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Grade 8

Strand: Number

	Curriculum Expectations	Pages
N8.1	Demonstrate understanding of the square and principle square root of whole numbers concretely or pictorially and symbolically	5-39
N8.2	Expand and demonstrate understanding of percents	03
N8.3		139
N8.4	Demonstrate understanding of multiplying and dividing positive fractions and mixed numbers, concretely, pictorially, and symbolically.	143-207
N8.5	Demonstrate understanding of multiplication and division of integers concretely, pictorially, and symbolically.	211-242
TQ	Tests and quizzes	104-107, 140-142, 208-210, 243-246

Name: _____ 6

Curriculum Connection: NR 1

Area of a Squares – Square Root

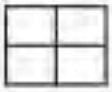
When we calculate the area of a square, we use a square number to determine the area.

Example: 

If the area of a square is 9, its side length is $\sqrt{9}$ or 3.

Part 1

What is the area? Write the side lengths as square roots and units

		Area	Side Length
1)			____units $\sqrt{}$
2)			____units $\sqrt{}$
3)			____units $\sqrt{}$

	Question	Area	Side Length
4)			____units $\sqrt{}$
5)			____units $\sqrt{}$
6)			____units $\sqrt{}$

Part 2

Fill in the table

	Area	Side Length (Units)	Side Length
1)			$\sqrt{64}$
2)		7	$\sqrt{}$
3)	144		$\sqrt{}$
4)		11	$\sqrt{}$

Part 3

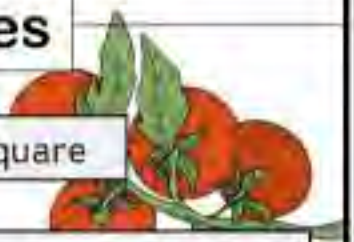
Is the number a perfect square?

	Area	Yes/No
1)	12	
2)	81	
3)	42	
4)	100	

Name: _____ 8

Curriculum Connection
NS.1

Word Problems - Perfect Squares



Questions Answer the questions below and provide the perfect square

1) Sarah is planting a square-shaped garden. She has 16 tomato plants and wants to plant them in equal rows and columns. How many plants should she plant in each row and column?

	Perfect Square	Square Number (x^2)

2) A square da… an … of 144 square meters. What is the length of each side of the dance flo…

	Perfect Square	Square Number (x^2)

3) Tim wants to create a square-shaped m…saic usi… ide… …iles. If he places the tiles in equal rows and columns, how many tiles … in e… column?

	P…	…e Number (x^2)

4) A square-shaped bedroom has a floor area of 64 square meters. What … length of each side of the bedroom?

	Perfect Square	Square Number (x^2)

5) In a park, there is a square-shaped sandbox with an area of 49 square meters. What is the length of each side of the sandbox?

	Perfect Square	Square Number (x^2)

Name: _____ 9

Curriculum Connection
NR 3

Square Roots

A **square root** is a number that can be multiplied by itself to give the original number. A square root is the opposite of a perfect square. Instead of multiplying a number by itself, we take the answer and find out what number was used.

Each positive number has two possible square roots – one positive and one negative

Example The square roots of 49 are +7 and -7 because (+7)(+7) and (–7)(–7) = 49

Part 1 Provide the positive and negative square root

	Question	Square Root	
		(+)	(-)
1)	$\sqrt{36}$		
2)	$\sqrt{4}$		
3)	$\sqrt{9}$		
4)	$\sqrt{16}$		
5)	$\sqrt{121}$		
6)	$\sqrt{144}$		

	Question	Square Root	
		(+)	(-)
7)	$\sqrt{49}$		
8)	$\sqrt{25}$		
9)			
10)	$\sqrt{8}$		
11)			
12)	$\sqrt{64}$		

Part 2 Provide the square root based on the symbol used

The symbol $\sqrt{}$ means positive square root and the symbol $\pm\sqrt{}$ means provide both the positive and negative square roots.

	Question	Answer(s)
1)	$\pm\sqrt{81}$	
2)	$\sqrt{49}$	
3)	$\pm\sqrt{9}$	

	Question	Answer(s)
4)	$\pm\sqrt{36}$	
5)	$\sqrt{100}$	
6)	$\pm\sqrt{64}$	

Name: _____ 11

Curriculum Connection
NS.1

Comparing Square Roots & Perfect Squares

Part 1 Which number is larger? Use < > or = to compare the numbers

1)	3^2	☐	$\sqrt{100}$
2)	$\sqrt{3}$	☐	6
3)	4	☐	5^2
4)	2^2	☐	6
5)	$\sqrt{36}$	☐	8

6)	$\sqrt{121}$	☐	11^2
7)	$\sqrt{25}$	☐	-6
8)	50	☐	7^2
9)	4^2	☐	$\sqrt{144}$
10)	2	☐	$\sqrt{4}$

Part 2 Order from least to greates

1) $\sqrt{4}$, 4, $\sqrt{16}$, -16, $\sqrt{9}$, $\sqrt{81}$	3) $\sqrt{144}$, 49
2) $\sqrt{64}$, $\sqrt{36}$, -3, 9, $\sqrt{121}$	4) $\sqrt{4}$, 16, $\sqrt{64}$, 9, $\sqrt{}$

Part 3 Challenge: find the square root for each number

1) $\sqrt{289}$	
2) $\sqrt{225}$	
3) $\sqrt{169}$	
4) $\sqrt{361}$	

5) $\sqrt{400}$	
6) $\sqrt{324}$	
7) $\sqrt{256}$	
8) $\sqrt{625}$	

Name: _____ 12

Curriculum Connection
NR3

Perfect Squares - Word Problems

Word Problems | Answer the word problems below

1) Which whole numbers between 100 and 150 are perfect squares?

2) Which numbers between 150 and 200 are perfect squares?

3) I am a square number. The sum of my digits is 7. What square numbers might I be?

4) What three square numbers have digits that add to 9?

5) Archer is planning to make a square garden this year. The garden needs to have an area less than 50m².

a) What is the largest area the garden could be?

b) What is the side length of the garden?

c) How many metres of fencing will be needed?

d) If one metre of fencing costs Archer $2.50, how much would the entire fence cost him?

Name: _____ 16

Curriculum Connection
NR 1

Rational vs Irrational Numbers

A **rational number** can be written as a ratio of two integers (a simple fraction). If a decimal number has a repeating or terminating decimal, it is a rational number.

Examples

5 can be written as 5/1	$\sqrt{16}$ can be written as 4 (4/1)	0.333... can be written as 1/3

An **irrational number** cannot be written as a ratio of two integers. Another clue is that the decimal goes on forever without repeating.

Examples

π (P...	$\sqrt{2}$ - 1.414213562373095...	$\sqrt{10}$ - 3.162277660168379...

Part 1

...mber ...al or irrational number?

	Question	Rational/Irrational
1)	$\sqrt{18}$	
2)	9	
3)	$\frac{5}{8}$	
4)	$\sqrt{16}$	
5)	$2.\overline{3}$	
6)	$\sqrt{24}$	

	Question	Rational/Irrational
7)	$\sqrt{49}$	
8)	...	
9)		
10)		
11)	$\frac{2}{6}$	
12)	$\sqrt{72}$	

Part 2

Write at least 10 rational and irrational numbers below

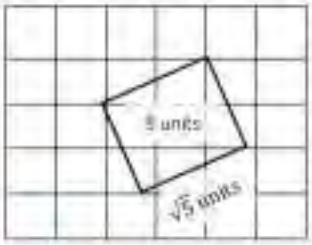
Rational Numbers	Irrational Numbers

Name: _____ 17

Curriculum Connection
NR.3

Estimating Square Roots

Perfect squares can be calculated. Imperfect squares can only be estimated.



An imperfect square and its square root is an irrational number with a decimal number that never ends.

We can estimate a square root by determining the two perfect squares that are closest to it.

Example: It is between $\sqrt{25}$ and $\sqrt{36}$, which means it is in between 5 and 6. This means estimating that the square of $\sqrt{31}$ is around 5.5. Since 31 is closer to 36 than 25, a better estimate would be 5.6.

Practice Estimate the square roots of the numbers below by filling in the table

	Non-Perfect Square	Lower Perfect Square	Upper Perfect Square	Estimate	Calculate round to tenth
1)	$\sqrt{19}$	$\sqrt{16} = 4$	$\sqrt{25}$	4.4	4.4
2)	$\sqrt{42}$				
3)	$\sqrt{68}$				
4)	$\sqrt{91}$				
5)	$\sqrt{29}$				
6)	$\sqrt{13}$				
7)	$\sqrt{55}$				
8)	$\sqrt{73}$				
9)	$\sqrt{6}$				
10)	$\sqrt{130}$				

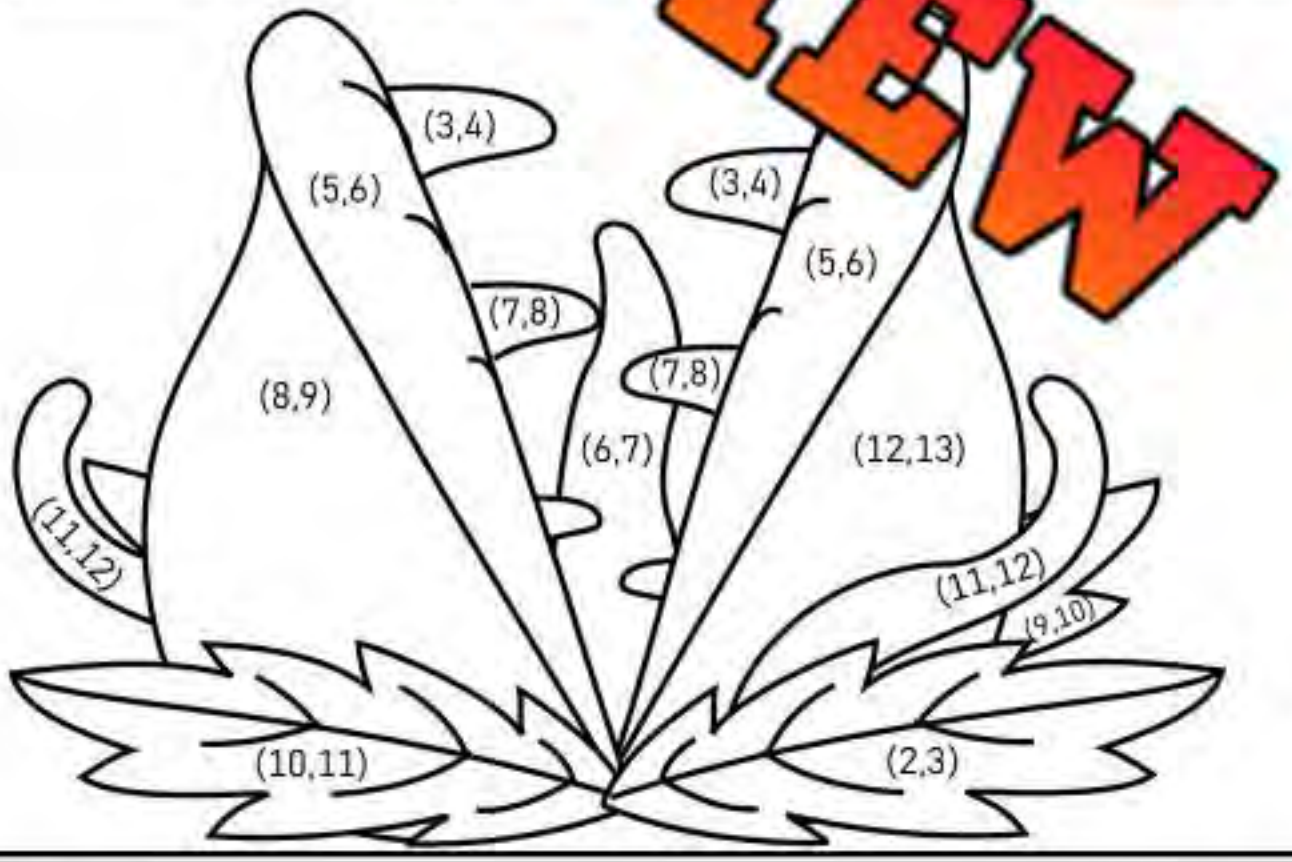
Name: _____ 18

Curriculum Connection
NR 1

Estimating Square Roots - Colouring

Practice Find the two square roots between the irrational numbers and colour the picture with the matching colour

	Irrational Number	Square Root 1	Square Root 2	Colour
1)	$\sqrt{32}$	√	√	Light Green
2)	$\sqrt{11}$	√	√	Yellow
3)	$\sqrt{7}$	√	√	Purple
4)	$\sqrt{6}$	√	√	Green
5)	$\sqrt{3}$	√	√	Light Green
6)	$\sqrt{4}$	√	√	Dark Green
7)	$\sqrt{54}$	√	√	Yellow
8)	$\sqrt{8}$	√	√	Dark Green
9)	$\sqrt{152}$	√	√	Green
10)	$\sqrt{89}$	√	√	Dark Green



Name: _____ 19 Curriculum Connection NR 1

Estimating Square Roots - Riddle

Practice Find the lower and higher perfect squares and write the corresponding letter above the numbers below

	Non-Perfect Square	Lower Perfect Square	Higher Perfect Square
B	$\sqrt{11}$		
Z	$\sqrt{}$		
S	$\sqrt{}$		
R	$\sqrt{55}$		
A	$\sqrt{2}$		
A	$\sqrt{6}$		
A	$\sqrt{77}$		
D	$\sqrt{125}$		
E	$\sqrt{18}$		

What's black and white and blue

(64,81)	(81,100)	(4,9)	(121,144)	(36,49)	(16,25)	(9,16)	(49,64)	(1,4)

Name: _____ 20

Curriculum Connection
NS.1

Square Roots - Area

Part 1 Assume the side lengths and area below are of squares. Fill in the table

	Side Length	Area
1)		81cm²
2)		
3)		
4)		144cm²
5)	10	

	Side Length	Area
6)		4m²
7)	11cm	
8)	4km	
9)		9m²
10)		36km²

Part 2 Find the side [illegible] square below. You will need to estimate one square

1)	A = 49	A = 54	A = 64	4)	A = 45	A = 49
	side length =	side length =	side length =		side length =	side length =
2)	A = 9	A = 15	A = 16	5)	A = 81	A = 85	A = 100
	side length =	side length =	side length =		side length =	side length =	side length =
3)	A = 64	A = 66	A = 81	6)	A = 16	A = 20	A = 25
	side length =	side length =	side length =		side length =	side length =	side length =

Name: _____ 21

Curriculum Connection
NBT

Estimating Square Roots

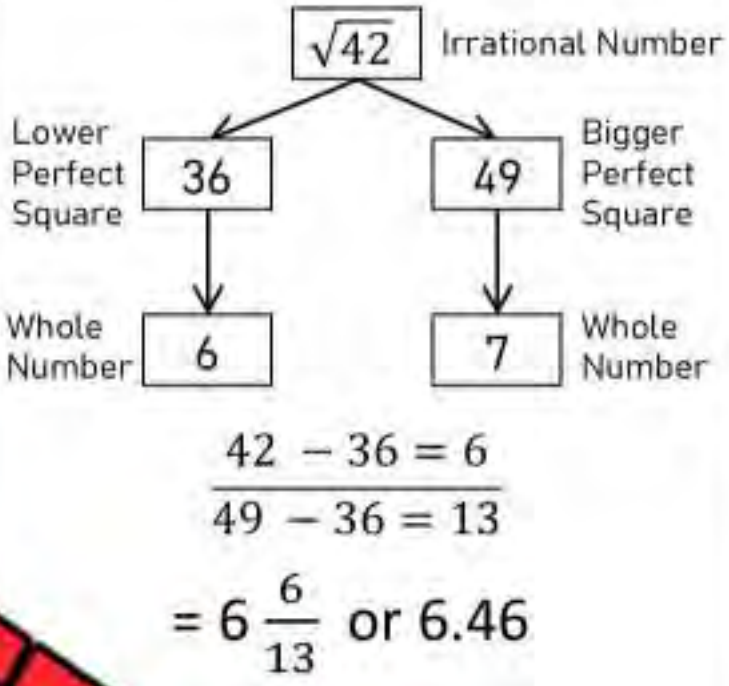
Step 1: Find the two perfect squares above and below the irrational number.

Step 2: Use the following formula to find the decimal number that will go with the whole number. Simplify the fraction.

Irrational # − Lower Perfect Square
Bigger P.S. − Lower P.S.

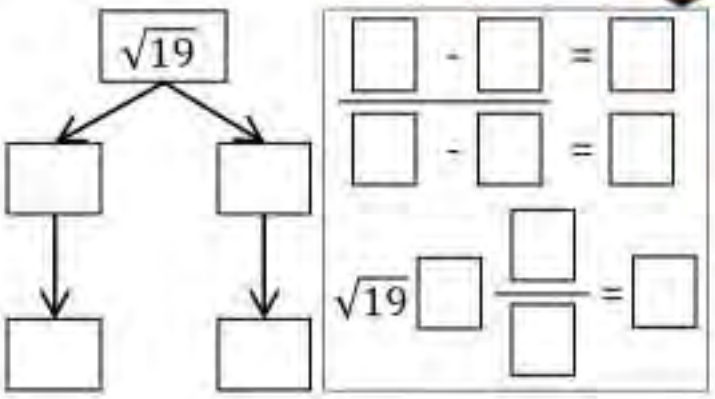
Step 3: Take the whole number using the lower perfect square number and the simplified fraction from above.

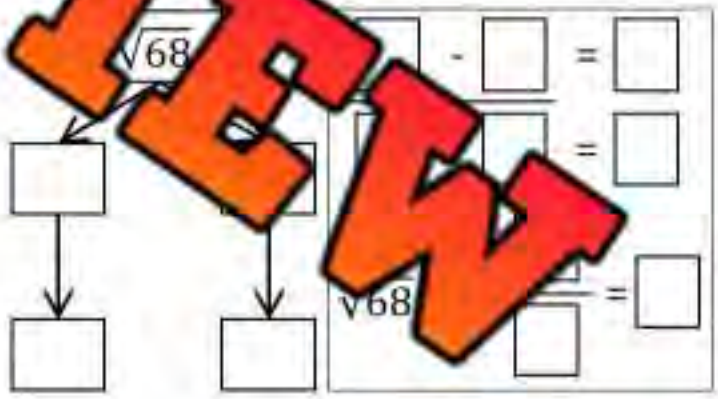
Step 4: Change the fraction to a decimal (rounded to the nearest hundredth).

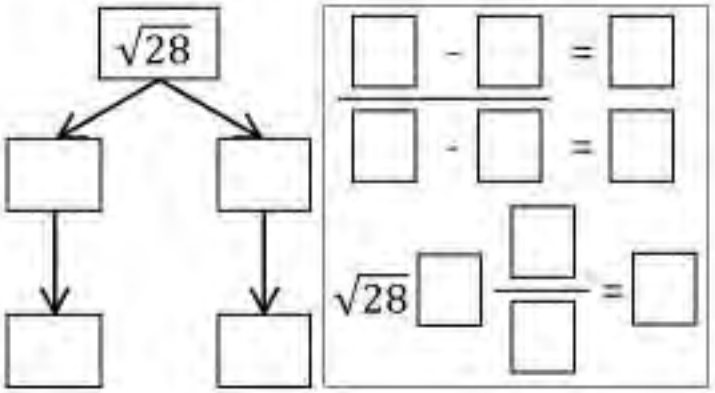


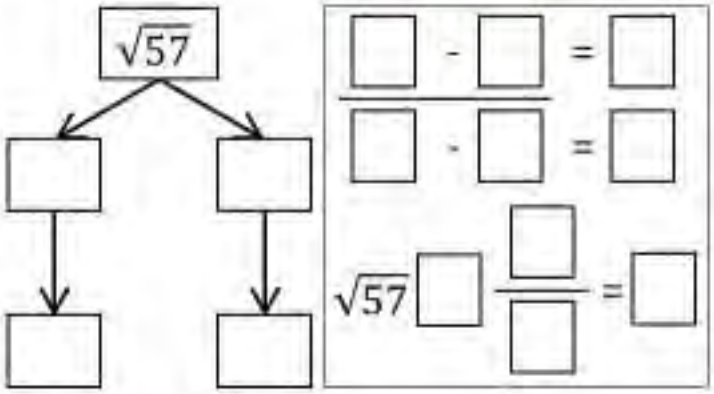
Practice

Fill in the blanks by following the steps above









Name: _____ 23

Curriculum Connection
NS.1

Comparing Square Roots & Perfect Squares

Part 1 Which number is larger? Use < > or = to compare the numbers

1)	3^2	☐	$\sqrt{110}$
2)	$\sqrt{}$	☐	10
3)	$\sqrt{}5$	☐	8
4)	7	☐	$\sqrt{}$
5)	$\sqrt{29}$	☐	$\sqrt{}$

6)	$\sqrt{45}$	☐	7
7)	$\sqrt{7}$	☐	3
8)	$\sqrt{14}$	☐	3
9)	12	☐	$\sqrt{138}$
	11	☐	$\sqrt{127}$

Part 2 Order from least to greatest

1) $\sqrt{8}$, 2, $\sqrt{10}$, 3, $\sqrt{5}$	3) $\sqrt{82}$, 8,
2) $\sqrt{32}$, $\sqrt{41}$, -11, 6, $\sqrt{35}$	4) $\sqrt{140}$, 12, $\sqrt{147}$, 1 3

Part 3 Circle which numbers are imperfect squares

1) 25, 4, 12, 24, 36, 50, 100, 68, 56, 64, 88, 96, 1, 6, 20
2) 16, 10, 28, 35, 9, 0, 81, 144, 110, 108, 121, 64, 62, 18

Name: _____ 24

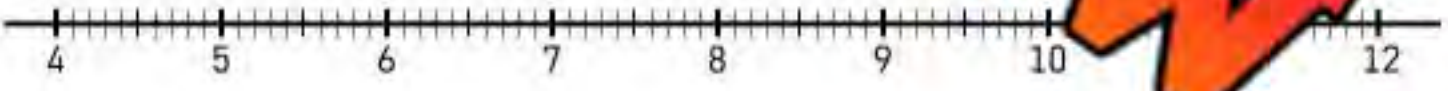
Curriculum Connection
NS.1

Square Roots – Number Line

Part 1 Place each square root on the number line to show its approximate value

1) $\sqrt{38}$	2) $\sqrt{10}$	3) $\sqrt{28}$
4) $\sqrt{42}$	5) $\sqrt{65}$	6) $\sqrt{87}$

7) $\sqrt{62}$	8) $\sqrt{10}$	9) $\sqrt{132}$
10) $\sqrt{141}$	11) $\sqrt{98}$	12) $\sqrt{22}$



Part 2 Which value is larger? Use < > or = to compare the values

1)	5 ☐ $\sqrt{21}$	4)	8.5 ☐ $\sqrt{66}$	7)	7.5 ☐ $\sqrt{52}$
2)	3 ☐ $\sqrt{14}$	5)	9.5 ☐ $\sqrt{95}$	8)	12.5 ☐ $\sqrt{145}$
3)	6 ☐ $\sqrt{31}$	6)	7.5 ☐ $\sqrt{60}$	9)	11.5 ☐ $\sqrt{142}$

Name: _____ 25

Curriculum Connection
NS.1

Square Roots - Word Problems

Word Problems	Answer the word problems below

1) Jade painted a beautiful square painting. She would like to frame it, so she needs the dimensions of the sides. The area of the painting is 5m². What are the side lengths? Round to the nearest two decimal places.

2) West[illegible]s cre[illegible]e around his square yard. The area of his yard is 140m².

a) What are th[illegible]engt[illegible]d to the nearest hundredth?

b) The fencing comes in metre len[illegible]ow m[illegible]t[illegible] should he buy?

3) Livia made a rectangular painting for her friend. [illegible]s a[illegible] of [illegible]86cm². Livia's friend loves it but needs a square painting to fit th[illegible]pac[illegible]. If Livia recreates a square painting with the same area, what sho[illegible]ths be?

4) An estimate for a square root is 8.49. Is the whole number (square) closer to 64 or 81? Explain.

Exit Cards

Cut Out Cut out the exit cards below and have students complete them at the end of class

Name: _____

1) Which value is larger?

a) [ ] $\sqrt{20}$

b) [ ] $\sqrt{85}$

2) Order from least to greatest

$\sqrt{50}$, 8, $\sqrt{60}$, 7, $\sqrt{48}$

Name: _____

1) Which value is larger?

a) 4 [ ] $\sqrt{20}$

b) 9 [ ] $\sqrt{85}$

2) Order from least to greatest

$\sqrt{50}$, 8, $\sqrt{60}$, 7, $\sqrt{48}$

Name: _____

1) Which value is larger?

a) 4 [ ] $\sqrt{20}$

b) 9 [ ] $\sqrt{85}$

2) Order from least to greatest

$\sqrt{50}$, 8, $\sqrt{60}$, 7, $\sqrt{48}$

Name: _____

1) Which value is larger?

a) 4 [ ] $\sqrt{20}$

b) 9 [ ] $\sqrt{85}$

2) Order from least to greatest

$\sqrt{50}$, 8, $\sqrt{60}$, 7, $\sqrt{48}$

Name: _____ 29

Curriculum Connection
NBT

Story - Archimedes and the Square Root of 3

Archimedes and the Square Root of 3

Once upon a time in the ancient city of Syracuse, there lived a genius mathematician named Archimedes. He was well-known for his incredible discoveries in the fields of math, physics, and engineering. One day, Archimedes decided to embark on an ambitious journey to find out how many grains of sand it would take to fill the entire universe. To accomplish this task, he needed to accurately determine the square root of 3.

He began by creating a right-angled triangle with one side measuring 1 unit and the other side measuring 2 units. The third side, known as the hypotenuse, was the length he sought. Using the Pythagorean theorem, Archimedes figured out that the square root of 3 was between the square root of 2 (approximately 1.4) and the square root of 4 (which is 2).

To pinpoint a more accurate value for the square root of 3, Archimedes used an ingenious method called the "method of exhaustion." He carefully drew polygons with an increasing number of sides around a circle that had a diameter of 2 units. By calculating the perimeters of these polygons, he could find numbers that were very close to the square root of 3, both a little bit larger and a little bit smaller.

Archimedes worked diligently, performing numerous calculations. Finally, he discovered that the square root of 3 was between the fractions 265/153 (1.73202614379) and 1351/780 (1.73205128205). His approximation was remarkably accurate for his time and a testament to his mathematical prowess.

With this newfound knowledge of the square root of 3, Archimedes could estimate the number of grains of sand required to fill the universe. His groundbreaking work laid the foundation for countless mathematicians and scientists who came after him. Archimedes' story is an inspiring example of how curiosity, determination, and creativity can lead to extraordinary discoveries.

Name: _____ 30

Curriculum Connection
NS.1

Story - Archimedes and the Square Root of 3

True or False Is the statement true or false?

1) Archimedes was a famous mathematician from the city of Syracuse.	True	False
2) Archimedes used the Pythagorean theorem to begin his calculations.	True	False
3) The square root of 3 is exactly 1.7	True	False
4) Archimedes drew polygons around a circle with a diameter of 1 unit.	True	False
5) Archimedes estimated the square root of 3 to be between 265/153 and 1351/780.	True	False

Questioning Write three questions you have after reading the text.

1)	
2)	
3)	

Questions Answer the questions below using evidence from the text.

1) Who was Archimedes? What was he trying to figure out?

2) How did Archimedes estimate the value of the square root of 3?

Name: _____ 31

Curriculum Connection
NS.1

Adding Square Roots

We can simplify expressions with square roots by evaluating the square root and performing the addition operation afterwards.

Example 1
$\sqrt{9} + \sqrt{25}$
$= 3 + 5$
$= 8$

Example 3
$\sqrt{22 + 27}$
$= \sqrt{49}$
$= 7$

Example 3
$\sqrt{40 + \sqrt{81}}$
$= \sqrt{40 + 9}$
$= \sqrt{49}$
$= 7$

Example 4
$\sqrt{\sqrt{49} + \sqrt{100}}$
$= \sqrt{7 + 10}$
$= \sqrt{17}$
$= 4.12$

Ques. S xpressions below

1) $\sqrt{16} + \sqrt{49}$	$13}$	3) $\sqrt{81} + \sqrt{64}$
4) $\sqrt{8 + \sqrt{64}}$	5) $\sqrt{\sqrt{25} + 20}$	$+ \sqrt{81}}$
7) $\sqrt{\sqrt{36} + \sqrt{100}}$	8) $\sqrt{\sqrt{100} + 111}$	9) $\sqrt{\sqrt{49}$ 1
10) $\sqrt{144} + \sqrt{100}$	11) $\sqrt{\sqrt{4} + \sqrt{49}}$	12) $\sqrt{95 + 26}$

Name: _____ 34

Curriculum Connection
V6.1

Task Cards: Square Root Operations

Objective

What are we learning about?

Students will practice adding, subtracting, multiplying, and dividing square roots using simplified expressions to enhance their understanding of operations with square roots.

Materials

What you will need for the activity.

- [illegible] cards
- Sep[illegible]te sh[illegible]er for answers
- Pencils

Instructions

How [illegible] mpl[illegible] activity

1. Begin by reviewing the co[illegible]epts [illegible]g, s[illegible]acting, multiplying, and dividing square roots, and the i[illegible]nce of [illegible]ying expressions.
2. Organize the students into pairs and pro[illegible]each p[illegible] their sets of task cards containing square root operations.
3. Give each pair an answer recording sheet to r[illegible] w[illegible] their [illegible]nses.
4. Encourage teamwork by having students collaborate [illegible]th t[illegible] solve the square root operations on each task card.
5. Allow students to select any task card to begin with, emphasizi[illegible]at they can complete the cards in any order they prefer.
6. Instruct students to solve the operation on their chosen card and write the simplified answer on their answer sheet.
7. If using a timer, set it for 30 minutes to encourage focus and manage classroom time effectively.
8. After the activity, review the answers collectively, discussing any challenging operations and the strategies used to solve them.
9. Have students reflect on the activity, sharing the methods they applied and obstacles they overcame.

Name: _____ 35

Curriculum Connection
NR.1

Task Cards | Cut out the task cards below

Task Card 1:

Calculate:

$\sqrt{\sqrt{49} + \sqrt{81}} =$ ___

Task Card 6:

Calculate:

$\sqrt{100 \div 25} =$ ___

Task Card 2:

Calculate:

$\sqrt{74} =$ ___

Task Card 7:

Calculate:

$\sqrt{9 \times 16} =$ ___

Task Card 3:

Calculate:

$\sqrt{81 \times 4} =$ ___

Task Card 8:

Calculate:

$\sqrt{\quad} =$ ___

Task Card 4:

Calculate:

$\sqrt{\sqrt{36} + \sqrt{100}} =$ ___

Task Card 9:

Calculate:

$\sqrt{\sqrt{25} + \sqrt{16}} =$ ___

Task Card 5:

Calculate:

$\sqrt{58 - 9} =$ ___

Task Card 10:

Calculate:

$\sqrt{36} \times \sqrt{81} =$ ___

Name: _____ 37

Curriculum Connection
NR.1

Task Cards | Cut out the task cards below

Task Card 21:

Calculate:

$\sqrt{\sqrt{25} \times \sqrt{25}} =$ ___

Task Card 22:

$\sqrt{3}$ [illegible] $6 =$ ___

Task Card 23:

Calculate:

$\sqrt{\sqrt{100} + \sqrt{36}} =$ ___

Task Card 24:

Calculate:

$\sqrt{\sqrt{144} + \sqrt{169}} =$ ___

Task Card 25:

Calculate:

$\sqrt{\sqrt{144} - 3} =$ ___

Task Card 26:

Calculate:

$\sqrt{81} + \sqrt{16} =$ ___

Task Card 27:

Calculate:

$\sqrt{\sqrt{49} + \sqrt{81}} =$ ___

Task Card 28:

[illegible]ulate:

[illegible] =

Task C

Calculate

$\sqrt{\sqrt{64} \div \sqrt{4}} =$ ___

Task Card 30:

Calculate:

$\sqrt{\sqrt{169} \div 13} =$ ___

Name: _____ 38

Curriculum Connection
NS.1

Task Cards: Square Root Operations

Answers | Record your answers below

1	
2	
3	
4	
5	
6	
7	
8	
9	
10	
11	
12	
13	
14	
15	

16	
17	
18	
19	
20	
21	
22	
23	
24	
25	
26	
27	
28	
29	
30	

Name: _____ 40

Curriculum Connection
NS.2

Fractions, Decimals, and Percents

Part 1 Fill in the table with the converted decimal, fraction, and percent

Fraction	Decimal	Percent
100/1000		10.0%
200/1000		20.0%
	0.300	%
		40.0%
/100		%
		60.0%
		%
		%
900/1000		%
	1.000	100.0%

Part 2 Answer the word problems below

1) Cole played in a doubles tennis match with Lilly. Cole scor nts. What percentage of the points did Lilly score?

2) Leon won a chili cooking competition. He received 150 of the 200 first place votes. What percentage of first place votes did Leon get?

3) Samantha finished 90% percent of the triathlon she competed in. Write what fraction of the race she completed in its simplest form.

Name: _____ 41

Curriculum Connection
NB 2

Fraction/Decimal/Percent Bottle Flip Challenge

Objective What are we learning about?

To practise and reinforce understanding of converting between fractions, decimals, and percents through the engaging and physically active bottle flip game.

Materials What you will need for the activity.

- P bottles air/group) filled to approximately one-third with water (or use c ps wit
- Set of frac , ane t conversion question cards
- Answer shee h gro

Instructions How you ple y

1. Start with a short lesson on conve between ecimals, and percents.
2. Arrange the students into pairs or small gr d dis ottle and a set of question cards to each.
3. Each pair or group receives an answer sheet to re answ
4. Explain the rules: One student draws a question card an es t conversion problem between fractions, decimals, or percents.
5. Once they believe they have the correct answer, they write it down o answer sheet.
6. The student then gets to attempt a bottle flip. A successful flip means they get a point; an unsuccessful flip means they need to try to solve another question card before flipping again.
7. Alternate turns within each group or pair until they have completed all the question cards.
8. Groups or pairs tally their successful flips and compare with the rest of the class to determine the winning team.
9. Go through the answer sheet with the class to ensure understanding and correct any misconceptions.

Name: _____ 42

Curriculum Connection
N8.2

Questions Cut out the questions below and use them for the game.

50/1000 = _____ %	902/1000 = 0 _____	33.5% = 0. _____	72% = _____/1000
0.523 = _____ %	[illegible]	86.7% = 0. _____	93.1% = _____/1000
475/1000 = _____ %	150/1000 = 0 _____	12[illegible] = 0. _____	3[illegible]0
0.789 = _____ %	0.947 = _____ %	45.8% = 0. _____	58.2% = ____/1000

Name: _____ 43

Curriculum Connection
NBT

Questions	Cut out the questions below and use them for the game.

A student read 180 pages out of a 300-page book. What is the fraction, decimal, and percent of the book re	A store sold 75 out of 150 items on sale. What fraction, decimal, and percent of the items were sold?	A runner completed 6 out of 8 laps in a race. What is the fraction, decimal, and percent of the laps completed?	A survey showed 120 out of 400 people prefer coffee over tea. What is the fraction, decimal, and percent of people who prefer coffee?
A gar[illegible] has [illegible] out of 60 p[illegible] that are flowe[illegible] What fraction, decimal, and percent of the plants are flowers?	[illegible]ef [illegible]ed 2 out [illegible] cu[illegible]ugar [illegible] a re[illegible] is [illegible] and perc[illegible]aug[illegible] used?	A student answered 45 out of 60 questions correctly on a test. What fraction, decimal, and [illegible]cent of the [illegible]s were [illegible]d [illegible]ectl[illegible]	A printer has printed 480 out of 600 pages. What is the fraction, decimal, and percent of pages printed?
A car was driven for 320 miles out of a 400-mile journey. What is the fraction, decimal, and percent of the journey completed?	A basketball team won 15 out of 25 games this season. What fraction, decimal, and percent of the games were won?	A fa[illegible] [illegible]et 1,200 [illegible]00 units wi[illegible] defects. What is the fraction, decimal, and percent of defect-free units?	[illegible]thlete drank [illegible]ers out of a [illegible] What [illegible], [illegible] and p[illegible]t of the bottle drunk?
A class of 30 students had 9 students who received an A grade. What fraction, decimal, and percent of the class received an A?	A library lent out 350 of its 500 books. What fraction, decimal, and percent of the books were lent out?	A worker finished 80 out of 100 tasks for the day. What is the fraction, decimal, and percent of tasks completed?	A swimmer swam 800 meters out of a 1,000-meter race. What is the fraction, decimal, and percent of the race completed?

Name: _____ 44

Curriculum Connection
NBT

Conversions Bottle Flip Challenge

Answers Record your answers below.

1	
2	
3	
4	
5	
6	
7	
8	
9	
10	
11	
12	
13	
14	
15	
16	

17	
18	
19	
20	
21	
22	
25	
26	
27	
28	
29	
30	
31	
32	

Name: _____ 45

Curriculum Connection
NS.2

Class List - Decimal, Fraction, Percent

Mrs. Hansen just finished marking a math test. Her class list with the results of the test are below. She has simplified some of the fractions, and some students wrote a different test, meaning they are out of a different total.

Grades
A = 80% and up
B = 70%-79%
C = 60% – 69%
D = 50% – 59%
F = 49% or less

Questions Fill in the class list

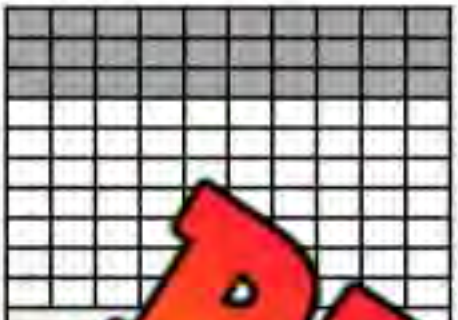
Student	Mark	Decimal	Percent	Grade
Madis				
River	/100			
Parker				
Zara	14/20			
Lorenzo	1/2			
Damian	1/7			
Matteo	5/5			
Everly	2/5			
Evan	79.5/100			
Skylar	93.5/100			
Luka	9.5/12			
Josie	2.5/9			
Cora	2/10			
Kaylee	3.5/5			
Savannah	75/100			

Name: _____ 46

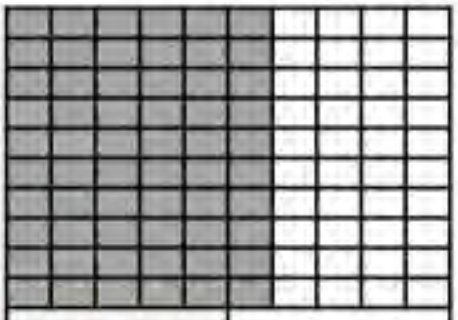
Curriculum Connection
NS.2

Fractions, Decimals, and Percents

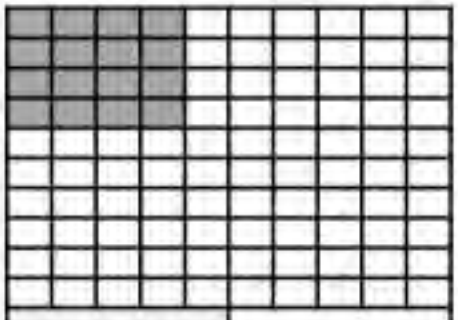
Questions What fraction, decimal and percent of the array is shaded in?



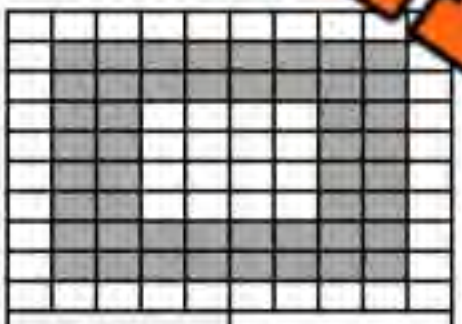
Fr	
Decima	
Percent	



Fraction	
ecimal	

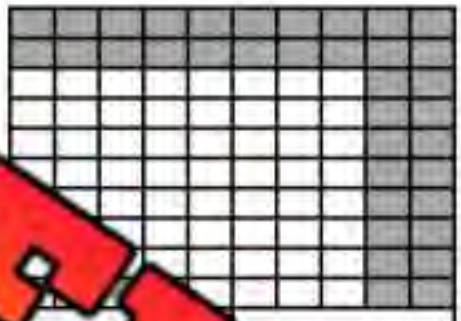


Fraction	
Decimal	
Percent	

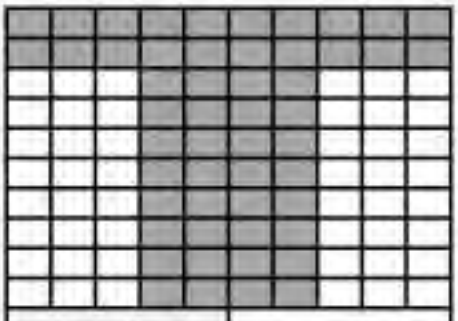


Fraction	
Decimal	
Percent	

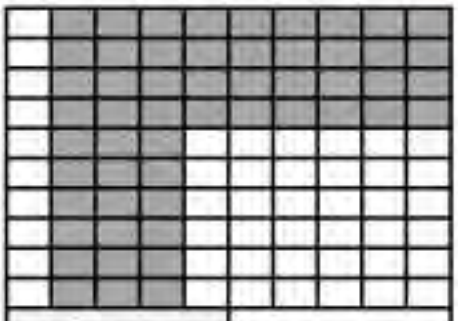
Fraction	
Decimal	
Percent	



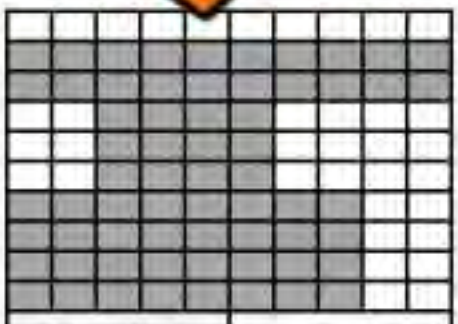
Fra	
D	
P	



Fraction	
Decimal	
Percent	



Fraction	
Decimal	
Percent	



Fraction	
Decimal	
Percent	

Name: _____ 51

Curriculum Connection
NS.2

Sport Statistics – Fractions, Decimals, and Percents

Questions | Baseball Statistics – 2021 Regular Season Offensive Statistics

1) Vladamir Guerrero Jr. had 600 at bats in the 2021 season. His stats are listed in the table below.

	Hits	Runs	Doubles	Triples	Home Runs
Totals - F ion	188/600	124/600	21/600	1/600	51/600
Deci					

a) If Guerrero ts, many home runs would he have?	
b) If Guerrero had t b doubles would he have?	
c) If Guerrero had 50 at ba any he have?	
d) Write the probability as a percentag rre get a hit at his next at bat?	

2) Bo Bichette had 700 at bats in the 2021 season. His liste e table below.

	Hits	Runs	Doubles	Tr	uns
Totals - Fraction	195/700	118/700	29/700	1/700	28/700
Decimal					
Percent					

a) If Bichette had 100 at bats, how many home runs would he have?	
b) If Bichette had 1000 at bats, how many doubles would he have?	
c) If Bichette had 50 at bats, how many hits would he have?	
d) Write the probability as a percentage that Bichette will get a home run at his next at bat?	

Name: _____ 53

Curriculum Connection
NS.2

Fractions, Decimals, and Percents - Word Problems

Questions | Answer the word problems below

1) Finn scored 82% on a math test. Aspen scored 20/25 on the same test. Who received a higher percentage?

2) Gracie [illegible] Blakely all ran for student president. Gracie received 35% of the 200 vot[illegible] 0.31 of the votes and Blakely received 68/200 votes.

How ma[illegible] votes [illegible] student get?

Gracie	Gael	Blakely

3) Daisy's goal is to [illegible] day. Today she walked 9253 steps. What percentage of her goal [illegible] ach?

4) Tyler's investment of $100 gained $10. Hi[illegible]n as [illegible] 10/100. What percentage has his investment increased?

5) Zayden and his friend Norah drove 500km to Canada's Wonder[illegible]den drove 335km and Norah drove the rest.

a) What percentage of the trip did Zayden drive?

b) What percentage of the trip did Norah drive?

6) Arthur can throw a football 66 yards. A Canadian football field is 110 yards. What percentage of the football field can Arthur throw?

Exit Cards

Cut Out Cut out the exit cards below and have students complete them at the end of class

Name: _____

1) Fill in the table with the converted decimal, fraction, and percent

Fraction	Decimal	Percent
		95%
62.5/100		
	0.4	

2) Lucas scored 18/20 on a science test, while Emma scored 85% on the same test. Who received a higher percentage?

_____

Name: _____

1) Fill in the table with the converted decimal, fraction, and percent

Fraction	Decimal	Percent
		95%
62.5/100		
	0.4	

2) Lucas scored 18/20 on a science test, while Emma scored 85% on the same test. Who received a higher percentage?

_____

Name: _____

1) Fill in the table with the converted decimal, fraction, and percent

Fraction	Decimal	Percent
		95%
62.5/100		
	0.4	

2) Lucas scored 18/20 on a science test, while Emma scored 85% on the same test. Who received a higher percentage?

_____

Name: _____ 60

Curriculum Connection
NBT

Four Finger Quiz - Percent Calculation

Objective What are we learning about?

Students will practice solving real-world word problems using mental math techniques for calculating percentages (1%, 10%, 15%, 25%, and 50%).

Materi ou will need for the activity.

- Printed q isp n a projector)

Instructions How you w ple

1. Prepare a list of questions with four answe ion ed A, B, C, and D.
2. Explain the finger signals for each answe ic A, two fingers for B, three fingers for C, and four fingers for
3. Inform the students they will show their answer using the en you read each question.
4. Read the first question aloud clearly and repeat if necessary.
5. Give students time to write down the problem and solve it.
6. After a countdown (e.g., "3, 2, 1"), have all students show their answer simultaneously by raising the appropriate number of fingers.
7. Reveal the correct answer and explain why it is correct.
8. Repeat with different questions to reinforce understanding of multiplying decimals.

Name: _____ 61

Curriculum Connection: NBT

Questions | Read the questions to the students

Question	A	B	C	D
1. A backpack costs $85. You get a 10% discount. How much is the discount?	$8.50	$8.00	$7.00	$9.00
2. A book has 340 pages. You read 1% of it today. How many pages did you read?	3.5 pages	3.0 pages	3.4 pages	4.0 pages
3. A restaurant bill is $150. You leave a 15% tip. How mu[illegible] the tip?	$22.00	$22.50	$23.00	$25.00
4. A coat c[illegible]. It's on sale for 50% off. How muc[illegible]	$150	$135	$140	$120
5. A p[illegible] Yo[illegible]25% discount. How m[illegible] the di[illegible]	$35.00	$25.00	$30.00	$40.00
6. Your total gr[illegible]0 g[illegible] and you use 0.1 of it [illegible]e. Ho[illegible] you use?	67 grams	6.7 grams	6.8 grams	60 grams
7. A soccer team won 10[illegible] [illegible]tches. How many matches did they	[illegible]00	92	95	85
8. A class has 1,300 students. 1% [illegible]hem on the debate team. How many are on t[illegible] debate team?	11 stude[illegible]	10 [illegible]nts	12 students	13 students
9. A dinner costs $200. You leave a 15% tip. How much tip did you leave?	[illegible]	[illegible]	$25.00	$22.50
10. A jar weighs 850 grams. You remove 0.01 of its weight. How much weight did you remove?	8.5 grams	[illegible]s	[illegible]s	[illegible]8 grams
11. A plant weighs 400 grams. It loses 25% of its weight. How much weight was lost?	150 grams	120 grams	[illegible]0	[illegible]0 grams
12. A water bottle is filled with 340 ml of water. You drink 50%. How much water did you drink?	170 ml	150 ml	160 ml	165 ml
13. A video game costs $450. You save 0.1 of your money for it. How much money do you save?	$45	$50	$40	$47
14. A cake recipe calls for 900 grams of flour, but you only use 10% of it. How much flour do you use?	90 grams	85 grams	95 grams	100 grams
15. A project weighs 670 grams. You reduce the weight by 0.01. How much weight is reduced?	6.7 grams	7.0 grams	5.7 grams	8.0 grams

Name: _____ 65

Curriculum Connection
NR.2

Determining Sales Tax

We can determine the exact price of a good or service by using a calculator. We can either convert the percentage to a decimal or we can use the percent button on our calculator.

Steps to use % Button on a Calculator

1) Enter the cost of the product
2) Hit the + button
3) Type th tax percentage (11)
4) Hit th tton (this will display the sales tax)
5) Click s button

Questi F steps above to calculate the sales tax and total price

#	Pro ice	les Tax (11%)	Total Price
1	$24.00	4	$26.64
2	$17.50		
3	$27.35		
4	$44.75		
5	$74.25		
6	$68.70		
7	$125.15		
8	$174.10		
9	$194.65		
10	$214.20		

Name: _____ 66

Curriculum Connection
NR.2

Determining Sales Tax - Word Problems

Questions | Answer the word problems below

1) Kayden has a $10 bill and wants to know if he can afford a burger and fry meal that costs $7.99 before taxes. Calculate the total cost of the meal. Can he afford the meal?

Bonus: How much money does he have left?

2) Dexter wants to buy a [illegible] game. He has $100 and the game costs $65.00 before tax. How much will the game cost?

Bonus: How much money will he have left if he buys the game?

3) Mya is thinking of purchasing a new pair of headphones that cost $59.99. She only has $65.00. Does she have enough money? Explain.

Name: _____ 68

Curriculum Connection
NS.2

Determining Sales Tax – Multiple Items

Item #1	Item #2	Total Price	Taxes	Total Cost
		$16.00	$1.76	$17.76

Questions Fill in the table below

Item #1	Item #2	Total Price	Taxes	Total Cost
				

Item #1	Item #2	Total Price	Taxes	Total Cost
				

Item #1	Item #2	Total Price	Taxes	Total Cost
				

Item #1	Item #2	Total Price	Taxes	Total Cost
				

Item #1	Item #2	Total Price	Taxes	Total Cost
				

Name: _____ 69

Curriculum Connection
NS.2

Determining Final Price – Multiple Items – Word Problems

Questions | Answer the word problems below

1) George went to the movies with his friends. He ordered a bag of popcorn for $6.50 and a drink for $4.75. How much was his total purchase with tax included?

Bonus: He paid with a $20 bill. How much will he get back?

2) Ruby went to the carnival. She had track and field meet. Her money is below:



She bought a hot dog for $3.00, a bag of chips for $1.50 and a drink for $2.25. How much did it cost her with tax?

Bonus: How would you pay - would you use all three pieces of money?

3) Steve went to a video game store and bought a video game for $29.99 and a controller for $49.99. How much money total did he spend with tax?

Bonus: He paid with a $100 bill. How much will he get back?

Name: _____ 74

Curriculum Connection
NBL2

Challenge – Restaurant Menu

Questions | Answer the word problems below

You are just sitting down to a meal at a restaurant with your friends. The waiter hands you a menu. You plan to choose 1 appetizer, 1 main, and 1 dessert.

Menu	
Appetizer	
Soup	$4.50
Salad	$8.25
Chicken Wings	$9.75
Poutine	$8.99
Mains	
Pasta	14.99
Steak	$25.99
Hamburger	$8.99
Pizza	$22.50
Desserts	
Ice Cream	$4.99
Apple Sundae	$6.99
Cheesecake	$5.25
Chocolate Cake	

1) What will you choose?

_____

2) How much will these things cost without tax?

_____

3) How much will these things cost with tax? (11%)

_____

4) When you finished your meal, it is customary to leave a 15-20% gratuity (tip). What percent will you leave? _____

5) What will your entire meal cost with the tax and tip included?

_____

6) Your friend enjoys expensive things. He orders the most expensive dinner, picking the most expensive appetizer, main, and dessert. How much would it cost him with tax and a 20% gratuity?

_____

Name: _____ 75

Curriculum Connection
NS.2

Restaurant Order – Adding Tip

Word Problems | Answer the questions below

An Italian restaurant serves the items below.

Menu	Cost
Spaghetti	$14.50
Pizza	$18.90
Lasagna	$22.25
Risotto	$19.75
ssert - Gelato	$5.80

1) James orders ti for nd gelato for dessert.

a) How much will ex (11%)?

b) James adds 15% tip to the total w ill he owe?

2) Sophia brings her family to the restaurant. They o zas an otto

a) How much will the meal cost with sales tax (11%)?

b) Sophia adds 20% tip to the total with tax. How much will she owe?

3) Evelyn and her 3 friends go to the restaurant. Each of them got a different meal and they all got gelato for dessert. Evelyn paid for the entire meal.

a) How much will the meal cost with sales tax (11%)?

b) Evelyn adds 18% tip to the total with tax. How much will she owe?

Exit Cards

Cut Out Cut out the exit cards below and have students complete them at the end of class

Name: ______________________

1) Calculate the sales tax and total price.

Product Price	Sales Tax (11%)	Total Price
$55.89		
$24.75		
$86.40		

2) Ethan went to a cafe and ordered a sandwich for $4.75, a coffee for $2.50, and a cookie for $1.25. How much was his total bill with tax included?

____

Name: ______________________

1) Calculate the sales tax and total price.

Product Price	Sales Tax (11%)	Total Price
$55.89		
$24.75		
$86.40		

2) Ethan went to a cafe and ordered a sandwich for $4.75, a coffee for $2.50, and a cookie for $1.25. How much was his total bill with tax included?

____

Name: ______________________

1) Calculate the sales tax and total price.

Product Price	Sales Tax (11%)	Total Price
$55.89		
$24.75		
$86.40		

2) Ethan went to a cafe and ordered a sandwich for $4.75, a coffee for $2.50, and a cookie for $1.25. How much was his total bill with tax included?

____

Name: ______________________

1) Calculate the sales tax and total price.

Product Price	Sales Tax (11%)	Total Price
$55.89		
$24.75		
$86.40		

2) Ethan went to a cafe and ordered a sandwich for $4.75, a coffee for $2.50, and a cookie for $1.25. How much was his total bill with tax included?

____

Name: _____ 77

Curriculum Connection
NBT

Introduction to Interest

What is Interest?

Interest is the amount of money earned from an investment or the cost of borrowing based on an interest rate.

Interest From Investments

We can earn interest on our investments, which means we are putting our money to work! If we invest $100 in the stock market, we hope that one hundred dollars is worth more at the end of the year. The average interest rate return in the stock market over the last 100 years is about 10%. This means that after one year, your $100 is now worth $110.

Interest From Borrowing

Most people will need to borrow money to pay for things like cars, houses, or even water heaters and necessities. When we borrow money, we pay the lender (usually a bank) the amount they pay in interest depends on the interest rate. A higher interest rate will require us to pay more in interest. For example, if we borrow $100 with a 15% yearly interest rate, we will owe at the end of the year. It is important to shop around for the lowest interest rate.

Part 1 — A bank pays % interest for your savings account – $5 per $100

Savings	Savings + Interest	Savings	Savings + Interest
1) $200	$210	5)	
2) $450		7	
3) $625		52	
4) $932		8) $28	

Part 2 — You pay 19% interest on your credit card – for every $100 yo $119

Debt	Debt + Interest	Debt	Debt + Interest	Debt	ebt + Interest
1) $300	$357	4) $999		7) $4230	
2) $485		5) $1452		8) $5417	
3) $712		6) $2375		9) $7759	

Part 3 — Answer the question below

What are your thoughts on interest? Is paying a 19% interest rate fair?

Name: _____ 78

Curriculum Connection
NF.2

Calculating Interest Rates - Investments

When dealing with interest rates, we are either paying interest or being paid interest. When we invest money in a savings account, we are paid interest. We can also invest in the stock market in hopes of being paid interest on our investment. We can calculate how much return we will get on an investment by using the following steps.

Steps to use % Button on a Calculator

1) Enter the investment amount
2) Hit the [illegible]utton
3) Type [illegible]est rate
4) Hit t[illegible] (this will display how much earned from interest)
5) C[illegible] (this will give you the total return)

Questions [illegible] above to calculate the return on investment

#	Investment	5% [illegible]	[illegible]turn on [illegible]t	15% Interest	Total Return on Investment
1	$28	$1.40		$4.20	$32.20
2	$37				
3	$41				
4	$97				
5	$150				
6	$370				
7	$525				
8	$855				
9	$1400				
10	$2755				

Name: _____ 80

Curriculum Connection
NF.2

Calculating Interest

Questions Calculate how much interest we will pay in the situations below

1) If you borrow $600 for 6 years at an interest rate of 10%, how much interest will you pay?

b) How much in total will you pay?

2) How m rest does a $430 investment earn at 6% over one year?

3) How much i he $875 investment at 4% for six years?

4) How much interest will you to w $325 for 2 years at a 12% interest rate.

5) Jacob invested $250 for 4 years. He earned $ f gets his interest rate. He thinks it was either 5% or 10%. Whic es rate g et?

6) If you borrow $1750 for 3 years at an interest rate of 6%, how m will you pay?

b) How much will you pay in total?

7) If you get a loan for $225 000 to buy a house with an interest rate of 2%, how much interest will you pay for a 10-year loan?

8) Hanna paid $28 of interest when she borrowed $200. Her father said she paid 28% interest, but she says she only paid 14%. Who is correct?

Name: _____ 81

Curriculum Connection
NB.2

Calculating Simple Interest

When we borrow money, we usually pay interest on the total amount we borrow. We call this amount the **principal**. Depending on the type of loan, the interest rates will vary. **Simple interest** is interest paid on the principal amount. We can calculate simple interest by using the following formula:

Simple interest = principal x interest rate x time to pay back the loan

This will give us how much interest we will pay for our loan.

For examp[illegible]owe $5000 for a car loan with a 5% simple interest rate on a 5-year term. The [illegible]f interest you will pay after the 5 years is 5000 x 0.05 x 5 = $1250

Part 1 Fill i[illegible] to determine the cost of borrowing for 3 and 8 years

#	Principa[illegible]	[illegible]nter[illegible]	3-Year Loan	8-Year Loan
1)	$2000		$300	$800
2)	$3500			
3)	$6000	19%		
4)	$10,000	8%		
5)	$17,000	10%		
6)	$25,000	4%		
7)	$47,500	3.5%		

Part 2 Answer the questions below

1) Is it more or less costly to borrow money for longer periods of time. Explain why that might be the case.

_____

_____

2) Jake is borrowing $8000 for a new car. The interest rate is 6%. He's not sure if he'll choose the 5- or 7-year term. How much will he save in interest on the 5-year term?

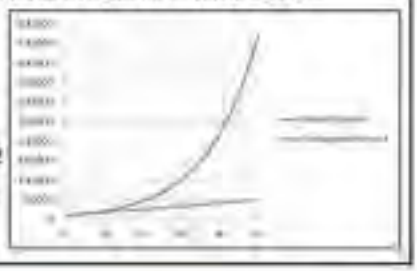
Name: _____ 83

Curriculum Connection
NR.2

Simple Interest vs Compound Interest

Overview - Simple Interest vs Compound Interest

Simple interest is based on the principal amount of the loan or deposit. This means the interest paid does not change. For example, if you borrow $100 at a 5% annual interest rate, you will owe $5 in interest each year until the loan is paid.



Compound interest is based on the principal amount and the interest that accumulates on it every period. For example, if you borrow $100 at a 5% annual interest rate, you will owe $5 after the first year, [illegible] of $105 the next year ($5.25). The third year, you would owe [illegible] 10.25, which is $5.51.

Ques[illegible] D[illegible]raph display a simple or compound interest loan?

1) How do you know which type of loan this was? Explain

_____

_____

_____

2) Ho[illegible]n int[illegible]ill be paid after 7 years?

_____

3) Will th[illegible]oan ge[illegible]a massive amount of i[illegible]ing

_____

1) How do you know which type of interest is being applied? Explain

_____

_____

_____

2) What do you notice about the graph? Why isn't it linear?

_____

_____

_____

Name: _____ 85

Curriculum Connection
NS.2

Compound Interest - Borrowing

When we borrow money, we pay interest on how much we borrow. We need to consider how long it will take to pay back the debt before we decide to borrow. Borrowing money to buy things like a house or car are essential for most people even though those debts will take a long time to pay off. Luckily, mortgage interest rates are between 2-4% and car loans are typically around 5%.

On the other hand, borrowing to buy things we don't need can lead to us using credit cards to borrow. Credit cards have a 19% interest rate. Complete the table to show how credit card debt can become overwhelming with compound

Question: How much interest is paid after borrowing for up to 5 years

#	Principal Borrowing Amount	1-Year 19% - Total	2-Year 19% - Total	3-Year 19% - Total	4-Year 19% - Total	5-Year 19% - Total
1	$100	$1		68.52	$200.53	$238.64
2	$250					
3	$700					
4	$1250					
5	$2000					
6	$2500					
7	$2800					
8	$3250					
9	$5000					
10	$15,000					

Name: _____ 86

Curriculum Connection: NBT

Compound Interest – Online Tool

Calculating compound interest is a complicated process. Fortunately, we can use online compound interest calculators to help us with the math. Using these tools helps us understand the importance of compounding interest, as it can get us in a lot of debt or earn us a lot of money.

Directions:

1) Search online: compound interest calculator
2) Type in the values from the table below to determine how much your investment or debt will grow.
3) Use the setting that interest is compounded monthly for all your results

Part 1 — Fill in the table below

#	Principal (Initial investment or borrowing amount)	Addition	Interest Rate	Years to Grow	Total Value of Debt or Investment
1	$100	$100		45	
2	$500	$50		40	
3	$2000	$200			
4	$25	$25			
5	$5000	$100	9%	30	
6	$8000	$250	8%	2	

Part 2 — Answer the questions below

1	What amount could you contribute now and each month? How much would you have in 40 years if you started today assuming a 10% return?	
2	Alex and Jeff are both 14 years old. Alex plans to contribute $10 today and $25 every month for the next 40 years. Jeff has more money now, so he will contribute $2000 today, but only $20 each month for the next 40 years. Assuming a 10% interest rate, who will earn more?	
3	Sam has two options for a compound interest loan. Option A is borrowing $500 for 5 years with a 7% interest rate and option B is borrowing $500 for 4 years with an 8% interest rate. Which will cost him more money?	

Name: _____ 95

Curriculum Connection - NBV

Loans

A **loan** is an amount of money that is expected to be paid back with interest. When people get a loan, they are borrowing money that is not theirs.

To get a loan, people apply to a lender asking for a certain amount of money. The lender – often a bank, will need to investigate whether the person can afford to pay back the loan. They will look at how much income they earn, assets they own, and how much debt they already have.

People can apply for a fixed rate loan or a variable rate loan. A **fixed rate** loan has an interest rate that stays the same for the period of time chosen – typically 5 years. You can get a longer fixed [illegible], but the interest rate will rise the longer you request. These loans are safe because yo[illegible]e surprised by the payment you need to make as the rate and payments stay the same. F[illegible] are usually slightly higher than variable but less risky.

A [illegible] has an interest rate that changes whenever the bank changes their prime [illegible] e base interest rate that all loans are based on. Usually all five big banks u[illegible] same [illegible] When they give any loan, they describe the loan as prime plus a certain number. F[illegible]ow [illegible]tgage rate might be prime plus 1%, whereas an [illegible] loan [illegible] prime plus 5.5%. In 2021, the prime rate was 2.45%, the lowe[illegible] been [illegible] variable rate could change each day as the prime rate chang[illegible] so it is a bit riskier.

Part 1

If the prime rate [illegible].45[illegible] [illegible]nterest paid for 1 year

Loan Amount	Prime + 0.5%
1) $5000	
2) $15 250	
3) $250 000	

[illegible]Amou[illegible]	Prime + 4%
[illegible]$ 540	
5) [illegible]	
6) $66 75[illegible]	

Part 2

Compare the fixed rate (5%) and variable-rate loans over [illegible] [illegible]r 5 years

1)	Loan	After 1 Year (2.45 +2%)	After 2 Years (2.75 +2%)	After 3 Years (3.5 +2%)	After 4 Years (4.2 +2%)	After 5 Years (5.1 +2%)
Fixed Rate (5%)	$1500					
Variable Rate	$1500					

2)	Loan	After 1 Year (2.45 +1.5%)	After 2 Years (3.65 +1.5%)	After 3 Years (4.5 +1.5%)	After 4 Years (5.5 +1.5%)	After 5 Years (3.45 +1.5%)
Fixed Rate (6%)	$9200					
Variable Rate	$9200					

Name: _____ 96

Curriculum Connection: NB2

Choosing a Loan

1) Scenario	Jill is on a fixed income, meaning she earns the same each month: $3000. She needs a loan to pay for a condo. She is worried the loan could get too expensive. She will pay off the loan over the next 25 years.

Fixed Rate – 3 Years	Fixed Rate – 5 Years	Fixed Rate – 10 Years	Variable Rate
3.1%	3.5%	3.9%	Prime + 0.5% *(Prime = 2.5%)*

Which loan should Jill choose? Explain why.

2) Scenario	Josh has a good paying job and a large amount of savings. He doesn't mind taking risks if it means a big reward. He needs a loan for a new house that he will pay off over the next [illegible]

Fixed Rate – 3 Year	Fixed Rate – 5 Years	Fixed Rate – 10 Years	Variable Rate
2.6%	3.1%	[illegible]	Prime – 0.4% *(Prime = 2.4%)*

Which loan should Josh choose? Explain why.

3) Scenario	Julian signed a contract to work for a business for the next 5 years. He will have a fixed income until his contract is up. His job pays him well, but he's worried he won't find a job quickly after his contract is up. He needs a loan for a new car. He will pay the car off over the next 6 years.

Fixed Rate – 2 Years	Fixed Rate – 4 Years	Fixed Rate – 6 Years	Variable Rate
4.6%	5.2%	5.7%	Prime + 2.5% *(Prime = 2.6%)*

Which loan should Julian choose? Explain why.

Name: _____ 97

Curriculum Connection
NS.2

Percents Greater Than 100

Percentages are out of 100. In other words, 100% is 100/100. In some cases, it may be impossible to get over 100%. For example, you can't watch TV more than 100% of your time. This is impossible because 100% is all the time you have.

On the other hand, it is very possible to have percentages over 100%. For example, you may get 100% of the vitamin C you need from eating an orange. But suppose you ate 3 oranges. You would receive 300% of the vitamin C you need for the day.

Part 1 Fill in the table using fractions out of 100

Fraction	Decimal	Percent
105/100	1.05	105.0%
150/100		
		400.0%
510/100		
	7.02	
900.5/100		

Part 2 Fill in the table using fractions out of 1000

Fraction	Decimal	Percent
2005/1000	2.005	200.5%
		301%
	3.582	
4486/1000		
		672.3%
	8.08	
10500/1000		

Name: _____ 100

Curriculum Connection
NS.2

Fractions, Decimals, Percents – Word Problems

Questions | Answer the word problems below

1) Kylie bakes cakes and sells them. It costs her $5 to make a cake. She sells the cake for $18. What percentage is the selling price in comparison to the cost price?

2) Gavin ... ur. He received a raise from his boss and is now earning $60 an h... es Gavin earn now in relation to what he earned ... re th...

3) Maeve did well on her ... She ... f the 20 questions correct and answered 3 bonus questions ... as ... as her mark as a fraction and percentage?

Frac...	...ge

4) Elliott ran a 10km race last week. The winner ... minutes. It took Elliot 45 minutes. What percentage ... Elliot in relation to the winner's time?

5) Calvin sold a baseball card for $88. He bought it for $20. How much did Calvin sell it for in relation to what he paid as a percentage?

6) Luke hit the golf ball 200 yards. Scott drove the golf ball 300 yards right after. Write how much further Scott hit the ball than Luke as a fraction, decimal, and percent.

Fraction	Decimal	Percent

Name: _____ 101

Curriculum Connection
NS.2

Comparing Fractions, Decimals, and Percents

Part 1 Use the <, >, = to make the statement true

1) 2.15 ☐ 218%	2) $2\frac{1}{3}$ ☐ 210%	3) 1.55 ☐ $1\frac{2}{4}$
4) $3\frac{1}{4}$ ☐ 3.25	5) 0.15 ☐ 13%	6) $\frac{8}{3}$ ☐ 231%
7) 4 ☐	8) 5.33 ☐ $5\frac{1}{3}$	9) 6.75 ☐ 685%
10) $\frac{15}{5}$ ☐	☐ $\frac{1}{2}$	12) $7\frac{3}{4}$ ☐ 7.8

Part 2 Arrange the fractions, p ts, bers from least to greatest below

1) 300%, $\frac{16}{4}$, 3.14, 232%, $2\frac{3}{4}$	3) 6%, 66, 65%, $\frac{3}{5}$
2) 250%, $2\frac{1}{4}$, 2.45, 275%, $\frac{14}{5}$	4) 750%, $\frac{}{5}$, 7

Part 3 Answer the question below

Tucker, Maddox, and Camden all invested $100 in the stock market. Tucker earned 258% of his initial investment. Maddox earned 2.49 times his investment. Camden earned $\frac{265}{100}$ of his investment.

Who earned the most from their $100 investment?

Name: _____ 102

Curriculum Connection
NS.7

Fractions, Decimals, Percents – Word Problems

Questions | Answer the word problems below

1) Tristan earns $30 each time he cuts his neighbour's grass. Last week, his neighbour paid him 150% of the $30. How much did he get paid?

2) Walker ma[illegible] tab[illegible] sells them. It costs him $50 to make one table. If he wants to e[illegible]% of h[illegible]ce, how much should he sell the tables for?

3) Colt won the long drive contest. The second [illegible] ball 310 yards. Colt drove it 132% further than the second-p[illegible]er. H[illegible] did he drive the ball?

4) Alaina and her friend Londyn both sell clothes. Alaina earned $2\frac{1}{4}$ more money than Londyn yesterday. Londyn earned $38. How much did Alaina earn?

Curriculum Connection
NS 2

Exit Cards

Cut Out Cut out the exit cards below and have students complete them at the end of class

Name: ____________________

Arrange the following from least to greatest below

1) 470%, $\frac{16}{4}$, 4.5, 232%, $1\frac{5}{6}$
2) 80%, $\frac{7}{10}$, 0.85, $\frac{5}{8}$, $1\frac{4}{8}$
3) 1.2, 125%, $1\frac{2}{5}$, 1.5, 115%,

Name: ____________________

Arrange the following from least to greatest below

1) 470%, $\frac{16}{4}$, 4.5, 232%, $1\frac{5}{6}$
2) 80%, $\frac{7}{10}$, 0.85, $\frac{5}{8}$, $1\frac{4}{8}$
3) 1.2, 125%, $1\frac{2}{5}$, 1.5, 115%,

Name: ____________________

Arrange the following from least to greatest below

1) 470%, $\frac{16}{4}$, 4.5, 232%, $1\frac{5}{6}$
2) 80%, $\frac{7}{10}$, 0.85, $\frac{5}{8}$, $1\frac{4}{8}$
3) 1.2, 125%, $1\frac{2}{5}$, 1.5, 115%,

Name: ____________________

Arrange the following from least to greatest below

1) 470%, $\frac{16}{4}$, 4.5, 232%, $1\frac{5}{6}$
2) 80%, $\frac{7}{10}$, 0.85, $\frac{5}{8}$, $1\frac{4}{8}$
3) 1.2, 125%, $1\frac{2}{5}$, 1.5, 115%,

Name: _____ 104

Curriculum Connection TG

Test – Squares, Multiplication/Division, and Percent

Part 1 Provide the positive and negative square root

	Question	Square Root (+)	Square Root (-)
1)	$\sqrt{3}$		
2)	$\sqrt{}$		
3)			

	Question	Square Root (+)	Square Root (-)
4)	$\sqrt{121}$		
5)	$\sqrt{25}$		
6)	$\sqrt{64}$		

Part 2 Which nu[illegible] is [illegible] or = to compare the number

1)	5^2	☐	$\sqrt{100}$
2)	$\sqrt{64}$	☐	7
3)	$\sqrt{49}$	☐	2^3

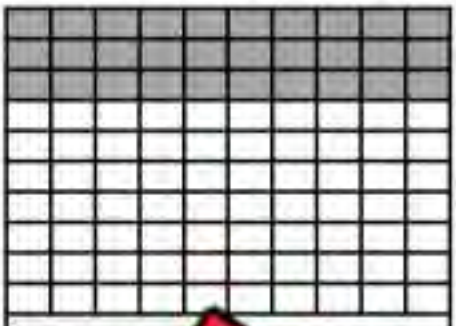
4)	$\sqrt{121}$	☐	11^2
5)	$\sqrt{}$	☐	-6
6)	-50	☐	

Part 3 Order from least to greatest

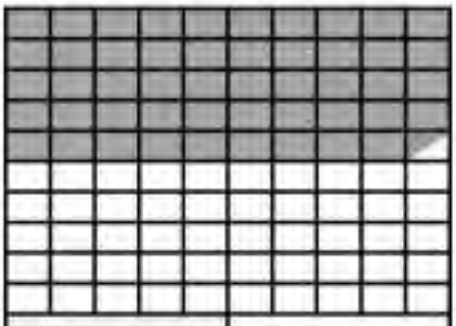
1) $\sqrt{49}$, 49, $\sqrt{16}$, -16, $\sqrt{9}$, $\sqrt{81}$	3) $\sqrt{16}$, 16, $\sqrt{64}$, -1, $\sqrt{100}$
2) $\sqrt{144}$, $\sqrt{36}$, -6, 6, $\sqrt{121}$	4) $\sqrt{9}$, 4, $\sqrt{81}$, 10, $\sqrt{4}$

Curriculum Connection
TBA

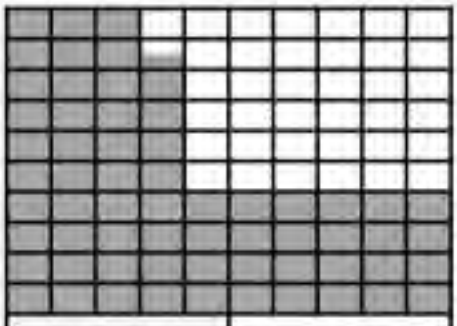
Part 4 What fraction, decimal and percent of the array is shaded in?



Fraction	
Decimal	
Percent	



Fraction	
Decimal	
Percent	



Fraction	
Decimal	
Percent	

Part 5 Co[illegible]e fra[illegible] decimal and a percent

	Fraction	[illegible]	Percent
1)	68/100		
2)	30/20		
3)	60/20		
4)	$3\frac{4}{6}$		
5)	$2\frac{1}{4}$		
6)	$\frac{8}{3}$		

Part 6 Arrange the fractions, percents, and decimal numbers from least to greatest below

1) 350%, $\frac{8}{2}$, 3.64, 432%, $3\frac{3}{4}$	2) 0.66%, $\frac{5}{6}$, 0.76, 65%, $\frac{3}{5}$

Curriculum Connection
TG

Part 7 Answer the word problems below

1) John's investment of $200 gained $40. His return as a fraction is 40/200. What percentage has his investment increased?

2) Fa[illegible] sells them. It costs her $1 to make a cookie. She sells each co[illegible]e for $[illegible] percentage is the selling price in comparison to the cost price?

3) Jonah earns $25 an hour. He received a ra[illegible]m hi[illegible]d is now earning $45 an hour. What percentage does Jonah ea[illegible]w in[illegible]hat he earned before the raise?

4) Sienna did well on her math test. She got all of the 50 questions correct and answered 5 bonus questions correct as well. What was her mark as a fraction and percentage?

Curriculum Connection
TEK

Part 8 Answer the questions below

1) George has a $10 bill and wants to know if he can afford a burger and milk shake that costs $7.50 before taxes. Calculate the total cost of the meal after adding 11% tax. Can he afford the meal?

Bonus: How much money does he have left?

2) Luc[illegible]nts to [illegible] video game controller. He has $100 and the controller costs $59.00 b[illegible]w [illegible]h will the controller cost with a 11% tax?

Bonus: How much money will [illegible] have [illegible] the controller?

Part 9 A bank pays you a 5% interest rate for your [illegible]acco[illegible]$5 per $100

Savings	Savings + Interest
1) $200	
2) $550	
3) $725	

Savings	[illegible]est
4) $1365	
5) $1952	
6) $2382	

Part 10 You pay 19% interest on your credit card - for every $100 you spend, you owe $119

Debt	Debt + Interest
1) $200	
2) $455	
3) $742	

Debt	Debt + Interest
4) $1099	
5) $1575	
6) $2525	

Name: _____ 109

Curriculum Connection
NR.3

Equivalent Ratios – Scaling Up and Down

Questions	Circle two equivalent ratios for each of the questions below

1) 2:8	2:6	4:8	4:16	1:4	1:2
2) 2:12	1:8	4:22	1:6	1:4	4:24
3) 6:8	12:14	12:18	12:16	3:8	
4) 2:4	4:6	4:7	4:8	1:4	1:2
5) 10:12	20:24	5:1	5	10:24	5:6
6) 5:10	1:2	5:20	10:1	10:2	10:30
7) 4:14	2:10	8:28	2:7	7:2	8:24
8) 10:30	10:60	20:15	5:15	20:60	20:10
9) 2:20	6:60	6:80	1:20	1:30	1:10
10) 4:8	8:12	8:16	8:14	2:4	2:6

Name: _____ 110

Curriculum Connection
NB.3

Rates

A **rate** is a **comparison** between two numbers that are in **different** units. We use a colon for ratios, but we commonly use per when we describe a unit rate.

For example – John drove 200 km in 2 hours. His speed is a rate between km and hours. His unit rate is 100km per hour.

Questions Write the rates for the questions below

1) 8 doll… …urgers

Rate =

Unit Rate = 4 do… …burg…

2) 5 dollars for 10 pencils

Rate =

Unit Rate = _____

3) 10 dollars for 10 ba…

Rate =

Unit Rate = _____

…) 6 dollars for 3 coffees

Uni… = _____

5) 6 dollars for 12 chocolate bars

Rate =

Unit Rate = _____

6) …of …

Rate =

Unit Rate = _____

7) Driving 600km in 4 hours

Rate =

Unit Rate = _____

8) Running 15km in 3 hours

Rate =

Unit Rate = _____

9) 300km on 20 litres of gas

Rate =

Unit Rate = _____

10) Growing 52cm every 4 years

Rate =

Unit Rate = _____

Name: _____ 111

Curriculum Connection
NS 3

Equivalent Rates

Multiple Choice Circle the equivalent rates below

1) 3 burgers per person a) 4 burgers for 10 people b) 8 burgers for 12 people c) 15 burg[illegible]r 5 people d) 6 bur[illegible]ple	2) 5 pencils per 5 people a) 5 pencils for 8 people b) 8 pencils for 8 people c) 6 pencils for 12 people d) 10 pencils for 15 people
3) $[illegible] a) $30 for 5 p[illegible] b) $25 for 3 pe[illegible] c) $20 for 2 people d) $50 for 10 people	4) 30 minutes per show a) 40 minutes for 3 shows b) 90 minutes for 3 shows) 60 minutes for 3 shows [illegible]inutes for 2 shows
5) 3 games per day a) 12 games in 3 days b) 15 games in 5 days c) 10 games in 2 days d) 6 games in 3 days	[illegible] per drink a) 1[illegible] 2 drinks [illegible] c) 16 [illegible] d) 6 ice cub[illegible]
7) 8 minutes per book a) 30 minutes for 3 books b) 50 minutes for 4 books c) 20 minutes for 3 books d) 32 minutes for 4 books	8) 2 pillows per per[illegible] a) 4 pillows for 4 people b) 8 pillows for 8 people c) 16 pillows for 8 people d) 20 pillows for 5 people
9) 7 basketballs per team a) 21 basketballs for 3 teams b) 25 basketballs for 5 teams c) 10 basketballs for 3 teams d) 16 basketballs for 2 teams	10) 5 snacks per student a) 9 snacks for 3 students b) 13 snacks for 3 students c) 25 snacks for 5 students d) 16 snacks for 4 students

Name: _____ 112

Curriculum Connection
NS.3

Memory Game: Matching Equivalent Rates

Objective What are we learning about?

Students will learn to identify and match equivalent rates through a fun and interactive game.

Materials What you will need for the activity.

- Memory game cards. Each card will have a different rate that can be matched to another equivalent rate
- A small table or clear space

Instructions How you will complete the activity

1. Divide the class into groups of 3 or 4. Give each group a set of Memory Game cards. (provided)
2. Have each group lay all the cards face down in a grid on a table.
3. The students take turns flipping over two cards at a time, trying to find a matching equivalent rate.
4. If a student finds a match, they remove those cards from the grid and keep them.
5. If the cards do not match, they are turned back over, and the next student takes a turn.
6. The game continues until all the cards have been matched.
7. After the game, review the equivalent fractions with the class.

Name: _____ 113

Curriculum Connection
NB.3

Cards | Memory Game Cards

$84/12	$42/6
8 for $4.00	4 for $2.00
$120/5	$50/2.5
6 for $3.00	12 for $6.00
$200/10	$100/5

Name: _____ 115

Curriculum Connection
NB.3

Cards | Memory Game Cards

$36/6	$18/3
8 for $4.00	6 for $8.00
$50/2	$100/4
9 for $3.00	18 for $6.00
$150/3	$300/6

Name: _____ 116

Curriculum Connection
NS.3

Cards | Memory Game Cards

7 for $2.10	14 for $4.20
$9.12	$48/6
20 for $8.00	1 for $4.00
$180/15	$90/7.5
$250/10	$125/5

Name: _____ 117

Curriculum Connection
NS 3

Comparing Rates

Part 1 Compare the rates using < > or =

	Rate #1		Rate #2
1)	$10/5		$7/3
2)			$12/3
3)	$38/		
4)	$21/6		
5)	$36/12		$14/5

	Rate #1		Rate #2
6)	$84/12		$50/7
7)	$36/11		$66/22
8)	$95/15		$72/11
	$99/9		$130/12
			$410/20

Part 2 Answer the questions below

1) Jake wants to buy some bottles of sports drinks. He has two options: O is a case of 12 sports drinks for $26.00. Option 2 is a case of 18 drinks for $39.00. W n option is the better deal, or are they the same value?

2) Hanna is about to buy a box of donuts. She has two options: Option 1 is 12 donuts for $4.99. Option 2 is 20 donuts for $7.39. Which is a better deal?

Name: _____ 118

Curriculum Connection
NS.3

Comparing Rates

Questions Circle the rate that is less expensive

1)

12 for

8 for $3.00

2)

10 for $4.00

3)

3 for $6.00

6 for $10.00

4)

12 for $20.00

5 for $11.00

5)

8 for $20.00

4 for $9.00

6)

3 for $8.00

6 for $15.00

7)

24 for $10.00

12 for $5.25

8)

24

for $7.25

9)

20 for $6.00

24 for $7.00

10)

4 for $9.50

6 for $11.25

Name: _____ 119

Curriculum Connection
NB.3

Unit Prices – Best Buys

When we buy things in a grocery store, we can often look at the price label to find out the unit price of the sale item. The unit price is often in 100mL or 100g. This allows us to compare different sizes of products to determine which is a better deal.

Questions Find out the unit price of each product. Which is the better buy?

	Item 1:	Item 2:	Better Buy
1)	00g for $4.25 Price pe = _____	 300g for $2.75 Price per 100g = _____	1 2
2)	 70 .90 Price per 100ml = _____	 500ml for $2.50 Price 100 _____	1 2
3)	 350g for $3.10 Price per 100g = _____	 g for Price per 100g = _____	2
4)	 500ml for $1.25 Price per 100ml = _____	 4L for $6.25 Price per 100ml = _____	1 2
5)	 450ml for $1.12 Price per 100ml = _____	 2.1L for $9.25 Price per 100ml = _____	1 2

Name: _____ 121

Curriculum Connection
NS 3

Choosing a Service Rate

Questions	Choose one of the options below after comparing the rates

1) Jackson is trying to find someone to build him a skateboard ramp. He has asked two different people to build him one. Which person should he get to build the ramp?

Person 1 – Will complete the job in 12 hours and will charge $325
Person 2 – Will work for $25 per hour and will take 15 hours to finish the ramp.

2) Thomas needs to get his computer fixed. He takes it to 2 different computer repair shops and gets two different prices. Which shop should he choose to fix his computer?

Shop 1 – Will fix the computer in 5 hours and charge $50 per hour.
Shop 2 – Will fix the computer in 6 hours and charge $50 per hour.

3) Charlotte is doing a kitchen renovation. She received two quotes from different businesses. Which quote should she choose?

Quote 1 – Will complete the job in 75 hours and will charge $20.50 per hour
Quote 2 – Will complete the job in 50 hours and will charge $30.75 per hour

Name: _____ 124

Curriculum Connection
NS.3

Ratio In 3 Ways

Part 1 Write the ratios for the questions below

1) Ratio of 35 balls to 78 strikes.	Words: _____ Ratio: _____ Fraction: _____	5) Ratio of sitting for 30 minutes to standing for 60	Words: _____ Ratio: _____ Fraction: _____
2) R… dunks … three pointers	Words: _____ Ratio: _____ Fraction: _____	6) Ratio of 1 grade 8 to 1 grade 7	Words: _____ Ratio: _____ Fraction: _____
3) Ratio of 10 cars to 3 trucks	Words: _____ Ratio: _____ Fraction: _____	…io of 3 … 1 shot	Words: _____ Ratio: _____ Fraction: _____
4) Ratio of 2 coffees to 6 waters	Words: _____ Ratio: _____ Fraction: _____	8) … treat … healthy …	…s: _____ R… _____

Part 2 Answer the questions below

1) A baseball pitcher threw a ratio of 1 ball to 3 strikes. The pitcher threw 75 strikes. How many balls did they throw?

2) A hockey player has a ratio of 1 goal for every 8 shots they took. The player scored 5 goals today. How many shots did they take?

Name: _____ 125

Curriculum Connection
NS 3

Equivalent Ratios – Scaling Up and Down

Questions Circle two equivalent ratios for each of the questions below

1) 5:10	$\frac{1}{3}$	2:5	1 to 2	3:5	$\frac{10}{20}$
2) 4:12	1:3	8 to 36	12:36	$\frac{2}{3}$	8:36
3) $\frac{6}{16}$	2:32	3:32	18:16	3:8	
4) $\frac{3}{6}$	1:4	2:5	5:10	2:8	5 to 15
5) 9:12	$\frac{2}{3}$	3:4	18:6	$\frac{27}{}$	18:48
6) 6:8	2:4	$\frac{1}{3}$	3:4	36:4	$\frac{60}{}$
7) 4 to 10	1:3	2:6	$\frac{3}{7}$	2 to 5	12:30
8) 15:20	5 to 10	10:15	3:4	30:50	$\frac{45}{60}$
9) $\frac{25}{40}$	1:3	5 to 8	50:80	3 to 6	10:30
10) 8:12	5 to 8	7:11	$\frac{3}{6}$	28:42	24 to 36

Name: _____ 128

Curriculum Connection
NS.3

Proportional vs Non-Proportional Relationship

A **proportional relationship** is when two variables change at the same rate.

Example – 1 cookie per 1 student (1/1) is proportional to 10 cookies per 10 students (10/10). Both variables (cookie and student), were multiplied by the same number – 10.

A **non-proportional relationship** is when two variables do not change at the same rate.

Example – [illegible]per 1 month (1/100) is different than $500 per 7 months (500/7)

Questi[illegible] relationships proportional or non-proportional?

1) $\frac{9}{2}$ and [illegible] Proportional [illegible]	2) $\frac{2}{6}$ and $\frac{5}{15}$ Proportional Non-Proportional
3) $\frac{14}{5}$ and $\frac{98}{35}$ Proportional Non-Proportional	[illegible] and $\frac{75}{125}$ [illegible] Non-Proportional
5) $\frac{5}{8}$ and $\frac{45}{64}$ Proportional Non-Proportional	6) [illegible] Proportional [illegible]
7) $\frac{12}{7}$ and $\frac{84}{56}$ Proportional Non-Proportional	8) $\frac{7}{3}$ and $\frac{210}{90}$ Proportional Non-Proportional
9) $\frac{60}{7}$ and $\frac{300}{35}$ Proportional Non-Proportional	10) $\frac{8}{17}$ and $\frac{56}{102}$ Proportional Non-Proportional
11) $\frac{9}{22}$ and $\frac{54}{132}$ Proportional Non-Proportional	12) $\frac{15}{35}$ and $\frac{120}{245}$ Proportional Non-Proportional

Name: _____ 131

Curriculum Connection
NS 3

Proportional vs Non-Proportional Relationship

When representing variables, we can use a table to determine if the relationship is proportional or non-proportional.

Example – Erica earned a pay cheque each week from her employer. Her earnings go up $250 each week, which makes the relationship between weeks and earnings proportional.

Weeks (x)	1	2	3	4	5	6
Ea s (y)	250	500	750	1000	1250	1500

Quest elationships proportional or non-proportional?

1)

(x)	1	
(y)	75	

Proportional Non- nal

2)

(x)	5	10	15	20
(y)	50	100	150	200

portional Non-Proportional

3)

(x)	3	6	9	
(y)	15	30	45	60

Proportional Non-Proportional

			12	16	20
				114	136

roportional

5)

(x)	10	20	30	40
(y)	70	140	210	280

Proportional Non-Proportional

6)

(x)				00
(y)	200			1200

Proportional Non roportional

7)

(x)	20	40	60	80
(y)	5	10	15	20

Proportional Non-Proportional

8)

(x)	7	14	21	28
(y)	21	42	64	86

Proportional Non-Proportional

9)

(x)	1	11	21	31
(y)	10	110	210	310

Proportional Non-Proportional

10)

(x)	5	15	25	35
(y)	150	450	750	1050

Proportional Non-Proportional

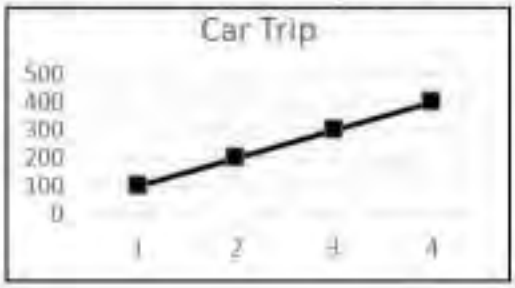
Name: _____ 132

Curriculum Connection
NB.3

Proportional Relationship - Graph

When a proportional relationship is represented on a graph, the result is a straight line. This is called a linear graph.

Example:
Kim drove from Kingston to Toronto. She kept track of her distanc[illegible]ry hour.



Hours	Distance (km)
1	100
2	200
3	300
4	400

Questions [illegible]le of values based on the graph. Is the relationship proportional?

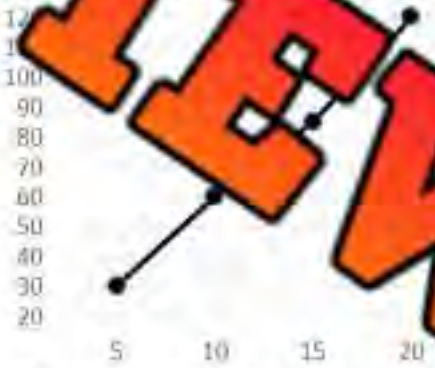
1)

(x)	
1	
2	
3	
4	

Proportional Non-Proportional

2)

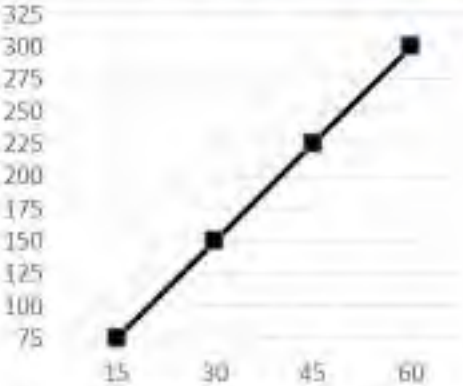
(x)	(y)
5	
10	
15	
20	



Proportional Non-Proportional

3)

(x)	(y)
15	
30	
45	
60	



Proportional Non-Proportional

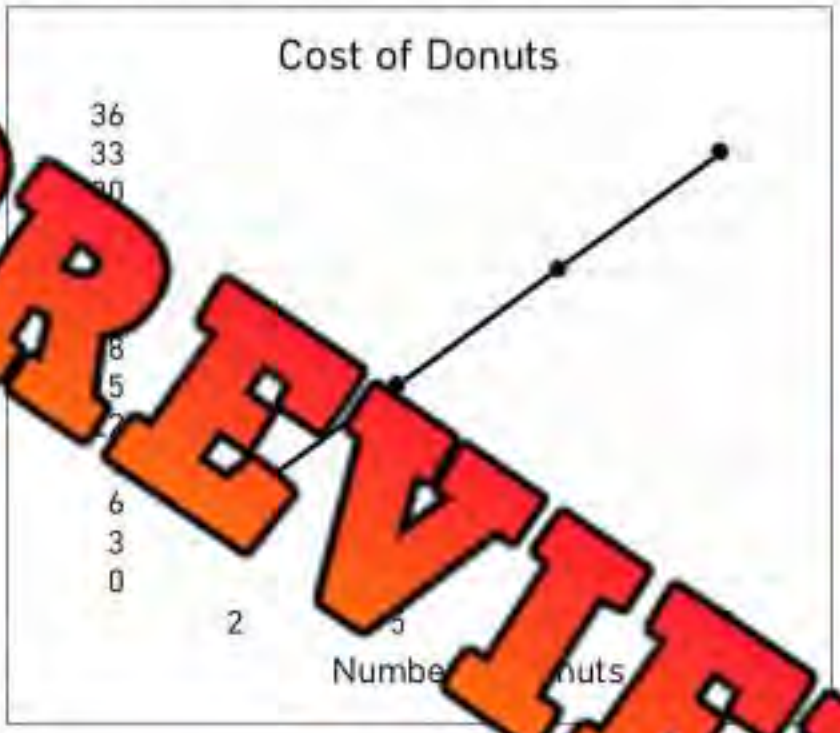
Name: _____ 134

Curriculum Connection
NS.3

Proportional Relationship – Donut Problem

Questions | Solve the problem below

Hailey is buying donuts for a party. The graph below represents the relationship between the cost of the donuts and the number of donuts.



1) Is the graph proportional or non-proportional?	
2) What is the unit rate? (cost per donut)	
3) How much does 8 donuts cost?	
4) How many donuts could Hailey buy for $33?	
5) Use the graph to determine how many donuts you could buy for $12	
6) Use the graph to determine how much 9 donuts would cost.	
7) If Hailey needs 150 donuts for her party, how much will it cost her?	

Name: _____ 137

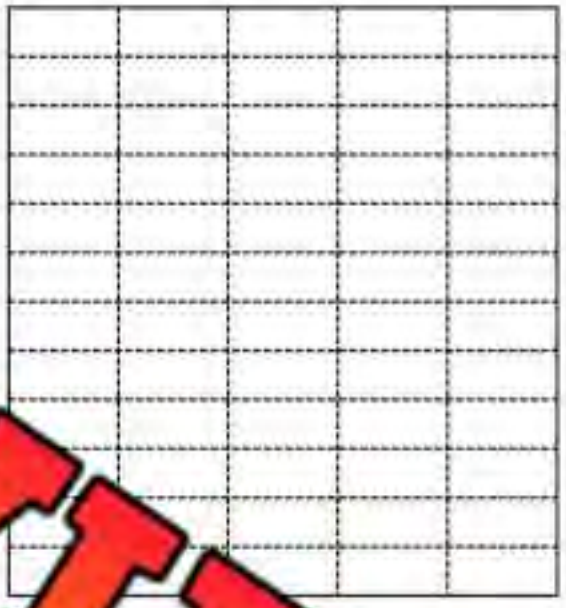
Curriculum Connection
NS 3

Proportional Relationship – Bike Race

Questions | Draw a line graph that represents the data in the table

Nick was in a bike race yesterday. They raced an 110km course. The relationship between his time and distance is listed in the table below.

utes	(km)
30	
60	40
90	
120	80
150	110



1) Is the relationship between minutes and dist proportional or non-proportional?	
2) What was the unit rate for the first 120 minutes of Nick's bike ride?	
3) How far did Nick travel after 45 minutes?	
4) How long did it take Nick to bike 70 kilometres?	
5) What was Nick's unit rate during his 120-150 minute time interval?	
6) Nick paced most of the race perfectly. What happened at the end of his race?	

Name: _____ 140

Curriculum Connection TQ

Proportional Reasoning - Quiz

Part 1 Write the ratios for the questions below

1) Ratio of 41 balls to 67 strikes.	Words: _____ Ratio: _____ Fraction: _____
2) Ratio of green [illegible] 15 red [illegible]es.	Words: _____ Ratio: _____ Fraction: _____
3) Ratio of 27 cars to 12 trucks.	Words: _____ Ratio: _____ Fraction: _____
4) Ratio of 25 students to 1 teacher.	Words: _____ Ratio: _____ Fraction: _____

Part 2 Circle [illegible] for each of the questions below

1) 3 to 9	$\frac{1}{3}$	2:5	[illegible]	9:27	$\frac{10}{33}$
2) 4:16	1:3	1 to 4	[illegible]	[illegible]	12:48
3) $\frac{5}{20}$	2:8	6:40	7:28	3:1	10:50

Part 3 Answer the word problems below

There are 35 students in a grade 8 class. The ratio of girls to boys is 3:2.

a) Write the ratio in words and as a fraction.

b) How many boys are in the class?

c) How many girls are in the class?

Curriculum Connection
TBA

Part 4 Are the relationships proportional or non-proportional?

1) $\frac{8}{2}$ and $\frac{18}{4}$

Proportional Non-Proportional

2) $\frac{4}{7}$ and $\frac{16}{28}$

Proportional Non-Proportional

3) $\frac{16}{5}$ and $\frac{64}{20}$

Proportional Non-Proportional

4) $\frac{9}{12}$ and $\frac{81}{109}$

Proportional Non-Proportional

Part 5 ...ional rates by determine the value of the variable

1) $\frac{3}{8}$ and $\frac{18}{r}$

r = _____

2) $\frac{2}{7}$ and $\frac{m}{63}$

m = _____

3) $\frac{11}{t}$ and $\frac{121}{44}$

t = _____

$\frac{48}{9}$ and $\frac{}{8}$

y = _____

5) $\frac{15}{6}$ and $\frac{105}{p}$

p = _____

6) $\frac{}{s}$ and $\frac{3}{}$

s = _____

Part 6 Are the relationships proportional or non-proportional?

1)

(x)	1	2	3	4
(y)	33	66	99	123

Proportional Non-Proportional

2)

(x)	5	10	15	20
(y)	45	90	135	170

Proportional Non-Proportional

3)

(x)	3	6	9	12
(y)	65	130	195	260

Proportional Non-Proportional

4)

(x)	8	12	16	20
(y)	125	250	375	500

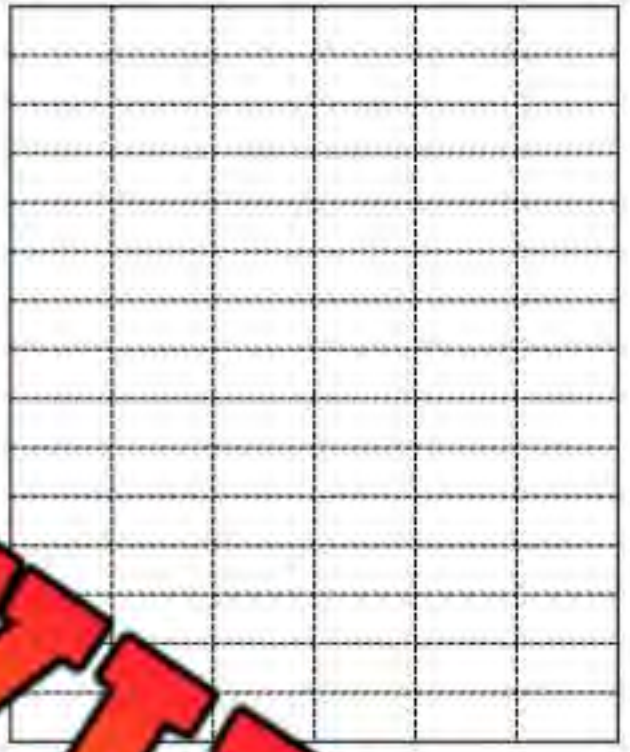
Proportional Non-Proportional

Curriculum Connection
TQ

Part 7 Draw a line graph and fill in the table to represent the situation

Stuart earns $225 a week from his job. Fill in his earnings over a 10-week period and graph his earnings.

	Total Earnings
4	
8	
10	



1) Is the relationship between week and savings proportional or non-proportional?	
2) How much did Stuart earn after 5 weeks?	
3) What is the unit rate? (earnings per week)	
4) How much does he earn after 4.5 weeks?	
5) After 20 weeks, how much would Stuart have earned?	
6) After 30 weeks, Stuart saved all his money and then spent $2650. How much does he have now?	

Name: _____ 150

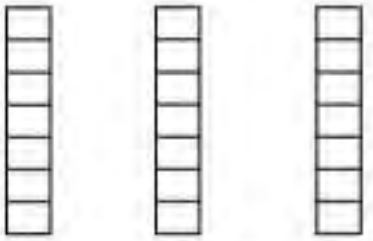
Curriculum Connection
N8.4

Adding Fractions With Common Denominators

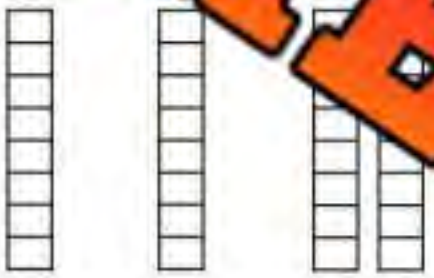
Questions | Add the fractions below using the models

1) $\frac{4}{5} + \frac{2}{5} = \frac{6}{5}$ or $1\frac{1}{5}$

2) $\frac{3}{7} + \frac{2}{7} = \_\_$



3) $\frac{5}{8} + \frac{3}{8} = \_\_$

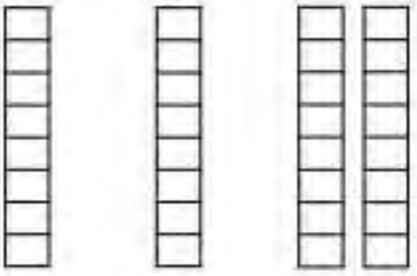


4) $\frac{3}{4} + \frac{2}{4} = \_\_$

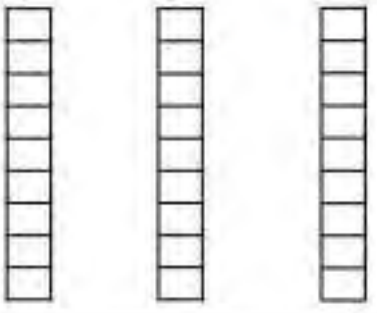
5) $\frac{2}{3} + \frac{3}{3} = \_\_$

6) $\frac{3}{6} + \frac{3}{6} = \_\_$

7) $\frac{4}{8} + \frac{5}{8} = \_\_$



8) $\frac{7}{9} + \frac{1}{9} = \_\_$



Name: _____ 152

Curriculum Connection
NBT

Adding Fractions With Common Denominators

Questions | Solve the word problems

1) At the end of the birthday party, there were 4 pizza boxes left. The first box had 5/8 slices left. The second box had 3/8 slices left. The third box had 4/8 slices remaining and the last box had 6/8 left.

a) How much pizza is left in total?

b) How many pizzas are left?

c) How many slices are left if there were 8 slices in each box?

2) Thomas is starting his fitness routine. The distances he ran are presented in the table.

Day	Distance (km)
Monday	3/8
Tuesday	6/8
Wednesday	$1\frac{3}{8}$
Thursday	$2\frac{4}{8}$
Friday	21/8

a) How far did he run after the 5 days?

b) Which day did he run the farthest?

3) Shelly bought $\frac{38}{6}$ metres of red fabric, $3\frac{7}{6}$ metres of blue fabric, and $1\frac{2}{6}$ metres of green fabric.

a) How much fabric did she buy in total?

b) Which colour of fabric did she buy the most of?

Name: _____ 153

Curriculum Connection
NBT.A

Adding Mixed Fractions

When adding a mixed fraction, we have two options we can use to solve.
1) We can keep the wholes and add them together first and then add the fractional parts after.
2) We can convert the mixed fractions to improper fractions and then add them

Part 1 Add the mixed fractions together using option 1

Ex) [illegible]	1) $6\frac{2}{5} + 3\frac{1}{5} =$	2) $5\frac{3}{9} + 11\frac{5}{9} =$
3) $8\frac{4}{8} + 5\frac{3}{8} =$	[illegible]	5) $2\frac{4}{5} + 6\frac{3}{5} =$
6) $12\frac{5}{9} + 10\frac{8}{9} =$	7) $8\frac{9}{12} +$ [illegible] $=$	[illegible] $15\frac{8}{10} + 3\frac{4}{10} =$

Part 2 Add the mixed fractions together usi[illegible] 2

Ex) $3\frac{2}{8} + 7\frac{4}{8} = \frac{26}{8} + \frac{60}{8} = \frac{86}{8}$ or $10\frac{6}{8}$	1) $3\frac{4}{8} + 4\frac{2}{8} =$
2) $6\frac{1}{4} + 8\frac{2}{4} =$	3) $11\frac{7}{9} + 7\frac{5}{9} =$
4) $10\frac{8}{11} + 9\frac{5}{11} =$	5) $12\frac{6}{14} + 6\frac{10}{14} =$

Name: _____ 154

Curriculum Connection
NBT.4

Adding Mixed Fractions

Questions	Solve the word problems

1) Arabella made a birthday cake for her mom. She used $2\frac{1}{4}$ cups of white sugar, $1\frac{3}{4}$ cups of brown sugar, and $3\frac{2}{4}$ cups of icing sugar. How many cups of sugar did she use?

2) The Miller family wen[illegible]tion t[illegible]. The drive to the airport took them $3\frac{2}{6}$ hours. The flight took $5\frac{1}{6}$ h[illegible]and [illegible] the airport to the hotel took $2\frac{5}{6}$ hours. How many hours did it take th[illegible]get to [illegible]el?

3) The grade 8 classes collected garbage on Earth Day. Class one collected $3\frac{1}{5}$kg of garbage. Class two collected $2\frac{3}{5}$ kg and class three collected $4\frac{4}{5}$ kg. How much garbage did the grade 8 classes collect in total?

Name: _____ 155

Curriculum Connection
N8.4

Adding Fractions With Unlike Denominators

Part 1 Add the fractions using the common denominators provided

1) $\frac{1}{4} + \frac{4}{12} = \frac{3}{12} + \frac{4}{12} = \frac{7}{12}$	2) $\frac{2}{4} + \frac{1}{16} = \frac{\quad}{16} + \frac{\quad}{16} = \frac{\quad}{16}$
3) $\frac{1}{8} + \frac{\quad}{8} = \frac{\quad}{\quad}$	4) $\frac{5}{9} + \frac{2}{3} = \frac{\quad}{9} + \frac{\quad}{9} = \frac{\quad}{9}$
5) $\frac{6}{18} + \frac{5}{6} = \frac{\quad}{18}$	6) $\frac{3}{5} + \frac{6}{15} = \frac{\quad}{15} + \frac{\quad}{15} = \frac{\quad}{15}$

Part 2 Create common denominators and then add the fractions below

1) $\frac{3}{4} + \frac{7}{12} =$	2) $\frac{\quad}{30} =$
3) $\frac{4}{5} + \frac{2}{3} =$	4) $\frac{5}{6} + \frac{8}{10} =$
5) $\frac{3}{4} + \frac{6}{7} =$	6) $\frac{3}{5} + \frac{7}{9} =$
7) $\frac{6}{8} + \frac{8}{12} =$	8) $\frac{5}{6} + \frac{4}{7} =$

Name: _____ 157

Curriculum Connection: NBT

Cooking With Fractions - Adding

Questions | Solve the word problems

1) Alice baked 100 pies last month. Of the 100 pies, $\frac{1}{5}$ were blueberry, $\frac{2}{10}$ were apple, and $\frac{8}{25}$ were peach.

a) What fraction of pies were blueberry, apple, or peach?

b) How [illegible] pies were either blueberry, apple, or peach?

2) Melanie sells [illegible] at he[illegible] last month, $\frac{2}{6}$ of the customers bought chocolate donuts, $\frac{1}{12}$ [illegible] and $\frac{2}{9}$ bought caramel donuts.

What fraction of customers b[illegible]t ei[illegible] vanilla or caramel donuts?

3) Ruben owns a restaurant. He likes to keep [illegible] of [illegible] tomers are buying. His top 3 sellers are sandwiches, salads, a[illegible]. He kn[illegible]at $\frac{2}{8}$ of his customers buy a sandwich, $\frac{1}{4}$ buy a salad, and $\frac{2}{6}$ buy a p[illegible]

What fraction of customers buy one of his top 3 sellers?

4) Evan has 4 methods of payment for his restaurant. He accepts credit cards, debit cards, cash, and cheque. Out of his last 100 customers, $\frac{2}{6}$ paid with a credit card, $\frac{1}{3}$ paid with a debit card, and $\frac{2}{9}$ paid with cash.

a) What fraction of customers paid with credit, debit, or cash?

b) What fraction paid with a cheque?

Name: _____ 163

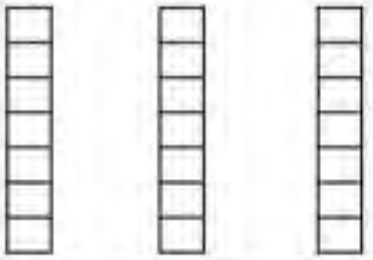
Curriculum Connection
N8.4

Subtraction Fractions - Common Denominators

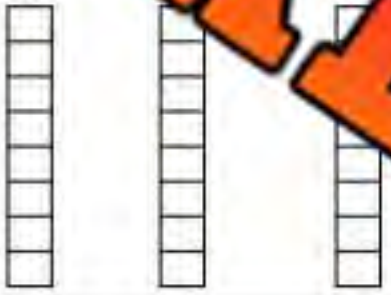
Questions | Subtract the fractions below using the models

1) $\frac{4}{6} - \frac{2}{6} = \frac{2}{6}$

2) $\frac{6}{7} - \frac{3}{7} = \_\_$



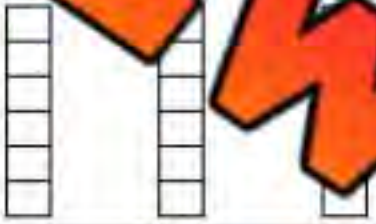
3) $\frac{7}{8} - \frac{\_}{8} = \frac{\_}{8}$



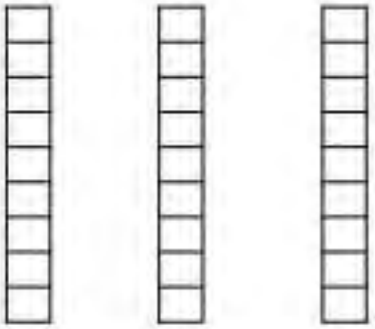
4) $\frac{3}{5} - \frac{1}{5} = \_\_$

5) $\frac{6}{7} - \frac{3}{7} = \_\_$

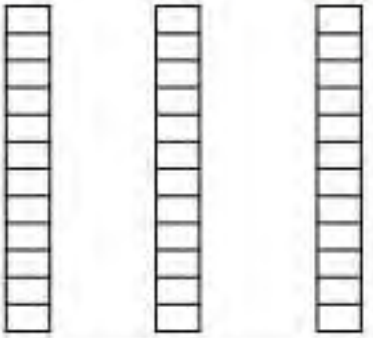
6) $\frac{5}{6} - \frac{\_}{6} = \frac{\_}{6}$



7) $\frac{7}{9} - \frac{4}{9} = \_\_$



8) $\frac{10}{12} - \frac{7}{12} = \_\_$



Name: _____ 165

Curriculum Connection
NBT

Subtraction Fractions – Word Problems

Questions | Solve the word problems

1) Drew ran $4\frac{3}{4}$ km yesterday in 20 minutes. Lindsay ran $\frac{18}{4}$ km yesterday in 20 minutes.

a) Who ran further in the 20 minutes?

b) How much further did they run?

2) Baker found a green snake and a black snake in his backyard. The green snake was $22\frac{1}{3}$ cm long and the black snake was $\frac{45}{3}$ cm long.

a) Which snake is longer?

b) How much longer is the snake?

3) Ayden picked $3\frac{3}{5}$ baskets of strawberries and [illegible] baskets of strawberries.

a) Who picked more strawberries?

b) How much more did they pick?

4) Sharon has practiced playing the piano for $2\frac{2}{7}$ hours this week. She wants to practice for $\frac{25}{7}$ hours.

a) How much more time does she need to practice?

b) If she wants to practice for 10 hours, how much longer does she need to practice?

Name: _____ 169

Curriculum Connection
NBT.A

Subtracting Mixed Fractions

When subtracting a mixed fraction, we have two options we can use to solve.
1) We can keep the wholes and subtract them first and then subtract the fractional parts after.
2) We can convert the mixed fractions to improper fractions and then subtract.

Part 1 Subtract the mixed fractions using option 1

Ex) [illegible]	1) $8\frac{4}{6} - 5\frac{1}{6} =$	2) $3\frac{7}{9} - 1\frac{5}{9} =$
3) $7\frac{5}{7} - 3\frac{3}{7} =$	[illegible]	5) $4\frac{6}{8} - 1\frac{3}{8} =$
6) $12\frac{9}{11} - 10\frac{8}{11} =$	7) $13\frac{12}{15} - 5\frac{6}{1}$ =	[illegible] $- 8\frac{4}{10} =$

Part 2 Subtract the mixed fractions using optio[illegible]

Ex) $6\frac{7}{8} - 2\frac{3}{8} = \frac{55}{8} - \frac{19}{8} = \frac{36}{8}$ or $4\frac{4}{8}$	1) $8\frac{7}{9} - 4\frac{3}{9} =$
2) $7\frac{4}{5} - 3\frac{2}{5} =$	3) $13\frac{8}{11} - 6\frac{3}{11} =$
4) $10\frac{11}{13} - 8\frac{6}{13} =$	5) $15\frac{12}{14} - 9\frac{9}{14} =$

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NBT

Repeated Addition & Multiplying Fractions

Part 1 Add and multiply the fractions below

Addition Version	Multiplication Version
1) $\frac{4}{7} + \frac{4}{7} + \frac{4}{7} + \frac{4}{7} + \frac{4}{7} = \frac{20}{7}$ or $2\frac{6}{7}$	$5 \times \frac{4}{7} = \frac{20}{7}$ or $2\frac{6}{7}$
2) $\frac{1}{9} + \frac{1}{9} + \frac{1}{9} + \frac{1}{9} + \frac{1}{9} + \frac{1}{9} + \frac{1}{9} =$	
3) $\frac{2}{5}$	
4) $\frac{3}{6} + \frac{3}{6} + \frac{3}{6}$	
5) $\frac{4}{9} + \frac{4}{9} + \frac{4}{9} + \frac{4}{9} + \frac{4}{9}$	
6) $\frac{5}{10} + \frac{5}{10} + \frac{5}{10} + \frac{5}{10} + \frac{5}{10} + \frac{5}{10}$	
7) $\frac{3}{7} + \frac{3}{7} + \frac{3}{7} + \frac{3}{7} + \frac{3}{7} + \frac{3}{7} + \frac{3}{7} =$	

Part 2 Answer the word problems below using an addition and m nce

1) Jerry made 5 pizzas. Each of the pizzas have 2/7 cups of cheese. Ho h cheese do all 5 pizzas have in total?

Addition Sentence	Multiplication Sentence

2) Helen buys 9 bags of chips. Each bag is 4/9 of a kg. How many kilograms are all 9 bags combined?

Addition Sentence	Multiplication Sentence

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Curriculum Connection
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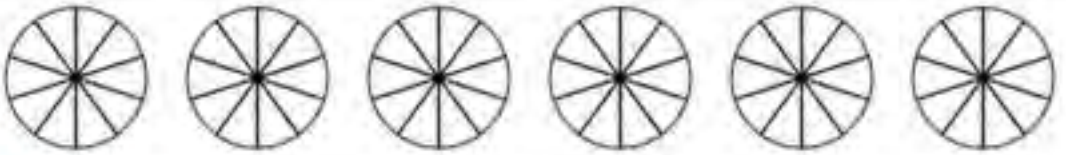
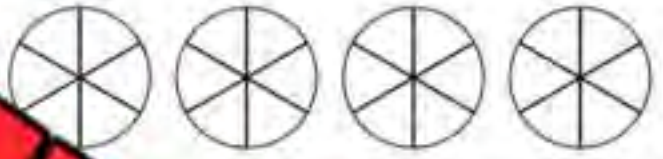
Multiply Whole Numbers by Fractions - Visual

Questions Shade in the fractions and then answer the multiplication equation

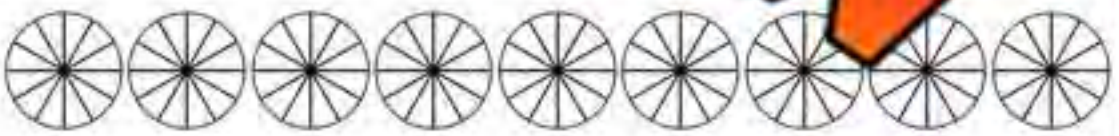
1) $6 \times \frac{4}{10}$ 

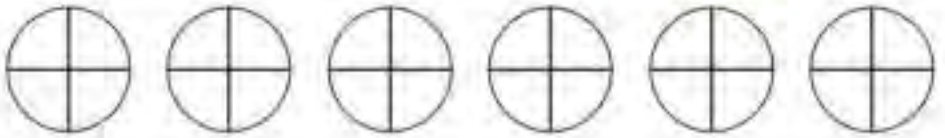
2) $7 \times$ 

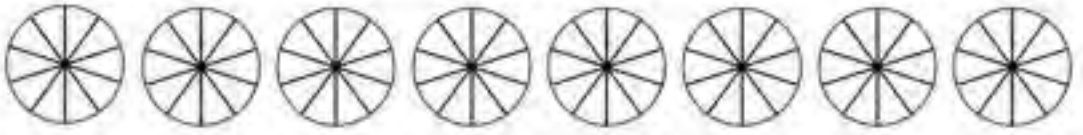
3) $5 \times \frac{2}{6}$ 

4) $6 \times \frac{7}{10}$ 

5) $6 \times \frac{5}{6}$ 

6) $9 \times \frac{6}{12}$ 

7) $6 \times \frac{2}{4}$ 

8) $8 \times \frac{5}{10}$ 

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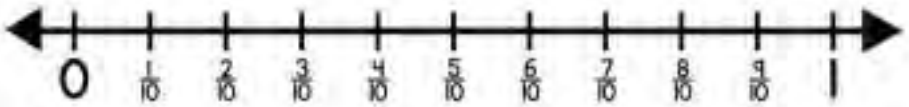
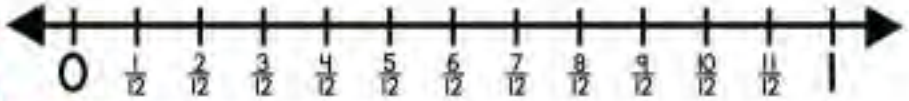
Curriculum Connection
NBT

Multiply Whole Numbers by Fractions – Number Line

Questions | Use the number line by skip counting to find the answer

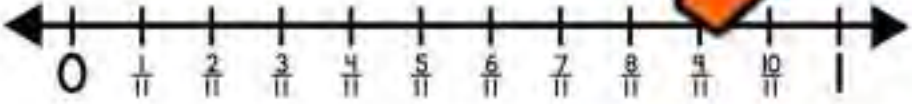
1) $8 \times \frac{1}{10} =$ 

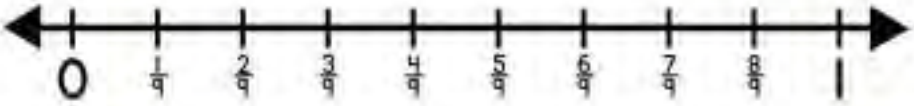
2) 10 

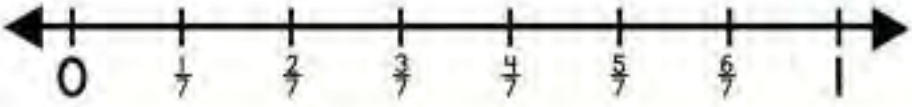
3) $7 \times \frac{1}{8} =$ 

4) $5 \times \frac{1}{6} =$ 

5) $4 \times \frac{1}{5} =$ 

6) $7 \times \frac{1}{11} =$ 

7) $8 \times \frac{1}{9} =$ 

8) $6 \times \frac{1}{7} =$ 

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Curriculum Connection
NBT.4

Multiply Whole Numbers by Fractions

Questions Multiply the whole numbers by the fractions below. Write the answer as an improper fraction

1) $4 \times \frac{3}{4} = \frac{12}{4}$	2) $5 \times \frac{2}{5} =$	3) $8 \times \frac{4}{8} =$
4) $9 \times \frac{7}{10} =$	5) $\times \frac{4}{7} =$	6) $6 \times \frac{6}{8} =$
7) $7 \times \frac{4}{6} =$	8) $4 \times$	9) $7 \times \frac{2}{5} =$
10) $3 \times \frac{6}{7} =$	11) $3 \times \frac{8}{10} =$	12) 2
13) $5 \times \frac{2}{6} =$	14) $5 \times \frac{3}{7} =$	15) $9 \times \frac{5}{7} =$
16) $6 \times \frac{3}{7} =$	17) $7 \times \frac{6}{8} =$	18) $11 \times \frac{2}{9} =$

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Curriculum Connection
NBT.4

Multiplying Fractions – Area Models

We can represent two fractions using the same area model. Doing so will allow us to determine the product when we multiply two fractions together.

$$\frac{2}{3} \times \frac{1}{4} = \frac{2}{12}$$

Example

Step 1: Divide the area model into thirds horizontally to represent 2/3
Step 2: Dra[illegible] diagonal lines that fill in two-thirds of the area model
Step 3: Di[illegible] area model into fourths vertically to represent 1/4
Step 4: S[illegible] fourth of the area model
Step 5: [illegible] many squares overlap compared to the total number of squa[illegible]

Questions Fin[illegible]uct u[illegible] area model. Steps 1-4 have been done for you

1)

$\frac{3}{5} \times \frac{2}{4} =$ ____

[illegible] = ____

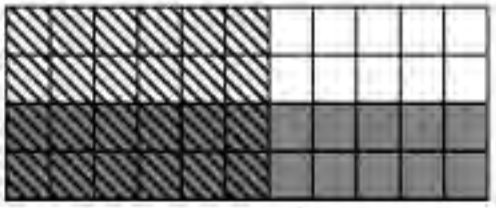
3)

$\frac{6}{7} \times \frac{3}{4} =$ ____

4)

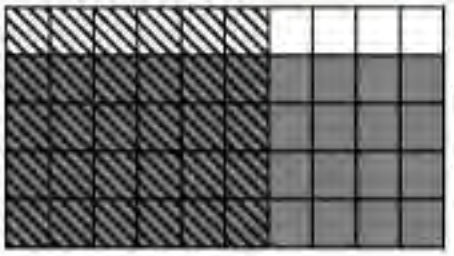
$\frac{5}{9} \times \frac{3}{5} =$ ____

5)



$\frac{6}{11} \times \frac{2}{4} =$ ____

6)



$\frac{6}{10} \times \frac{4}{5} =$ ____

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Curriculum Connection
N8.4

Multiplying Fractions – Area Models

The area models below have been divided to represent the fractions.

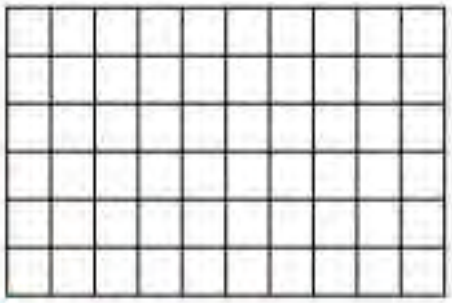
Directions:

1) Use diagonal lines to represent the first fraction
2) Shade in the area model to represent the second fraction
3) Write the answer

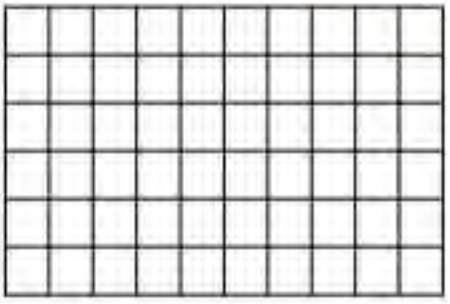
Questions Find the product using the area models below

1) 

$\frac{7}{9} \times \frac{5}{6} = \_\_\_$

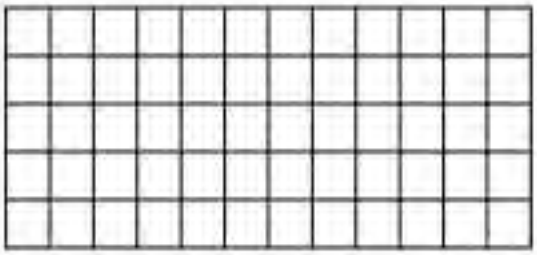
2) 

$\frac{3}{\_} \times \frac{4}{6} = \_\_\_$

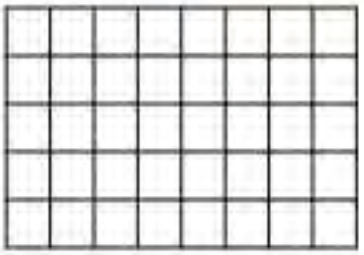
3) 

$\frac{4}{10} \times \frac{4}{6} = \_\_\_$

$\frac{6}{14} \times \frac{3}{5} = \_\_\_$

5) 

$\frac{8}{12} \times \frac{4}{5} = \_\_\_$

6) 

$\frac{5}{8} \times \frac{2}{5} = \_\_\_$

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Curriculum Connection
NBT.4

Multiplying Fractions – Word Problems

Questions | Find the products of the fractions below

1) Axel and Jasmine raced for 5 minutes. In the 5 minutes, Axel ran $\frac{4}{5}$ of a kilometre. Jasmine ran $\frac{2}{3}$ times as far as Axel. How far did Jasmine run?

2) Faith and Ember ... sandwiches. Faith ate $\frac{3}{4}$ of her sandwich. Ember wasn't that hungry, so she ate $\frac{1}{2}$ as much as Faith ate. How much of her sandwich did Ember eat?

3) Laura completed $\frac{8}{11}$ of a marathon in the ... time ... finished $\frac{2}{3}$ times as much of the race that Laura finished. How much ... marathon ... Adalyn finish?

4) Atlas and Evie volunteered one day. Atlas spent $\frac{3}{4}$ of the 8-hour workday volunteering. Evie volunteered $\frac{1}{3}$ the amount of time that Atlas volunteered.

a) What fraction of the workday did Evie volunteer?

b) How much time did Atlas volunteer?

c) How much time did Evie volunteer?

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Curriculum Connection
NBT.4

Multiplying Mixed Fractions

How to multiply mixed fractions

1) Convert the mixed fractions to improper fractions
2) Multiply the improper fractions
3) Convert the improper fraction back to a mixed fraction
4) Simplify if necessary

$2\frac{2}{3} \times 2\frac{2}{4} = \frac{8}{3} \times \frac{10}{4} = \frac{80}{12}$ or $6\frac{8}{12}$ or $6\frac{3}{4}$

Part 1 the products of the fractions below. Simplify the fractions.

1) $3\frac{1}{3} \times 2\frac{2}{4} =$	2) $4\frac{2}{5} \times 7\frac{5}{6} =$
3) $5\frac{1}{2} \times 6\frac{3}{7} =$	) $9\frac{2}{4} \times 4\frac{7}{9} =$
5) $10\frac{5}{7} \times 7\frac{2}{3} =$	6) 1
7) $12\frac{3}{5} \times 5\frac{2}{3} =$	8) $8\frac{}{9} =$

Part 2 Answer the word problems below

1) Hadley ran $3\frac{4}{5}$ km. Freya ran $2\frac{2}{3}$ km times further. How far did Freya run?

2) Parker made tomato and chicken noodle soup. He made $2\frac{3}{4}$ kg of tomato soup and $4\frac{4}{5}$ times more chicken noodle soup. How much chicken noodle soup did he make?

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Curriculum Connection
NS.6

Dividing Fractions by Whole Numbers

Steps
1. Change the whole number to a fraction by putting it over a denominator of 1
2. Flip the numerator and denominator of the dividend fraction (fraction after ÷ sign)
3. Switch the ÷ sign to a x sign and solve

Questions Follow the steps above to solve

1) $\frac{}{4} \div 2 =$	2) $\frac{5}{6} \div 3 =$
3) $\frac{7}{8} \div 4 =$	$\frac{6}{} \div 6 =$
5) $\frac{5}{11} \div 5 =$	6) $\div$
7) $\frac{6}{7} \div 8 =$	8) $\frac{7}{15} \div 3 =$
9) $\frac{3}{7} \div 3 =$	10) $\frac{1}{2} \div 4 =$
11) $\frac{3}{4} \div 5 =$	12) $\frac{5}{6} \div 2 =$

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Curriculum Connection
NBT

Dividing Fractions by Whole Numbers

Questions | Answer the questions below

1) A baker has 2 1/4 cups of flour and needs to divide it evenly among 3 bread loaves. How much flour will each loaf receive?

2) Em[illegible] 3 1/2 chocolate bars with her 5 friends. How much chocolate will [illegible] get?

3) A group of 4 friends has 5 [illegible] for their craft project. How much ribbon will each friend receive?

4) A group of students is working on an art project that re[illegible] a litre of paint. If they want to equally divide the paint among the 5 [illegible] will each student get?

5) A mother wants to divide her 4 1/6 kilograms of fruit evenly among her 3 children. How much fruit will each child get?

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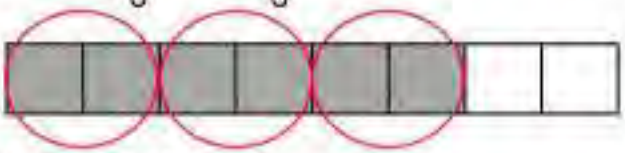
N8.4

Dividing Fractions Using Models

Dividing Fractions

When we divide a fraction by its unit fraction, we should think, "how many counts of the unit are in the fraction (i.e., how many two-eights are in six-eights?)

$\frac{6}{8} \div \frac{2}{8} = 3$



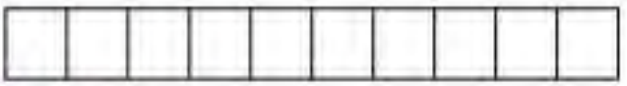
Solution – We can see that there are 3 two eights in six eights.

Questions – Use the fraction bar. How many times does the divisor fit into the dividend

1)

$\frac{4}{8} \div \frac{2}{8} =$ ____

2)



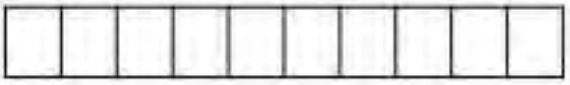
$\frac{9}{10} \div \frac{3}{10} =$ ____

3)

$\frac{4}{8} \div \frac{1}{8} =$ ____

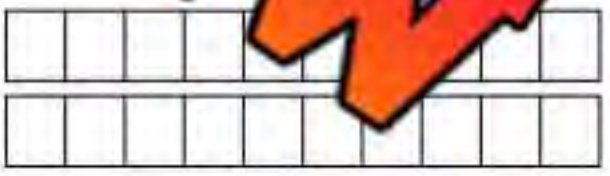
4)

5)



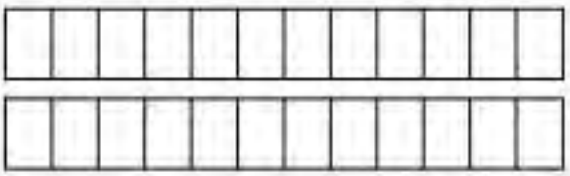
$\frac{8}{10} \div \frac{2}{10} =$ ____

6)



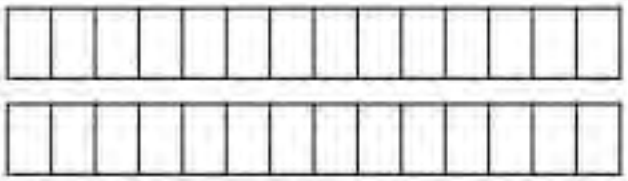
$\frac{16}{20} \div \frac{4}{20} =$ ____

7)



$\frac{24}{24} \div \frac{4}{24} =$ ____

8)



$\frac{21}{28} \div \frac{3}{28} =$ ____

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N8.4

Dividing Fractions Using Models

Dividing Fractions
We can use a bar model to compare fractions to make it easier to divide.

Solution – We can see that 1/8 fits into 3/4 six times.

$\frac{3}{4} \div \frac{1}{8} = 6$

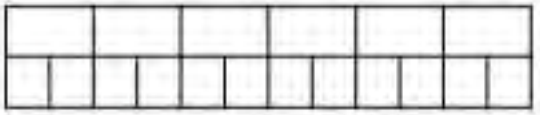
Questions

in the fraction bars. How many times does the divisor fit into the dividend

1)

$\frac{3}{5} \div \frac{\quad}{10}$

2)



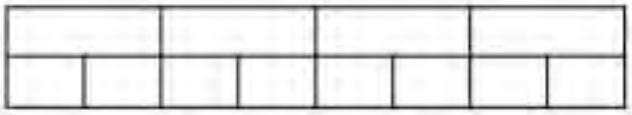
$\frac{5}{6} \div \frac{1}{12} = \_\_\_$

3)

$\frac{2}{4} \div \frac{1}{12} = \_\_\_$

$\div \frac{\quad}{1} = \_\_\_$

5)

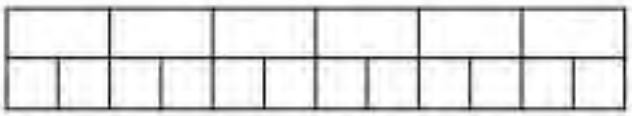


$\frac{3}{4} \div \frac{1}{8} = \_\_\_$

6)

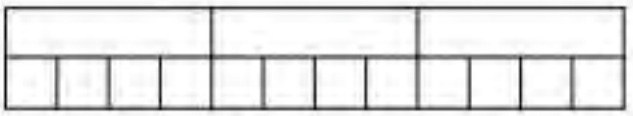
$\frac{1}{3} \div \frac{1}{9} = \_\_\_$

7)



$\frac{5}{6} \div \frac{1}{12} = \_\_\_$

8)



$\frac{1}{3} \div \frac{1}{12} = \_\_\_$

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Curriculum Connection
NBT.4

Dividing Mixed Fractions

How to divide mixed fractions

1) Convert the mixed fractions to improper fractions
2) Use the Keep, Switch, Flip (K,S,F) method to change the question to multiplication
3) Convert the answer back to a mixed fraction and simplify if necessary

Question	Improper	K, S, F	Answer	Simplified
$4\frac{2}{3} \div 3\frac{1}{5}$	$\frac{14}{3} \div \frac{16}{5}$	$\frac{14}{3} \times \frac{5}{16} = \frac{70}{48}$	$1\frac{32}{48}$	$1\frac{2}{3}$

Part 1

Find the answers of the fractions below. Simplify the fractions.

Question	Improper	K, S, F	Answer	Simplified
1) $6\frac{3}{7} \div 2\frac{2}{5}$				
2) $5\frac{4}{6} \div 4\frac{1}{3}$				
3) $8\frac{5}{6} \div 3\frac{3}{4}$				
4) $7\frac{4}{5} \div 4\frac{1}{6}$				
5) $6\frac{1}{4} \div 3\frac{2}{5}$				
6) $8\frac{3}{9} \div 2\frac{5}{7}$				

Part 2

Answer the word problem

Jasper ordered $5\frac{4}{5}$ loads of mulch to fill gardens around his property. Each garden requires $1\frac{2}{3}$ loads of mulch. How many gardens can he fill with mulch?

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Curriculum Connection
[illegible]

Dividing Fractions - Word Problems

Questions Find the answers of the fractions below

1) At a bakery, the baker divides 4 1/2 pounds of chocolate into portions of 1 1/2 pounds each for making cakes. How many portions can the baker make?

2) During a s[illegible]ime[illegible]hael needs to divide 6 3/6 liters of a liquid into containers that [illegible]d 1 1/[illegible]h. How many containers can he fill completely?

3) Emily has 4 2/4 meters of fabric and wants t[illegible] 1 1/4 meters long each. How many scarves can she make using [illegible] fabri[illegible]

4) A landscaper has 3 3/9 meters of mulch and needs to spread it in flower beds that are each 1 1/3 meters wide. How many flower beds can he cover with the mulch?

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TG

Unit Test - Fractions

Part 1 Convert the mixed numbers to improper fractions

1) $7\frac{2}{4}$ =	2) $4\frac{1}{5}$ =	3) $5\frac{3}{5}$ =

Part 2 [illegible] the improper fractions to mixed numbers

1) $\frac{27}{4}$ =	[illegible]$\frac{26}{}$ =	3) $\frac{34}{6}$ =

Part 3 Multiply the mixed [illegible]ons [illegible]wers as a mixed fraction

1) $4 \times \frac{4}{7}$ = ☐ = ☐	2) [illegible] = ☐
3) $6 \times \frac{5}{8}$ = ☐ = ☐	4) $5 \times \frac{3}{12}$ = ☐ ☐

Part 4 Find the products of the fractions below. Simplify the fractions.

1) $\frac{4}{5} \times \frac{5}{6}$ = ___	2) $\frac{2}{8} \times \frac{6}{8}$ = ___

Curriculum Connection
TBA

Part 5 Solve the division questions below

1) $\frac{7}{8} \div \frac{3}{12} =$	2) $\frac{9}{11} \div \frac{3}{7} =$
3) $\frac{5}{6} \div \frac{2}{\quad} =$	4) $\frac{8}{9} \div \frac{4}{6} =$
5) $8 \div \frac{\quad}{8} =$	6) $5 \div \frac{7}{8} = \frac{\quad}{\quad} \times \frac{\quad}{\quad} =$
7) $\frac{3}{4} \div 2 =$	$5 \div 3 =$

Part 6 Answer the word problems b

1) Scotty can run a kilometre in 4/8 of an hour. How m me n run in 3/4 of an hour?

2) Quinn bought 5 cans of tomato soup. Each can holds 8/9 litres of soup. How many litres of soup do all 5 cans hold?

3) A cook has 7 1/2 cups of sugar and needs to divide it into portions of 1 1/2 cups each for different dessert recipes. How many portions can the cook make?

4) Samantha is making a punch for a party. She needs to make 5 1/2 batches of her punch rec ch batch requires 2 1/3 cups of orange juice. How many cups of orange j amantha need in total to make the punch?

5) A baker needs to di s o f to portions of 1/4 cup each to make cookies. How many portio e b ?

6) There are 5 submarine sandwiches, and a teacher w dis th equally among her students so that each student gets 1/5 a s any students are in her class?

7) In a recipe, a cook uses 2 1/4 cups of flour for each batch of cookies. If he wants to make 1/2 of a batch, how much flour should he use?

Name: _____ 211

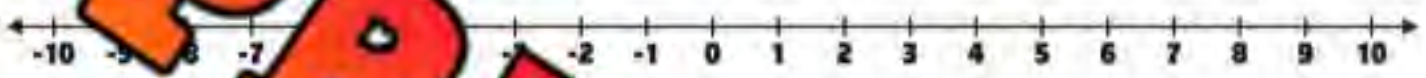
Curriculum Connection
NBT5

Introduction to Integers

Integers are whole numbers that can be positive, negative or zero. Integers do not include fractions or decimals. We use positive integers a lot, but we sometime need to use negative integers, like when we are measuring the temperature outside in the winter.

Questions | Use the number lines to solve the questions

1) The tem e at 6am was -9°C. At noon, the temperature was 5°C. Circle the temperat e number line. How much did the temperature rise?



Rise in temperature

2) Steve was in debt to his Hen d -$5. He was able to make some money by cutting his neighbou ass id his brother back and has $10 left. How much did he make cutting gr

Earnings from cutting grass = $_____

3) A running back in football earned -8 yards in the first ha his the game with 10 yards. How many yards did he get in the second ha

Yards in the second half = _____

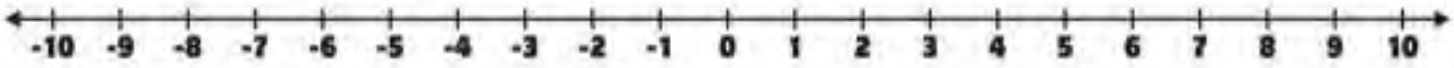
4) Tiger Woods scored a -8 in his third round of a golf tournament. He scored +8 in the fourth round. How many more shots did he take in the fourth round?

Extra shots in the fourth round = _____

Name: _____ 213

Curriculum Connection
N8.5

Comparing Integers



Part 1 Use the <, >, = to compare the integers below

1) 9 ☐ -3 2) -7 ☐ 3 3) -10 ☐ 0

4) -2 ☐ 1 5) 1 ☐ -1 6) -10 ☐ 10

7) -3 ☐ 3 8) 5 ☐ 6 9) 8 ☐ -6

10) -6 ☐ -7 11) -7 ☐ -1 12) -1 ☐ 0

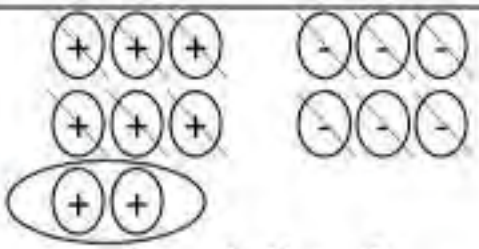
Part 2 Arrange the integers from least to great

1) 7, 2, -6, -7, 4	2) 0, -4, -8, , 8
3) 0, 3, -4, 5, -6	4) -2, 0, -6, 2, -5
5) 10, -10, -9, 8, -8	6) -8, -7, 7, 0, 8

Name: _____ 214

Curriculum Connection
- NBT.5

Adding Integers – Zero Pairs



8 + (-6) = 2

Question: Cross out the zero pairs. What is left?

1) _____ + _____ = _____	2) _____ + _____ = _____	3) _____ + _____ = _____
4) _____ + _____ = _____	5) _____ + _____ = _____	6) _____ + _____ = _____
7) _____ + _____ = _____	8) _____ + _____ = _____	9) _____ + _____ = _____
10) _____ + _____ = _____	11) _____ + _____ = _____	12) _____ + _____ = _____

Name: _____ 216

Curriculum Connection
NBT5

Golf - Adding Integers – Zero Pairs

Word Problems Solve the word problems below using counter chips

1) Bailey played 3 rounds of golf. She filled out her scorecard, but she forgot what she shot in round 2. Fill it in for her.

Round	Score
1	-6
2	
3	+9
Total Score	+10

Equa_____ + _____ = _____

2) Ryker playe_____unds o_____is final scores for all three rounds are on the scorecard. What is _____tal s_____

Round	Score
1	-13
2	-8
3	+11
_____core	

Equation: _____ + _____ + _____ = _____

3) Sara played 4 rounds of golf. Her final scores are _____ the s_____rd, but she can't remember what she scored on her first round. Help _____co_____ _____score card.

R1	R2	R3	R4	Total Score
	3	-6	-5	-17

Equation: _____ + _____ + _____ + _____ = _____

4) Jason played 4 rounds of golf. His final scores are written on the scorecard. What is his total score?

R1	R2	R3	R4	Total Score
-11	-6	8	-7	

Equation: _____ + _____ + _____ + _____ = _____

Name: _____ 217

Curriculum Connection
NS 5

Adding Integers – Using Number Lines

-20	-19	-18	-17	-16	-15	-14	-13	-12	-11	-10	-9	-8	-7	-6	-5	-4	-3	-2	-1
0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20

Part 1 Solve the questions below

1) 9 + (-4	6) -35 + 21 + (-17)
2) 15 + 5	7) 17 + (-25) + (-11)
3) -17 + 30 + (-13)	8) -10 + (-10) + 35 + (-12)
4) 20 + (-32) + (-7)	9) 19 + (-7) + (22)
5) -18 + 20 + (-21)	10)

Part 2 Answer the word problems below. Write the equations

1) You start at point A and take 19 steps forward to point B, then 29 steps backward to point C, followed by 10 steps backward to point D, and finally 31 steps forward to point E. How many steps are you away from the starting point, point A?

2) A submarine starts at sea level and dives 52m down before coming up 16m. It makes another plunge down 39m and then rises 14m. How many meters is it below sea level?

Name: _____ 220

Curriculum Connection
NBS

Subtracting Integers – Keep, Flip, Change

Subtraction Integers Rules

To subtract integers, it is easiest to change the operation to addition and then follow the addition rules. We can do this by using the rule – Keep, Flip, Change. We keep the first number the same, flip the operation from subtraction to addition, and then change the third number's sign.

Example: 5 – (-6) = ? becomes 5 + 6 = 11

- **Keep** the first integer
- **Flip** the operation
- **Change** the sign of the next integer

Part 1

Use the rules above to solve the problems

1) 11 – (-6) =	6) (+45) – (+43) =
2) 24 – (-11) =	7) (+7 83) =
3) (-11) – 8 =	8) (
4) (-23) – 13 =	9) (-118) – (- =
5) (-31) – (-12) =	10) 159 – (-77) =

Part 2

Answer the word problem below. Write the equation

Jake has +$130 in his bank account. Todd owes $80 to his brother and has no other money. How much more money does Jake have then Todd?

Name: _____ 223

Curriculum Connection
NS.5

Subtracting Integers – Word Problems

Questions | Answer the questions below

1) The temperature in the morning was 5°C and dropped to -3°C in the evening. What was the change in temperature?

2) A company [illegible] 300 in January. In February, they lost $8,600 in profits. What is [illegible] between the two months?

3) A mountain peak is 6,387 meters above sea [illegible] 215 meters below sea level. What is the difference in elevation [illegible] the [illegible]in peak and the valley?

4) A submarine was at a depth of -150 meters below sea level. It then descended until it was -325 metres below sea level. What was its change in metres below sea level?

Name: _____ 225

Curriculum Connection
NBT.5

Multiplying Integers – Number Line

Follow these steps to use a number line for solving multiplication questions involving integers.

Multiplier → -5 x -4 = 20 ← Product

Multiplicand

1) The dog always starts at 0
2) The multiplier tells us how many steps the dog will take.
3) The multiplicand tells us to walk forwards or backwards. For a positive number, walk forwards. For a negative number, walk backwards.
4) The multiplicand also tells us how many jumps to take.
5) If both numbers are negative, the answer will be positive (the dog will jump in the opposite direction)

Ex. (-5) x (-4) = 20

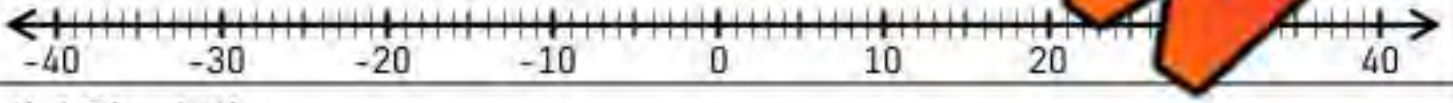
Questions

Use the number line to solve the questions

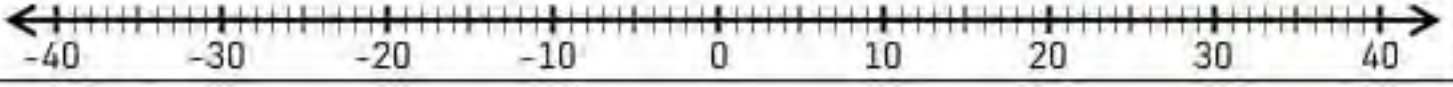
1) (-5) x (-7) =

2) 8 x (-4) =

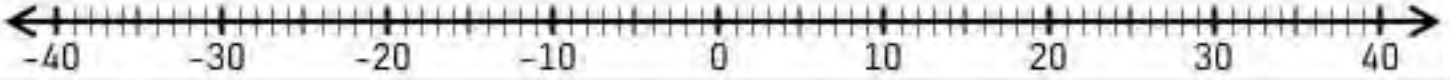
3) (-7) x 3 =



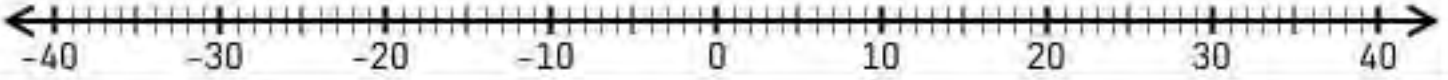
4) (-9) x (-4) =



5) 5 x (-8) =



6) (-20) x (-2) =



Name: _____ 227

Curriculum Connection
NBS

Multiplying Integers

Multiplying Integers Rules

(+) x (+) = (+) Multiplying 2 positive integers will give a positive answer

(-) x (-) = (+) Multiplying 2 negative integers will give a positive answer

(+) x (-) = (-) Multiplying integers with different signs will give a negative answer

(-) x (+) = (-) Multiplying integers with different signs will give a negative answer

Part 1 Use the rules above to answer the 1-step equations below

1)	5 x (-2) =	6)	[illegible] =	11)	(-8) x (-12) =
2)	(-7) x 7 =		[illegible]	12)	13 x (-9) =
3)	(-8) x (-3) =	8)	(-12) [illegible]	13)	(-16) x 8 =
4)	12 x 8 =	9)	(-13) x (-11) =	[illegible]	[illegible] x (-13) =
5)	(-11) x 12 =	10)	20 x 7 =	[illegible]	25 x [illegible]

Part 2 Simplify the multi-step expressions and use the

Ex) 2 x (-3) x (-8) = (-6) x (-8) = 48	3) 5 x 10 x (-10) x (-10)
1) (7) x (-3) x 2	4) 6 x (-2) x (-4) x 2
2) (-4) x (-6) x (-3)	5) (-9) x 3 x (-2) x 10

Name: _____ 228

Curriculum Connection
NBT

Multiplication Squares

Part 1 Fill in the squares by multiplying the integers

1)

x	5	-8
-3		
-7		

2)

x	2	-9
-8		
-6		

3)

x	7	-1
-9		
-3		

4)

x	-3	
-8		
6		

	-7	-10
3		
-1		

6)

x	12	-6
-4		
9		

7)

x	-15	-13
-3		
-5		

8)

x	-6	
-4		
7		

	23	-56

Part 2 Fill in the squares by multiplying the integers

1)

x	6	-5	2
-4			
-7			
3			

2)

x	10	-11	12
-3			
-7			
-9			

3)

x	-5	15	-25
-2			
-4			
6			

Name: _____ 229

Curriculum Connection
NS 5

Integer Multiplication Chart

Directions Fill in the chart by multiplying the integers

x	-5	-4	-3	-2	-1	0	1	2	3	4	5
5											
4											
3											
2											
1											
0											
-1											
-2											
-3											
-4											
-5											

Name: _____ 232

Curriculum Connection
NBS

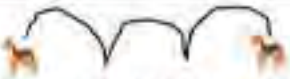
Dividing Integers – Number Line

Follow these steps to use a number line for solving division questions involving integers.

Dividend → (-15) ÷ 5 = -3
Divisor
Quotient

1) The dog always starts at 0
2) The dog jumps by the divisor until it reaches the dividend
3) Your answer is how many jumps it takes
4) The answer is negative if the dog faces the negative side and positive if it faces the positive side

Ex. (-15) ÷ 5 =



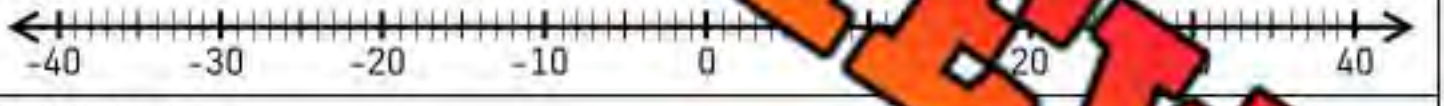
Distance = 3 jumps
Jumped to the left (negative side) = -3

Questions

Use the number lines to solve the questions

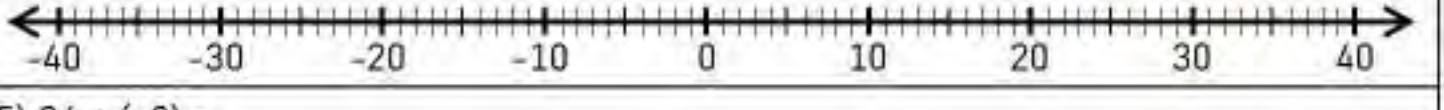
1) (-25) ÷ (-5) =

2) 12 ÷ (-4) =

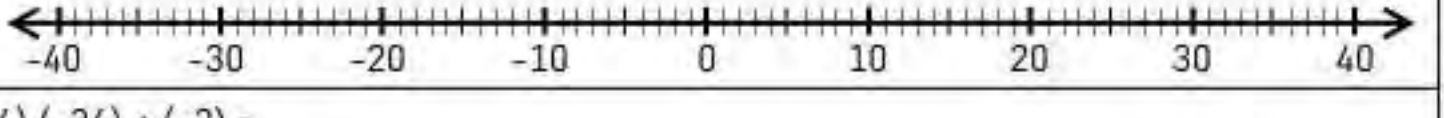


3) (-32) ÷ 4 =

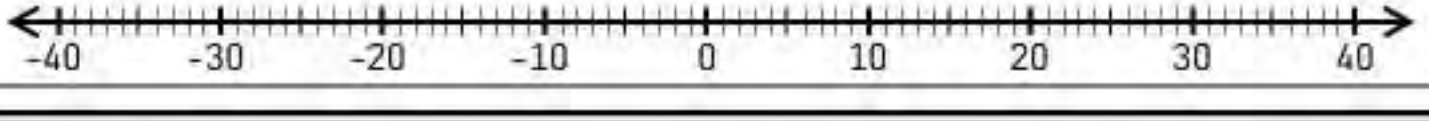
4) (-18) ÷ (-6) =



5) 24 ÷ (-8) =



6) (-36) ÷ (-3) =



Name: _____ 235

Curriculum Connection
NBT

Division Squares

Part 1 Fill in the squares by dividing the integers

1)

÷	5	-3
-15		
-30		

2)

÷	-6	3
18		
-12		

3)

÷	7	-2
28		
-56		

4)

÷	12	
-48		
36		

	-4	-8
56		
-3		

6)

÷	-2	-12
-60		
96		

7)

÷	5	15
-75		
-105		

8)

÷	-22	
-88		
66		

	3	-9

Part 2 Fill in the squares by dividing the integers

1)

÷	2	-6	-10
-60			
90			
-180			

2)

÷	-3	-6	9
18			
-54			
90			

3)

÷	-5	15	-25
-75			
-150			
225			

Name: _____ 236

Curriculum Connection
- NBTs

Dividing Integers - Word Problems

Questions | Answer the questions below

1) A debt of -$1,800 is to be divided equally among 6 friends. How much money does each friend have in relation to this debt?

2) An elevato[illegible] floor (0) and goes down 16 floors in 4 minutes. What is the rate [illegible] descending in terms of floors per minute?

3) A hiker is descending a mountain trail at a co[illegible]rs per hour. If the hiker needs to descend a total of -300 meter[illegible] the [illegible] of the mountain, how many hours will it take to complete the [illegible]nt?

4) A company recorded a loss of -$45,000 in a year. If they lost the same amount of money each month, what was their monthly loss?

Name: _____ 237

Curriculum Connection
NBT

Math Jeopardy – Integer Operations

Objective What are we learning about?

Students will practice adding, subtracting, multiplying, and dividing numbers, while solving w[illegible] problems using all four operations in a fun and engaging way.

Mate[illegible] [illegible]u will need for the activity.

- Jeopardy [illegible]e ne[illegible]
- Buzzer or bell

Instructions How you will comp[illegible]acti[illegible]

1. Print the Jeopardy board on the next p[illegible]
2. Divide the class into two teams.
3. Ask one team to go first by selecting a point value.
4. Read the question aloud from the point value.
5. The first team to ring the bell or buzzer gets to answer.
6. If they answer correctly, award them the points. If not, another team can answer.
7. Continue the game until all questions have been answered.
8. Tally the points to determine the winning team.
9. Conclude by discussing what they learned about the topic in the questions.

Name: _____ 238

Curriculum Connection: NS.5

Jeopardy Questions | Ask students the questions below:

$100	$200	$300	$400	$500
12 + (-5) + 3	20 + (-7) + 9	(-15) + 25 + (-10)	(-45) + 30 + (-20)	78 + (-45) + 62
24 - (-8)	(-15) - 9	43 - (-17) - 12	(-75) - (-20) - 33	108 - 45 - (-18)
4 × (-3)	(-5) × (-8)	(-9) × 12 × (-2)	25 × (-6) × 4	(-11) × (-12) × (-5)
20 ÷ (-5)	(-72) ÷ 9	180 ÷ (-6) ÷ 5	(-1440) ÷ (-12) ÷ 6	(-360) ÷ 8 ÷ (-3)
You [illegible] -20 points, then gain 8 points. How many points do you have now?	[illegible]ker [illegible] 20 [illegible]a [illegible], he [illegible]s 15 [illegible]ter. How far has he descended in total?	A submarine is 120 meters below sea level. It rises [illegible] meters and [illegible]cends 50 [illegible] far below s[illegible]s it	A snowstorm causes the temperature to drop by -3°C every hour. After 10 hours, what's the total temperature change?	A glacier retreats by -2.5 meters every month. How far will it retreat in 2 years?
A diver is 12 meters below sea level. She descends another 8 meters. How far below sea level is she now?	The stock market drops 12 points one day, 6 the next day, and then another 8 points the next day. How much did the stock market drop in total?	A debt of -$1,[illegible] is to be divided equally among 5 people. How much debt does each person take on?	A co[illegible] $[illegible] [illegible] f[illegible]ee[illegible]s. How m[illegible]e comps[illegible]ost after 10 week[illegible]	A scuba diver descends -4 [illegible]eters per [illegible]cond. How far [illegible]iver [illegible] 2 [illegible]es.
The temperature was -5°C in the morning. By noon, it rose by 7°C. What's the temperature now?	You start with -40 points in a quiz competition. You earn 55 points in the first round and lose 10 points in the second round. What's your final score?	A mountain climber descends -200 meters per hour. How far has the climber descended after 7 hours?	A company's value decreases by -$350 per day. How much will the company's value decrease in 20 days?	A company experiences a daily loss of -$5,000 for 14 days. What's the total loss over the 14 days?

Name: _____ 240

Curriculum Connection
NB.5

Order of Operations - Integers

Questions Calculate the answers to the equations using BEDMAS

1) 7 + (-3) x (-9)	2) 11 x (-4 + -6)	3) (-5)(-9) + (4 – 2)
4) (-4 x 8) ÷	) – (-2 x 1)	6) (-66 ÷ 6)(4)
7) 12 x (-3) + (-6)	8) 15 ÷ (-3) + (-	x (3 + 5)
10) 18 ÷ 3 + (-16 – 7)	11) (-4)(-7) ÷ 4 + 8	12) 18 + (-11) – 2 x (-5)

Exit Cards

Cut Out Cut out the exit cards below and have students complete them at the end of class

Name: _____

Calculate the answers to the equations using BEDMAS

a) (−1 × −2) = _____

b) (−9) × (−4) − (6 + −7) = _____

Name: _____

Calculate the answers to the equations using BEDMAS

a) (−15÷3) + (4 × −2) = _____

b) (−9) × (−4) − (6 + −7) = _____

Name: _____

Calculate the answers to the equations using BEDMAS

a) (−15÷3) + (4 × −2) = _____

b) (−9) × (−4) − (6 + −7) = _____

Name: _____

Calculate the answers to the equations using BEDMAS

a) (−15÷3) + (4 × −2) = _____

b) (−9) × (−4) − (6 + −7) = _____

Name: _____ 242

Curriculum Connection
NBT.5

Order of Operations - Word Problems

Questions	Write an equation that represents the situation and solve

1) An elevator starts at the ground floor. It travels up 8 floors before going down halfway to the ground. Next, it travels back up 12 more floors before going down 13 floors. What floor is the elevator on now?

2) A deep-sea [illegible]ming [illegible]m his world record diving adventure. He travelled 320m [illegible]e Re[illegible]came up at a rate of 10 metres a minute for 32 minutes. How ma[illegible]r the sea at the end of the 10 minutes?

3) Chase is the running back for his football tea[illegible]he rushed 5 times for an average of +8 yards per rush. He had [illegible]in th[illegible]nd quarter and -15 yards in the third. In the last quarter, he had +[illegible]s. [illegible]al yards did he rush for?

4) Vincent golfed 10 times last month. He had 6 rounds of -3 golf and 3 rounds of +2. His last round he scored a -8. What was his total score for the month?

Name: _____ 243

Curriculum Connection
TG

Integers Quiz

Part 1 Solve the questions below

1) 9 + (-5) =	2) 11 + (-9) =	3) (-15) + 6 =
4) (-13)	5) (-31) + 19 =	6) (-43) + 15 =

Part 2 Solve ques

1) 11 + (-4) + 4		2 + (-17)	
3) 25 + (-18) + 13		4) (-1	

Part 3 Answer the word problems below. Write the e ion ion

1) You start at point A and take 17 steps forward to point B. Then, y tk 15 steps backward to point C, followed by 25 steps backward to po . Finally, you take 19 steps forward to point E. How many steps are you away from the starting point, point A?

2) A submarine starts at sea level and dives 17m down before coming up 11m. It makes another plunge down 43m and then rises 27m. How many meters is it below sea level?

Curriculum Connection
TEK

Part 4 Solve the subtraction equations below

1) 15 – (-6) =	2) (+18) – (+13) =
3) 27 – (-13) =	4) (+45) – (-31) =
5) (-51) – [illegible] =	6) (-84) – (-55) =

Part 5 Answer the word problems below. Write the equation for each question

1) The winner of a golf tournament scored a -28 after four rounds. The last place golfer scored a [illegible]. What is the difference between these two scores?

2) The average temperature at the South Pole is -49 degrees Celsius. The average temperature in the North Pole is -20 degrees Celsius. What is the difference in temperatures between the two Poles?

Part 6 Solve the multiplication equations below

1)	6 x (-3) =	2)	(-13) x (-5) =	3)	(-7) x (-12) =
4)	(-7) x 9 =	5)	8 x (-6) =	6)	4 x (-9) =
7)	(8) x (-5) x 2	8)	7 x (-4) x (-2) x 1		

Curriculum Connection
TBL

Part 7 Fill in the tables below

1)

x	5	-4
-20		
-40		

2)

x	-6	3
30		
-12		

3)

÷	7	-2
42		
-56		

Part 8 Fill in the input/output tables by following the rules

1)

Input	Output
-12	
-8	
4	
7	
11	
Multiply by -3	

2)

Input	Output
-52	
-28	
2	
Divide by	

3)

Input	Output
-11	
-7	
-4	
2	
12	
Multiply by -8	

Part 9 Calculate the answers to the equations using PEMDAS

1) $9 + (-5) \times (-3)$	2) $7 \times (-5 + -8)$	3) [illegible]
4) $(-5 \times 9) \div (5 \times 1)$	5) $(\frac{-36}{6}) - (-3 \times 1)$	6) $(-48 \div 6)(4)$

Curriculum Connection
TEK

Part 10 Write an expression that represents the situation and solve

1) An elevator starts at the ground floor. It travels up 12 floors before going down 8 floors. Next, it travels twice as high as it is now. What floor is the elevator on now?

2) Nate golfed [illegible] last w[illegible] ored a -2 for 3 of the rounds. For each of his other 3 rounds, he [illegible] score for all 6 rounds?

3) Neil rushed for -8 yards in the first quarter of his football game. [illegible]hed for +22 yards in the second quarter. In the last two quarters, he rushed for +13 yards in each quarter. How many total yards did he rush for?

Grade 8

Patterns and Relationships

	Curriculum Expectations	Pages
P8.1	Demonstrate understanding of linear relations concretely, pictorially (including graphs), physically, and symbolically	5 – 68
P8.2	• $ax + b = c$ • $\frac{x}{a} + b = c$ • $a(x + b) = c$ concretely, pictorially, and symbolically, where a, b, and c are integers.	73 - 167
TQ	Tests and quizzes	69 – 72, 168 – 170

Name: _____ 5

Curriculum Connection
PS.1

Increasing Pattern Rules - Adding

Part 1 Continue the increasing patterns below

1) 87, 93, 99, _____, _____, _____

Pattern Rule: Start at 87, add _____ each time

2) 148, 159, 170, _____, _____, _____

Pattern Rule: Start at _____ add _____ each time

3) 287, _____, _____, _____

Pattern Rule: Start at _____ add _____ each time

4) 346, 361, 376, _____, _____, _____

Pattern Rule: Start at _____ each time

5) 503, 528, 553, _____, _____, _____

Pattern Rule: Start at _____

BONUS

Nora gets paid based on how fast she works. She is getting faster each day! Check out her paycheque for the last 5 weeks.

Week	Pay
1	120
2	250
3	390
4	540
5	700

Question

How much will she make in week 10 if the pattern continues?

Part 2 Fill in the blanks below using the pattern rule

1) Start at 27, add 16 each time

2) Start at 9, add 22 each time

3) Start at 15, add 25 each time

4) Start at 74, add 13 each time

5) Start at 118, add 31 each time

Exit Cards

Cut Out Cut out the exit cards below and have students complete them at the end of class

Name: _____

Continuing the increasing patterns.

1) 147.53, 148.61, 149.69, _____,

_____, _____, _____

2) 310.20, 315.30, 320.40, _____,

_____, _____, _____

3) 450.50, 453.53, 456.56, _____,

_____, _____, _____

Name: _____

Continuing the increasing patterns.

1) 147.53, 148.61, 149.69, _____,

_____, _____, _____

2) 310.20, 315.30, 320.40, _____,

_____, _____, _____

3) 450.50, 453.53, 456.56, _____,

_____, _____, _____

Name: _____

Continuing the increasing patterns.

1) 147.53, 148.61, 149.69, _____,

_____, _____, _____

2) 310.20, 315.30, 320.40, _____,

_____, _____, _____

3) 450.50, 453.53, 456.56, _____,

_____, _____, _____

Name: _____ 8

Curriculum Connection P8.1

Decreasing Subtraction Patterns

Shrinking/Decreasing Patterns

-10 -10 -10 -10 -10

60, 50, 40, 30, 20, 10

-5 -5 -5 -5 -5

45, 40, 35, 30, 25, 20

Part 1 Decreasing Patterns - Subtracting

1) _____, _____	2) 122, 116, 110, _____, _____, _____
3) 177, 168, 1_____, _____, _____	4) 264, 253, 242, _____, _____, _____
5) 337, 329, 321, _____, _____, _____	6) 466, 452, 438, _____, _____, _____
7) 597, 574, 551, _____, _____, _____	722, _____, _____, _____
9) 891, 874, 857, _____, _____, _____	10) 80, 9_____, _____, _____

Part 2 Challenging subtraction patterns – f_____ blank_____

1)	125	115	106	98	91					
2)	188	168	150	134	120					
3)	300	250	205	165	130					
4)	700	600	510	430	360					
5)	1000	800	625	475	350					

Curriculum Connection
P9.1

Exit Cards

Cut Out Cut out the exit cards below and have students complete them at the end of class

Name: ____________________

Continue the increasing patterns below and determine the pattern rule.

1) 2, 10, 50, ________, ________, ________, ________, ________

Pattern Rule: Start at ________, multiply by ________ each time.

2) 15, 45, 135, ________, ________, ________, ________, ________

Pattern Rule: Start at ________, multiply by ________ each time.

Name: ____________________

Continue the increasing patterns below and determine the pattern rule.

1) 2, 10, 50, ________, ________, ________, ________, ________

Pattern Rule: Start at ________, multiply by ________ each time.

2) 15, 45, 135, ________, ________, ________, ________, ________

Pattern Rule: Start at ________, multiply by ________ each time.

Name: ____________________

Continue the increasing patterns below and determine the pattern rule.

1) 2, 10, 50, ________, ________, ________, ________, ________

Pattern Rule: Start at ________, multiply by ________ each time.

2) 15, 45, 135, ________, ________, ________, ________, ________

Pattern Rule: Start at ________, multiply by ________ each time.

Name: ____________________

Continue the increasing patterns below and determine the pattern rule.

1) 2, 10, 50, ________, ________, ________, ________, ________

Pattern Rule: Start at ________, multiply by ________ each time.

2) 15, 45, 135, ________, ________, ________, ________, ________

Pattern Rule: Start at ________, multiply by ________ each time.

Name: _____ 13

Curriculum Connection
PS.1

Pattern Rule – Input/Output Tables

Instructions Fill in the input/output tables below

Rule: add 4	
In	Out
112	
121	
143	

Rule: add 7	
In	Out
235	
251	
274	
295	

Rule: add 12	
In	Out
344	
361	
387	
408	

Rule: sub	
In	
473	
486	
504	
527	

e: subtract 11	
	Out
	574
	692
	608
	646

Rule: Subtract 9	
In	Out
778	
791	
807	
	832

Rule: multiply by 2	
In	Out
3	
12	
25	
41	

Rule: multiply by 5	
In	Out
5	
9	
13	
17	

Ru iply by 7	
	ut
8	
10	
12	

Rule: divide by 3	
In	Out
150	
240	
300	
390	

Rule: divide by 4	
In	Out
40	
80	
100	
240	

Rule: divide by 6	
In	Out
48	
72	
120	
180	

Name: _____ 15

Curriculum Connection P8.1

Two-Operation Patterns

Some patterns can be formed with two operations. We can determine the pattern rule by analyzing the gap between the two numbers.

You may need to multiply or divide first and add or subtract after. If you can't determine the pattern that way, try adding or subtracting first, and then multiplying or dividing after.

Practice Two-Operation Patterns – Write the pattern rule and fill in the blanks

1)	1	4	13	40	121		
Rule: Start at 1, multiply by 3, then add 1							
2)	2	6	14	30	62		
Rule:							
3)	3	8	18	38	78		
Rule:							
4)	5	15	35	75			
Rule:							
5)	4	10	22	46	94		
Rule:							
6)	8	22	50	106	218		
Rule:							
7)	3	8	23	68	203		
Rule:							
8)	16	20	28	44	76		
Rule:							

Name: _____ 17

Curriculum Connection
PS1

Algebra Jeopardy

Objective What are we learning about?

To reinforce students' understanding of basic algebraic concepts and their application to solve simple equations and word problems in a fun and competitive game for

Mat will need for the activity.

- Jeopardy the n
- Buzzer or bell

Instructions How you will comp acti

1. Print the Jeopardy board on the next p
2. Divide the class into two teams.
3. Ask one team to go first by selecting a point value.
4. Read the question aloud from the point value.
5. The first team to ring the bell or buzzer gets to answer.
6. If they answer correctly, award them the points. If not, another team can answer.
7. Continue the game until all questions have been answered.
8. Tally the points to determine the winning team.
9. Conclude by discussing what they learned about the topic in the questions.

Name: _____ 18

Jeopardy Questions | Ask students the questions below

$100	$200	$300	$400	$500
87, 93, 99, _____	5.2, 5.5, 5.8, _____	Start at 1, multiply by 3 and add 1, what is the fourth term?	A plant grows 3.5 cm every week. If it was 12.3 cm tall at the start, how tall will it be after 3 weeks?	A builder lays 14.5 bricks per hour. If they have already laid 58 bricks, how many bricks will they have laid after 4 more hours of work?
148, [illegible] 170, _____	[illegible]	[illegible]rt at 6, divide by 2 [illegible]dd 1, what is [illegible]rd [illegible]?	A rabbit population doubles every year. If there are 4 rabbits this year, how many will there be in 5 years?	A runner increases their distance by 1.75 km every week. If they started at 5.25 km, how far will they be running after 10 weeks?
82, 75, 68, _____	18.52, 18.59, 18.66, _____	Start [illegible]ltip[illegible] 2 and ad[illegible], wh[illegible] the fifth ter[illegible]	[illegible]eed increases [illegible]every hour. [illegible]d at 40 km/h, [illegible] speed b[illegible] 4 h	A teacher's class size increases by 3.5 students every term. If the initial class size was 20 students, what will the class size be after 4 terms?
177, 168, 159, _____	35.7, 35.1, 34.5, _____	Start at 3, multiply by 4 and subtract 2, what is the fourth term?	A [illegible]ravel[illegible] meters [illegible] 5 meters o[illegible] day, and 7.5 me[illegible] the third day. How [illegible] will it travel in total by the sixth day?	A[illegible]ives a raise of $[illegible]ery year. If his sta[illegible]45,000, wh[illegible]fter 6
2, 10, 50, _____	17.3, 16.8, 16.3, _____	Start at 7, multiply by 3 and subtract 1, what is the third term?	A train travels 75 km in the first hour, 112.5 km in the second hour, and 150 km in the third hour. How far will it travel in total by the fifth hour?	A swimmer increases their training distance by 2.25 km every week. If they started at 4.75 km, how far will they be swimming after 8 weeks?
9, 18, 36, _____	11.32, 11.53, 11.74, _____	Start at 6, multiply by 5 and add 2, what is the fourth term?	A tree grows 5.5 inches in the first year, 7.5 inches in the second year, and 9.5 inches in the third year. How much will it have grown in total by the sixth year?	A bank account balance increases by $75.50 every month due to interest. If the initial balance was $2500, what will the balance be after 10 months?

Name: _____ 19

Curriculum Connection
PS.1

Recursive vs Functional Relationships

A **recursive relationship** describes the pattern between successive numbers in one of the rows/columns of a table of values. A **functional relationship** is a general rule to describe the relationship between two variables in a table of values. For a functional relationship, we look across the table instead of beside.

Part 1 — Is Hanna describing the recursive or functional relationship?

	Pattern				Hanna's Description	Recursive or Functional
1)	x			4	The pattern goes up by 5 each time.	
	y	7		22		
2)	x	5		15	y variable goes up by 50 each time	
	y	50	100	00		
3)	x	1	2	3	is multiplied	
	y	8	15	22	29	y 7 an dded	
4)	x	1	2	3	4		
	y	5	14	23	32		
5)	x	1	2	3	4	Start at 17, add 6 each	
	y	17	23	29	35		

Part 2 — Provide a recursive and functional description of the patterns

	Pattern				
1)	x	1	2	3	4
	y	4	11	18	25

Recursive	
Functional	

	Pattern				
2)	x	1	2	3	4
	y	20	45	70	95

Recursive	
Functional	

Name: _____ 20

Curriculum Connections
P8.1

Table of Values – Finding Term N

When finding a random term in a pattern, we can use a variable. Often *n* is used to take the place of the term number. When we use *n*, we can change the value to find the term value for any term number.

We can find the value for *n* by looking at the pattern between the term number and term value. To do this, we look across the table from the term number to the term value.

Practice ...ind the pattern rule when you look across the table of values

Term Number	Term Value
1	
2	12
3	18
4	
5	
8	

1) 6n

Term Number	Term Value
1	3
2	8
3	
4	
5	
9	

2) 5n - 2

Term Number	Term Value
1	4
2	8
3	12
4	16
5	

3) _____

Term Number	Term Value
1	9
2	16
3	23
4	30
5	
9	

4) _____

Term Number	Term Value
1	6
2	9
3	12
4	15
5	
10	

5) _____

Term Number	Term Value
1	4
2	10
3	16
4	22
5	
11	

6) _____

Name: _____ 22

Curriculum Connection
PS.1

Using Algebraic Expressions

In the expression $6y + 5$, the 6 is the **numerical coefficient** of the variable and the 5 is the **constant term**. The **variable** is the y, which can represent any number.

Part 1 Use the algebraic expression to fill in the tables

Term Number	Term Value
1	
2	
3	
4	
5	
8	

1) $5x + 2$

Term Number	Term Value
1	
2	
3	
4	
5	
9	

Term Number	Term Value
1	
2	
3	
4	
5	
11	

3) $t + 9$

Term Number	Term Value
1	
2	
3	
4	
5	
11	

4) $4n - 3$

Term Number	Term Value
1	
2	
4	
5	
10	
20	

5) $20 \div x + 8$

Term Number	Term Value
1	
2	
3	
4	
5	
11	

6) $7x - 6$

Part 2 Write 4 algebraic expressions using:
Variable = n Constant term = 12 Numerical coefficient = 4

1	
2	

3	
4	

Name: _____ 23

Curriculum Connections
P8.1

Pattern Rule – Input/Output Tables

Instructions Fill in the input/output tables below

1)

In n	Out $3n$
1	
2	
3	
4	
5	

2)

In n	Out $3n + 2$
1	
2	
3	
4	
5	

3)

In n	Out $4n - 4$
1	
2	
3	
4	
5	

4)

In x	Out $5x - 4$
10	
20	
30	
40	
50	

5)

In	Out $10x$
2	
4	
6	
8	
10	

6)

In x	Out $50 + x$
1	
9	

7)

In p	Out $7p + 20$
20	
40	
60	
80	
100	

8)

In p	Out $10p - 15$
3	
6	
9	
12	
15	

9)

In p	Out $8p + 100$
5	
10	
15	
20	
25	

Exit Cards

Cut Out Cut out the exit cards below and have students complete them at the end of class

Name: _____

Fill in the input/output tables below.

In n	Out $12x \div 3$
3	
5	
7	
9	
11	

Name: _____

Fill in the input/output tables below.

In n	Out $12x \div 3$
3	
5	
7	
9	
11	

Name: _____

Fill in the input/output tables below.

In n	Out $12x \div 3$
3	
5	
7	
9	
11	

Name: _____

Fill in the input/output tables below.

In n	$12x \div 3$
3	
5	
7	
9	
11	

Name: _____ 25

Curriculum Connection
P9.1

Activity Title: Algebraic Adventure Hunt

Objective What are we learning about?

To help students understand and practice filling in input/output tables using given expressions involving all four operations through a fun and engaging treasure hunt.

Materials What you will need for the activity.

- St tch or d use a smartphone)
- Index card
- Markers
- Small prizes o s (fo s)
- Tape

Instructions How you will comp acti

1) Cut out the index cards with the input/out es pr se will be the treasure hunt challenge questions.
2) Hide these cards around the classroom or in a desig e o are taping them under chairs, desks, or tucked into non-obvious sp
3) Divide the class into small teams and give each team a stopwa
4) Explain the game: each team will hunt for a card, fill in the table as q kly as they can, and return to you for verification.
5) Start the timer when you say "Go!" Each team rushes to find their first card.
6) When a team thinks they have the correct answer, they come back to you for verification. If they get it right, the teacher keeps the card. If the answer is wrong, they can try again or hide the card back in its original spot and find a new card.
7) The game continues until all cards are found or you call time. The team with the most correct answers wins.
8) Discuss the game, focusing on the concepts taught on the cards.

Name: _____ 26

Curriculum Connection
P8.1

Instructions Cut out the cards below

In j	Out 44j ÷ 4	In u	Out u ÷ 4 + 12	In c	Out 16c ÷ 2	In a	Out 3a + 37
3		4		3		2	
6		8		5		3	
9		12		7		4	
12		16				5	
15		20					

In k	Out k + 120	In l	Out l ÷ 5	In x	Out 40e − 3	Out 15x
100		1		2		
150		2		4		
200		3		6		
250		4		8		
300		5		10		

Name: _____ 27

Curriculum Connection
P8.1

Instructions Cut out the cards below

In r	Out r ÷ 5	In p	Out p ÷ 4 + 40	In u	Out u ÷ 7 − 21	In z	Out 3z + 1
25		12		14			
50		24		28		115	
75		36		42		125	
100		48				135	
125		60				145	

In u	Out u ÷ 5 + 7	In z	Out 4z +	In a	Out 32o − 11	In a	Out 4a + 17
10		2				8	
20		4		10		16	
30		6		15		24	
40		8		20		32	
50		10		25		40	

Name: _____ 28

Curriculum Connection
P8.1

Instructions Cut out the cards below

In z	Out z − 5+35	In x	Out x + 5 +300	In v	Out 4v−16+1	In t	Out t + 92−11
10		10		33		30	
20		20		66		60	
30		30		99		90	
40		40				120	
50		50				150	

In z	Out 16z + 4	In y	Out 8y +	In u	Out 6w + 62	In u	Out u ÷ 4 − 5
1		3				40	
2		5		8		60	
3		7		12		80	
4		9		16		100	
5		11		20		120	

Name: _____ 30

Curriculum Connections
P9.1

Growing Patterns

Instructions How many blocks are in each term? Sketch the next 3 terms

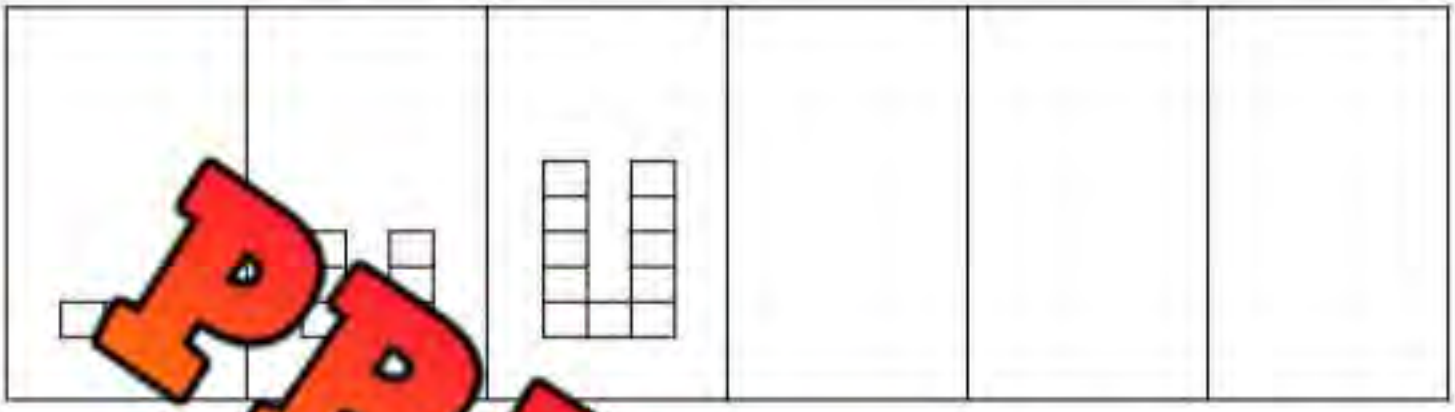
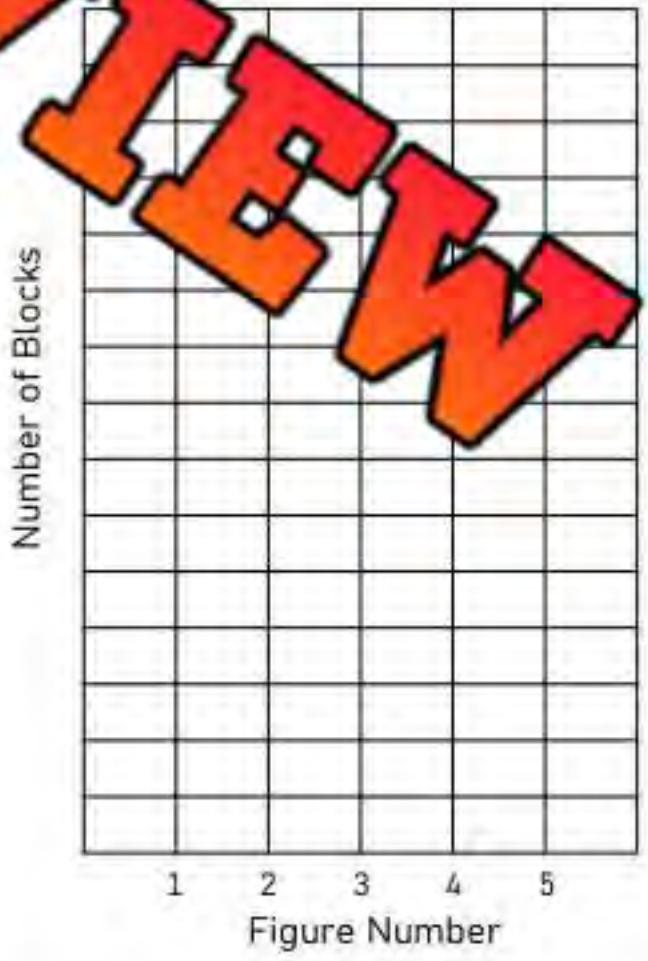


Figure Number			3	4	5	20	50
Number of Blocks							

1) Describe the recursive pattern?

2) What is the functional relationship between the variables? (Write the expression)

3) How many blocks would the 100th figure have?

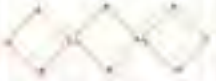


Name: _____ 32

Curriculum Connection P8.1

Matchstick Growing Patterns

Instructions How many matchsticks are in each term? Sketch the next 2/3 terms

F-1	F-2	F-3	F-4	F-5	F-6
					

Write the functional relationship:

Figure #	1	2	3	4	5	6	20
# of matchsticks							

F-1	F-2	F-3	F-4	F-5	F-6
					

Write the functional relationship:

Figure #	1	2	3	4	5	6	20
# of matchsticks							

F-1	F-2	F-3	F-4	F-5	F-6
					

Write the functional relationship:

Figure #	1	2	3	4	5	6	20
# of matchsticks							

Name: _____ 33

Curriculum Connection P8.2

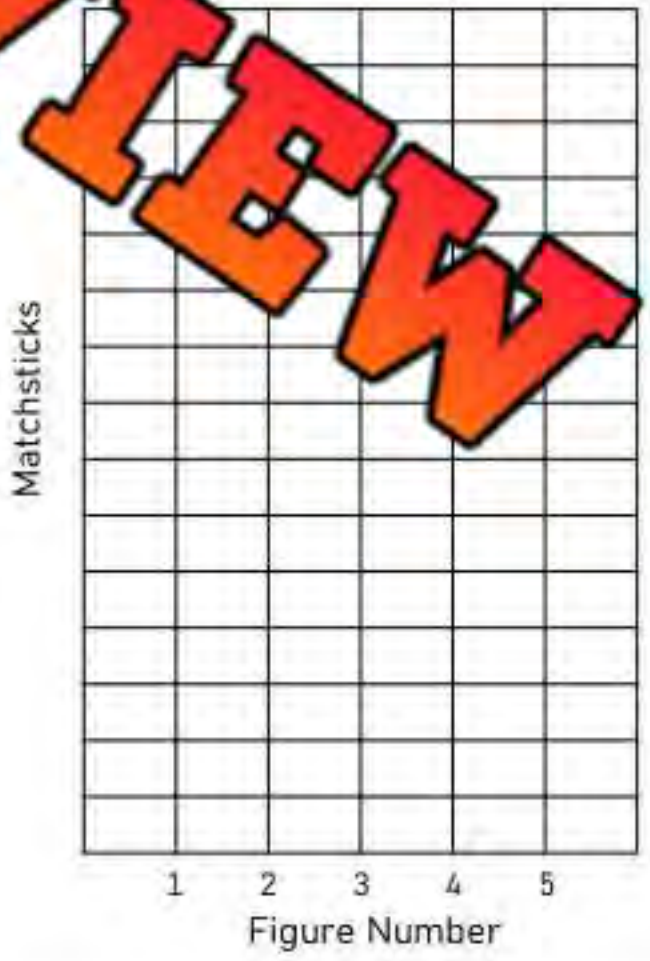
Matchstick Growing Patterns

Instructions How many matchsticks are in each figure? Draw the next 2 figures

F-1	F-2	F-3	F-4	F-5
				

Figure Number	1	2	3	4	5	10	20
Number of Matchsticks							

Questions
1) Write an expression that represents the functional relationship.
2) How many matchsticks will the 7th term have?
3) How many matchsticks will the 10th term have?
4) What figure would use 201 matchsticks?



Name: _____ 35

Two-Variable Linear Relationships PS.1

Two-Variable Linear Relationships

A **two-variable linear relationship** is when the increasing or decreasing of one variable causes a corresponding increase or decrease in the other variable. For example, driving 100km/hr would be a linear relationship between time driving and distance driven (for every hour driven, you travel 100km). As you drive longer, you travel further at a predictable distance.

Instructi Fill in the tables and answer the questions.

1) Ch… for today has been represented in the table below

Ho… orked (…	1	2	3	4	5	6	7	8
Money Earn…		44	66					

a) Is the relati… betw… variables linear? Yes No

b) What is the funct… onshi… een variables? _____

2) John sells cars. He earns a comm… …lls a car. His earnings for last week are represented in … ble be… …e were some days he did not earn commission.

Days Worked (x)	0	1	2			6	7
Money Earned (y)	0	140	280	620	…	90…	…40	1280

a) Is the relationship between variables linear? Yes …

b) If you graphed this relationship, would the line be straight… …ain.

_____

_____

3) Greg has a membership to a shopping website. He pays a yearly membership fee and orders the same thing each week for 10 weeks. His spending is displayed below.

Weeks (x)	0	1	2	3	4	5	6	7
Money Spent (y)	50	80	110	140	170	200	230	260

a) Is the relationship between variables linear? Yes No

b) What is the functional relationship between variables? _____

c) If you graphed this relationship, would the line be straight or curved? Explain.

_____

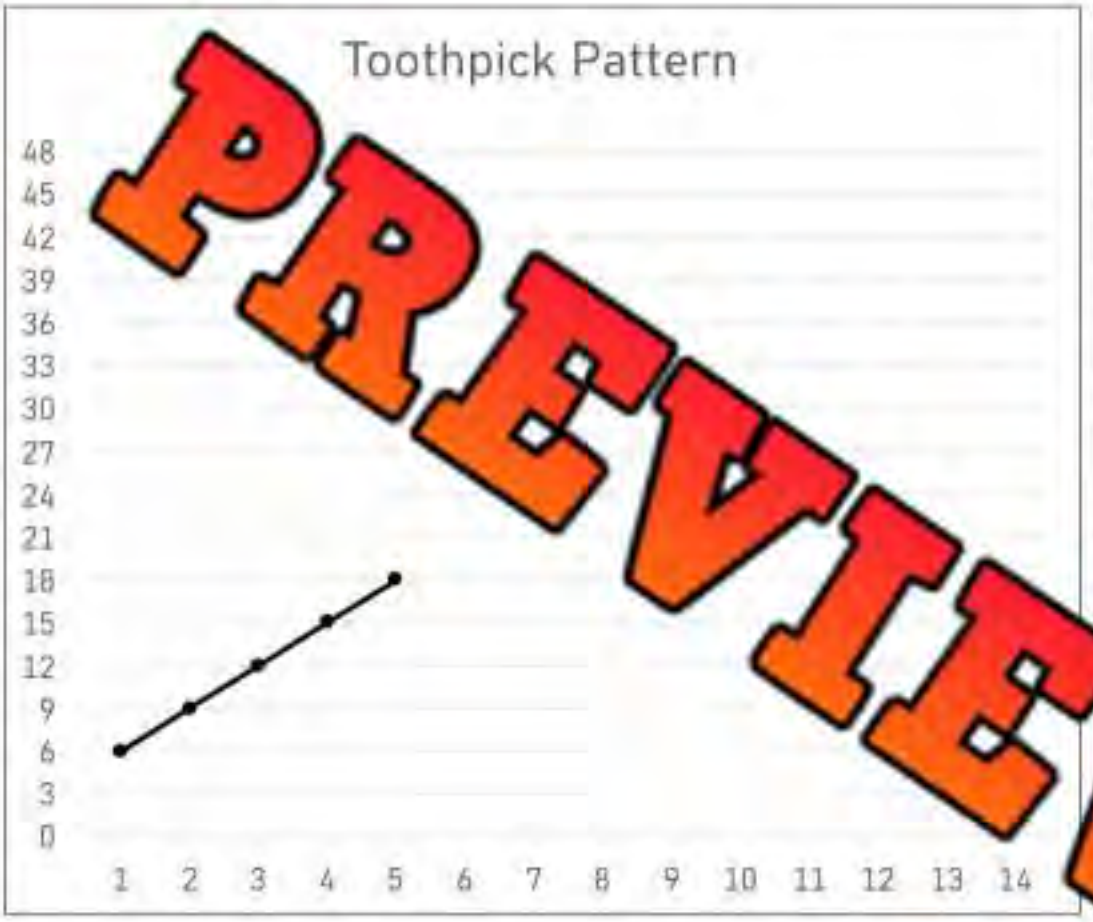
Name: _____ 37

Curriculum Connection
P8.1

Reading a Linear Pattern - Graph

A **linear** pattern displays a constant rate of change. The pattern increases or decreases by the same amount each time.

Instructions Continue the line on the graph and fill in the table of values



Term Number	Term Value
1	
2	
3	
4	
5	
6	
7	
8	
9	
10	
11	

1) Draw the toothpick pattern below for the graph/table of values. Use any design you'd like.

Term 1	Term 2	Term 3	Term 4	Term 5

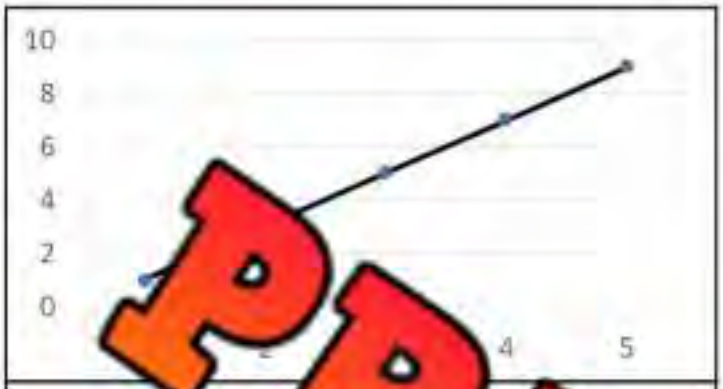
2) What is the constant rate of change?

Name: _____ 38

Curriculum Connection
P8.1

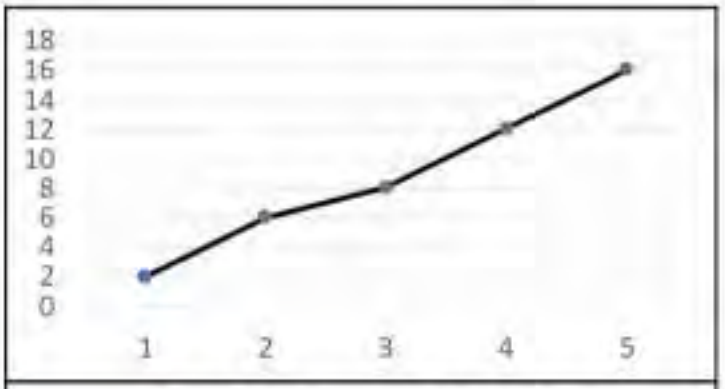
Increasing Linear Patterns – Yes or No?

Instructions Circle if the pattern displayed on the graph is linear or not



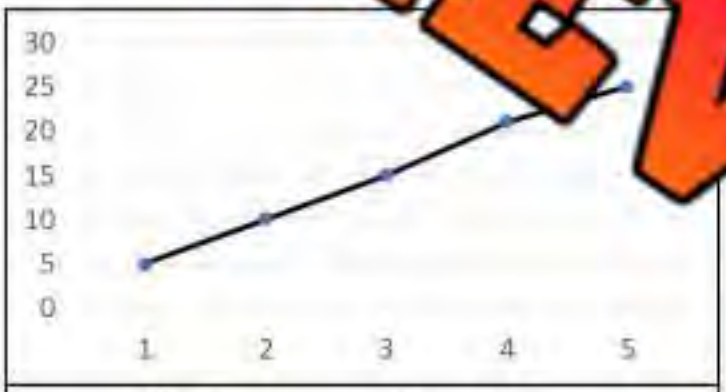
1) Lin Lin

Rat ge =



2) Linear Non-Linear

Rate of change =

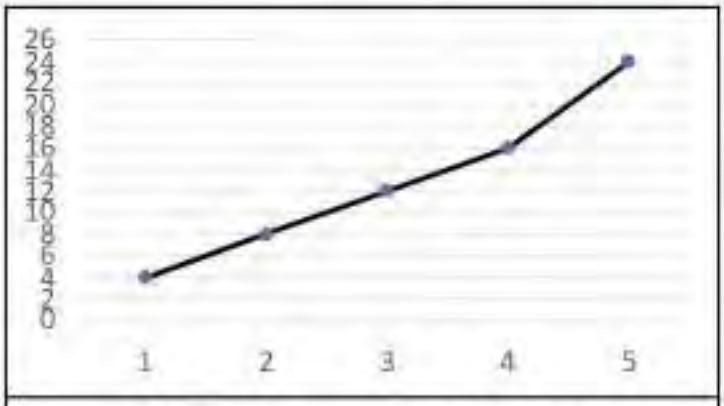


3) Linear Non-Linear

Rate of change =

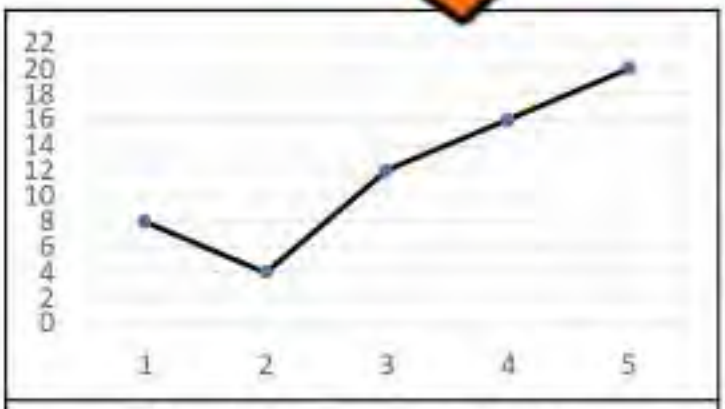
4) Lin ar

Rate o ar



5) Linear Non-Linear

Rate of change =



6) Linear Non-Linear

Rate of change =

Name: _____ 39

Curriculum Connection
PS.1

Increasing Linear Patterns – Yes or No?

Instructions Circle if the pattern is linear or not, based on the table of values

Term Number	Term Value
1	5
2	9
3	13
4	
5	
Linear	Non-Linear

Term Number	Term Value
1	37
2	44
3	51
4	57
5	64
Linear	Non-Linear

Term Number	Term Value
1	88
2	96
3	104
4	112
5	120
Linear	Non-Linear

Term Number	Term Value
1	2.5
2	4.5
3	6.5
4	8.5
5	10.5
Linear	Non-Linear

Term Number	Term Value
1	
2	
3	
4	17.5
5	21.5
Linear	Non-Linear

Term Number	Term Value
1	200
2	275
3	350
4	425
5	
	h-Linear

Term Number	Term Value
1	44.0
2	47.5
3	50.5
4	54.0
5	57.5
Linear	Non-Linear

Term Number	Term Value
1	140
2	280
3	420
4	580
5	720
Linear	Non-Linear

Term Number	Term Value
1	112.1
2	112.3
3	112.5
4	112.7
5	112.9
Linear	Non-Linear

Name: _____ 41

Curriculum Connection
PS:1

Integer Patterns - Adding

-20	-19	-18	-17	-16	-15	-14	-13	-12	-11	-10	-9	-8	-7	-6	-5	-4	-3	-2	-1

0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20

Instructions Fill in the blanks below using the pattern rule

1) Start at 0, add 3 each time

2) Start at 4, add 4 each time

3) Start at -17, add 2 each time

4) Start at 19, add -5 each time

5) Start at 15, add -4 each time

6) Start at -3, add -2 each time

7) Start at 12, add -5 each time

8) Start at -20, add 4 each time

9) Start at 20, add -4 each time

10) Start at -16, add 3 each time

Name: _____ 43

Curriculum Connections
P8.1

Pattern Rule – Input/Output Tables - Integers

Instructions Fill in the input/output tables below

1)

In n	Out $n + (-5)$
1	
2	
4	
5	

2)

In n	Out $2n + (-3)$
1	
2	
3	
4	

3)

In n	Out $n + 9$
-1	
-2	
-3	
-4	
-5	

4)

In x	Out $x + (-3)$
-2	
-4	
-6	
-8	
-10	

5)

In	Out
4	
6	
8	
10	

6)

In x	Out $x + 13$
-1	

7)

In p	Out $2p + (-12)$
20	
40	
60	
80	
100	

8)

In p	Out $p + (-15)$
-3	
-6	
-9	
-12	
-15	

9)

In p	Out $p + (-12)$
-3	
-1	
2	
4	
6	

Exit Cards

Cut Out Cut out the exit cards below and have students complete them at the end of class

Name: _____

Fill in the input/output tables below

In n	Out $+ (-7)$
-2	
5	
10	
20	

Name: _____

Fill in the input/output tables below

In n	Out $5n + (-7)$
-2	
2	
5	
10	

Name: _____

Fill in the input/output tables below

In n	Out $5n + (-7)$
-2	
2	
5	
10	
20	

Name: _____

Fill in the input/output tables below

In n	Out $5n + (-7)$
-2	
2	
5	
10	
20	

Name: _____ 46

Curriculum Connection
P8.1

Integer Patterns – Writing Subtraction Rules

-20	-19	-18	-17	-16	-15	-14	-13	-12	-11	-10	-9	-8	-7	-6	-5	-4	-3	-2	-1
0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20

Part 1 Write the subtraction pattern rule and complete the pattern

1)						
7	4	1	-2			

2)						
		-2	2			

3)						
-19			-1			

4)						
17	12					

5)						
-20	-16	-12	-8			

6)						
-18	-16	-14	-12			

7)						
-3	0	3	6			

Part 2 Write your own pattern and pattern rule by filling in the table

1)						

2)						

3)						

Name: _____ 47

Curriculum Connection P8.1

Pattern Rule – Input/Output Tables

Instructions Fill in the input/output tables below

1)

In n	Out $n - (-4)$
1	
2	
4	
5	

2)

In n	Out $4n - 6$
1	
2	
3	
4	

3)

In n	Out $n - 7$
-1	
-2	
-3	
-4	
-5	

4)

In x	Out $x - (-9)$
-2	
-4	
-6	
-8	
-10	

4	
6	
8	
10	

6)

In x	Out $x - 7$
-1	

7)

In p	Out $7p - 15$
20	
40	
60	
80	
100	

8)

In p	Out $p - (-14)$
-3	
-6	
-9	
-12	
-15	

9)

In p	Out $p - (-22)$
-3	
-1	
1	
3	
5	

Name: _____ 48

Task Cards: Patterning – All Operations

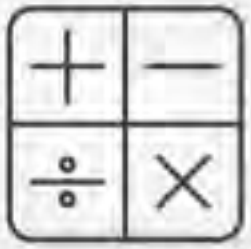
Objective What are we learning about?

To recognize and create patterns using the four basic mathematical operations.

Materials What you will need for the activity.

- 24 t
- S et
- P

er for answers



Instructions ou w the activity

1. Introduce the concept o s in perations and their relevance to problem-solving in everyda e.
2. Organize the students into pairs an ovide e air their sets of task cards.
3. Give each pair an answer recording sheet t do ses.
4. Encourage teamwork by having students collabora ir p on finding solutions.
5. Allow students to select any task card to begin with, emphasiz n complete the cards in any order they prefer.
6. Instruct students to record the letter of their chosen answer (A, B, or C) on their answer sheet beside the task card's number.
7. Consider using a timer to create a dynamic challenge, adjusting the duration to fit the lesson's objectives and complexity.
8. After the activity, review the answers collectively, discussing any challenging patterns and strategies used to solve them.
9. Have students reflect on the activity, sharing the methods they applied and obstacles they overcame.

Name: _____ 48

Curriculum Connection P8.1

Task Cards | Cut out the task cards below

Card 1:
Start with 70. Subtract 30 and then add 10 for the next number. What is the second number?

a) 40
b) 50
c) 60

Card 5:
Start at -20, add 15 each time. What is the third number?

a) 10
b) -5
c) 20

Card 2:
Begin with 90, th[illegible]ivide by 5 for the nex[illegible] What [illegible]ird n[illegible]?

a) 22
b) 26
c) 8.4

Card 6:
Start with -35. Multiply by 3 and then add 20 for the next number. What is the second number?

a) -85
b) -105
c) -55

Card 3:
Begin with 100. Subtract 40 and then multiply by 2 for the next number. What is the fourth number?

a) 20
b) 240
c) 120

Star[illegible]d then add 12 for the [illegible]ber. [illegible]s the second [illegible]m[illegible]

a)
b) 24
c) 16

Card 4:
Start with 30. Multiply by 3 and then subtract 15 for the next number. What is the fifth number?

a) 1260
b) 75
c) 1830

Card 8:
Begin with 180. Divide by 6 and then subtract 10 for the next number. What is the second number?

a) 10
b) 20
c) 25

Task Cards | Cut out the task cards below

Card 17:
Start with 45. Add 25 and then subtract 30 for the next number. What is the sixth number?

a) 40
b) 25
c) 20

Card 21:
Start at -25, add 20 each time. What is the seventh number?

a) 100
b) -35
c) 95

Card 18:
Begin with 2[illegible] 80[illegible] then divide by 4 fo[illegible] num[illegible] is the sec[illegible]umb[illegible]

a) 30
b) 25
c) 20

Card 22:
Start with -45. Multiply by 3 and then add 25 for the next number. What is the third number?

a) -110
b) -220
c) -305

Card 19:
Begin with 75. Subtract 35 and then multiply by 3 for the next number. What is the fourth number?

a) 1875
b) 660
c) 255

Card 23:
Sta[illegible] [illegible]d then add 9 for the [illegible]ber. [illegible]s the fourth [illegible]m[illegible]

a) [illegible]
b) 11
c) 19

Card 20:
Start with 50. Multiply by 2 and then subtract 25 for the next number. What is the third number?

a) 75
b) 125
c) 100

Card 24:
Begin with 170. Divide by 5 and then subtract 10 for the next number. What is the second number?

a) 20
b) 24
c) 34

Name: _____ 52

Curriculum Connection
PS.1

Linear Equations – Table of Values

A **linear equation** is an equation that is written for two different variables. The variables have a relationship where they increase or decrease at the same rate. This means when the variables are plotted on a graph, the line will be straight.

It is helpful to use a table of values to represent the values of both variables. This allows us to see the relationship between the variables. We can find any missing value by using an equation that represents the relationship between the variables. A related pair of x and y values is called an ordered pair.

Practice Complete the tables using the equations below

x	y
1	
2	14
3	20
4	
5	
6	

1) $y = 6x + 2$

x	y
1	-2
2	1
3	
4	
5	
9	

2) $y = 3x - 5$

x	y
1	
2	
3	
4	
5	

x	y
1	
2	
3	
4	
5	
9	

4) $y = 4x - 7$

x	y
1	
2	
3	
4	
5	
10	

5) $y = -3x - 4$

x	y
1	
2	
3	
4	
5	
11	

6) $y = 5x - (-8)$

Exit Cards

Cut Out Cut out the exit cards below and have students complete them at the end of class

Name: _____

Write the equation that represents the relation between x and y.

x	y
1	
2	-5
3	-11
4	
5	
12	

Name: _____

Write the equation that represents the relation between x and y.

x	y
1	1
2	-5
3	-11
4	-17
5	
12	

Name: _____

Write the equation that represents the relation between x and y.

x	y
1	1
2	-5
3	-11
4	-17
5	
12	

Name: _____

Write the equation that represents the relation between x and y.

x	y
1	1
2	-5
3	-11
4	-17
5	
12	

Name: _____ 55

Curriculum Connection
P8.2

Linear Equations – Table of Values

Practice Make a table of values for each relation

1) $y = 3x + 2$

2) $y = 5x - 6$

3) $y = -2x + 3$

4) $y = 4x - 2$

6) $y = -7x - 8$

Challenge Can you determine the equation using the

These ordered pairs are in the same linear relation: (-2, -4), (0, 4), (2, 12), (4, 20)

a) What is the equation that represents the values in the ordered pairs?

b) Fill in the missing value in the ordered pairs.
(1, ___), (3, ___), (8, ___), (-4, ___), (-8, ___), (___, 56) ,(___, -56)

c) Fill in the table of values for the linear relation.

x	-6	-3	0	5	7	12	15	20
y								

Name: _____ 56

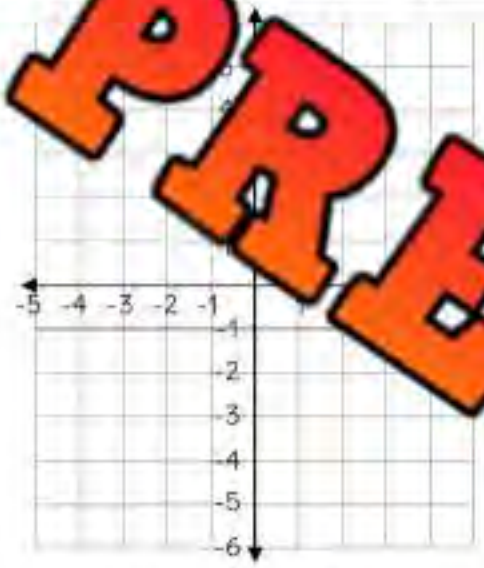
Curriculum Connection
P8.1

Linear Equations – Graphing 2 Variables

Instructions Fill in the table of values and then graph the results using ordered pairs

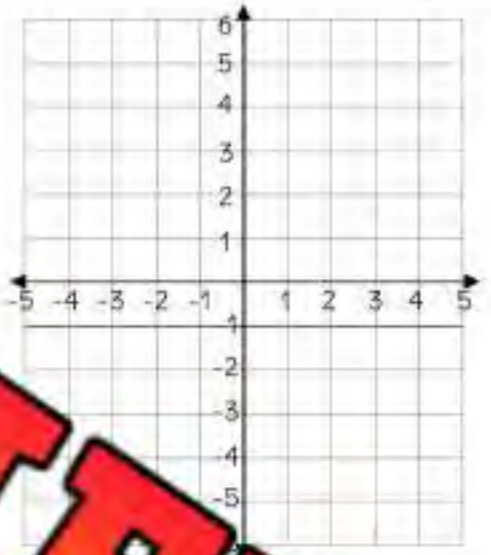
1) $y = 2x - 2$

x	0	1	2	3	4
y					



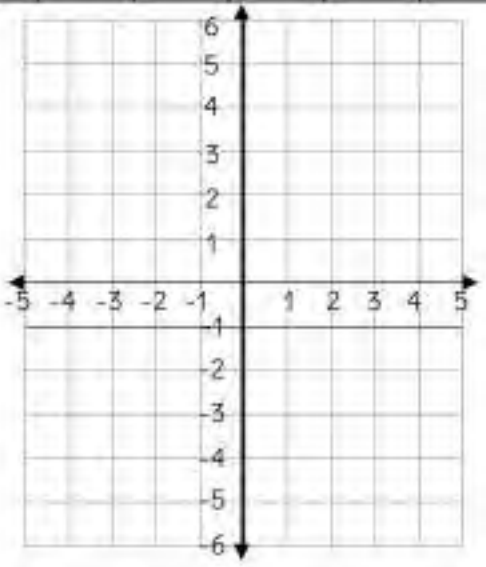
2) $y = 3x - 6$

x	0	1	2	3	4
y					



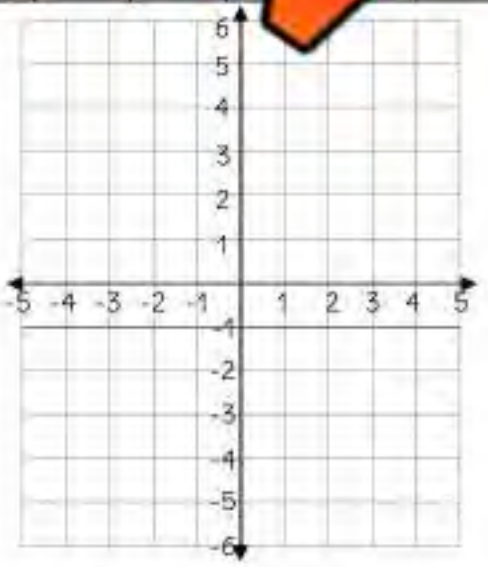
3) $y = -x + 2$

x	0	1	2	3	4
y					



$y =$ 3

x		1			
y					



Name: _____ 57

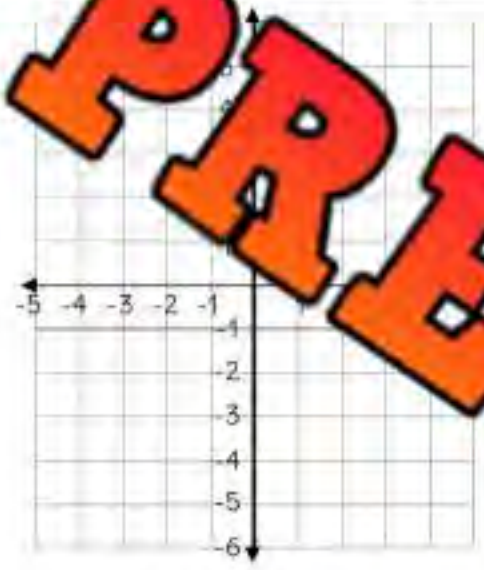
Curriculum Connection
P8.1

Linear Equations – Graphing 2 Variables

Instructions Fill in the table of values and then graph the results using ordered pairs

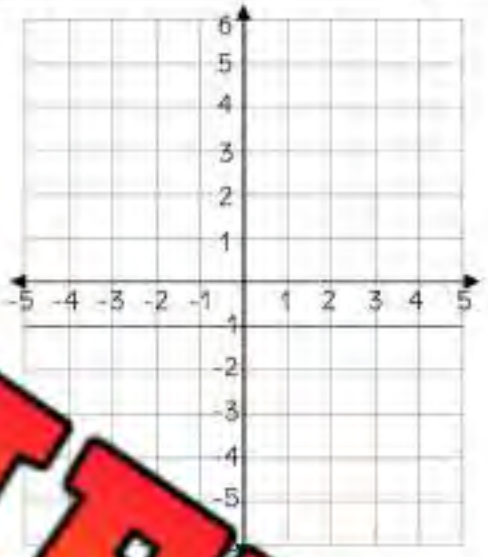
1) $y = -2x - 2$

x	0	1	2	3	4
y					



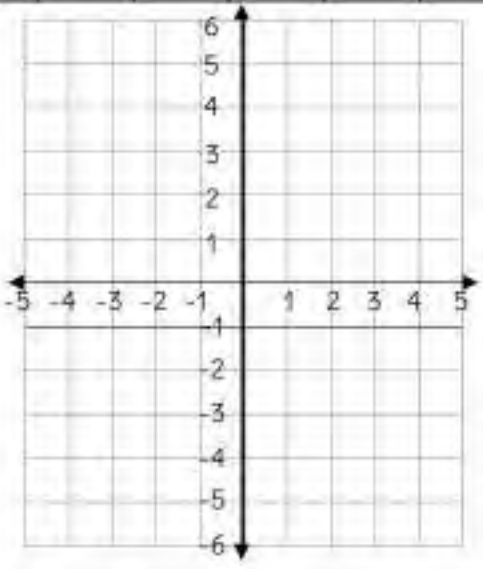
2) $y = -x + 4$

x	0	1	2	3	4
y					



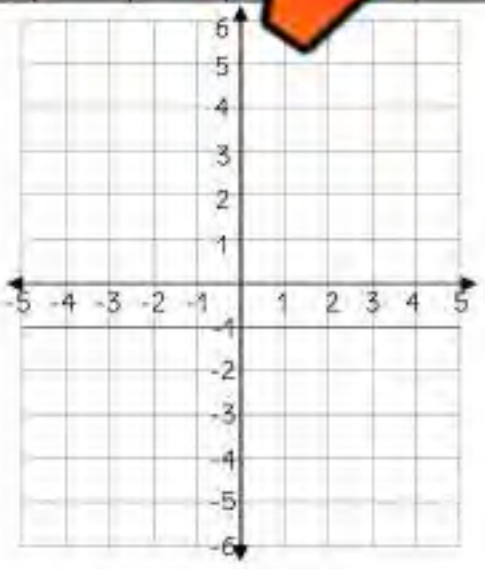
3) $y = -3x + 4$

x	0	1	2	3	4
y					



4) $y = \quad + 4$

x		1			
y					



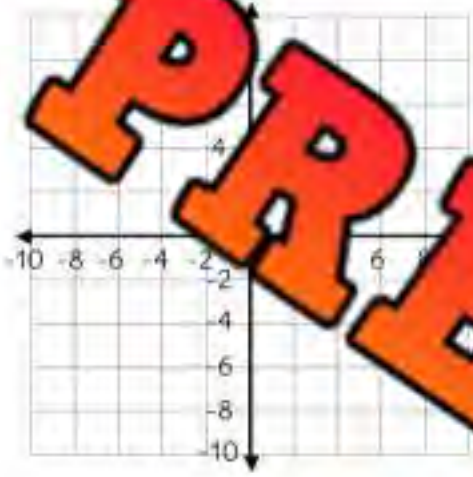
Name: _____ 58

Curriculum Connection
PS.1

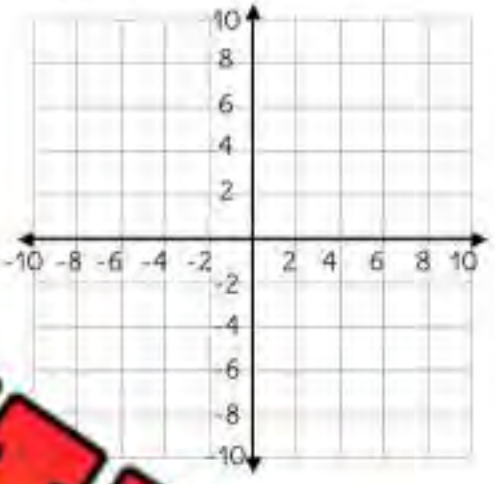
Linear Equations – Graphing 2 Variables

Instructions Graph the equations below. Create a table of values if necessary

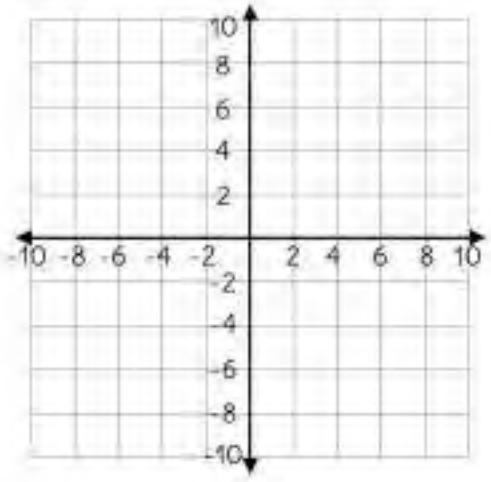
1) $y = 3x - 4$



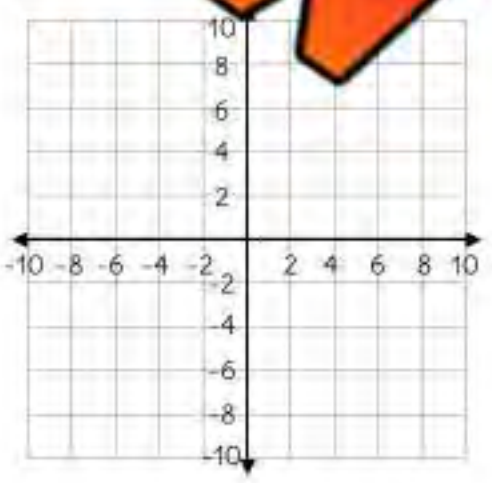
2) $y = -4x + 10$



3) $y = -3x + 8$



4) $y = 4$



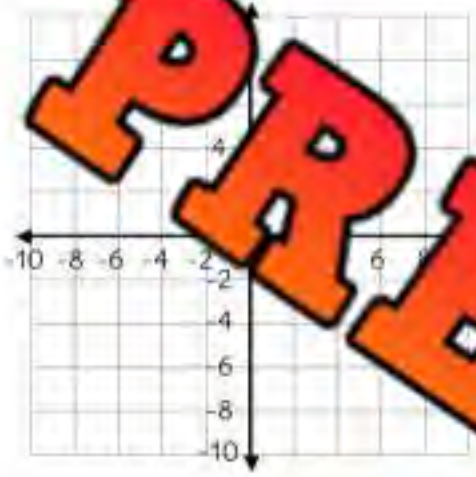
Name: _____ 59

Curriculum Connection
P8.1

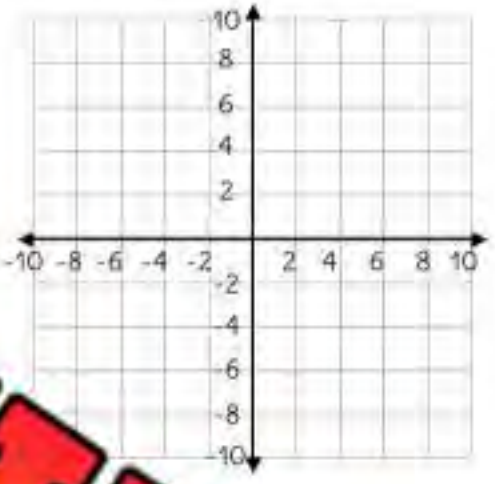
Linear Equations – Graphing 2 Variables

Instructions Graph the equations below. Create a table of values if necessary

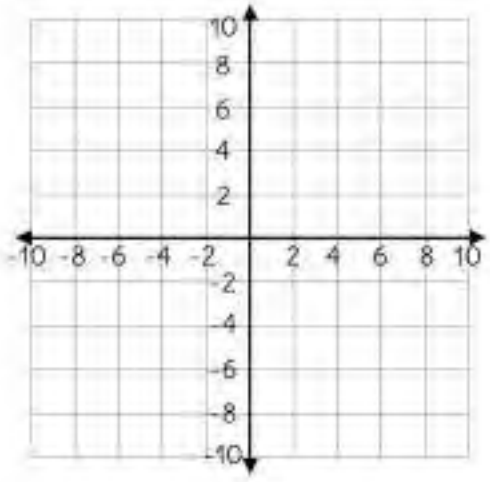
1) $y = 2x - 3$



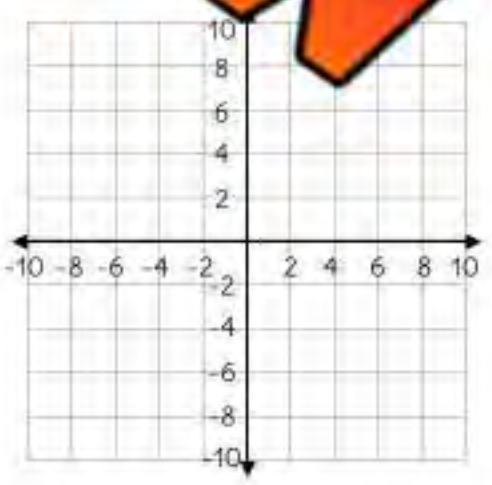
2) $y = -2x + 1$



3) $y = x - 4$



4) $y =$



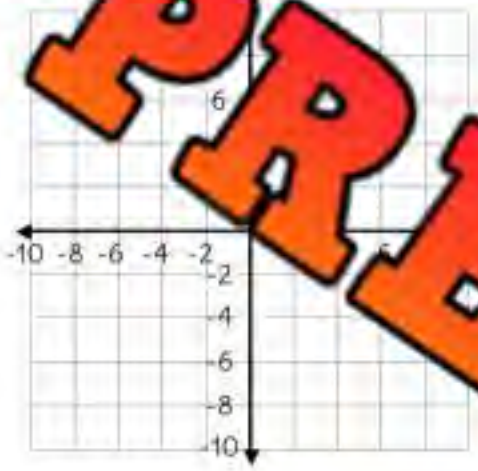
Exit Cards

Cut Out Cut out the exit cards below and have students complete them at the end of class

Name: _____

Graph the equations below.

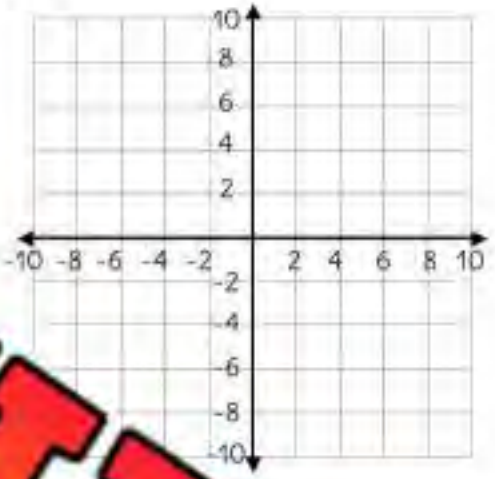
y = -6x +



Name: _____

Graph the equations below.

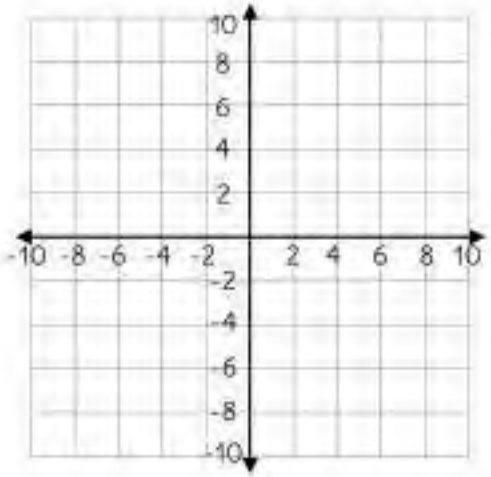
y = -6x + 4



Name: _____

Graph the equations below.

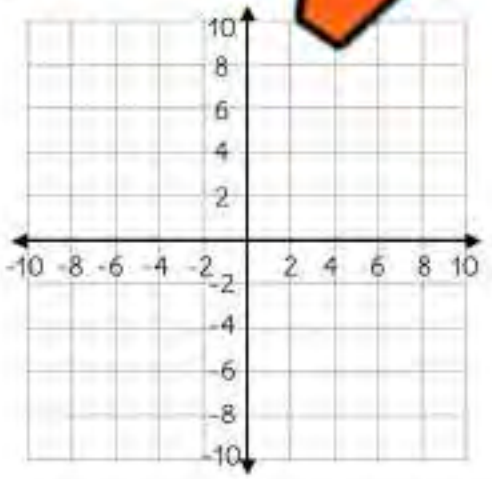
y = -6x + 4



Name: _____

Graph the equation

y = -6x + 4



Name: _____ 61

Curriculum Connection P8.2

Two-Variable Linear Relationship - Scientist

Challenge | Answer the word problem below

Mrs. Ferrety teaches a grade 8 class. She invited a scientist to join her class to do some experiments with them. The scientist charges $40 for the materials they use for the experiments, plus an additional $3 per student who is in the class.

a) Fill in the table of values below using the linear equation: $y = 3x + 40$

# of Students						
Cost						

b) Graph the table of values

Questions

a) Fill in the missing values in the ordered pairs below:

(25, _____), (50, _____), (100, _____)

(_____, 67), (_____, 85), (_____, 106)

b) If 28 students are in the class, how much money will the scientist earn for their presentation?

c) If the scientist earned $136, how many students were in the class?

Name: _____ 63

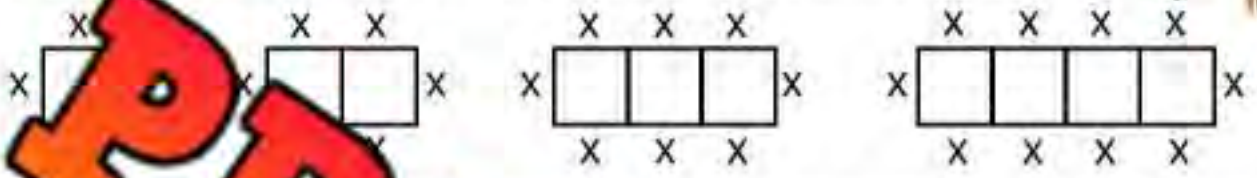
Curriculum Connection
PS.1

Graphing Linear Equations - Tables

Challenge Answer the word problem below

You have been put in charge of organizing the end of year banquet for your baseball team. You want to have as many seats as you can.

The diagram below shows how many people can sit at the tables.



Fill in the table below to represent the relationship between the number of tables and seats.

Tables (*x*)			4	5	10	20	50
# of Seats (y)							

Questions
a) Write the linear equation that represents this problem.
b) If you had 61 tables, how many seats would you have?
c) Fill in the missing values in the ordered pairs below (15, _____), (75, _____), (135, _____) (_____, 132), (_____, 174), (_____, 500)
d) If you had 100 people attending the banquet, how many tables would you need?

Name: _____ 64

Curriculum Connection
PS.1

Two-Variable Linear Relationship – Moving Day

Challenge Answer the word problem below

Aiden's family is moving. They rented a moving truck for $50 a day. They are charged an additional $0.50 for every 1km they drive.

1) Fill in the table of values below

2) Graph the data values

3) Questions

a) Write the linear equation that represents this problem.

b) If Aiden's family drove 330km in one day, how much would they need to pay?

c) Fill in the missing values in the ordered pairs below.

(15, _____), (75, _____), (135, _____)

(_____, 130), (_____, 240), (_____, 500)

d) Aiden's family owes $660 to the moving company. How far did they drive?

Name: _____ 65

Curriculum Connection
P8.1

Linear Equations – Graphing 2 Variables

Instructions Fill in the table of values and then graph the results using ordered pairs

Matt is hosting a pizza party. He will buy 2 slices for each person coming and 4 extra slices in case someone shows up unexpectedly. He determined an equation that will help him decide how many slices to buy: $y = 2x + 4$

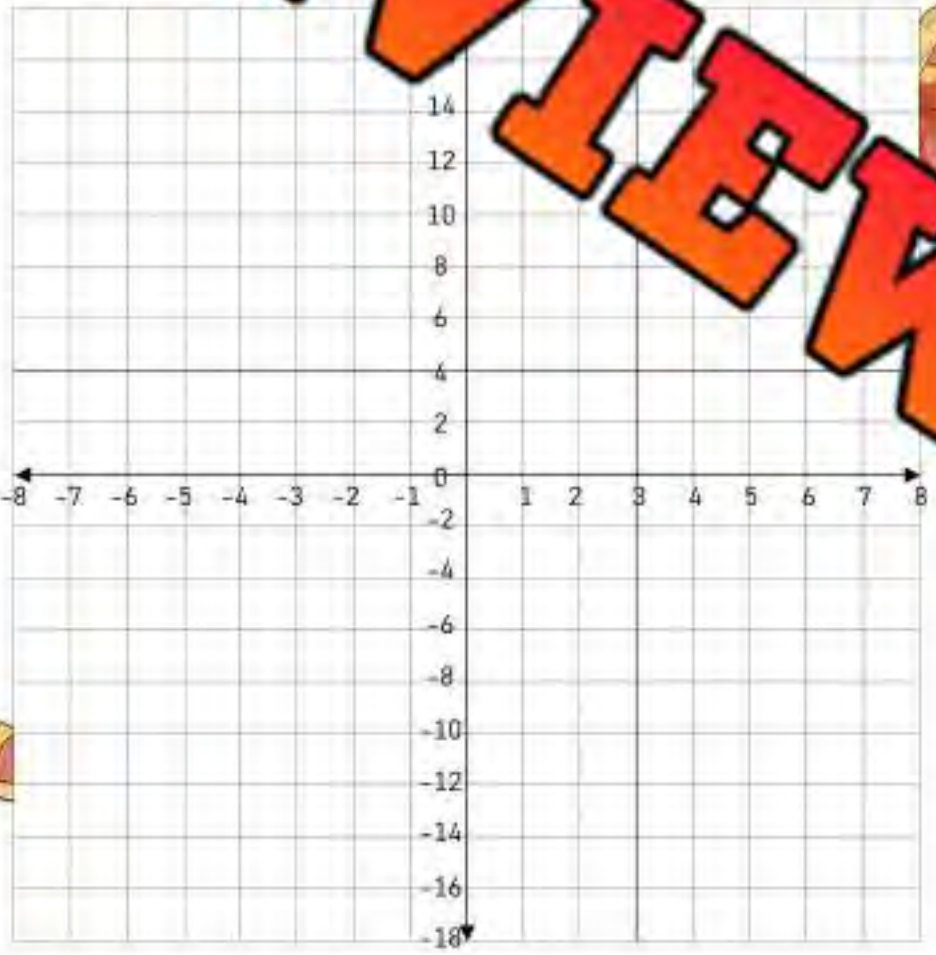
a) Fill in the table of values using the equation above.

x		1	2	3	4	5	6
y							

b) Represent the values on the graph. Connect the dots using a line. Is the relation linear? Explain.

_____

_____



Name: _____ 66

Curriculum Connection P8.1

Linear Equations – Graphing 2 Variables

Instructions Fill in the table of values and then graph the results using ordered pairs

Hadley sells her homemade scarfs at a flee market. It costs her $10 to rent a table but she makes $5 each hour she is there. She uses the following equation to represent her earnings: $y = 5x - 10$

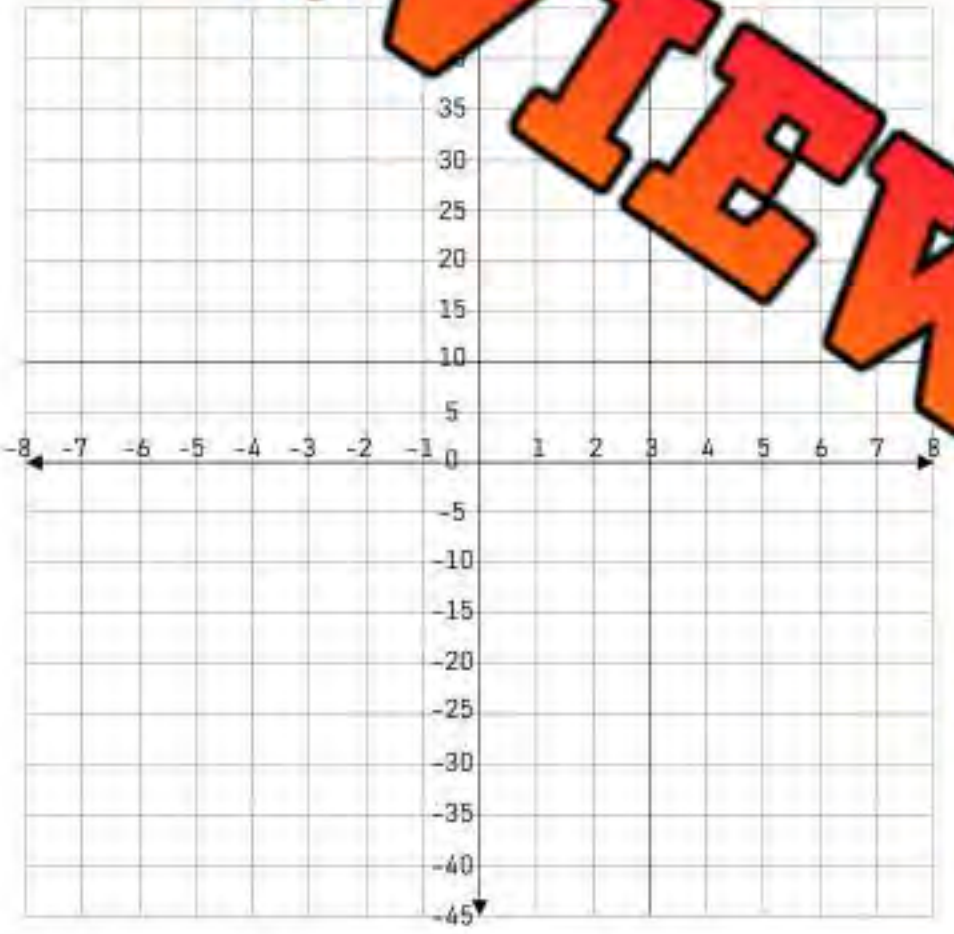
a) Fill in the table of values using the equation above.

x		2	3	4	5	6	7	8
y								

b) Represent the values on the graph. Connect the dots using a line.

c) Fill in the missing values in the ordered pairs below

(10, ___), (20, ___), (, 80), (___, 100), (___, 150)



Name: _____ 67

Curriculum Connection
PS.1

Graphing Linear Equations - Exercise

Instructions Answer the questions below

For every 1-hour Logan exercises, he burns 250 calories. Use negative integers to fill in the table of values that tracks Logan's calorie burn.

1-Hour	2-Hours	3-Hours	4-Hours	5-Hours	6-Hours	7-Hours

a) If Logan ex… h… a week, ho… …ries … burn?

b) Write the linear equation that represents the situation. Use multiplication and a negative integer.

c) If Logan has already burned 750 calories this week, how many more hours will he need to exercise to burn 2250 calories? Write an equation that represents the situation.

d) Describe the r… …n the two variab… …words.

e) Fill in the missing values in the ordered pairs below

(14, _____), (20, _____), (32, _____)

(____, -4250), (____, -6500), (____, -9750)

Name: ______________________ 68

Graphing Linear Equations - Advertising

Instructions Answer the questions below

Chloe has an advertising budget of $150. She decides to spend $15 a day. Use negative integers to fill in the table of values that tracks her advertising spending. Display the table of values as a graph as well.

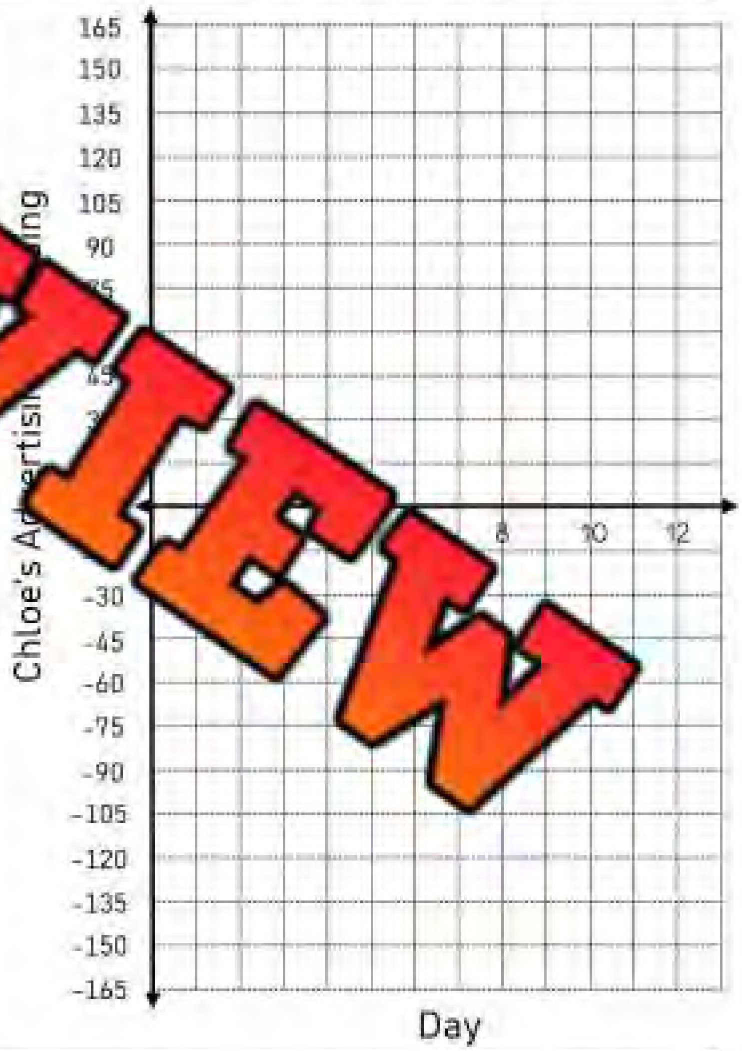
Qu

1) After 20 da ... of ... et will Chloe have ... egativ

2) Write the linear equation that represents the situation. Use multiplication and a negative integer.

3) Chloe has discovered that she earns $20 a day from people buying her products after seeing her advertisements. Use the numbers/operations below to write a new linear equation that represents the situation.

y *x* -15 20 + =



4) Matthew answered the question above using this equation: y = x(-15) + 20 but he isn't getting the correct answer. How could he move one bracket to get the correct answer? Why was he wrong before?

Name: _____ 69

Curriculum Connection TQ

Algebra Quiz - Patterning

Part 1 How many matchsticks are in each term? Sketch the next 3 terms

F-1	F-2	F-3	F-4	F-5	F-6

What [illegible] tional	Expression:					
[illegible] #	2	3	4	5	6	20
# of Matchsti						

Part 2 [illegible] nd answer the questions

1) Cole's pay for today has [illegible] re[illegible] table below

Hours Worked	0	1		3		6	7	8
Money Earned ($)	0	27	54					

a) Is the relationship between the variables linea[illegible] No

b) What is the functional relationship between variable[illegible]

2) It costs $30 for admission to an amusement park. Once inside, yo[illegible]or each additional ride you go on.

Rides	0	1	2	3	4	5
Total Cost	$30.00	$31.50	$33.00	$34.50	$36.00	$37.50

a) What is the functional relationship between the two variables (algebraic expression)?

b) If you graphed the table of values, would the line be straight or curved? Explain.

c) How much would it cost if you went on 25 rides?

Part 3 Fill in the tables using the equations below

x	y
1	10
2	16
3	22
4	
5	
6	

x	y
1	-1
2	2
3	5
4	
5	
9	

x	y
1	
2	
3	
4	
5	
11	

2) $y = 3x - 4$

3) $y = -2x + 4$

Part 4 Wri... eq...n that represents the relation between x and y

x	y
1	3
2	10
3	17
4	24
5	
6	

x	y
1	8
2	
3	
4	
5	
9	

x	y
1	-4
2	-1
3	2
4	5

1) _____ 2) _____ 3) _____

Part 5 Make a table of values for each relation

1) $y = 2x + 3$

2) $y = 4x - 5$

3) $y = -3x + 3$

Curriculum Connection
TQ

Part 6 Answer the word problem below

1) Cameron went to an amusement park. He paid $22 to get in and then $3 per ride he went on.

a) Write a linear equation that represents the situation.

b) Fill in the table of values below

c) Graph the t es

2) If Cameron wen 5 r would it cost him?

3) Cameron ended up paying $118 at the amusement park. How many rides did he go on?

4) Fill in the missing values in the ordered pairs below

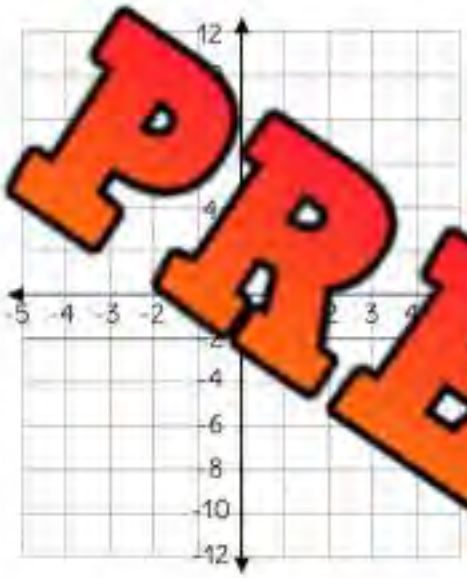
(18, _____), (35, _____), (110, _____)

(_____, 100), (_____, 136), (_____, 937)

Part 7 Fill in the table of values and then graph the results using ordered pairs

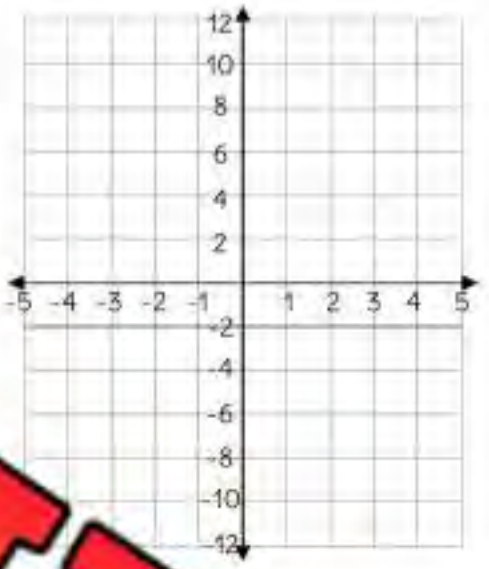
1) $y = -2x - 2$

x	0	1	2	3	4
y					



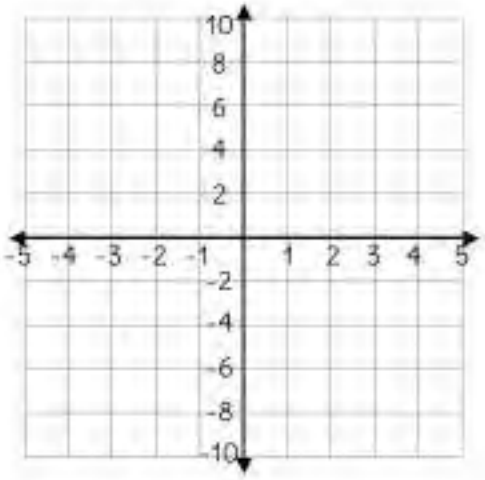
2) $y = -x + 4$

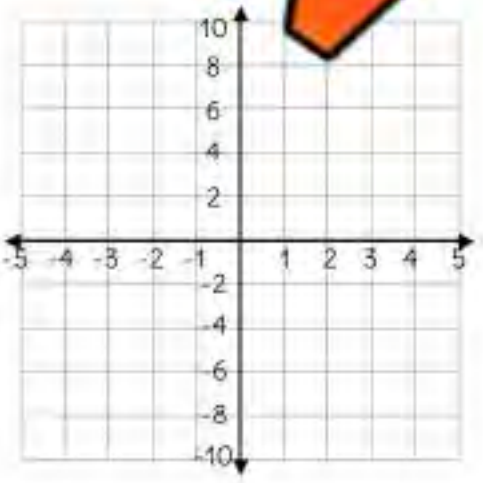
x	0	1	2	3	4
y					



Part 8 Graph the linear equations below. C[illegible] necessary

3) $y = -3x + 8$





Name: _____ 74

Curriculum Connection
P4.2

Equation or Expression?

Instructions Is the number sentence an expression or equation?

1) Paul has 5 cookies but needs enough for 10 people. $5 + c = 10$	Equation	Expression
2) The pa… …s the following rule: $3n - 1$	Equation	Expression
3) Maria want… …week. She has already run 22km. $22 + …$	Equation	Expression
4) The cost to enter an a… …t pa… …er ticket. $t20$	Equation	Expression
5) Jeff works at a garden centre and earns $15… …lour. He can figure out his pay by using the follo… …ion $15h$		Expression
6) Bailey made $200 last week working with her mom. She worked 10 hours. $10w = 200$	Eq…	…ion
7) Jane had 150 candies to give away on Halloween. She has 30 left. $150 - c = 30$	Equation	Expression
8) Ashley had 200 candies to give away on Halloween. She will give 2 candies to each kid. How many kids can she give candy to? $200 \div 2 = k$	Equation	Expression
9) Candy bags come in 30 packs. The total number of candies is represented below: $30b$	Equation	Expression

Exit Cards

Cut Out Cut out the exit cards below and have students complete them at the end of class

Name: _____

Is the number sentence an expression or equation? Circle the answer

1) A marathon runner drinks 2 liters of water every 5 miles. The total amount of water needed for m miles can be calculated using the following: $m \div 5 \times 2 = w$

Expression Equation

2) A car travels 60 miles per hour. The distance traveled in t hours can be calculated using the following: $60t = d$

Expression Equation

Name: _____

Is the number sentence an expression or equation? Circle the answer

1) A marathon runner drinks 2 liters of water every 5 miles. The total amount of water needed for m miles can be calculated using the following: $m \div 5 \times 2 = w$

Expression Equation

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Expression Equation

Name: _____

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Expression Equation

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Expression Equation

Name: _____

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Expression Equation

2) A car travels 60 miles per hour. The distance traveled in t hours can be calculated using the following: $60t = d$

Expression Equation

Name: _____ 76

Curriculum Connection P8.2

Writing Algebraic Expressions

Using algebraic expressions helps us understand mathematical situations. We can use a variable to replace a changing number, like how many tickets are sold to a game – t x 10

Part 1 Write each algebraic expression in words.
Use the words, "a number" in place of the variable

1) 7 – t

Seve

2) n +

3) 8 + b

4) 9r

5) $\frac{y}{5}$

Part 2 Write an algebraic expression for each st eme

1) Nineteen add a number

2) Divide a number by three

3) A number is subtracted by nineteen

4) Triple a number and add seven

5) Subtract 19 from a number, then multiply by four

Name: _____ 77

Curriculum Connection P8.2

Writing Algebraic Expressions - Treats

A mathematical expression is similar to an equation, but it does not have an equal sign. We use expressions to describe a mathematical situation.

Instructions Write the expressions for the situations below

1) Lindsay ... *y* amount of cookies. She gives 27 cookies away to the students in her class.

Expression:

2) C... cuts ... ies into *b* pieces. She eats 3 brownies.

Expression:

3) Alyse makes c... kes ... ally with her 5 friends.

Expression:

4) Hani gives 3 candies to eac... his ... nds.

Expression:

5) Scott has 14 sodas in his fridge and buys ... sod...

Expression:

6) Dan buys 3 dozen donuts and eats *d* number of don... or...

Expression:

7) Steve buys *x* number of cookies and gives 31 to his staff.

Expression:

8) Alexa has 100 suckers that she shares equally with her *f* number of friends.

Expression:

9) Brian has 250 gummy worms and takes *n* number of gummies from his brother.

Expression:

10) Howard gives 4 books each to *s* number of students.

Expression:

Finger Signals Quiz - Understanding Algebraic Expressions

Objective What are we learning about?

Students will reinforce their understanding of algebraic expressions through an interactive finger signals quiz.

Materi- u will need for the activity.

- A list of q

Instructions How y ample tivity

1. Prepare a list of questions with swer s labeled A, B, C, and D.
2. Explain the finger signals for each ans ice: for A, two fingers for B, three fingers for C, and four finger D.
3. Inform the students they will show their answer f when you read each question.
4. Read the first question aloud clearly and repeat if necessary.
5. Give students a few moments to think about their answer and decide independently.
6. After a countdown (e.g., "3, 2, 1"), have all students show their answer simultaneously by raising the appropriate number of fingers.
7. Reveal the correct answer and explain why it is correct.
8. Repeat with different questions to reinforce understanding of algebraic expressions.

Name: _____ 79

Curriculum Connection P9.2

Question	A	B	C	D
A student reads r pages each day for 6 days. What is the total number of pages read?	6 + r	6 - r	6r	r ÷ 6
A photographer takes p photos, takes 4 more each day for 6 days, and then deletes 8. How many photos are there now?	p + (4 × 6)	(p + 24) - 8	p + 24	p + (4 x 6) - 8
A farmer has f cows, buys 18 more, and sells 7. How many cows are there now?	f + 18 - 7	f × 18 - 7	f + 18 + 7	f + 18 - 7
A librarian shelved 40 books over the course of h hours. What is the average number of books shelved per hour?	40 + h	40 - h	40h	40 ÷ h
A farmer plants f rows of trees and has 6 rows. How many trees?	6 + f	6 - f	6f	f ÷ 6
A worker makes w dolls per hour for 7 hours. What is the total	7 + w	7 - w	7w	w ÷ 7
A library has b books, receives 50 more, and loses 20. How many books are there	b + 50 - 20	b × 50 - 20	b + 50 + 20	b + 50 - 20
A factory produces p products per day for 10 days. What is the total production		10 - p	10p	p ÷ 10
A librarian has b books, receives 7 more each hour for 8 hours, and then donates 10. How many books are there now?		56) - 10	b + (7 × 8)	b + 7 x 8 - 10
A runner runs 40 kilometres over the course of d days.		40	40d	40 ÷ d
A school has s students but loses 20. What is the total number of students?	s + 20			s - 20
A gardener has g plants, plants 5 more each day for 3 days, and then removes 4. How many plants are there now?	(g + 15) - 4	g + (5 × 3) - 4		× 3)
A chef cooked 120 meals over the course of m days. What is the average number of meals cooked per day?	120 + m	120 - m	120m	120 ÷ m
A baker makes b batches of cookies each day for 4 days. What is the total number of batches?	4 + b	4 - b	4b	b ÷ 4
Sarah has s apples and buys 5 more. How many apples does she have now?	s + 5	s - 5	5s	s + 5
A store has k kites but sells 30. What is the total number of kites left?	k + 30	k - 30	30k	k - 30
An artist has p paintings, paints 2 more each day for 5 days, and then sells 6. How many paintings are there now?	a + (2 × 5)	(a + 10) - 6	a + (2 x 5)	a + (2 x 5) - 6

Name: _____ 80

Curriculum Connection P8.2

Distributive Property - Addition

The distributive property is used to make difficult problems simpler. It means that when we multiply a number by the sum of two or more addends, we get the same result as multiplying each addend separately by the number.

You can use the distributive property of multiplication to rewrite expressions that have a number outside of a parenthesis.

Example 1

$7(5$
7×5

	5	3
7	35	21

Example 2

$4(y + 8)$
$4 \times y + 4 \times 8$
$4y + 32$

	y	8
4	$4y$	32

Evaluate

Fill ... de... epresent the distributive property of the expressions

1) $9(4 + 6)$

2) $6(3 + n)$

3) $8(7 + 3)$

4) $n)$

5) $6(f + 11)$

6) $-3(5 + p)$

Expand

Evaluate the expressions below

1) $9(t + 7)$	2) $-2(8 + 12)$	3) $-6(x + 3)$
4) $8(y + 4)$	5) $5(-11 + n)$	6) $-4(-12 + k)$

Name: _____ 81

Curriculum Connections
P8.2

Distributive Property - Subtraction

To subtract using the distributive property, we follow the same steps as with addition questions. If the number outside of the parenthesis is positive, we can simply distribute it to the numbers inside the parenthesis, as done in example 1.

In some situations, it may be easier to "add the opposite." This is especially true if the number outside of the parenthesis is negative, like in examples 2 and 3.

Exam
$5(y$
$5y$

Example 2
$-4(n - 8)$
$-4n - (-4)(8)$
$-4n - (-32)$ or $-4n + 32$
$-4n + 32$

Example 3
$-4(-t - 3)$
$-4(-t) - (-4)(3)$
$4t + 12$

Part 1 — d the ions below

1) $9(5 - 7)$	2) $3(8 -$	3) $7(x - 6)$
4) $8(y - 4)$	5) $5(1$	$4(11 - k)$
7) $10(b - 6)$	8) $8(11 - c)$	$6(n$

Part 2 — Expand the expressions below

1) $-3(5 - t)$	2) $-7(n - 4)$	3) $8(x - 7)$
4) $-4(y - 8)$	5) $-6(12 - n)$	6) $-4(10 - k)$
7) $10(k - 8)$	8) $-7(9 - c)$	9) $-5(m - 12)$

Name: _____ 82

Curriculum Connection
P8.2

Distributive Property – Equivalent Expressions

Match Write the letter from column 2 beside the equivalent expression from column 1

1

Answer	Column 1	Letter	Column 2
	3(9 – 5)	a	15 + 27
	-3(9 + 5)	b	(-15) + 27
	3(5 + 9)	c	3 x 9 – 3 x 5
	-3(5 – 9)	d	(-27) + (-15)

2

Answer	Colu	Letter	Column 2
		a	-63 – 7t
		b	7t + 63
	7(t +)		-7t + 63
	-7(t – 9)		63 – 7t

3

Answer	Column 1	Let	n 2
	8(11 – n)	a	
	-8(n + 11)	b	
	8(11 + n)	c	-8 8
	-8(11 – n)	d	88 + 8n

4

Answer	Column 1	Letter	Column 2
	3(y – 5)	a	3y + 15
	-3(y + 5)	b	-3y + 15
	3(y + 5)	c	3y – 15
	-3(y – 5)	d	-3y – 15

Name: _____ 83

Curriculum Connection
P8.2

Evaluating Algebraic Expressions - Addition

Part 1 Evaluate the following expressions for x = -7

1) $x + 13$	2) $9 + x$	3) $25 + x$	4) $x + 17$
5) $39 +$	6) $83 + x$	7) $74 + x + 11$	8) $87 + x + 24$

Part 2 Eva he f pressions for y = -7 and n = 4

1) $n + y$	2) $1 y$	$+ y + n$	4) $y + 18 + n$
5) $54 + y + n$	6) $n + (y + 20)$	7) $+ n$	$5 + n + (y + 4)$

Part 3 Evaluate the following expressions for x = -5 and p = -1

1) $(x) + (p) - 23$	2) $17 + x + (p)$	3) $(19 + x) + (p)$	4) $x + (35 + p)$
5) $(p + 27) + x$	6) $x + 49 + (p)$	7) $(x + 63) + (p)$	8) $88 + p + x$

Exit Cards

Cut Out Cut out the exit cards below and have students complete them at the end of class

Name: _____

Evaluate the following expressions for x = -5 and p = -12

1) (19 + x) + (p)

2) x + (35 + p)

3) (x) + (p) − 23

Name: _____

Evaluate the following expressions for x = -5 and p = -12

1) (19 + x) + (p)

2) x + (35 + p)

3) (x) + (p) − 23

Name: _____

Evaluate the following expressions for x = -5 and p = -12

1) (19 + x) + (p)

2) x + (35 + p)

3) (x) + (p) − 23

Name: _____

Evaluate the following expressions for x = -5 and p = -12

1) (19 + x) + (p)

2) x + (35 + p)

3) (x) + (p) − 23

Name: _____ 85

Curriculum Connection P8.2

Evaluating Algebraic Expressions - Subtraction

Subtraction Integers Rules

To subtract integers, it is easiest to change the operation to addition and then follow the addition rules. We can do this by using the rule – Keep, Flip, Change. We keep the first number the same, flip the operation from subtraction to addition, and then change the third number's sign.

Example: 5 – (–6) = ? becomes 5 + 6 = 11

Keep the first integer

Flip the operation

Change the sign of the next integer

Part 1 Eva ow pressions for x = -8

1) $x - 15$	2)	27 - x	4) $x - 31$
5) $47 - x$	6) $61 - x$	- 1	94 - x - 14

Part 2 Evaluate the following expressions for y = -12 and n = -5

1) $y - n$	2) $(16 - n) - y$	3) $15 - (y - n)$	4) $y - 11 - n$
5) $21 - y - n$	6) $(n - y) - 36$	7) $y - (n - 43)$	8) $(28 - n) - y$

Name: _____ 86

Curriculum Connection P8.2

Evaluating Expressions – Food Truck

Walker works at a food truck selling burgers, hot dogs, fries, and pogos. He uses algebraic expressions to determine the cost of his customer's orders.

Menu	
Burger (*b*)	$4.50
Hot Dog (*h*)	$2.75
Fries (*f*)	$3.25
Pogo (*p*)	$3.50

Solve Write [illegible]aic expression and then evaluate using the menu prices

Customer Order	Expression	Answer
1) 2 burgers, 1 fry	2 x *b* + *f* [illegible] + 3.25	
2) 4 hot dogs, 2 pogos		
3) 5 fries, 2 pogos		
4) 3 burgers, 2 fries, 2 pogos		
5) 3 fries, 5 burgers, 4 hot dogs		
6) 10 burgers, 10 fries		
7) 5 hot dogs, 7 fries, 3 pogos		
8) 4 burgers, 9 hot dogs		

Name: _____ 87

Curriculum Connection P8.2

Evaluating Expressions - Bakery

Gavin works at a bakery selling bread, cookies, and donuts. He calculates the cost of orders (o) and subtracts it from the payment (p) he is given to determine how much change to give his customers.

Menu	
Bread (b)	$3.50
Cookies (c)	$1.25
Donuts (d)	$1.50

Evaluate Solve the subtraction expressions below

Values		Expression – Customer's Change
	P	p – o
$[illegible]70	$[illegible]20	
$18.25	$[illegible]	
$9.75		
$33.65		

Evaluate Calculate the ord[illegible] deter[illegible]e customer's change

Order (o)			Expression	Pa[illegible]t	Change
b	c	d			
3	0	1	3b + d 3 x 3.50 + 1.50 10.50 + 1.50 $12.00	$15.00	
2	1	0		$10.00	
3	2	1		$20.00	
1	4	3		$20.00	
3	5	4		$30.00	

Name: _____ 88

Curriculum Connection P8.2

Evaluating Algebraic Expressions – (x ÷)

Part 1 Evaluate for x = -3. Use brackets to separate the numbers

1) $7x$	2) $6x$	3) $4x - 5$	4) $12x + 7$
5) $17x$	6) $15x - 10$	7) $8x - x$	8) $13x + 6 - x$

Part 2 Evaluate the expressions for y = -8

1) $\frac{y}{2}$	2) $\frac{32}{y}$		4) $\frac{y}{2} + 5$
5) $\frac{48}{y} + 7$	6) $\frac{88}{y} + y$	7) $\frac{0}{y}$	x y

Challenge! Use three -5s and any operation or brackets to write an expression with the values provided

	Your Expressions	Value
1)		-125
2)		-5
3)		0
4)		50

	Your Expressions	Value
5)		5
6)		30
7)		20
8)		-6

Name: _____ 90

Curriculum Connection P8.2

Evaluating Expressions - BEDMAS

Part 1 Evaluate the following expressions for t = 6

1) $t + 16 \times 2$	2) $10t - (t + 4)$	3) $63 - (t)\frac{t}{3}$	4) $4t \div (2 + 10)$
5) $4t \div$	6) $12 + \frac{2t}{3} - 5$	7) $\frac{4t - t}{3}$	8) $18 + t \div 3$

Part 2 Evalu… …ssions for y = -8 and n = 2

1) $y + n \div (-2)$	2) $6n$ …	… $(2n - 6)$	4) $y \div (-2 - n)$
5) $4n + 40 \div y$	6) $\frac{24n}{y} + 12$	7)	…15 + n)(y)

Part 3 Evaluate the following expressions for x = -10 and p = -…

1) $2x(p + 5)$	2) $4x + (2p - x)$	3) $(-25) - (x)(p)$
4) $90 \div (p + -5x)$	5) $22 + 8x - (p + 5)$	6) $12 - \frac{5x}{p} + 5p$

Name: _____ 91

Curriculum Connection P8.2

Writing Expressions

An equation is a statement that two expressions are equal. An expression has no equal sign, whereas an equation has an equal sign. When we can solve the answer to an expression, it becomes an equation because we add an equal sign.

Expression	**Equation**
Eight more than a number 8 n	Eight more than a number is 14 8 + n = 14 n = 6

Part 1 W ons for each sentence

	Sente	Equation	Answer
1)	Eleven less than s sixt		
2)	Sixty-two more than a n er		
3)	Eight times a number minus 3 is		
4)	Twenty-eight divided by a number is fou		
5)	A number plus sixteen divided by two is 10		
6)	Nine times a number plus forty is 76		

Part 2 Write a sentence in words for each equation

Equation	Sentence	Value of *n*
1) $6n = 24$		
2) $11 + n - 8 = 12$		
3) $7 + \frac{32}{n} = 15$		
4) $9n - 9 = 45$		

Exit Cards

Cut Out Cut out the exit cards below and have students complete them at the end of class

Name: _____

Write a sentence in words for each equation.

1) 11 + n − 8 = 12

2) $7 + \frac{32}{n} = 15$

Name: _____

Write a sentence in words for each equation.

1) 11 + n − 8 = 12

2) $7 + \frac{32}{n} = 15$

Name: _____

Write a sentence in words for each equation.

1) 11 + n − 8 = 12

2) $7 + \frac{32}{n} = 15$

Name: _____

Write a sentence in words for each equation.

1) 11 + n − 8 = 12

2) $7 + \frac{32}{n} = 15$

Name: _____ 94

Curriculum Connections
P9.2

Matching Game: Do The Equations Match?

Objective	What are we learning about?

To enhance students' understanding of equivalent equations. Students will identify and match pairs of equations that yield the same result, fostering critical thinking and prob lving skills in a collaborative group setting.

Mat	will need for the activity.

- Pre-prepar re-c g cards.
- Small bags or envel ld t ts for each group

Instructions	How you will complete the

1. Before the class, the teacher will cut out the p ed m g game cards.
2. Divide the students into small groups and give each group elope containing a set of the matching cards.
3. In their groups, students will spread out the cards face down on their table.
4. Each person takes a turn to try to match two cards. They will need to solve both equations to see if they match (equal the same).
5. If they find a correct match, they keep the cards out and continue with their next turn. If the cards don't match, they turn them back over in the same place, and the next player takes a turn.
6. The activity continues until all pairs are correctly matched within each group.

Name: _____ 95

Curriculum Connection
P8.2

Cards | Matching Game Cards

60 + (-15) + 20	55 - (-10)
1[illegible]75	100 + (-25)
90 + (-20) + 12	[illegible]30 + 30
-104 + 151 + 112	366 - 15[illegible] - 57
20 + 180	250 - 50

Name: _____ 96

Curriculum Connection
P8.2

Cards | Matching Game Cards

47 + (-20) + 15	32 - (-10)
16[illegible]8	153 + (-30) - 39
-32 + 159	[illegible]14 55 – 32
83 - 48 + 27	66 - 12[illegible]8
125 + (-41) + 38	194 - 48 - 24

Name: _____ 98

Curriculum Connection
P8.2

Cards | Matching Game Cards

98 + (-43)	75 + 20 - 40
-67 + 58	290 – 99
89 - 49 + 18	6[illegible]2 + 14
-83 + 249	199 + (-66) + 33
77 - 25 + 12	40 + 24 - 0

Name: _____ 99

Curriculum Connection P8.2

Finding The Value of a Variable

When we write an algebraic expression with an equal sign, it becomes an equation. An equation is a statement that two expressions are equal.

We can solve for a variable by balancing an equation, making sure both sides of the equal sign have the same value.

Part 1 Find out the value of the variable

n =	2) n + 15 = 29 n =	3) 36 - n = 28 n =
4) 45 - 19 = p p =	+ p = 62	6) p – 13 = (-25) p =
7) 13 – y = (-10) y =	8) y =	9) (-32) – 15 = y y =
10) 27 + t = (-12) t =	11) 36 - t = 0 t =	2) + t = (-49)

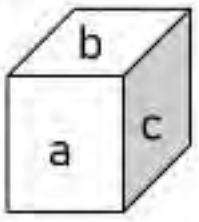
Part 2 The formula for calculating the surface area of a rectangular pr o add the areas of each side together

Use the following equation to find the surface area (s) of a rectangular prism:

$s = a + a + b + b + c + c$ or $s = 2a + 2b + 2c$

1) a=6 b=11 c=10	SA=
2) a=9 b=14 c=21	SA=
3) a=11 b=21 c=25	SA=

4) a=26 b=15 c=41	SA=
5) a=35 b=32 c=49	SA=
6) a=29 b=19 c=52	SA=



Name: _____ 100

Curriculum Connection P8.2

Addition Equations – Golf Tournament - Challenge

Zack hosted a 4-round golf tournament. He has the results and needs to find out who won the tournament. The leaderboard is below but is missing numbers.

Directions Fill in the leaderboard

Player	Round 1	Round 2	Round 3	Round 4	Final Score
Ri		-6	4	-5	
Charlie		-2	5		-5
Dominic				9	-6
Kayden	-3	-7	-1	-5	
Silas	5	3			-1
Lillian	5	8			9
Brooklyn	-4	-2			-5
Natalie		7	2	-6	-4
Andrew	-5	4	1		
Santiago		-3	-8		-22

Results Who won the golf tournament?

1) Who won the golf tournament?	
2) The entry fee for the tournament was $75. All the money went to the prize (p). Write an equation that determines the value for (p).	
3) More golfers joined the tournament. The prize ended up being $1125. Write an equation that determines how many golfers (g) participated in the tournament.	

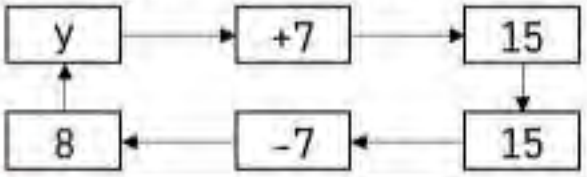
Name: _____ 102

Curriculum Connection P8.2

Adding and Subtracting Equations – Flow Chart

We can use a reverse flow chart to calculate the value of a variable in an equation.

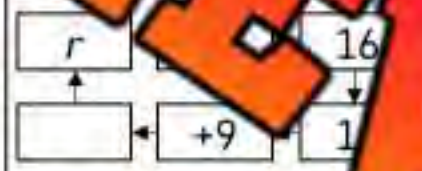
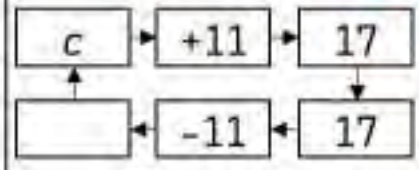
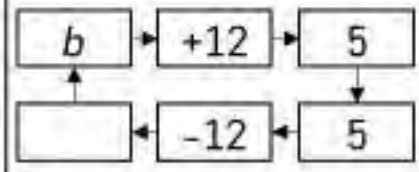
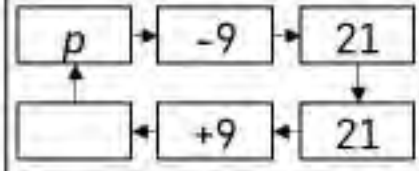
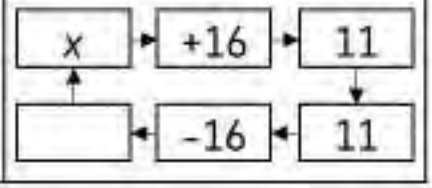
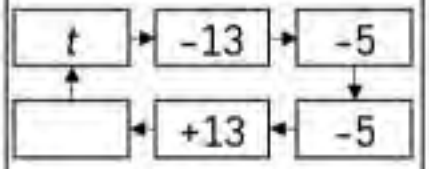
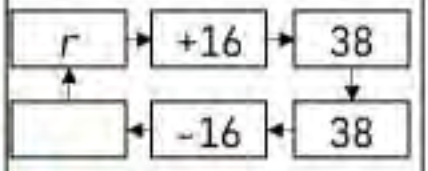
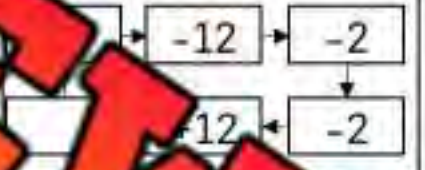
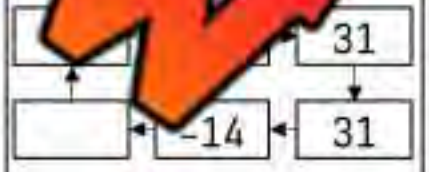
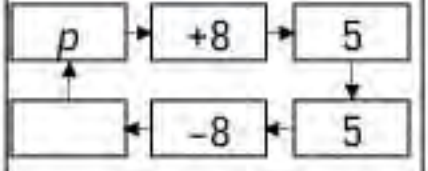
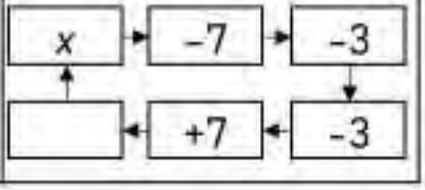
Example: $y + 7 = 15$



- Equation represented the same

- Use the opposite operation in the middle and solve for the last box

Direction Use the flow chart to find the value of the variable

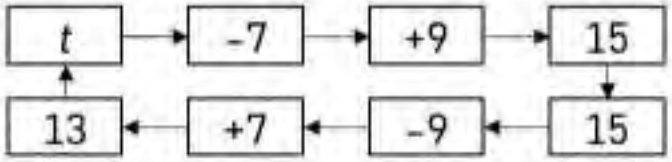
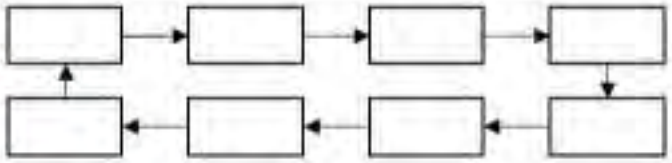
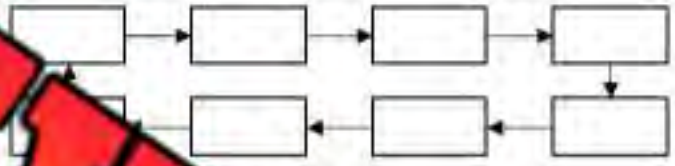
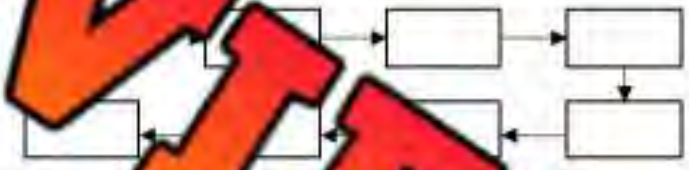
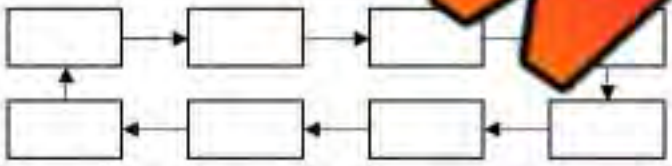
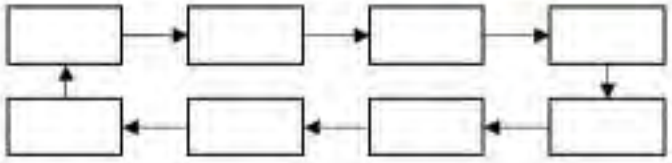
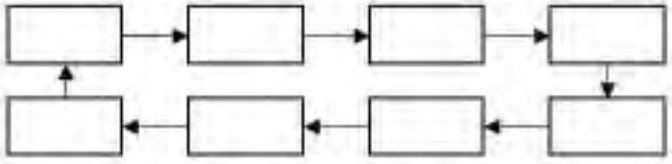
1) $t - 7 = 12$	
2) $r - 9 = 16$	
3) $c + 11 = 17$	
4) $b + 12 = 5$	
5) $p - 9 = 21$	
6) $x + 16 = 11$	
7) $t - 13 = -5$	
8) $r + 16 = 38$	
9)	
10) $b + 14 = 31$	
11) $p + 8 = 5$	
12) $x - 7 = -3$	

Name: _____ 104

Curriculum Connection P8.2

Adding and Subtracting Equations – Flow Chart

Directions Fill in the blanks in the flow chart

1) $t - 7 + 9 = 15$	
2) r	
3) $c + 7 - 14 = 1$	
4) $b - 11 + 7 = -5$	
5) $p - 5 + 13 = 2$	
6) $c + 16 - 13 = -4$	
7) $b + 11 + 6 = 15$	
8) $p - 9 - 15 = -13$	

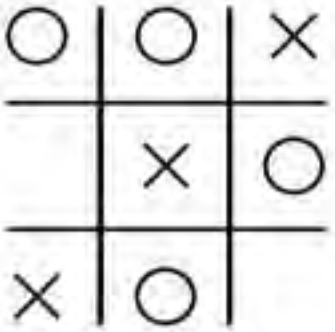
Name: _____ 107

Curriculum Connections P9.2

Math Tic-Tac-Toe: Balance The Equations

Objective What are we learning about?

To help students practice solving and balancing equations involving variables in a fun and interactive way thro[illegible] Tic-Tac-Toe game.



Mate[illegible] [illegible] will need for the activity.

- Tic-Tac-T[illegible] [illegible]oards [illegible]ided

Instructions How yo[illegible]ople[illegible]ivity

1. Find a partner to play the game[illegible]
2. The goal is to solve and balance the alg[illegible] equ[illegible]ch square to place your marker (X or O).
3. One player will be "X" and the other will be "O".
4. Take turns choosing a square and solving the equation in [illegible] find the value of the variable.
5. Write down the solution below the equation and place your marker (X or O) in the square.
6. If a player chooses a square and solves the equation incorrectly, they do not get to place their marker in that square. The other player gets a chance to solve it correctly and place their marker.
7. The first player to get three markers in a row (horizontally, vertically, and diagonally) wins the game. Continue playing with different tic-tac-toe grids on the sheet.

Name: _____ 108

Curriculum Correction P8.2

Tic-Tac-Toe Use the following tic-tac-toe grids for the game.

72 ÷ ___ = 8	(-18) x ___ = 54	___ + 7 = 10
(-15) x ___ = 45	84 ÷ (-12) = ___	___ x 13 = 104
99 ÷ ___ = (-11)	x (-5) = ___	___ + 6 = (-9)

300 ÷ __ = 25	(-20) x __ = 100	__ + 4 = 6
(-24) x __ = 72	56 ÷ (-8) = __	__ x 15 = 75
88 ÷ __ = (-11)	(-30) x (-3) = __	__ + 5 = (-7)

144 ÷ ___ = 122	(-2 100	
(-21) x ___ = 63	90 ÷ (-10) = ___	___ x 20 =
120÷___ = (-10)	(-28) x (-7)= ___	___ + 10 = (-4)

64 ÷ ___ = 8	(-22) x___ = 110	___ + 5 = 10
(-18) 54	49 ÷ (-7) = ___	___ x 18 = 108
81	33) x (	___ + 8 = (-5)

108 ÷ ___ = 9	(-16) x ___ = 64	___ + 12 = 8
(-27) x ___ = 81	72 ÷ (-6) = ___	___ x 25 = 125
132 ÷ ___ = (-11)	(-40) x (-5) = ___	___ + 3 = (-15)

84 ÷ ___ = 12	(-14) x ___	___ + 2 = 20
(-35) x ___ =105	63 ÷ (-9) = ___	___ x 10 = 100
150 ÷ ___ = (-15)	(-45) x (-6) =___	___ + 7 = (-8)

Name: _____ 109

Curriculum Connection
P8.2

Tic-Tac-Toe

Use the following tic-tac-toe grids for the game.

96 ÷ ___ = 16	(-12) x ___ = 60	___ + 6 = 12
(-42) x ___ = 84	48 ÷ (-8) = ___	___ x 5 = 35
180 ÷ ___ =	x (-4) = ___	___ + 9 = (-9)

128 ÷ ___ = 16	(-18) x ___ = 72	___ + 4 = 8
(-36) x ___ = 108	75 ÷ (-15) = ___	___ x 6 = 36
110 ÷ ___ = (-11)	(-25) x (-8) = ___	___ + 10 = (-6)

192 ÷ ___ = 16	(- = 48	
(-30) x ___ = 90	54 ÷ (-6) = ___	___ x 12 =
200 ÷ ___ = (-10)	(-44) x (-3) = ___	___ ÷ 2 = (-10)

72 ÷ ___ = 9	(-15) x ___ = 60	___ + 4 = 10
(-22)	80 ÷ (-8) = ___	___ x 14 = 98
135	32)	___ + 6 = (-5)

48 ÷ ___ = 8	(-21) x ___ = 105	___ ÷ 7 = 9
(-16) x ___ = 48	60 ÷ (-10) = ___	___ x 11 = 88
72 ÷ ___ = (-6)	(-40) x (-4) = ___	___ + 3 = (-8)

64 ÷ ___ = 16	(-20) x ___	___ ÷ 8 = 5
(-28) x ___ = 56	100 ÷ (-25) = ___	___ x 7 = 28
90 ÷ ___ = (-9)	(-36) x (-2) = ___	___ ÷ 12 = (-6)

Name: _____ 110

Curriculum Connections P8.2

Finding The Value of a Variable

When we multiply a number by a variable, we do not need to use the multiplication sign. It is known that any variable next to a number means the operation we are using is multiplication.
Example: 7n = 14 means 7 x n = 14
We can figure out the unknown number by balancing the equation: n = 2.

Part 1 Find out the value of the variable

1) [illegible]	2) (-4n) = 16 n =	3) (-9s) = 54 s =
4) [illegible] x (-4) p =	5) $\frac{-77}{p} = -11$ p =	6) $\frac{-28}{k} = -7$ k =
7) (-3n) = (-18) n =	[illegible] (-42)	9) $\frac{n}{8} = -9$ n =
10) $\frac{-40}{5} = n$ n =	11) [illegible]	12) $\frac{p}{15} = -5$ p =
13) (-8n) = 96 n =	14) $\frac{110}{n}$ [illegible] n =	15) 7d = 56 d =

Part 2 Calculate the area of a circle and a triangle [illegible]

The formula for calculating the area of a circle is: A = [illegible] π = ~3.14
Calculate the area in the questions below using the values for radius and pi

	Radius	Area - Circle
1)	r = 9cm	A =
2)	r = 6cm	A =

	Radius	Area - Circle
3)	r = 12cm	A =
4)	r = 7cm	A =

	Radius	Area - Circle
5)	r = 13cm	A =
6)	r = 11cm	A =

The formula for calculating the area of a triangle is: $A = \frac{(b)(h)}{2}$

	b	h	Area - Triangle
1)	6	2	A =
2)	9	6	A =

	b	h	Area - Triangle
3)	8	4	A =
4)	7	5	A =

	b	h	Area - Triangle
5)	3	4	A =
6)	8	6	A =

Name: _____ 111

Curriculum Connection P8.2

Writing Multiplication Equations – Gas Station

Tyler works at a gas station. He sells fuel by the litre, chips, drinks, and chocolate bars.

Fuel (f)	Chips (c)	Drinks (d)	Chocolate Bars (b)
$1.33/L 	$1.75 	$1.25 	$1.99 

Instructi Complete the table below. The first one is done for you

#	F	C	D	B	Equation	Answer
1	20	2		0	20f + 2c	t = 20 x 1.33 + 2 x 1.75 t = 26.6 + 3.50 t = $30.1
2	50	0	3	2		
3	0	2	1	0		
4	60	1	2	2		
5	0	2	0	0		
6	0	1	1	0		
7	25	2	1	2		
8	70	0	1	3		

Name: _____ 114

Curriculum Connection P8.2

Activity: Decimal Multiplication Race

Objective What are we learning about?

Students will practice multiplication of decimals to solve for a variable by racing to solve equations quickly and accurately.

Materials What you will need for the activity.

- I
- M s or pe
- Timer (opt

Instructions How [illegible] activity

1. Prepare a stack of index c s wi of decimal equations involving variables. Include a mix of proble nsure
2. Have students line up in a single file.
3. Call the first two students in line to the fron t ace to answer the multiplication algebraic equation question t cher rom the stack.
4. Pull a card from the stack and read the question aloud.
5. The first student to answer correctly wins the round. If a student s he wrong answer, they are out and go to the end of the line.
6. The student who answers correctly stays at the front to compete against the next student in line.
7. The student who loses goes to the end of the line.
8. Optional: If a student wins five rounds in a row, they move to the back of the line to give others a chance to play.
9. Continue the game until all students have had a chance to compete multiple times or until the designated game time is up.

Name: _____ 115

Curriculum Connection
P8.2

Multiplication Equations | Use these for the race

3.5m = 17.5	4.2a = -21.0	1.5n = 9.0
-4.8b = 14.4	-3.3x = 6.6	-2.7k = 8.1
	p / -4 = 5.5	-5.4y = 27.0
-1.5x =	z = -1.1	-4.4 / w = -2.2
7.2y = -28.8	2.8	3.6t = -18.0
-6.6 / z = 2.2	9.0 / p =	= 22.5
t / -3 = -2.2	-8.1v = -24.3	
-8.5w = 34.0	5.5 / s = -1.1	7.4b = 29.6
v / 4.4 = -5	2.2c = -11.0	4.0d = -16.0
-9.0k = 18.0	-6.4j = 19.2	3.3h = -9.9

Name: _____ 116

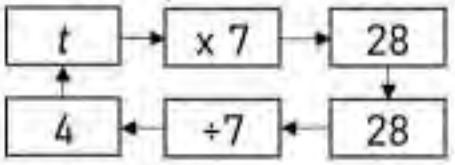
Curriculum Connection
PS.2

Multiplying Equations – Flow Chart

Steps to fill in a flow chart:

1) Write the variable in the first box
2) Write the second value in the second box
3) Write the answer in the third box
4) We are working in reverse now. Write the answer in the first box
5) We d opposite to the next box as we did with the second box
6) Fill i t box to find the value of the variable, which it points to

Example: $7t = 28$



Direc he blanks in the flow chart

1) $7t = 28$		$12t = -84$	
2) $3r = 15$		$= -55$	
3) $-9c = 36$		8) $-7c = 63$	
4) $-6b = -42$		9) $-12b = -132$	
5) $8p = -72$		10) $-9n = 63$	

Name: _____ 118

Curriculum Connection P8.2

Writing Division Equations - Sharing

Mark is the best boss! Every week, he brings in treats for his staff to share. Each week, there are different treats and a different number of staff members working at the office.

Instructions Use a formula to find out how many treats (t) each person gets

#		# of Staff (s)	Formula	Answer
1	donu	6	$\frac{d}{s} = t$	$\frac{18}{6} = 3$
2	16 coo		$\frac{c}{s} = t$	$\frac{12}{6} = 2$
3	28 muffins (m)	4		
4	88 slices of pizza (p)	22		
5	56 bagels (b)	7		
6	48 donuts (d)	12		
7	12 cookies (c)	4		
8	72 muffins (m)	9		
9	25 pastries (p)	10		
10	50 cookies (c)	20		
11	64 slices of pizza (p)	8		
12	30 bagels (b)	20		
13	75 muffins (m)	50		

Name: _____ 119

Curriculum Correction P8.2

Writing Division Equations - Investments

An investment club is a group of investors who pool their money to make investments. Each member of the group helps study new investment opportunities. When an investment earns money, they split the earnings. When an investment loses money, they split the losses.

Instructio Use a formula to find out the balance for each person in the club

#	Inv[illegible]0 loss	# of People in the Club (*n*)	Formula	Answer
1		8	$\frac{i}{n} = t$	$\frac{-400}{8} = -50$
2	$600 ga[illegible]			
3	$800 loss	5		
4	$1200 loss	8		
5	$ 750 gain	5		
6	$5000 gain	20		
7	$2500 loss	25		
8	$3600 loss	24		
9	$12500 gain	5		
10	$8000 gain	40		
11	$6800 loss	17		
12	$25000 loss	20		
13	$84000 gain	16		

Name: _____ 120

Curriculum Correction P8.2

Division Equations – Flow Chart

Directions Fill in the blanks in the flow chart

1) $\frac{t}{-6} = 4$	t → ÷ -6 → 4 -24 ← x -6 ← 4	7) $\frac{t}{8} = -4$	
2) $\frac{r}{-7} = 8$		8) $\frac{r}{-12} = 9$	
3) $\frac{c}{4} = -7$		9) $\frac{c}{-6}$	
4) $\frac{b}{11} = 6$		10) $\frac{b}{-15} = 4$	
5) $\frac{p}{-7} = -12$		11) $\frac{p}{8} = 12$	
6) $\frac{n}{-2} = -33$		12) $\frac{n}{-13} = -6$	

Division Equations – Flow Chart

Directions Fill in the blanks in the flow chart

Equation	Flow Chart
1) $\frac{t}{-7} + -13 = -21$	t → ÷ -7 → + -13 → -21 ↓ -21 → - -13 → x 5 → 56 ↑ t
2) $\frac{r}{}$ [illegible]	
3) $\frac{c}{-9} + (-6) = 1$	
4) $\frac{b}{8} - 5 = 8$	
5) $\frac{p}{-6} - 7 = -2$	
6) $\frac{n}{-7} + (-17) = -6$	
7) $\frac{t}{12} - 6 = -11$	
8) $\frac{r}{-9} + 9 = 17$	

Name: _____ 122

Curriculum Connection
P8.2

Evaluating Equations

Instructions Evaluate the equations below

1) $x = 9 + 14 - 5$

2) $x = 7 \times 4 - 11$

3) x 5

4) $x = 25 - 4 \times 3$

5) $x = 6 + 5 - 5 \times 3$

6) + 3 - 23

7) $x = 8 \times 5 \div (-2)$

8) $x = (2 - 5)$

9) $x = 24 \div 6 \times (-5)$

10) $x = 61 - 6 + (-15)$

Name: _____ 124

Curriculum Connection P8.2

Evaluating Equations – Isolating The Variable

Steps to isolate a variable:

1. Add or subtract the same amount from both sides so that the variable is by itself
2. If the number that is with the variable is positive, you will subtract the same number from both sides.
3. If it is negative, you will add the number to both sides.
4. Leave your answer with the variable on the left (examples 2/3)

Example 2

$15 = x + 9$

$15 - 9 = x + 9 - 9$

$6 = x$

$x = 6$

Example 3

$-34 = 6x - 4$

$-34 + 4 = 6x - 4$

$\frac{-30}{6} = \frac{6x}{6}$

$-5 = x$

$x = -5$

Instructions Ev…tion below

1) $x - 5 = 15$

$x + 17 = 31$

3) $x + 12 = 25$

4) …3

5) $9 = x + 13$

6) $24 = x - 15$

7) $x + 32 = 25$

8) $48 = x + 56$

Name: _____ 126

Curriculum Connection
P9.2

Activity – Math Hot Seat: Evaluating Equations

Objective What are we learning about?

Students will practice evaluating equations by participating in a fun and interactive game, enhancing their arithmetic skills and quick thinking.

Materials What you will need for the activity.

- Li… equatio… …ded
- Chairs arr… …le
- Stopwatch …
- Whiteboard ar… …kers …

Instructions How you wi… …ple…

1. Prepare a stack of index cards wit… …arious e… …ons
2. Arrange chairs in a circle with one "hot se… …the…
3. Explain the rules of the game to the students. One … …vill … …he h…t seat while the rest sit in the surrounding chairs.
4. The teacher will read equations from the provided sheet (alter…nati… …e teacher can write the questions on the board). The student in the hot seat … limited time (e.g., 30 seconds) to solve for the variable.
5. If the student in the hot seat answers correctly within the time limit, they stay in the hot seat for the next round. If they answer incorrectly or run out of time, they switch places with another student from the circle.
6. Continue the game until each student has had the opportunity to sit in the hot seat multiple times, or until the designated game time is up.
7. Keep track of the number of correct answers each student provides while in the hot seat. The student with the most correct answers at the end of the game wins.

Name: _____ 127

Curriculum Connection P8.2

Equations | Use the equations below

Equation	Solution
x + 5 - 8 = 9	x = 12
6x + (-3) = 45	x = 8
x/(−7) + (-13) = -21	x = 56
x = 8 + 5 -	x = 6
x = 16 - 4	x = 5
x = 25	x = 13
x - 5 = 1	x = 20
x + 32 = 25	x = -7
x - 7 = -4	x = 3
x - 17 = -5	x = 12
(-6) + x = 3	x = 9
(-7) + x = 15 - 7	= 15
x + 6 = 6 x (-2)	
14 + x = 11 x 4 - 5	x = 2
3x + 2 = 17	x
x/2 - 7 = 3	x
x + 9 - 4 = 12	x = 7
2x - 5 = 11	x = 8
x/5 + 3 = 6	x = 15
4x + (-8) = 12	x = 5
x - 9 + 3 = -1	x = 5
5x - 2 = 18	x = 4
x/3 - 5 = -2	x = 9
x - 7 = 0	x = 7

Name: _____ 128

Curriculum Connections
P8.2

7x + (-4) = 24	x = 4
x/6 + (-1) = 5	x = 36
8 + x - 3 = 7	x = 2
6x - 7 = 29	x = 6
x/4 - 2 = 0	x = 8
x + 6 - 4 = 5	x = 3
3x - 9 = 15	x = 8
x/5 -	x = 20
9 + x - 3 = 12	x = 8
4x - 3 = 13	x = 4
x/7 + (-2) = 1	x = 21
5 + x - 2 = 9	x = 6
2x - 6 = 10	x = 8
x/3 - 5 = -1	12
7 + x - 4 = 6	
3x - 5 = 10	x =
x/4 - 3 = 2	x =
x + 8 - 3 = 10	x = 5
2x - 7 = 9	x = 8
x/2 - 4 = 3	x = 14
5 + x - 7 = 6	x = 8
4x - 8 = 16	x = 6
x/3 - 2 = 4	x = 18
9 + x - 6 = 5	x = 2
6x - 8 = 16	x = 4

Name: _____ 129

Curriculum Connection
P8.2

Representing Linear Equations (ax = b)

Instructions Write a pictorial representation of the linear equations provided

#	Linear Equation ($ax = b$)	Pictorial Representation
Ex)	$4x = 28$ $x = 7$	(7) (7) (7) (7) = (28) 4 groups of 7 = 28
1)	5	
2)	$7x =$ $x =$	
3)	$9x = 72$ $x =$	
4)	$8x = 96$ $x =$	
5)	$2x = 144$ $x =$	
6)	$6x = 84$ $x =$	
7)	$4x = 64$ $x =$	

Name: _____ 130

Curriculum Connection
P8.2

Representing Problems with Linear Equations (ax = b)

Instructions Represent the problems with linear equations (ax = b) and solve for x

1) Gianna drove 110km per hour for many hours to get to her cottage that is 770km away. How many hours did she drive for?

Linear equation: x =

2) S full bottles of water each day. She drinks a total of 4500mL of s. How many mL are in her bottle?

quati x =

3) Avery ran 7 laps a neigh d. She ended up running 4200m in total. What is the distance a ghbourhood?

Linear equation:

4) Mason just finished a video game he had ju yday for 10 days. He played for a total of 1250 minutes. Ho inutes play each day?

Linear equation: x =

5) Levi finished recording 6 songs with his band. It took them 174 min s to record all 6 songs. On average, how many minutes did it take them to record each song?

Linear equation: x =

6) Owen types 32 words per minute. He typed an essay that was 256 words long. How many minutes did it take him to type the essay?

Linear equation: x =

Name: _____ 131

Curriculum Correction
P8.2

Representing Problems with Linear Equations (ax = b)

Directions Write your own situations that can be represented with an (ax = b) equation

1)

Linear equ

2)

Linear equation:

3)

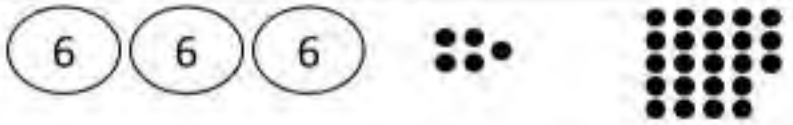
Linear equation:

Name: _____ 132

Curriculum Connection P8.2

Representing Linear Equations (ax + b = c)

Instructions Write a pictorial representation of the linear equation provided

#	Linear Equation	Pictorial Representation
Ex)	$3x + 5 = 23$ $x = 6$	 3 groups of 6 + 5 = 23
1)	$3x$	
2)	$8x + 9$ $x =$	
3)	$5x + 8 = 43$ $x =$	
4)	$7x + 8 = 50$ $x =$	
5)	$2x + 12 = 42$ $x =$	
6)	$4x + 22 = 66$ $x =$	
7)	$8x + 15 = 79$ $x =$	

Name: _____ 133

Curriculum Connection
P8.2

Representing Problems with Linear Equations (ax + b = c)

Instructions Represent the problems with linear equations (ax + b = c) and solve for x

1) Dylan went to an arcade. He had to pay for each game he played. He ended up playing 8 games. He also had to pay $12 to enter the arcade. In total, it cost him $36 at the arcade. How much does each game cost?

Linear equation: x =

2) For babysitting, [illegible] charges a fee of $10, plus $4 per hour. Ashley earned $46 babysitting. How many hours did she babysit for?

Linear equation: x =

3) Riley has $30 saved to buy a new coat. She is able to save $7 a week from her allowance. How many weeks will it be until she has the $128 she needs for her new coat?

Linear equation: x =

Exit Cards

Cut Out Cut out the exit cards below and have students complete them at the end of class

Name: _____

Represe e problems with linear equatio = c) and solve for x.

A c arges a flat fee o plus r for renting a ca cos renting the ca 0, for many hours did t stor car?

Name: _____

Represent the problems with linear equations (ax + b = c) and solve for x.

A car rental company charges a flat fee of $25 plus $5 per hour for renting a car. If the total cost for renting the car was $60, for how many hours did the customer rent the car?

Name: _____

Represent the problems with linear equations (ax + b = c) and solve for x.

A car rental company charges a flat fee of $25 plus $5 per hour for renting a car. If the total cost for renting the car was $60, for how many hours did the customer rent the car?

Name: _____

Represent the pr ar equations (ax + b = c) a e for x.

A car rental company charges a flat fee of $25 plus $5 per hour for renting a car. If the total cost for renting the car was $60, for how many hours did the customer rent the car?

Name: _____ 137

Curriculum Connection P8.2

Solving Linear Equations (ax=b, ax+b=c)

Instructions Solve the linear equations below by determining the value of x

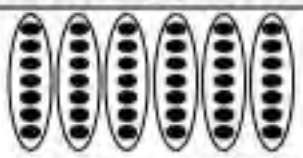
1) $8x = 56$ $x =$	2) $6x + 8 = 50$ $x =$	3) $9x + 11 = 83$ $x =$
4) [illegible] $x =$	5) $4x + 17 = 45$ $x =$	6) $8x + 15 = 71$ $x =$
7) $11x = 55$ $x =$	8) [illegible] $x =$	9) $9x = 108$ $x =$
10) $15x + 40 = 115$ $x =$	11) $7x + 31 = 94$ $x =$	12) [illegible] 110 $x =$
13) $16x = 96$ $x =$	14) $11x + 60 = 115$ $x =$	15) $12x + 42 = 126$ $x =$
16) $25x + 70 = 245$ $x =$	17) $14x + 25 = 123$ $x =$	18) $100x = 1200$ $x =$

Name: _____ 138

Curriculum Connection
P8.2

Representing Linear Equations (x/a = b)

Instructions Write a pictorial representation of the linear equations provided

#	Linear Equation	Pictorial Representation	Verification
Ex)	$\frac{x}{6} = 7$ $x = 42$	 42 divided by 6 = 7	$\frac{42}{6} = 7$ ✓
1)	$\frac{x}{3} = 8$ $x =$		
2)	$\frac{x}{5} = 6$ $x =$		
3)	$\frac{x}{8} = 9$ $x =$		
4)	$\frac{x}{7} = 11$ $x =$		
5)	$\frac{x}{6} = 7$ $x =$		
6)	$\frac{x}{4} = 12$ $x =$		
7)	$\frac{x}{3} = 15$ $x =$		

Name: _____ 139

Curriculum Connection
P9.2

Representing Problems with Linear Equations (x/a = b)

Directions Represent the problems with linear equations ($\frac{x}{a} = b$) and solve for x

1) Mya is having a party with 95 guests. She is serving soda to drink. She bought enough soda for each guest to have 3. How many sodas did she buy?

Linear equation: $x =$

2) [illegible] me money today cutting grass in her neighbourhood. She [illegible] yard she cuts and she cut 7 yards. How much money did she [illegible] today

Linear equation: $x =$

3) Neill collected a [illegible] candy a[illegible] trick-or-treating for Halloween. He divided his candy equ[illegible] his 3 other brothers. Each person got 24 candies. How many candi[illegible]?

Linear equation:

4) Amelia is in a running challenge. She will [illegible] needs to run over 6 days. Each day she will run 12km. How [illegible] km d[illegible] need to run for the challenge?

Linear equation: $x =$

5) Connor is one of the best 3-point shooters around. Each week, he takes a certain amount of 3-point shots during practice. He practices 6 days a week and takes 85 shots per session. How many shots in total does he take for the week?

Linear equation: $x =$

6) Hani has to do a bunch of push-ups for a fitness challenge. He divides the pushups into 8 sets of 25. How many total pushups does he need to do for the challenge?

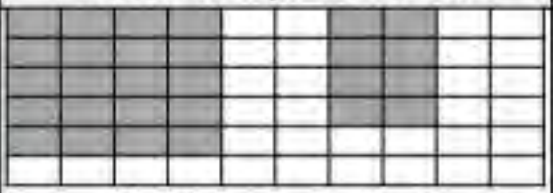
Linear equation: $x =$

Name: _____ 142

Curriculum Connection
P8.2

Representing Linear Equations (x/a + b = c)

Instructions Write a pictorial representation of the linear equations provided

#	Linear Equation	Pictorial Representation	Verification
Ex)	$\frac{x}{4} + 8 = 13$ $x = 20$	 20 divided by 4 + 8 = 13	$\frac{20}{4} + 8 = 13$ ✓
1)	+ 6 =		
2)	$\frac{x}{5} + 10 = 13$ $x =$		
3)	$\frac{x}{8} + 5 = 9$ $x =$		
4)	$\frac{x}{7} + 15 = 17$ $x =$		
5)	$\frac{x}{6} + 14 = 18$ $x =$		
6)	$\frac{x}{4} + 12 = 19$ $x =$		

Name: _____ 143

Curriculum Connection
PB.2

Representing Linear Equations (x/a + b = c)

Directions Represent the problems with linear equations (x/a + b = c) and solve for x

1) Ivy's teacher had a box of pencils to give out to the class. Each of the 30 students in the class received 3 pencils. Ivy also brought 8 pencils from home and now she has 11 pencils. How many pencils did Ivy's teacher have in the box?

ar equation: x =

2) arned some money today selling bracelets. Leah took home and a e $85 she already had, which means she now has $135. How much tal?

Linear eq x =

3) Hailey made spaghetti and meat her She made enough meatballs for 6 of her friends to have 7 ea e frien xtra meatballs from home. That friend now has 10 meatballs. H any s did Hailey make?

Linear equation:

4) A group of 6 friends drove to Ottawa to see the Parliament E end drove 120km. After everyone drove 120km, one friend finishe the y driving an extra 55km. That friend drove 175km in total. How far was the before the one friend drove the extra 55km?

Linear equation: x =

5) A bag of carrots was divided into 8 groups for 8 bunnies to eat. Each bunny got 6 carrots, however, one of the bunnies found a different bag of carrots and ate 15 extra carrots before being caught. That bunny was able to eat 21 carrots in total. How many carrots were in the original bag of carrots.

Linear equation: x =

Exit Cards

Cut Out Cut out the exit cards below and have students complete them at the end of class

Name: _____

Represent the problems with linear equations (x/a + b = c) and solve for x.

A bag of candies was divided among 5 children equally. Each child received 10 candies. One child found another bag and ate an extra 5 candies. That child ate 15 candies in total. How many candies were in the original bag?

Name: _____

Represent the problems with linear equations (x/a + b = c) and solve for x.

A bag of candies was divided among 5 children equally. Each child received 10 candies. One child found another bag and ate an extra 5 candies. That child ate 15 candies in total. How many candies were in the original bag?

Name: _____

Represent the problems with linear equations (x/a + b = c) and solve for x.

A bag of candies was divided among 5 children equally. Each child received 10 candies. One child found another bag and ate an extra 5 candies. That child ate 15 candies in total. How many candies were in the original bag?

Name: _____

Represent the problems with linear equations (x/a + b = c) and solve for x.

A bag of candies was divided among 5 children equally. Each child received 10 candies. One child found another bag and ate an extra 5 candies. That child ate 15 candies in total. How many candies were in the original bag?

Name: _____ 146

Curriculum Connection P8.2

Solving Linear Equations (x/a=b, x/a+b=c)

Instructions Solve the linear equations below by determining the value of x

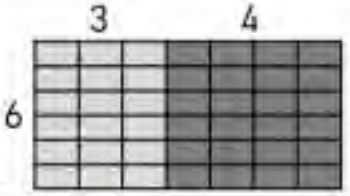
1) $\frac{x}{6} = 7$ $x =$	2) $\frac{x}{6} + 5 = 13$ $x =$	3) $\frac{x}{3} = 8$ $x =$
4) [illegible] $x =$	5) $\frac{x}{4} = 9$ $x =$	6) $\frac{x}{8} + 4 = 12$ $x =$
7) $\frac{x}{11} + 13 = 21$ $x =$	[illegible] $x =$	9) $\frac{x}{12} + 8 = 13$ $x =$
10) $\frac{x}{7} = 7$ $x =$	11) $\frac{x}{15} + 5 = 9$ $x =$	[illegible] = 7 $x =$
13) $\frac{x}{10} + 27 = 40$ $x =$	14) $\frac{x}{8} = 7$ $x =$	15) $\frac{x}{8} + 11 = 20$ $x =$
16) $\frac{x}{3} + 15 = 26$ $x =$	17) $\frac{x}{5} + 22 = 42$ $x =$	18) $\frac{x}{12} = 7$ $x =$

Name: _____ 147

Curriculum Connection P8.2

Representing Linear Equations – a(x + b) = c

Instructions Write a pictorial representation of the linear equation provided

#	Linear Equation	Pictorial Representation	Verification
Ex)	6(x + 4) = 42 x = 3		6(3 + 4) = 6 x 7 = 42 ✓
1)	x + 5)		
2)	4(x + 3) = 36 x =		
3)	2(x + 6) = 22 x =		
4)	7(x + 4) = 77 x =		
5)	8(x + 5) = 72 x =		
6)	6(x + 3) = 48 x =		

Name: _____ 148

Curriculum Connection
P8.2

Representing Linear Equations – a(x + b) = c

Instructions Represent the problems with linear equations a(x + b) = c and solve for x

1) 3 students were comparing what they had in their lunch today. All 3 students had the same number of pieces of fruit. They had 6 strawberries each and some raspberries as well. In total, the 3 students had 42 pieces of fruit. How many raspberries did each student have?

Linear equation: x =

2) A uniform consists of a jersey and shorts. The jersey costs $22. A team ordered 15 uniforms and paid a total of $1485. How much did each pair of shorts cost?

Linear equation: x =

3) Ralph ordered 7 slices of pizza and 7 drinks for him and his friends. The pizza slices were $4 each. Ralph paid $49 in total. How much did each drink cost?

Linear equation: x =

Name: _____ 149

Curriculum Connections
P8.2

Representing Linear Equations – a(x + b) = c

Instructions Represent the problems with linear equations a(x + b) = c and solve for x

1) Lisa worked out 5 times last week. She did weight training for 30 minutes each session and ran each session as well. In total, she exercised for 250 minutes last week. How long did she run for each session?

Li ation: x =

2) A bakery sells do kies ordered 7 cookies and 7 donuts and spent $35. If the cook $2 ere the donuts?

Linear equation: x =

3) Gabe orders 9 burgers and fries for him and his friends. He spends $108 in total on the order. If the burgers cost $7 each, how much is one order of fries?

Linear equation: x =

Name: _____ 152

Curriculum Connection P8.2

Solving Linear Equations: a(x + b) = c

Instructions Solve the linear equations below by determining the value of x

1) $8(x + 4) = 56$ $x =$	2) $6(x + 7) = 66$ $x =$	3) $4(x + 5) = 32$ $x =$
4) [illegible] $x =$	5) $11(x + 9) = 121$ $x =$	6) $12(x + 6) = 96$ $x =$
7) $6(x + 3) = 96$ $x =$	8) [illegible] $x =$	9) $4(x + 6) = 52$ $x =$
10) $7(x + 11) = 105$ $x =$	11) $4(x + 12) = 8$[illegible] $x =$	12) [illegible] = 90
13) $11(x + 7) = 110$ $x =$	14) $50(x + 5) = 450$ $x =$	15) $20(x + 4) = 220$ $x =$
16) $6(x + 6) = 150$ $x =$	17) $15(x + 11) = 225$ $x =$	18) $25(x + 3) = 375$ $x =$

Name: _____ 153

Curriculum Connection
P9.2

Math Basketball: Linear Equations Challenge

Objective

What are we learning about?

To reinforce students' understanding and application of solving linear equations in the form of $a(x+b)=c$ through a fun basketball shooting game.

Materials

What you will need for the activity.

- [illegible]ns
- Rec[illegible]ing sh[illegible]n te[illegible]m
- Paper bal[illegible]m)
- Bins or bask[illegible]per te[illegible]
- Desks (one per [illegible]

Instructions

How you wi[illegible]mple[illegible]

1. Arrange the classroom so that there is enoug[illegible]ce fo[illegible]ple teams to work simultaneously. Place a desk about 6 feet [illegible]om a[illegible]et.
2. Place a stack of index cards with problems o[illegible]
3. Provide each team with a recording sheet and a pe[illegible]
4. Divide the students into teams of about five members e[illegible]
5. Each team stands in a line behind their respective desk.
6. The first student in line flips over an index card and solves the probl[illegible]
7. Once the answer is recorded, the student attempts to shoot the pape[illegible]ll into the bin.
8. If the student makes the shot, they place a tally mark on the team's tally sheet for a point. If they miss, no tally is given.
9. The student then goes to the end of the line, and the next student steps up to the desk to repeat the process.
10. The activity continues until all index cards have been solved.
11. Once all index cards are completed, the teacher collects the recording sheets and reviews the answers with the class.
12. For each incorrect answer, the team loses one point.
13. The team with the highest number of points after deductions is declared the winner.

Name: _____ 154

Curriculum Connection
P8.2

Index Cards | Use the following table for the game.

$7(x + 5) = 84$	$5(x + 10) = 75$	$2(x + 15) = 42$
$4(x$ [illegible] $= 64$	$6(x + 7) = 96$	$12(x + 6) = 156$
$8(x +$ [illegible] $+ 5) = 104$		$11(x + 4) = 121$
$9(x + 7) = 144$	$(x$ [illegible]	$7(x + 6) = 91$
$6(x + 4) = 72$	$4(x + 11) =$ [illegible]	$1(x$ [illegible] $) = 110$
$5(x + 8) = 85$	$3(x + 13) = 48$	$2(x +$ [illegible] $) = 36$
$3(x + 12) = 51$	$7(x + 9) = 126$	$8(x + 6) = 112$
$10(x + 3) = 130$	$10(x + 4) = 140$	$5(x + 9) = 80$

Name: _____ 155

Curriculum Connection P8.2

Representing Problems with Linear Equations

Instructions Represent the problems with linear equations

1) A plumber charges $35 for a service call plus an additional hourly rate. The plumber just earned $195 for a 4-hour call. How much does the plumber earn per hour?

Linear equation: x =

2) Jody worked two jobs last week for a total of 45 hours at each job. She is a hair-dresser and works as a cashier as well. As a cashier she earns $15 an hour. For the week, Jody made $333. How much does Jody earn as a hair-dresser per hour?

Linear equation: x =

3) A group of 9 friends earned some money performing in a band. Rachel is the singer, and she went home with $60. She already had $150 at home and now she has $210. How much did the band earn?

Linear equation: x =

Name: _____ 157

Curriculum Connections
P8.2

Algebraic Bottle Flip Challenge

Objective What are we learning about?

To practice and reinforce understanding of representing and solving linear equations through an engaging and physically active bottle flip game.

Materials What you will need for the activity.

- pair/group) filled to ap mately with water (or use cups)
- Set of pro can b ented with linear equations.

Instructions How you

1. Start with a short lesson on repres ting an ing equations.
2. Arrange the students into pairs or small and bottle and a set of question cards to each.
3. Each pair or group receives an answer sheet to eir an
4. Explain the rules: One student draws a question ca ies ve t subtraction algebra problem.
5. Once they believe they have the correct answer, they write i answer sheet.
6. The student then gets to attempt a bottle flip. After answering eac estion, the student gets only one flip. After they flip their bottle, they should keep track of successful flips and unsuccessful flips.
7. Alternate turns within each group or pair until they have completed all the question cards.
8. Groups or pairs tally their successful flips and compare with the rest of the class to determine the winning team (team with the most successful flips/correct answers). For incorrect answers, deduct a point from their successful bottle flips.
9. Go through the answer sheet with the class to ensure understanding and correct any misconceptions.
10. Discuss the strategies used to solve the linear equations and how this type of algebra is used in real-life situations.

Name: _____ 158

Curriculum Connections
PB.2

Directions Cut out the questions below and use for the game

$5(x + 5) = 45$	Samantha bought 5 identical notebooks and a pen for $29. If each notebook costs $5, how much did the pen cost?
$+ 7 = 28$	A garden has a length of 65 metres and a width of x metres. The area of the garden is 520 square metres. Find the width.
$= 5$	There are x apples equally divided among 3 baskets. Each basket has 8 apples. How many apples are there in total?
$9x - 11 = 16$	Thre s the number of candies s 4 ls 20. How many ca there?
$8x + 14 = 38$	A book cti extra pages. The t l n is 41. How many section hav
$7x - 5 = 30$	A large box contains 8 smaller boxes minus 12 items in total. If the large box has 36 items, how many items does each small box have?
$10x + 9 = 49$	A school bought 12 identical desks and a teacher's desk for $780. If each identical desk costs $60, how much did the teacher's desk cost?

Name: _____ 159

Directions Cut out the questions below and use for the game

$x/2 + 3 = 11$	The total weight of 10 identical boxes minus 6 kg is 44 kg. What is the weight of each box?
- 7 = 29	Two times the number of students in a group divided by 5 equals 8. How many students are in the group?
4x 36	Four times the age of a person minus 6 equals 30. How old is the person?
$11x - 8 = 36$	Five a mber minus 8 equals 7. W he number?
$5x + 13 = 48$	Seven tim nu dents plus 3 equals 52. H nts are t e?
$3x - 9 = 12$	Four times the length of a rope minus 7 cm equals 13 cm. What is the length of the rope?
$9x + 5 = 86$	Five times the age of a person minus 7 equals 38. How old is the person?

Name: _____ 160

Curriculum Connections
PB.2

Directions Cut out the questions below and use for the game

$7x - 14 = 28$	A rectangle's length is 5 metres more than its width. If the perimeter of the rectangle is 30 metres, what is the width?
$+ 8 = 26$	Jane has 3 times as many apples as Tom. Together, they have 48 apples. How many apples does each person have?
60	The number of boys in a class is 4 more than the number of girls. If there are 24 students in total, how many boys are there?
$6x + 10 = 40$	Thr…es the number of chairs min… equ…4. How many chairs …re?
$x/3 - 2 = 7$	The total …er … …ded by 4 plus 3 equa… …y apples a… th…
$4x + 5 = 21$	Eight times the number of books plus 2 equals 50. How many books are there?
$12x + 7 = 55$	Nine times the height of a building minus 1 equals 80. What is the height of the building?

Name: _____ 161

Curriculum Connection
P8.2

Answers

Record your answers below

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41	
42	

Tally

Record your makes and misses

Makes	Misses	Incorrect Answers	Final Score

Name: _____ 162

Curriculum Connections P8.2

Algebraic Puzzle

Steps Fill in the table below to complete the puzzle

In the year 2024, use these steps:	
❑ Pick the number of times a week that you would like to go out to eat (more than once but less than 10).	
❑ Multip[illegible]umber by 2 (just to be bold).	
❑ Add [illegible]	
❑ M[illegible] it by 5	
❑ If you hav[illegible] yo[illegible]day this year, add 1774. If you have not, ad[illegible]	
❑ Now subtract the [illegible] t[illegible]ere born.	
❑ You should have a three-[illegible]nbe[illegible]git of this was your original number. The ne[illegible]wo[illegible]age.	

Explain How does this puzzle w[illegible]

Break down the algebra in each step. Let x be the nu[illegible]es a w[illegible]u want to go out.

Steps	Algebra
Multiply this number by 2 (just to be bold).	
Add 5.	
Multiply it by 50.	
If you have already had your birthday this year, add 1774. If you have not, add 1773.	
Subtract the year you were born, let's call it Y.	

Name: _____ 167

Curriculum Connections P8.2

Algebraic Puzzle

Steps Fill in the table below to complete the puzzle

In the year 2029, use these steps:	
❑ Pick the number of times a week that you would like to go out to eat (more than once but less than 10).	
❑ Multip[illegible]umber by 2 (just to be bold).	
❑ Add [illegible]	
❑ M[illegible] it by 5	
❑ If you hav[illegible] yo[illegible]day this year, add 1779. If you have not, ad[illegible]	
❑ Now subtract the [illegible] [illegible]ere born.	
❑ You should have a three-[illegible]nbe[illegible]git of this was your original number. The ne[illegible]wo[illegible]age.	

Explain How does this puzzle w[illegible]

Break down the algebra in each step. Let x be the nu[illegible] [illegible]es a w[illegible]u want to go out.	
Steps	**Algebra[illegible]**
Multiply this number by 2 (just to be bold).	
Add 5.	
Multiply it by 50.	
If you have already had your birthday this year, add 1778. If you have not, add 1777.	
Subtract the year you were born, let's call it Y.	

Name: _____ 168

Curriculum Connection
TQ

Unit Test – Variables and Equations

Part 1 Evaluate the following expression for x = 5 and p = -7

1) $(x) + (p) - 11$	2) $17 + x + (p)$	3) $(19 - x) - (p)$	4) $x + (26 + p)$
5) $54 \div$ [illegible]	6) $22 + 8x - (p + 5)$	7) $12 - \frac{7x}{p} + 5p$	8) $9x + (2p - x)$

Part 2 Put a slas[illegible] the [illegible]n (≠) if it is not balanced

1) (-9) + 7 = 2	2) 1[illegible] 18) =	3) (-21) + 13 = -8
4) $\frac{50}{10} = -10$	5) $\frac{36}{-9} = ($[illegible]	$\frac{48}{}$ = 6

Part 3 Simplify the equations below. Make sure the va[illegible]ble

1) $x = 9 + 14 - 5$

2) $x = 24 \div 6$[illegible]

3) $48 = x + 56$

4) $x + (3 \times 4) = 60 \div (-10)$

Curriculum Connection
TBA

Part 4 Solve the linear equations below by determining the value of x

1) $6x = 84$ $x =$	2) $4x + 14 = 62$ $x =$	3) $11x + 24 = 79$ $x =$
4) $x =$	5) $\frac{x}{6} = 12$ $x =$	6) $\frac{x}{6} + 7 = 18$ $x =$
7) $8(x + 5) = 96$ $x =$	8) $x =$	9) $7(x + 12) = 140$

Part 5 Represent the problems with linear equations

1)	A hot tub repair technician charges $125 for a service call plus an additional hourly rate. The technician just earned $245 for a 4-hour call. How much does the technician earn per hour? Linear equation: $x =$

2)	Jordan has 5 children. He bought them all the same 2 Christmas presents. He bought them each a new hockey stick for $45. He also bought them each a new sweater. In total, Jordan spent $560 on the sweaters and hockey sticks. How much does each sweater cost? Linear equation: x =
3)	A [illegible] friends earned some money today selling lemonade. Leah took home [illegible]dy had $142, which means she now has $177. How much did the [illegible] Linear eq[illegible] x =
4)	Ava has 4 bags of oranges, and [illegible] bag co[illegible]me number of oranges. She also has 7 more oranges that she pick[illegible]m he[illegible]rd tree. In total, Ava has 39 oranges. How many oranges are [illegible] bag? Linear equation: x =
5)	Samantha went to the gym for 4 days last week. She spent 20 minutes on the elliptical machine and lifted weights for the rest of her workout. In total, she spent 2 hours and 20 minutes at the gym last week. How many minutes did she spend lifting weights each day? Linear equation: x =

Grade 8
SHAPE AND SPACE
Measurement

	Curriculum Expectations	Pages
SS8.1	Demonstrate understanding of the Pythagorean Theorem concretely or pictorially and symbolically and by solving problems.	5-28
SS8.	Demonstrate understanding of the surface area of 3-D objects limited to right prisms and cylinders	
SS8.3	Demonstrate understanding of volume limited to right prisms and cylinders (concretely, pictorially, or symbolically) by: · relating area to volume · generalizing strategies and formulae · analyzing the effect of orientation · solving problems	84-128
SS8.4	Demonstrate an understanding of tessellation by: · explaining the properties of shapes that make tessellating possible · creating tessellations · identifying tessellations in the environment.	133-169, 172-184
TQ	Tests and quizzes	29-30, 129-132, 170-171, 188-189

Name: _____ 5

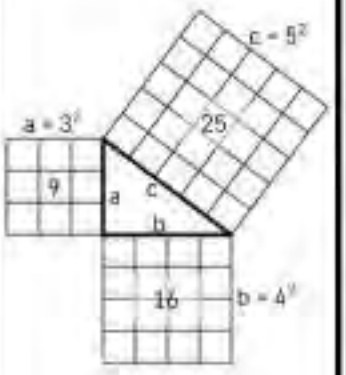
Curriculum Connection
SS8.1

Intro – Pythagorean Theorem

The properties of a right triangle can be used to find an unknown side length. The longest side of a right triangle is always opposite the 90° angle and is called the **hypotenuse.**

The formula for calculating the length of the hypotenuse is: $a^2 + b^2 = c^2$

- If side a is 3 units long, then a square on this side has an area of 3^2 or 9.
- If side b is 4 units long, then a square on this side has an area of 4^2 or 16.
- If the area of the square on side c is equal to the combined areas of the squares on sides a and b, then the square on side c must have an area of 25 square units (9 + 16). This means the length of side c must be $\sqrt{25}$.



Part 1 — Label the sides (a, b, and c) of the triangles: a, b, and c

1)

2)

4)

Part 2 — Evaluate

	Question	Answer
1)	3^2	
2)	8^2	
3)	10^2	
4)	$\sqrt{36}$	

	Question	Answer
5)	$\sqrt{144}$	
6)	$\sqrt{16}$	
7)	7^2	
8)	$\sqrt{81}$	

Part 3 — Label the triangles: a, b, c and fill in the blanks to find their values

1)

$a^2 + b^2 = c^2$

___ + ___ = ___

Hypotenuse = _____

2)

$a^2 + b^2 = c^2$

___ + ___ = ___

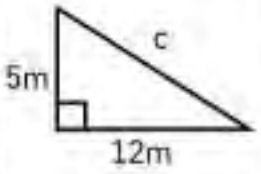
Hypotenuse = _____

Name: _____ 6

Curriculum Connection
SS8.1

Pythagorean Theorem – Missing Side

The most common use of the Pythagorean Theorem is to find the value of a side on a right-triangle. We do this by applying our understanding of simplifying algebraic equations. To find the value of the hypotenuse, simply plug the values into the equation.



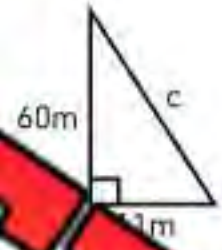
Solution

$a^2 + b^2 = c^2$
$5^2 + 12^2 = c^2$
$25 + 144 = c^2$
$\sqrt{169} = \sqrt{c^2}$
$13 = c$

Instruction Find the value of the hypotenuse

1)

2)



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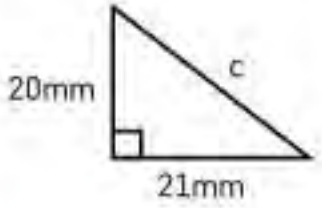

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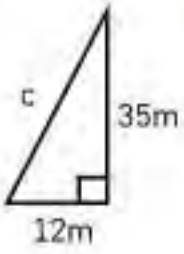

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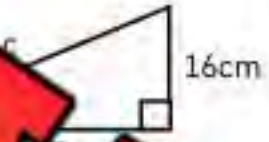

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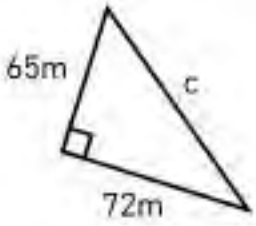

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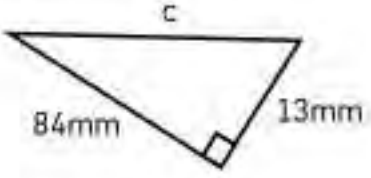

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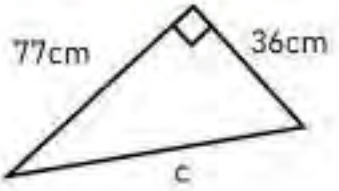


Name: _____ 7

Curriculum Connection
SS8.1

Pythagorean Theorem – Word Problems

Instructions Answer the questions below

1)	In a right-angled triangle, the lengths of the two shorter sides are 3 cm and 4 cm. What is the length of the hypotenuse?
2)	ht tria e leg that measures 8 meters and another leg that measur Wh the length of the hypotenuse?
3)	A building is 30 meters tall, and is le st the top of the building. If the base of the ladder is 25 metre away fr bu ow long is the ladder?
4)	A rectangular billboard is 15 meters tall and 20 meters wide dia ble runs from the bottom corner to the top corner. How long is the pole?
5)	A rectangular garden is 12 meters long and 8 meters wide. If a diagonal path is drawn across the garden, what is the length of the path?

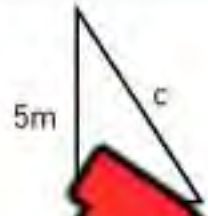
Name: _____ 9

Curriculum Connection
SS8.1

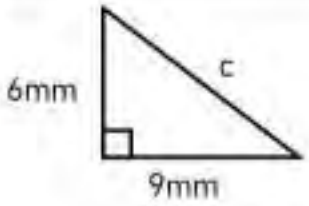
Pythagorean Theorem – Missing Side

Instructions Find the value of the hypotenuse. Round the answer to the nearest tenth

1)



2)



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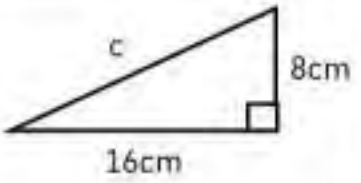
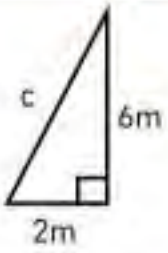
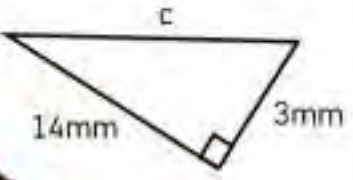


4)



5)

6)



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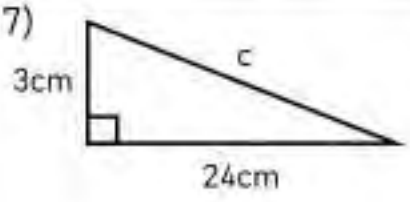

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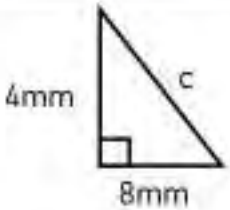

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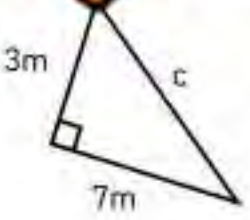


Exit Cards

Cut Out Cut out the exit cards below and have students complete them at the end of class

Name: _____

1) Find the value of the missing side.	2) A rectangular park measures 45m by 60m. A diagonal path cuts across the park. Find the length of the path to the nearest tenth.
a	

Name: _____

1) Find the value of the missing side.	2) A rectangular park measures 45m by 60m. A diagonal path cuts across the park. Find the length of the path to the nearest tenth.
a, 25m, 12m	

Name: _____

1) Find the value of the missing side.	2) A rectangular park measures 45m by 60m. A diagonal path cuts across the park. Find the length of the path to the nearest tenth.
a, 25m, 12m	

Name: _____

1) Find the the missing sid	park path cu the park. Fi length of the path to the nearest tenth.
a, 25m, 12m	

Name: _____ 12

Curriculum Connections
SS8.1

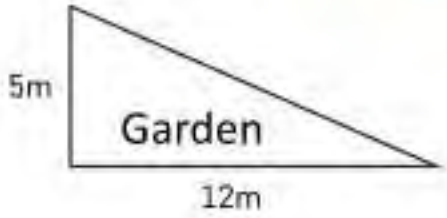
Pythagorean Theorem – Word Problems

Instructions Answer the word problems below

1) Find the hypotenuse of a right triangle with a base of 10cm and a height of 6cm.

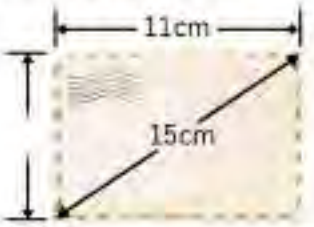
2) Lil[illegible]uth and 3 km east. Calculate how far Lily is away from her [illegible]g point.

3) Julian built a triangular [illegible]h u[illegible]ensions below. If he wanted to put a fence around his gar[illegible]en, h[illegible]wo[illegible]a fence need to be?



4) Ivy's house is a rectangular shape that is 15m wide by 9m [illegible]g. [illegible]g is the diagonal of her house (from corner to corner)?

5) An envelope has the dimensions below. What is the height of the envelope?



Name: ____________________

Curriculum Connection
SS8.1

Pythagorean Theorem – Missing Side

Instructions Find the value of the missing side. Record your answer as a <u>square root</u>

1)

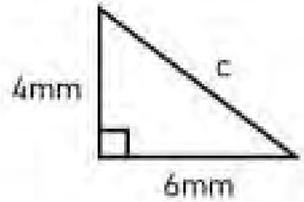
a^2 [illegible]

14[illegible] 36 = [illegible]

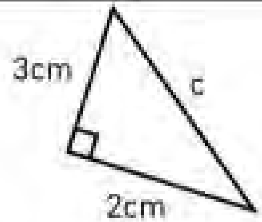
$\sqrt{180} = \sqrt{c}$[illegible]

$c = \sqrt{180}$

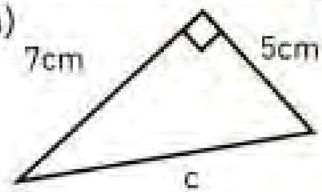
2)



3)

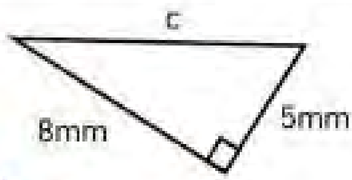


4)

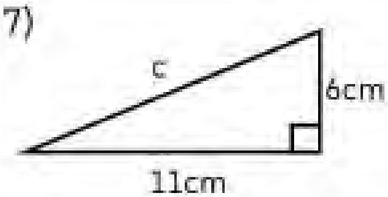


5)

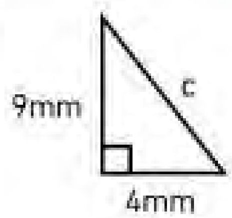
6)



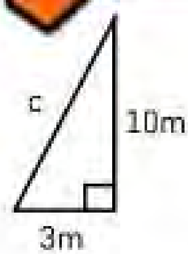
7)



8)



9)



Name: _____ 15

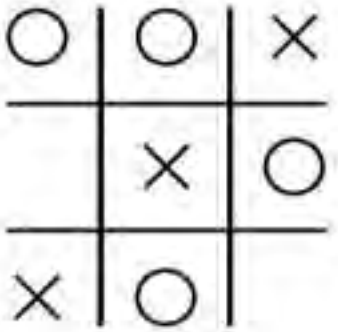
Curriculum Connection
SS8.1

Math Tic-Tac-Toe: Pythagorean Challenge

Objective

What are we learning about?

Students will practice using the Pythagorean Theorem to find the missing side of right triangles in a fun, competitive game of tic-tac-toe. This activity will reinforce their problem-solving skills and teamwork.



Materials

...you will need for the activity.

- Whiteboard ...er
- Markers o... mark...
- Pre-written P... rean... ...e for each cell of the tic-tac-toe grid)

Instructions

How you w... ple... ...y

1) **Preparation**: Hand out Tic-Tac-Toe ...ksheets ...ch ...f students. Each worksheet should have a large tic-tac-toe ...h a d... Pythagorean Theorem problem in each cell. One side o... ...ht t... ...missing in each problem.

2) **Instructions**:
   - Students will play individually against each other, ...n o... ...
     and the other "O."
   - The student playing "X" will go first. They will choose a cell, so...
     Pythagorean Theorem problem in that cell, and check their an... with their partner. If the solution is correct, they place an X in that cell.
   - If the answer is incorrect, they do not place their mark, and it becomes the "O" player's turn. The "O" player will then choose a cell, solve the problem, and check their answer. If correct, they place an O in that cell.
   - The game continues with alternating turns.

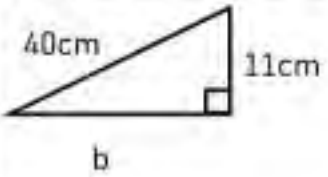
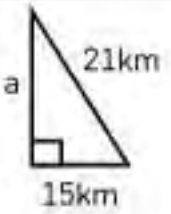
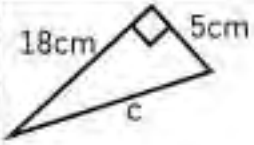
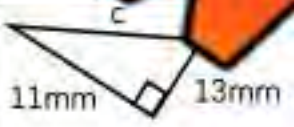
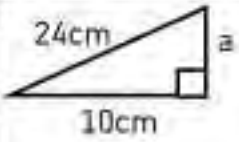
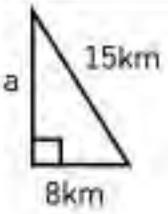
3) **Winning the Game**: The first player to get three marks in a row (horizontally, vertically, or diagonally) wins the game.

4) **Discussion**: After the game, students should discuss with their partner the different strategies they used to solve the problems and any challenges they faced during the activity.

Name: _____ 16

Curriculum Connection
SS8.1

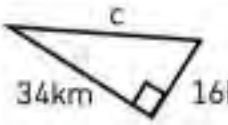
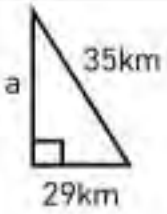
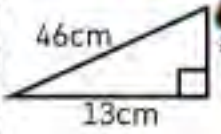
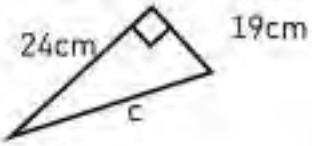
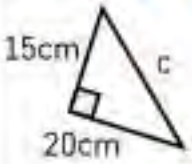
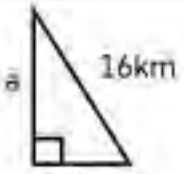
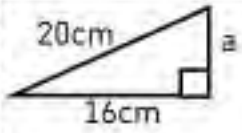
Tic-Tac-Toe Use the following tic-tac-toe grids for the game.

Lily walked 5 km south and 12 km east. How far is she from her starting point?		Jacob's rectangular garden measures 18 m by 24 m. Find the diagonal length.
	Lucas paddled his kayak 4 km north and 3 km east. How far is he from his starting point?	
David climbs 12m up a tree and moves 5m to the right on a branch. What is his diagonal distance from the tree base?		The base of a TV screen measures 48cm, and the height is 36cm. Find the diagonal size of the screen.
A rectangular rug is 9 m wide and 12 m long. What is the diagonal length?	Ella's garden is a rectangle measuring 20m by 15m. Find the diagonal length.	
	Daniel cycled 9km west and 12 km north. How far is he from his starting point?	
	Find the hypotenuse: right triangle with legs of 12cm and 16cm.	

Name: _____ 18

Curriculum Connection
SS8.1

Tic-Tac-Toe Use the following tic-tac-toe grids for the game.

Chris's living room measures 5 m by 12 m. Find the diagonal length.	Lisa climbs 3 m up a ladder and moves 4 m sideways on a scaffold. What is her diagonal distance from the ground?	A triangle has legs of 5 cm and 12 cm. What is the hypotenuse?
A rectangular field is 12m wide and 35 long. What the diag length		
	and 60 nd th of t onal.	Ava jogged 7 km west and 24 km south. How far is she from her starting point?
		mm m
Nathan walked 3km north and 4km east. Calculate the distance from his starting point.		Hannah hiked 15km east and 20 km south. How far is she from the starting point?
	Mia flew her drone 8m upward and 15 m to the right. Calculate the diagonal distance.	Jamie's rectangular swimming pool measures 20m by 25m. Find the diagonal length.

Name: _____ 19

Curriculum Connection
SS8.1

Pythagorean Theorem – Word Problems

Instruction Answer the word problems below

1) Robert has a 4m ladder that he is using to get as high as possible to hang his Christmas lights. He puts the ladder 2 metres away from the wall.

a) Label the dimensions on the diagram

b) How [illegible] the top of the ladder off the ground?

2) Howard has a huge [illegible] very tall bookshelf. He needs to climb 9m to find the boo[illegible] wa[illegible] the top of the ladder to be at the height of the book he wants [illegible] sho[illegible] put the ladder away from the bookshelf?

3) A pirate is on a treasure hunting missing. His GPS tells him he is 32km away from the treasure. He decides to travel 21km due east. The GPS now tells him that the treasure is due south from where his boat is. How far south does he need to travel to find the treasure?

Name: _____ 20

Curriculum Connection
SS8.1

Pythagorean Theorem – Word Problems

Instruction Answer the questions below

1)	Jake's treehouse has a rope ladder that runs diagonally. It measures 26 meters long. The distance from the base of the tree to the bottom of the ladder on the ground is 10 meters. How far above the ground is the entrance to the treehouse?
2)	A recta[illegible]ground[illegible]diagonal length of 85 meters. If the width of the playground[illegible]mete[illegible]gth of the playground.
3)	A zip line is stretched between two trees w[illegible]s between them. The zip line is anchored at a height of 3 [illegible]one tr[illegible]at a height of 8 meters on the other tree. How far apart horizont[illegible]the[illegible]ints?
4)	A tightrope walker is practicing on a rope that measures 25 meters long. The rope is tied between two poles that are 24 meters apart horizontally. If the tightrope walker walks down the rope, how many metres down is it from start to finish?

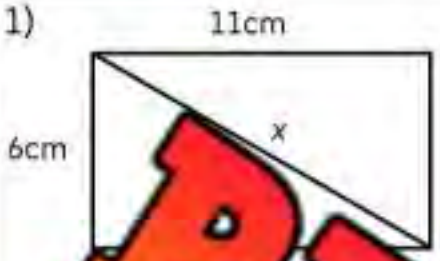
Name: _____ 22

Curriculum Connection
SS8.1

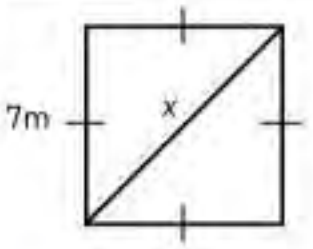
Pythagorean Theorem – Missing Side

Instruction Find the value of x.
Round the answer to the nearest tenth or leave as a square root

1)



2)



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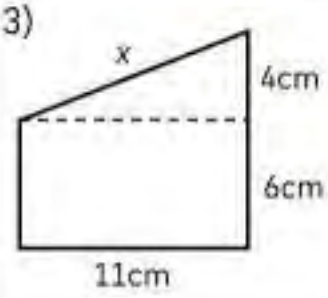
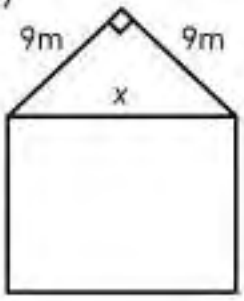
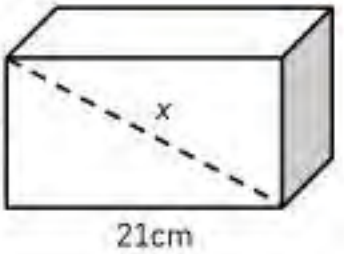


5)



6)



Name: _____ 23

Curriculum Connections
SS8.1

Pythagorean Theorem – Word Problems

Instruction Answer the word problems below

1) TVs are measured diagonally from corner to corner. Jeffrey wants a 150cm TV. He likes the look of one that has a base of 140cm and a height of 54cm. Is the TV 150cm diagonally?

2) To get from point A to point B, you need to walk around the pond. To avoid the pond, you walk 60 m and 45 m. To the nearest metre, how many metres would you have saved if you could have walked through the pond?

3) A baseball diamond is a square with sides of 30m. What is the distance between first base and third base?

4) The local fire department has been called to a burning building. They need their ladder to reach the 4th floor, which is 22m high. They know that the ladder will need to be at least 12m away from the building. If they brought a 25m ladder, will they reach the fourth floor?

Exit Cards

Cut Out Cut out the exit cards below and have students complete them at the end of class

Name: _____

Real-life Pythagorean theorem problems, Find the value of the missing side.

1) A tree is 20 m tall and casts a shadow 15 m long on the ground. What is the distance from the top of the tree to the end of the shadow?

2) A ramp is used to load equipment onto a truck. The ramp is 2 m high and 4 m long along the ground. What is the length of the ramp itself?

Name: _____

Real-life Pythagorean theorem problems, Find the value of the missing side.

1) A tree is 20 m tall and casts a shadow 15 m long on the ground. What is the distance from the top of the tree to the end of the shadow?

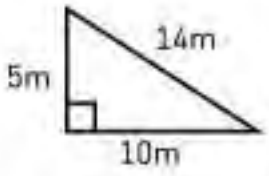
2) A ramp is used to load equipment onto a truck. The ramp is 2 m high and 4 m long along the ground. What is the length of the ramp itself?

Name: _____ 26

Curriculum Connection
SS8.1

Identify Right Triangles – Pythagorean Theorem

We can use the Pythagorean Theorem to find out if a triangle is a right triangle or not. If we have all the measurements of the triangle, we can plug them into the equation. If the equation is true, the triangle is a right triangle and if it is false, it is not.



Solution

$a^2 + b^2 = c^2$

$5^2 + 10^2 = 14^2$

$25 + 100 = 196$

$125 \neq 196$

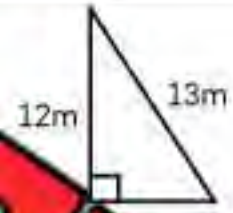
This equation is false, therefore this is not a right triangle

Questions Is the triangle a right triangle?

1)

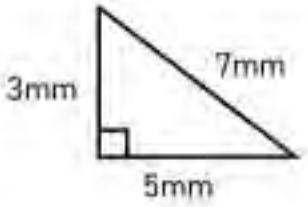
Yes No

2)



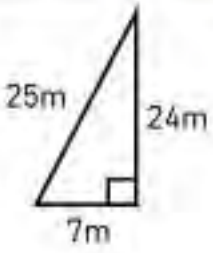
No

3)



Yes No

4)



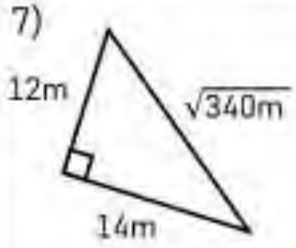
Yes No

5)

Yes No

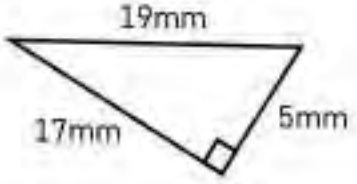
Yes No

7)



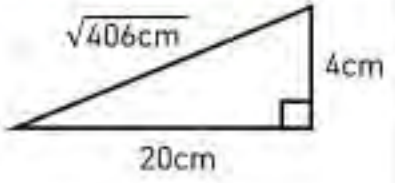
Yes No

8)



Yes No

9)



Yes No

Name: _____ 28

Curriculum Connection
SS8.1

Pythagorean Theorem – Word Problems

Instructions Answer the questions below

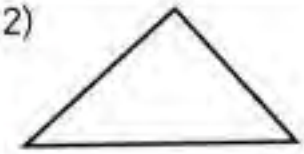
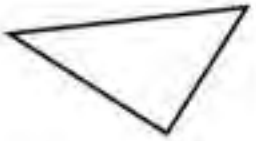
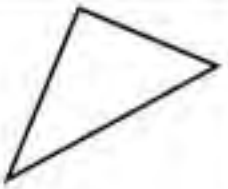
1)	A triangular garden has sides measuring 35 meters, 45 meters, and 55 meters. Is the triangle a right triangle?
2)	A trian[illegible] pool[illegible]des that measure 12 meters, 16 meters, and 20 meters. Is [illegible]ngle[illegible]le?
3)	Three friends are standing at three different [illegible]triang[illegible]ield. The distances between them are 9 meters, 12 meter[illegible]mete[illegible]e triangle a right triangle?
4)	A kite has a width of 18 meters and a height of 24 meters. The diagonal between the two non-adjacent corners measures 30 meters. Is the triangle a right triangle?

Name: _____ 29

Curriculum Connection
TQ

Pythagorean Theorem – Quiz

Part 1 Label the sides of the right triangles: a, b, and c

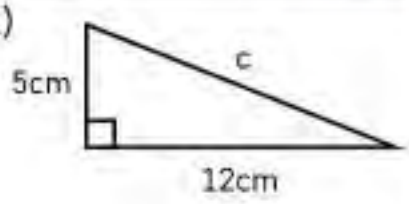
1)	2)	3)	4)
			

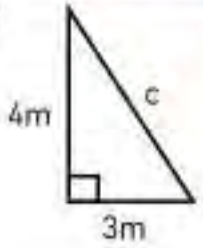
Part 2 [illegible]

	Quest[illegible]	Ans
1)	7^2	
2)	9^2	
3)	$\sqrt{16}$	

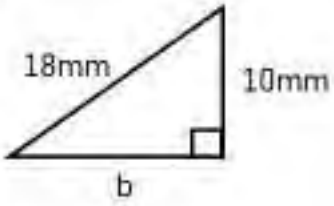
	Question	Answer
4)	$\sqrt{121}$	
5)	$\sqrt{64}$	
	6^2	

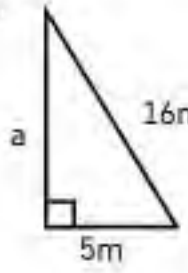
Part 3 Find the value of the mis[illegible]g side [illegible]n

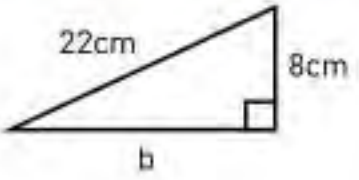
1)


2)


[illegible]


4)


5)


6)


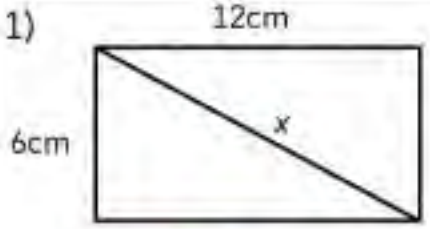
Name: _____ 30

Curriculum Connection
TQ

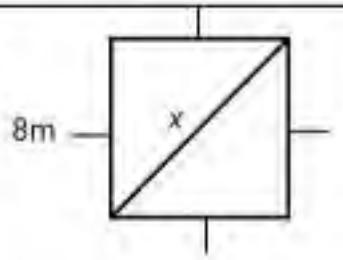
Part 4

Find the value of x.
Round the answer to the nearest tenth or leave as a square root

1)



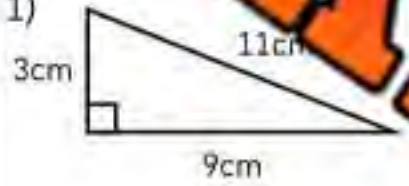
2)



Part 5

gle a right triangle?

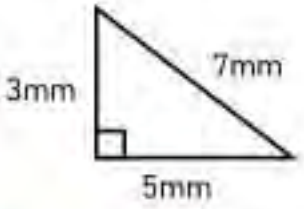
1)



Yes No

Yes No

3)



No

Part 6

Is the triangle a right triangle?

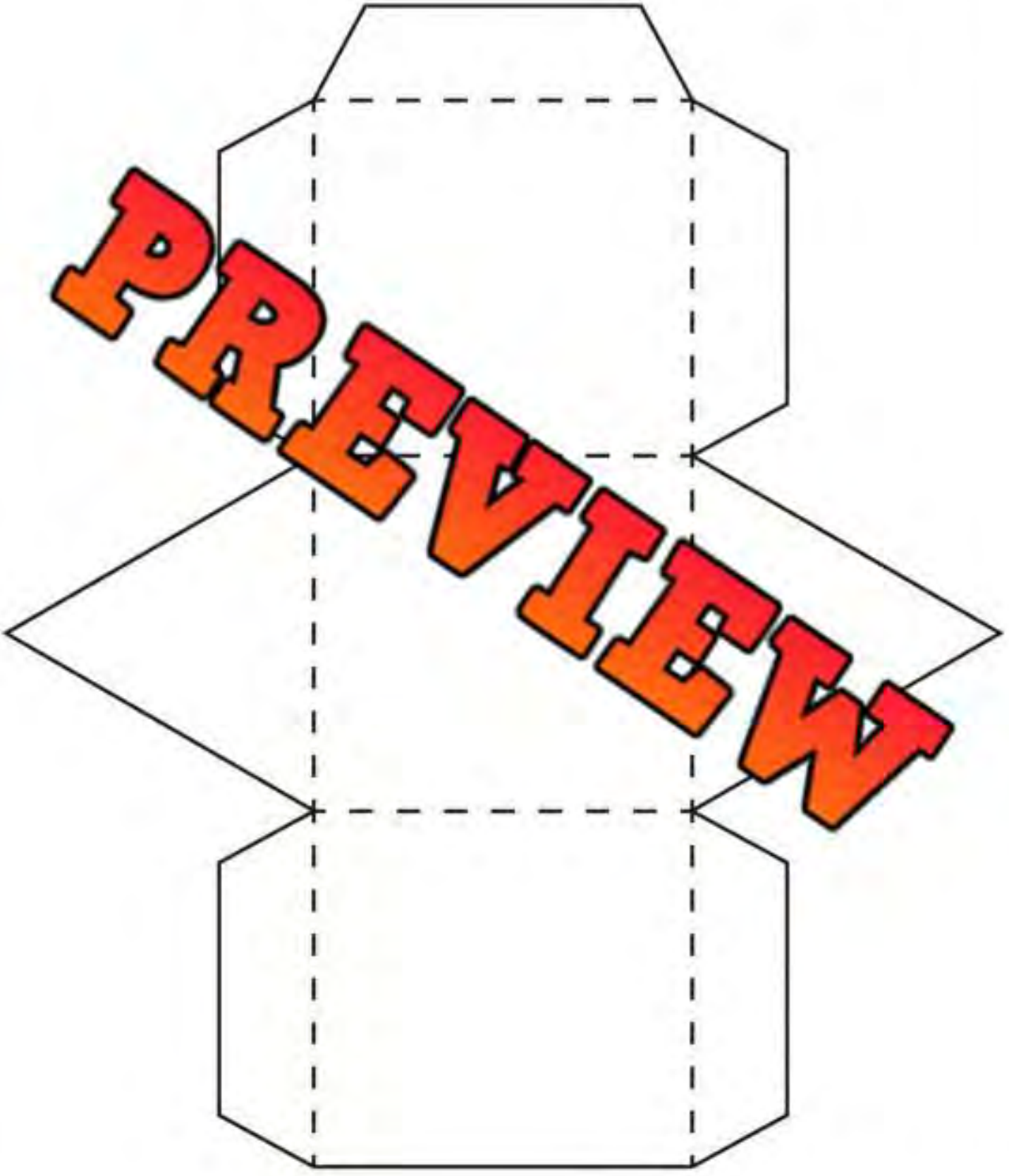
1) A 14m ladder is leaning against a house. The bottom of the ladder is es from the house. How high does the ladder reach to the nearest tenth?

2) A building casts a shadow of 10m on the ground. The length from the top of the building to the end of the shadow is 26m. How tall is the building?

Name: _____ 31

Curriculum Connection
SS8.2

3D Model – Triangle Based Prism Net



Name: _____ 33

Curriculum Connection
SS8.2

3D Model – Cube Net

Name: _____ 36

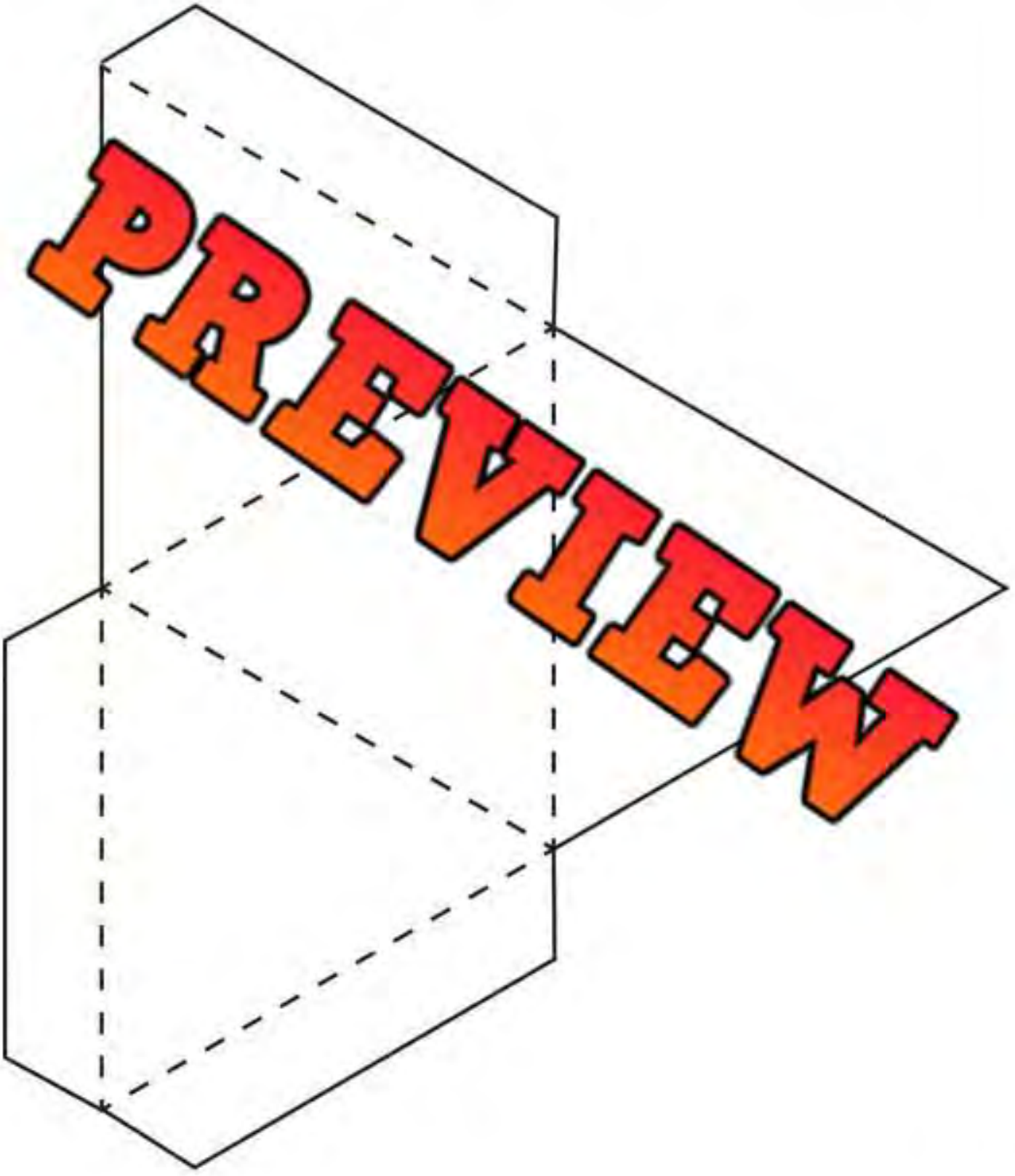
Curriculum Connection
SS8.2

3D Model – Cone Net

Name: _____ 38

Curriculum Connection
SS8.2

3D Model – Triangle Based Pyramid Net



Name: _____ 44

Curriculum Connection
SS8.2

3D Models – Investigating Nets

Name of 3D Shape	Prism or Pyramid	Shape of Base	Faces

Name: _____ 45

Curriculum Connection
SS8.2

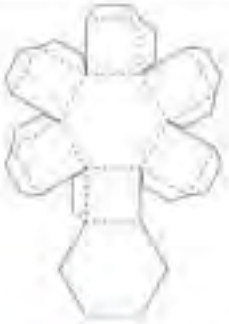
Nets Representing 3D Objects

Instruction Identify and circle the 3D object formed by each net

1)

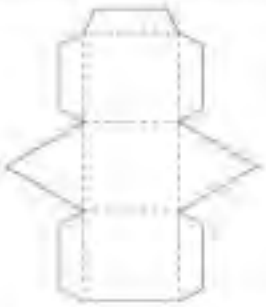
- Rectangular Prism
- Cylinder
- Cube

2)



- Rectangular Prism
- [illegible]gonal Prism
- [illegible] Prism

3)



- Rectangular Prism
- Pentagonal Prism
- Triangular Prism

4)

- Rectangular Pyramid
- Pentagonal Pyramid
- Triangular Pyramid

5)

- Rectangular Pyramid
- Square Pyramid
- Triangular Pyramid

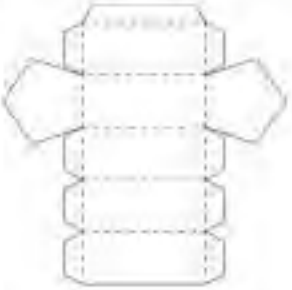
6)

- [illegible]
- [illegible]
- Cone

7)

- Rectangular Prism
- Cylinder
- Cone

8)



- Rectangular Prism
- Pentagonal Prism
- Cube

9)

- Rectangular Prism
- Pentagonal Prism
- Cube

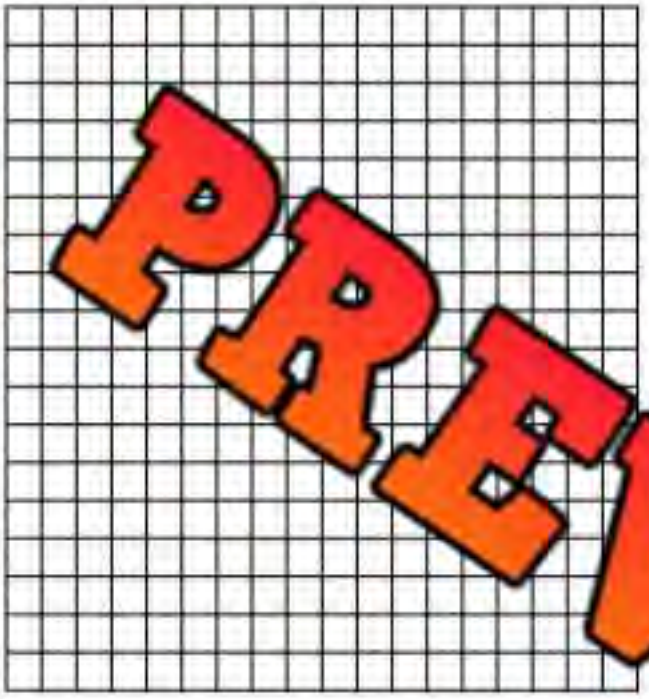
Name: _____ 46

Curriculum Connection
SS8.2

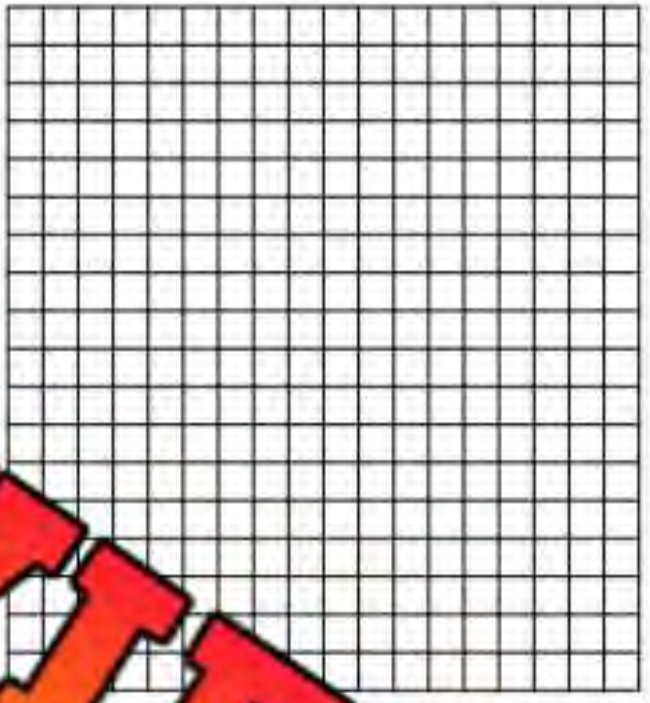
Drawing Nets – 3D Objects

Instructions Draw the 3D objects using the grids below

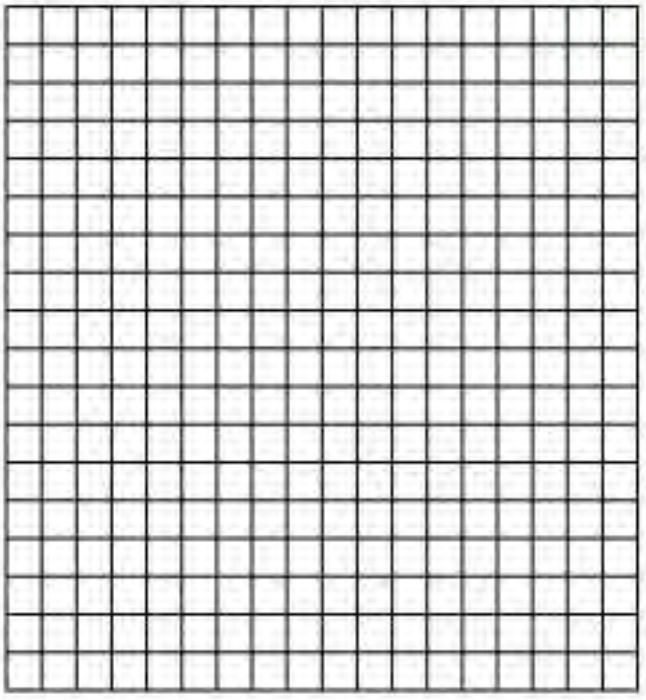
1) Rectangular Prism



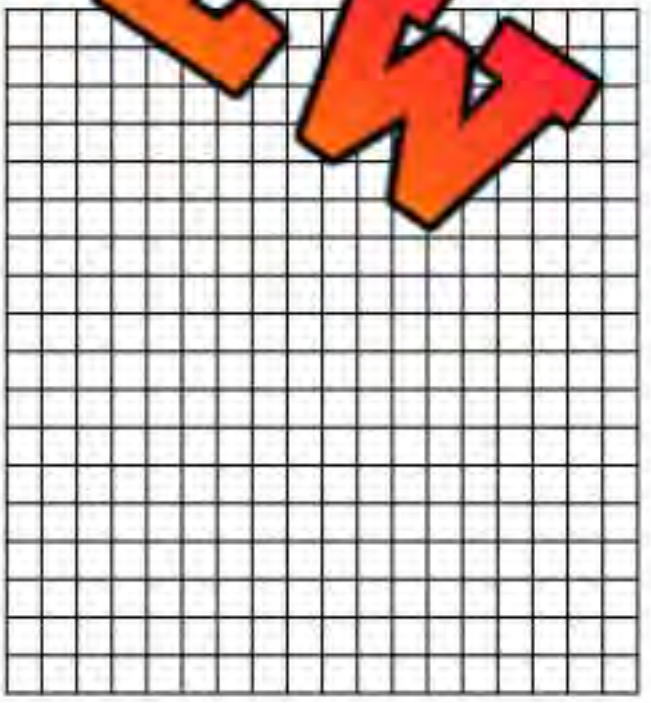
2) Rectangular Prism



3) Triangular Prism



4) [illegible]



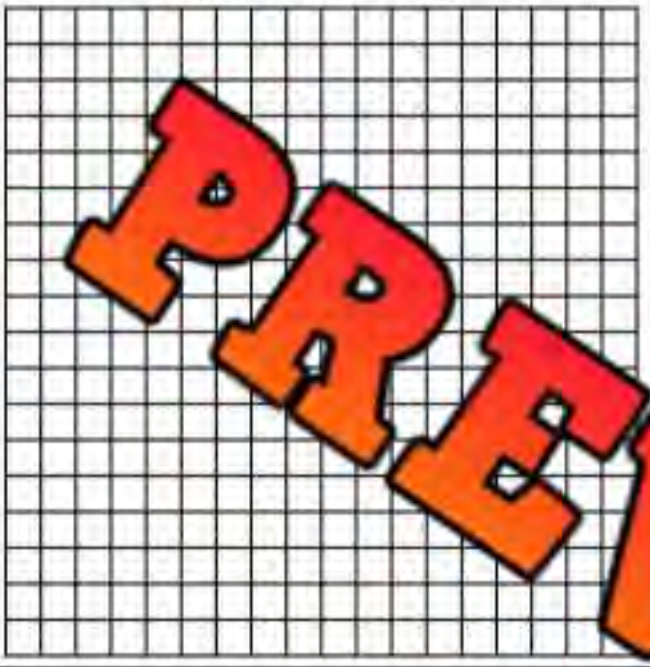
Curriculum Connection
SS8.2

Exit Cards

Cut Out Cut out the exit cards below and have students complete them at the end of class

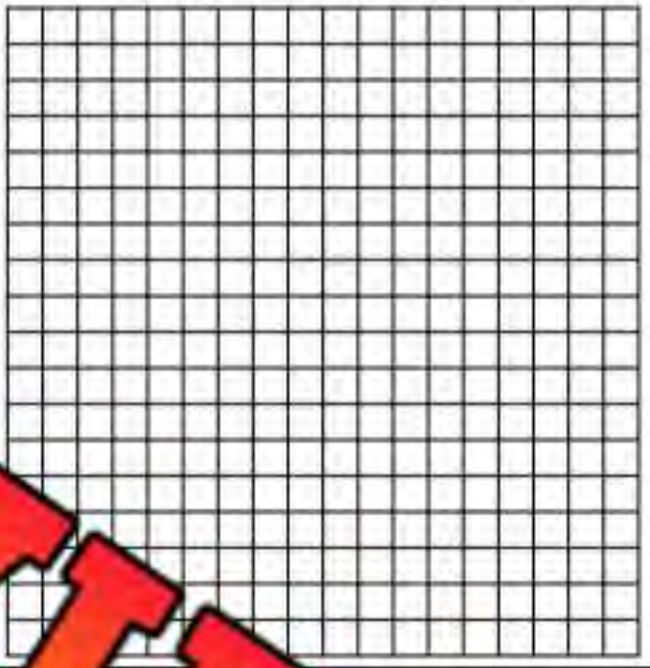
Name: _____

Draw the **Octagonal Prism** using the grid.



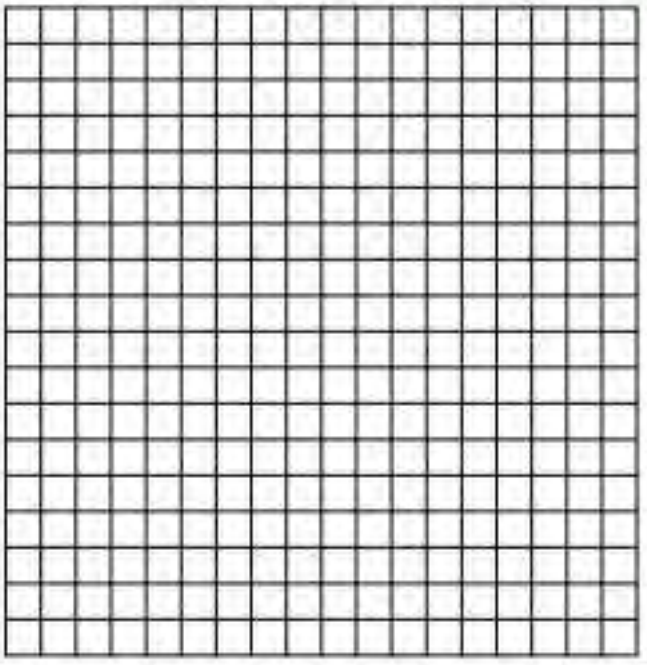
Name: _____

Draw the **Octagonal Prism** using the grid.



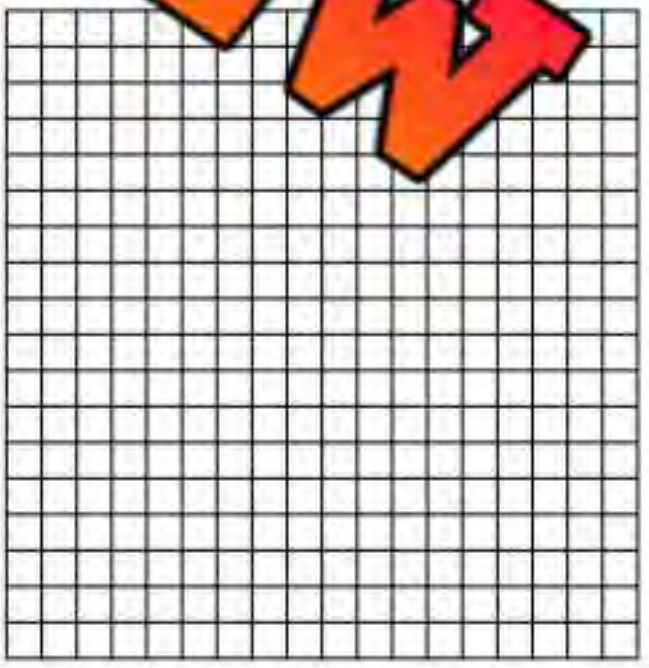
Name: _____

Draw the **Octagonal Prism** using the grid.



Name: _____

Draw the **Octagonal Prism** using the grid.



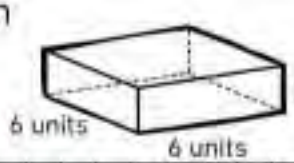
Name: _____ 49

Curriculum Connection
SS8.2

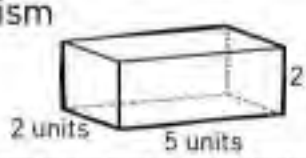
Drawing Nets – 3D Objects

Instructions Draw the nets based on the dimensions provided

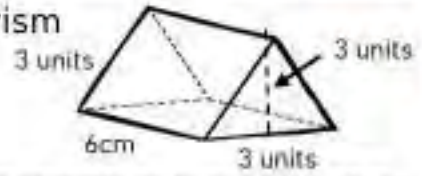
1) Rectangular Prism



2) Rectangular Prism



3) Triangular Prism



4) [illegible]

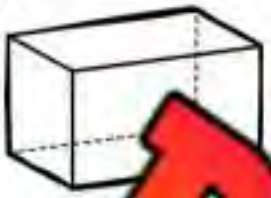
Name: _____ 50

Curriculum Connection
SS8.2

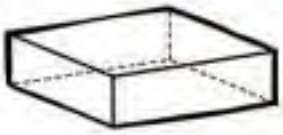
Drawing Nets – 3D Objects

Instructions Draw two different nets of the 3D objects

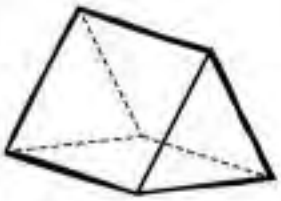
1)



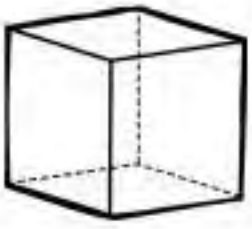
2)



3)



4)

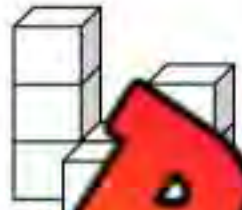
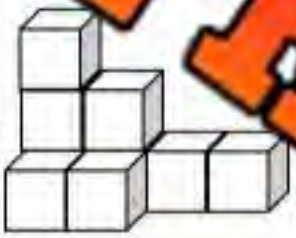
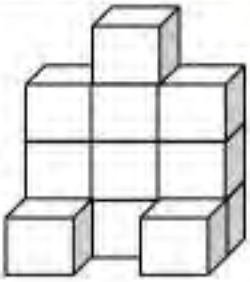
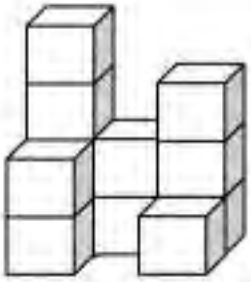
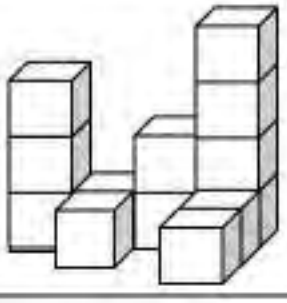


Name: _____ 52

Curriculum Connection
SS8.2

Drawing Top, Front, and Side Views of Objects

Instructions Draw the top, front, and side view of the objects below

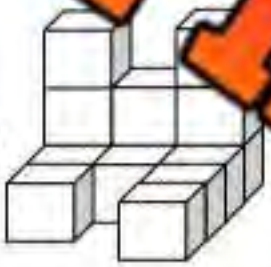
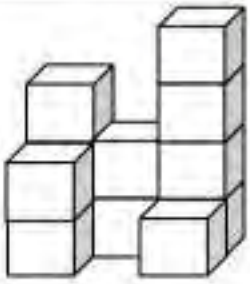
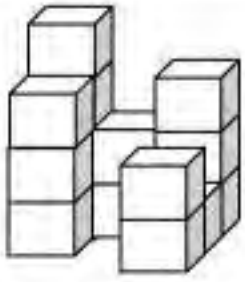
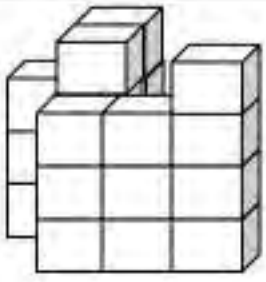
Original Shape	Top View	Front View	Side View
1) 			
2) 			
3) 			
4) 			
5) 			

Name: _____ 54

Curriculum Connection
SS8.2

Drawing Top, Front, and Side Views of Objects

Instructions Draw the top, front, and side view of the objects below

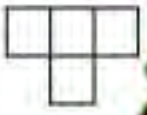
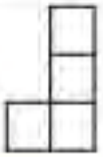
Original Shape	Top View	Front View	Side View
1) 			
2) 			
3) 			
4) 			
5) 			

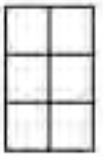
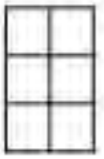
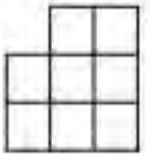
Name: _____ 56

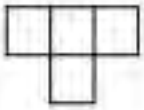
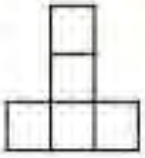
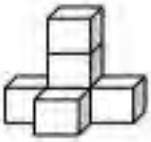
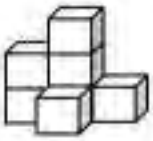
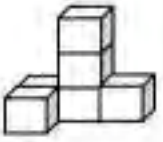
Curriculum Connection
SS8.2

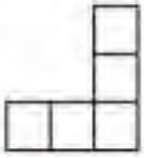
Drawing Top, Front, and Side Views of Objects

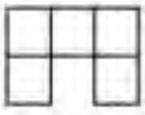
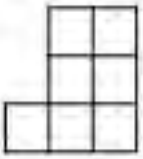
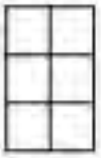
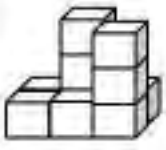
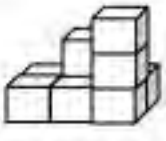
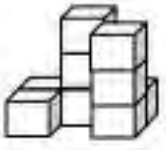
Instruction Look at the front, top, and side views and circle the matching 3D object

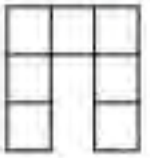
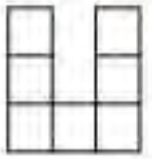
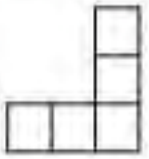
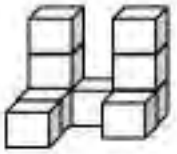
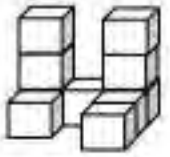
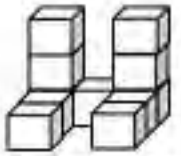
1) Top View	Front View	Side View
		
		

2) Top View	Front View	Side View
		
		

3) Top View	Front View	Side View
		
		

p View	Front View	Side View
		
		

5) Top View	Front View	Side View
		
		

6) Top View	Front View	Side View
		
		

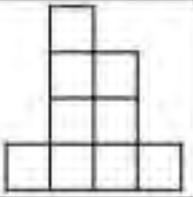
Name: _____ 58

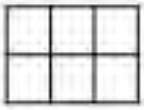
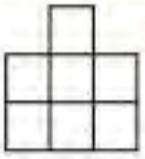
Curriculum Connection
SS8.2

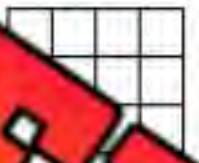
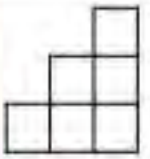
Drawing Top, Front, and Side Views of Objects

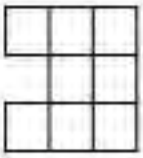
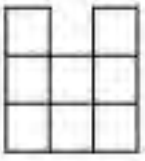
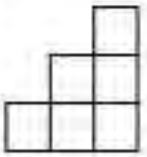
Instruction Draw the 3D objects by using the top, front, and side views

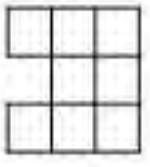
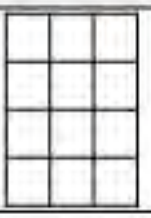
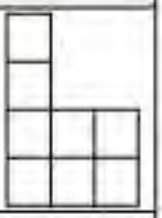
Top View	Front View	Side View
		
1)		

Top View	Front View	Side View
		
2)		

Top View	Front View	Side View
		
3)		

Top View	Front View	Side View
		
4)		

Top View	Front View	Side View
		
5)		

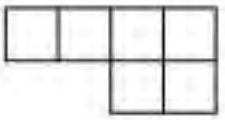
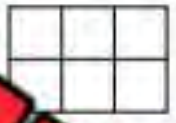
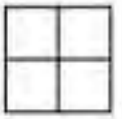
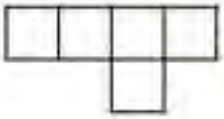
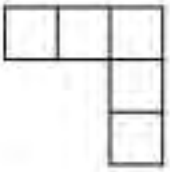
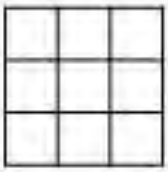
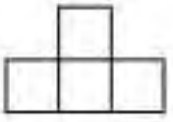
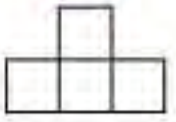
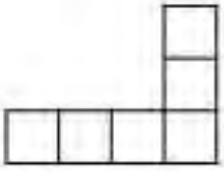
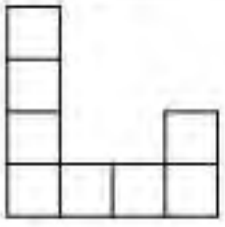
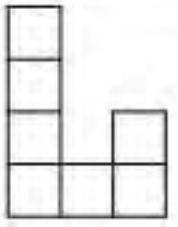
Top View	Front View	Side View
		
6)		

Name: _____ 60

Curriculum Connection
SS8.2

Building 3D Objects Using Blocks

Instruction Use blocks to build a 3D object that matches the top, front, and side viewpoints

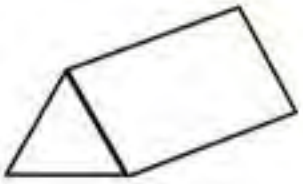
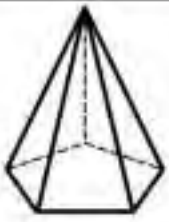
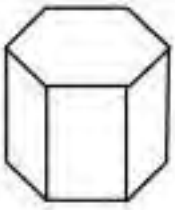
	Top View	Front View	Side View
1)			
2)			
3)			
4)			
5)			
6)			

Name: _____ 61

Curriculum Connection
SS8.2

Drawing Top, Front, and Side Views – 3D Shapes

Instruction Draw the top, front, and side views of the 3D shapes

3D Shape	Top View	Front View	Side View
			
			
			
			
			

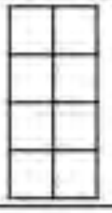
Curriculum Connection
SS8.2

Exit Cards

Cut Out Cut out the exit cards below and have students complete them at the end of class

Name: _____

1) Draw the 3D objects by using the top, front, and side views

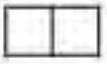
3D Objects	Top View	Front View	Side View
			

2) Draw the top, front, and side views of the 3D shapes

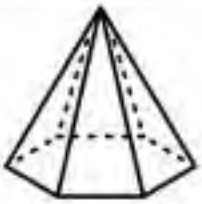
3D Objects	Top View	Front View	Side View
			

Name: _____

1) Draw the 3D objects by using the top, front, and side views

3D Objects	Top View	Front View	Side View
			

2) Draw the top, front, and side views of the 3D shapes

3D Objects	Top View	Front View	Side View
			

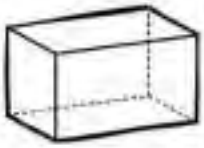
Name: _____ 67

Curriculum Connection
SS8.2

Drawing 3D Objects – Top, Side, Front

Instruction Draw the front, side, and top views of the objects below

Shape	Front	Side	Top
			

Shape	Front	Side	Top
			

Shape	Front	Side	Top
			

Name: _____ 69

Curriculum Connection
SS8.2

Drawing 3D Objects – Top, Side, Front

Instruction Draw the top, side, and front views of the objects after the rotation

Shape	After a 90° horizontal clockwise rotation		
	Front	Side	Top
			

Shape	After a 180° horizontal clockwise rotation		
	Front	Side	Top
			

Shape	After a 270° vertical clockwise rotation		
	Front	Side	Top
			

Shape	After a 180° vertical clockwise rotation		
	Front	Side	Top
			

Name: _____ 71

Curriculum Connection
SS8.2

Introduction – Area of a Triangle

Instruction Find the area of the triangles below (A= b x h ÷ 2)

1)

Area of a rectangle = _____

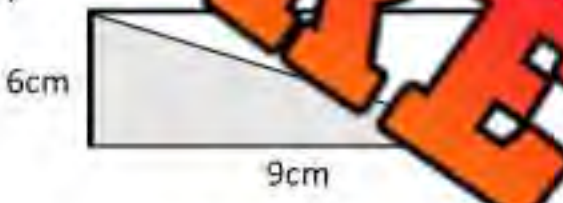
Area of a triangle = _____

2)

Area of a rectangle = _____

Area of a triangle = _____

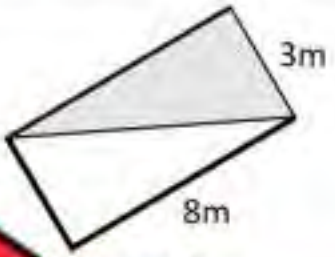
3)



Area of a rectangle = _____

Area of a triangle = _____

4)



Area of a rectangle = _____

Area of a triangle = _____

5)

Area of a rectangle = _____

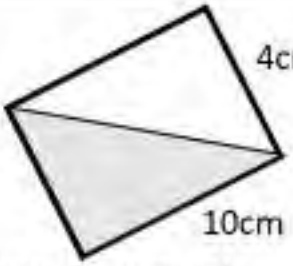
Area of a triangle = _____

6)

Area of a square = _____

Area of a triangle = _____

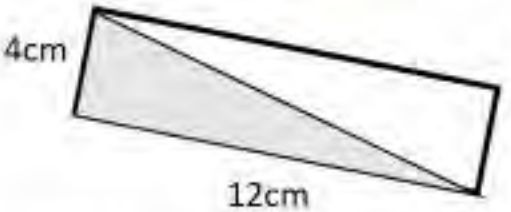
7)



Area of a rectangle = _____

Area of a triangle = _____

8)



Area of a rectangle = _____

Area of a triangle = _____

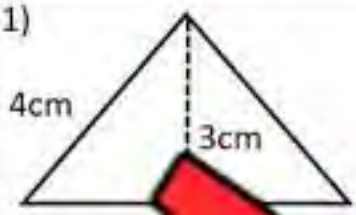
Name: _____ 72

Curriculum Connection
SS8.2

Area of a Triangle

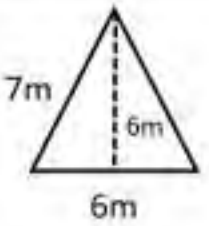
Instruction Find the area of the triangles below (A= b x h ÷ 2)

1)



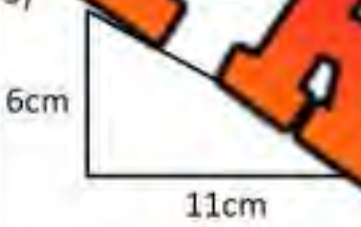
Area = _____

2)



Area = _____

3)

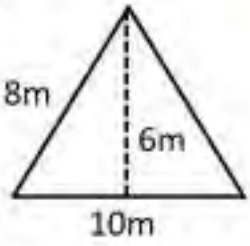


Area = _____

4)

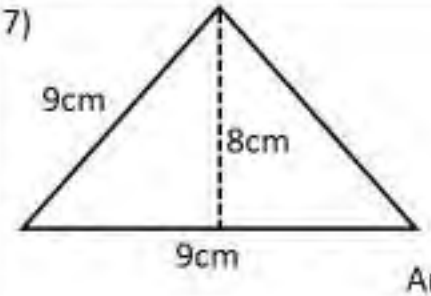
Area = _____

5)



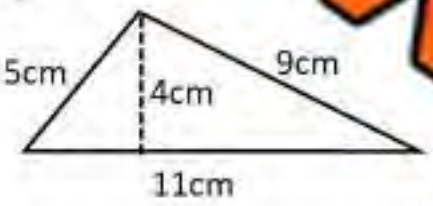
Area = _____

7)



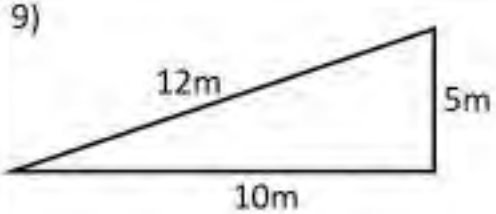
Area = _____

8)



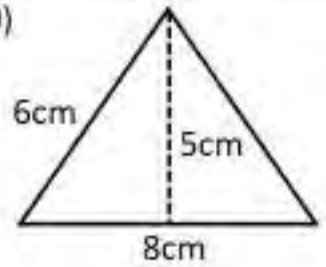
Area = _____

9)



Area = _____

10)



Area = _____

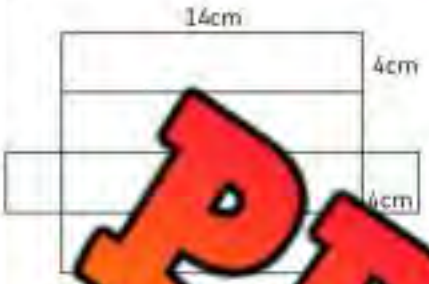
Name: _____ 73

Curriculum Connection
SS8.2

Surface Area Using Nets – Rectangular Prisms

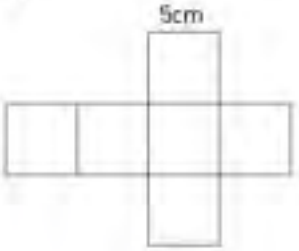
Instruction Find the surface area of the 3D objects using the nets below

1)



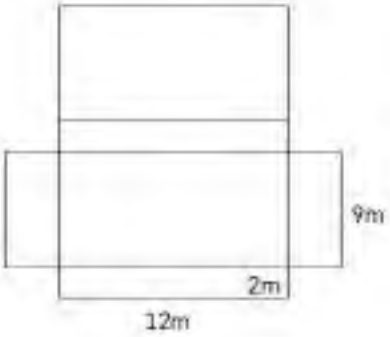
Surface Area: _____

2)



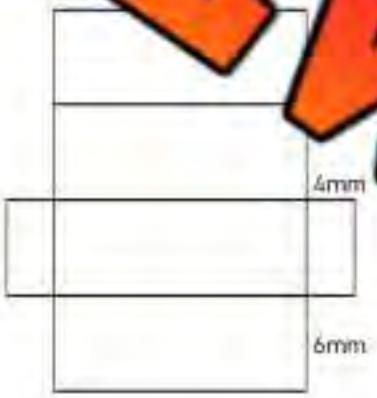
Surface Area: _____

3)



Surface Area: _____

4)



Surface Area: _____

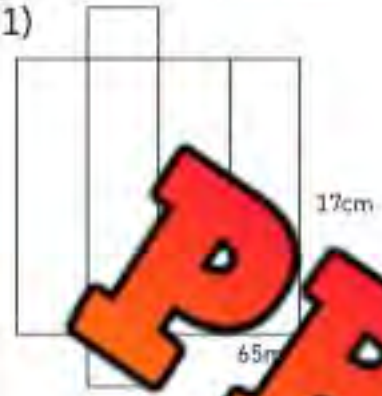
Name: _____ 75

Curriculum Connection
SS8.2

Surface Area Using Nets – Rectangular Prisms

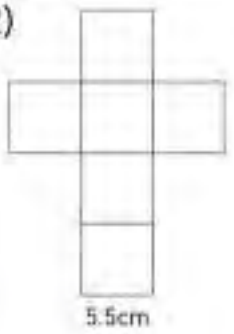
Instruction Find the surface area of the 3D objects using the nets below

1)



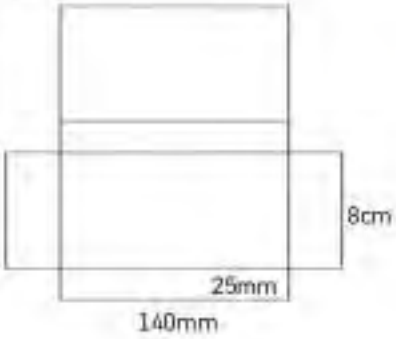
Surface Area: _____

2)



Surface Area: _____

3)



Surface Area: _____

4)

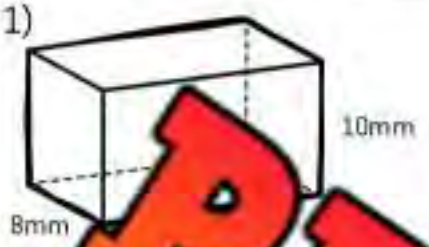
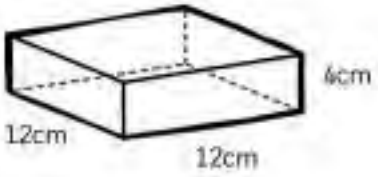
Surface Area: _____

Name: _____ 77

Curriculum Connection
SS8.2

Surface Area Using Nets – Rectangular Prisms

Instruction Find the surface area of the 3D objects below

Workspace	Draw the Net
1)  Surface Area: _____	
2)  Surface Area: _____	

Curriculum Connection
SS8.2

Exit Cards

Cut Out Cut out the exit cards below and have students complete them at the end of class

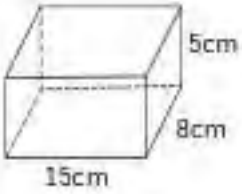
Name: _____

Find the surface area of the 3D objects & draw the net of the rectangular prism.

Workspace	Draw the Net
 Surface Area: _____	

Name: _____

Find the surface area of the 3D objects & draw the net of [illegible]

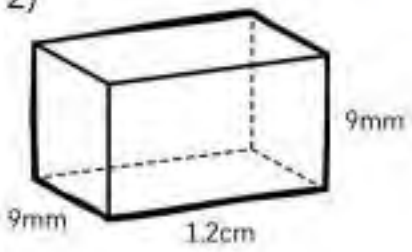
Workspace	Draw the
 Surface Area: _____	

Name: _____ 79

Curriculum Connection
SS8.2

Surface Area Using Nets – Rectangular Prisms

Instruction Find the surface area of the 3D objects below

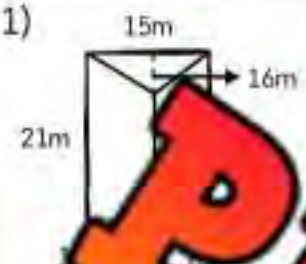
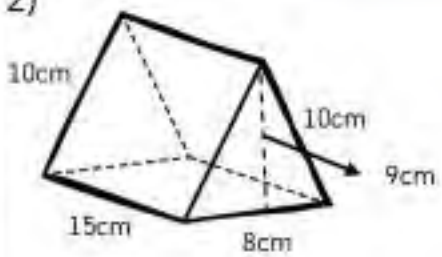
Workspace	Draw the Net
1)  Surface Area: _____	
2)  Surface Area: _____	

Name: _____ 81

Curriculum Connection
SS8.2

Surface Area Using Nets – Triangular Prisms

Instruction Find the surface area of the 3D objects below

Workspace	Draw the Net
1)  Surface Area: _____	
2)  Surface Area: _____	

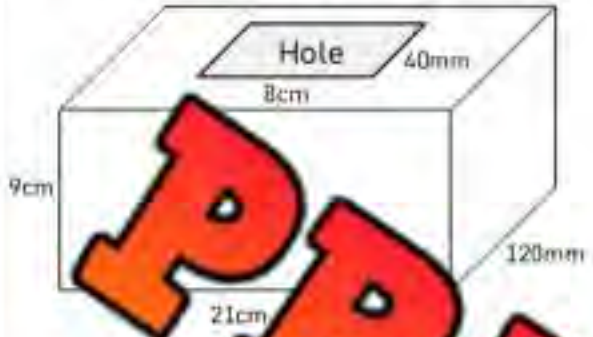
Name: _____ 82

Curriculum Connections
SS8.2

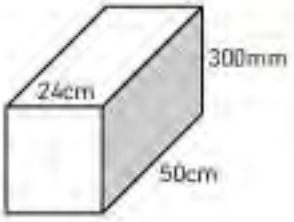
Surface Area – Prism – Word Problems

Instruction Solve the word problems below

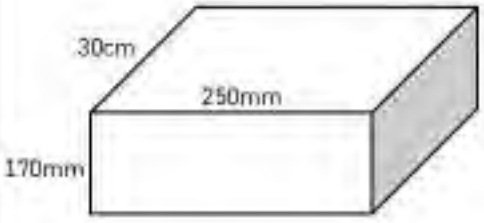
1) Find the surface area of the tissue box below.



2) Edward is paint[illegible] needs to find the surface area so he can buy the amount [illegible] mailbox has no door on the front. Find the surface area of [illegible] diagram below.



3) Kaitlyn needs to wrap her mom's birthday present. She has enough wrapping paper to cover a surface area of 3500cm². Does she have enough paper?



Name: _____ 83

Curriculum Connection
SS8.2

Surface Area – Prism – Word Problems

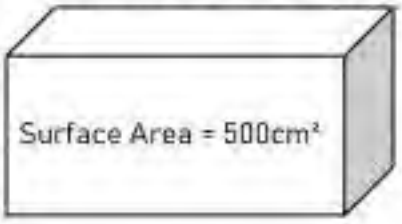
Instruction Solve the questions below

Lisa is planning to lay bricks on her outdoor fireplace. Her fireplace is a rectangular prism, and she wants to brick all sides, except the bottom.

a) What is the surface area of the fireplace, excluding the bottom?

b) What is the surface area of the fireplace (excluding the bottom) in cm?

c) If the surface area of each brick is 500cm², how many bricks does Caitlyn need to cover her fireplace (excluding the bottom)?



d) If each brick costs $0.79, how much will it cost to cover the fireplace?

Name: _____ 84

Curriculum Connection
SS8.3

Calculating Radius and Diameter

Calculating Radius Formula

$r = \frac{d}{2}$ or $r = d \div 2$

Calculating Diameter Formula

$d = 2r$ or $d = r \times 2$

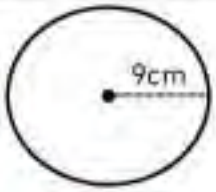
Instruction Find the radius and diameter of each circle below

1)

Radius = _____

Diameter = _____

2)



Radius = _____

Diameter = _____

3)

Radius = _____

Diameter = _____

4)

Radius = _____

Diameter = _____

Radius = _____

Diameter = _____

6)

Radius = _____

Diameter = _____

7)

Radius = _____

Diameter = _____

8)

Radius = _____

Diameter = _____

Radius = _____

Diameter = _____

10)

Radius = _____

Diameter = _____

11)

Radius = _____

Diameter = _____

12)

Radius = _____

Diameter = _____

Name: _____ 86

Curriculum Connection
SS8.3

Calculating Circumference

Calculating Circumference (Diameter)
$c = \pi d$ or $c = \pi \times d$

Calculating Circumference (Radius)
$c = 2\pi r$ or $c = 2 \times \pi \times r$

Part 1 Fill in the table with the missing information

	Radius	Diameter	Circumference
1)	8cm		
2)			
3)		25m	
4)		48cm	
5)	21		
6)			
7)	3.8km		
8)	8.5m		
9)			
10)		54.8m	

Part 2 Answer the word problems below

1)	Aiden is deciding which pizza to buy. He has two options. Option A: Pizza with a radius of 22cm Option B: Pizza with a circumference of 136cm Which pizza is larger? 	
2)	You need to wrap a label around a can. If the diameter of the can is 11.5cm, what length does the label need to be? 	
3)	Alexa needs to wrap a cake she made with a ribbon. The cake has a radius of 16.25cm. How long does the ribbon need to be? 	

Curriculum Connection
SS8.3

Exit Cards

Cut Out Cut out the exit cards below and have students complete them at the end of class

Name: _____

1) Fill in the table with the missing information. ($c = \pi d$ & $c = 2\pi d$)

	Radius	Diameter	Circumference
1)	13m		
2)		39m	
3)	11m		
4)		77m	

2) A circular garden has a radius of 7.5 m. You want to put a fence around the entire garden. How long does the fence need to be?

Name: _____

1) Fill in the table with the missing information. ($c = \pi d$ & $c = 2\pi d$)

	Radius	Diameter	Circumference
1)	13m		
2)		39m	
3)	11m		
4)		77m	

2) A circular garden has a radius of 7.5 m. You want to put a fence around the entire garden. How long does the fence need to be?

Name: _____

1) Fill in the table with the missing information. ($c = \pi d$ & $c = 2\pi d$)

	Radius	Diameter	Circumference
1)	13m		
2)		39m	
3)	11m		
4)		77m	

2) A circular garden has a radius of 7.5 m. You want to put a fence around the entire garden. How long does the fence need to be?

Name: _____ 88

Curriculum Connections
SS8.3

Area of a Circle - Radius

The area of a circle is the part inside the circle. We can calculate the area of a circle by using its radius. For most calculations, we can use 3.14 for pi. The formula is pi x radius^2. We can write this as $a = \pi r^2$

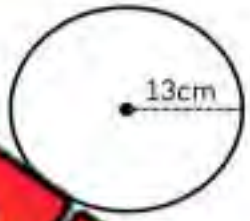
Calculating Area Using Radius

$a = \pi r^2$
$a = \pi \times 8 \times 8$
$a = 200.96m^2$

Practice Calculate the area of the circles using the radius

1) 

Radius = _____
Area = _____

2) 

Radius = _____
Area = _____

3) 

Radius = _____
Area = _____

4) 

Radius = _____
Area = _____

5) 

Radius = _____
Area = _____

Radius = _____
Area = _____

7) 

Radius = _____
Area = _____

8) 

Radius = _____
Area = _____

9) 

Radius = _____
Area = _____

Name: _____ 89

Curriculum Connections
SS8.3

Area of a Circle - Diameter

When we know the diameter of a circle, we can divide it by two to get the radius. Once we have the radius, we can use it to calculate the area of a circle using the formula: $a = \pi r^2$

Calculating Area Using Diameter

$a = \pi r^2$
diameter = 18, radius = 9
$a = \pi \times 9 \times 9$
$a = 254.34m^2$

Practice Calculate the area of the circles using the radius

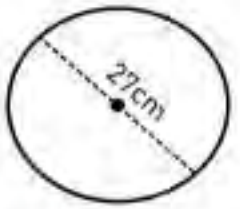
1)

Diameter = _____
Radius = _____
Area = _____

2)

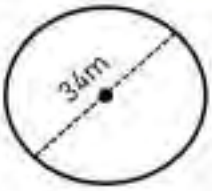
Diameter = _____
Radius = _____
Area = _____

3)



Diameter = _____
Radius = _____
Area = _____

4)



Diameter = _____
Radius = _____
Area = _____

5)

Diameter = _____
Radius = _____
Area = _____

Diam_____
Radius = _____
Area = _____

Word Problems Solve the problems below

	Questions	Answer
1)	A dinner plate has a diameter of 19cm. What is the area of the plate?	
2)	A circular table is 1.3 metres wide. What is the area of the table in centimetres?	

Name: _____ 91

Curriculum Connection
SS8.3

Math Race: Circumference, Radius, Diameter, and Area

Objective

What are we learning about?

Students will practice calculating the circumference, radius, diameter, and area of circles by quickly answering related questions in a competitive and engaging game format. They will learn how to estimate these values using pi = 3.

Materials

What you will need for the activity.

- L... circumference, radius, d... r, and ...les.
- Optional: Ti... atch
- Chairs ar... ircle

Instructions

How y... mple... tivity

1. Setup: Arrange chairs in a cir..., w... stud... ...ted in a chair. One student stands behind a seated student to ... the gam...
2. Explain the Game: Explain to the students t... y wil... ...ipating in a race around the circle by answering questions a... circu... ...s, diameter, and area. The goal is to move around the entire circ... ...n to th... ...ginal position. Students should use mental math and esti... ...i =
3. Start the Game: The teacher reads out a question (e.g., "W...at is... ...e of a circle with a radius of 3 cm?")
4. Answering the Question: The standing student and the seated studen... ...ront of them compete to answer the question first. The student who answers correctly first moves to stand behind the next seated student, while the other student remains seated.
5. Continue the Race: The teacher continues reading out questions, and the process repeats. The standing student continues to move around the circle, answering questions at each stop.
6. Winning the Game: The first student to make it around the entire circle and return to their original position wins the race.
7. Review: After the game, review some of the questions and answers with the class to reinforce the concepts and ensure understanding.

Name: _____ 92

Curriculum Connection
SS8.3

Questions | Use the questions below for the game

A circular fountain has a diameter of 3 metres. What is the circumference of the fountain in centimetres?	900 cm
A clock face has a radius of 10 cm. Calculate the area of the clock face.	300 cm^2
A circular garden has a circumference of 60 metres. What is the diameter of the garden?	20 metres
A car tire [illegible]ius of 30 cm. Find the circumference of the tire.	180 cm
The [illegible] 300 square metres. What is the diameter of the pool?	10 metres
You have a cir[illegible] of 2 metres. What is the area of the rug in square cen[illegible]s?	600 cm^2
A circular logo has a ra[illegible] length is needed to outline the logo's edge?	60 cm
The circumference of a bicycle wheel is [illegible] wheel's radius?	30 cm
A frisbee has a radius of 5 cm. What is the area [illegible]	75 cm^2
The area of a circular rug is 48 square metres. What is t[illegible]	4 metres
A circular tablecloth has a circumference of 90 cm. What is the dia[illegible] the tablecloth?	[illegible] cm
The area of a circular park is 12 square metres. What is the diameter of th[illegible] park?	4 m
A round swimming pool has a circumference of 30 metres. What is the pool's radius?	5 metres
A pizza with a diameter of 40 cm needs to be boxed. What is the circumference of the pizza?	120 cm
A round garden bed has a radius of 1 metre. Calculate the area of the bed in square centimetres.	30,000 cm^2
The area of a circular park is 75 square metres. What is the radius of the park?	5 metres

Name: _____ 93

Curriculum Connection
SS8.3

Questions | Use the questions below for the game

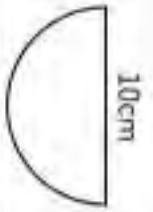
A cylindrical can has a circumference of 30 cm at its base. What is the can's diameter?	10 cm
A round placemat has a radius of 12 cm. What is the circumference of the placemat?	72 cm
The area of a circular fountain is 27 square metres. What is the diameter of the fountain?	6 metres
A round pl ound has a circumference of 48 metres. What is the radius of the playgr	8 metres
The are yground is 300 square metres. What is the radius of the p	10 metres
The are a circ ce is 12 square metres. What is the radius of the clock?	2 metres
A round wall cloc diam . What is the circumference of the clock?	90 cm
A circular pizza pan has a nce What is the radius of the pan?	10 cm
A circular garden plot has a radius of 4 What ircumference of the plot in centimetres?	240 cm
A round clock's face has a diameter of 16 cm. W he a ock's face?	192 cm²
The area of a circular trampoline is 75 square metres. ampo diameter.	10 etres
A cylindrical water tank has a circumference of 150 cm at its base. radius of the base?	cm
A round hot tub has a radius of 3 metres. What is the area of the hot tub square centimetres?	2,700 cm²
The diameter of a circular sticker is 9 cm. Calculate the circumference of the sticker.	27 cm
A circular track has a circumference of 60 metres. What is the radius of the track?	10 metres
The area of a round park bench is 300 square centimetres. Find the radius of the bench.	10 cm
A circular plate has a circumference of 30 cm. What is the plate's diameter?	10 cm
A round fountain has a diameter of 12 metres. Calculate the area of the fountain in square metres.	108 m²

Name: _____ 98

Curriculum Connection
SS8.3

Semi-Circles

A semi-circle is half of a circle. If we can find the area of a full-circle, we can divide it by two to find the area of a semi-circle.



Calculating Area of Semi-Circle

$a = \pi r^2 \div 2$

diameter = 10, radius = 5

$a = 3.14 \times 5 \times 5 \div 2$

$a = 78.5cm^2 \div 2$

area of semi-circle = $39.25cm^2$

Calculating Circumference

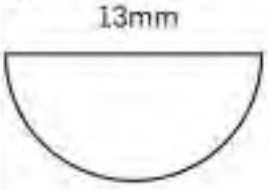
$c = \pi d$ or $c = 2\pi r$

Part 1 Fill in the table below

	Diameter	Radius	Area of Full Circle	Area of Semi-Circle	Circumference of Full Circle	Circumference of Semi-Circle
1)	7 cm					
2)	5 km					
3)	26 m					
4)	12 mm					
5)	18 m					
6)	33 cm					

Part 2 Calculate the area and perimeter of the semi-circle

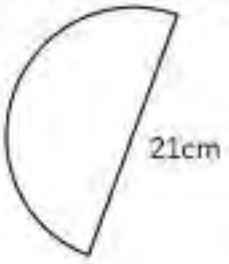
1)



Area = _____

Perimeter = _____

2)



Area = _____

Perimeter = _____

3)

Area = _____

Perimeter = _____

Name: _____ 99

Curriculum Connection
SS8.3

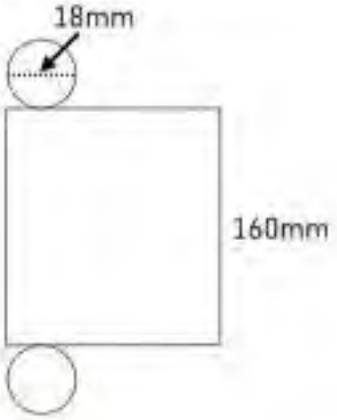
Surface Area Using Nets - Cylinders

Part 1 Solve the questions below

1)

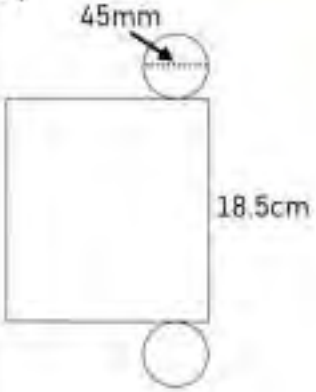
Surface Area: _____

2)



Surface Area: _____

3)



Surface Area: _____

Surface Area: _____

Part 2 Solve the question below

A can is 13cm tall. The top of the can has a radius of 3cm. Draw the net of the can and calculate the surface area of the can.

Name: _____ 100

Curriculum Connections
SS8.3

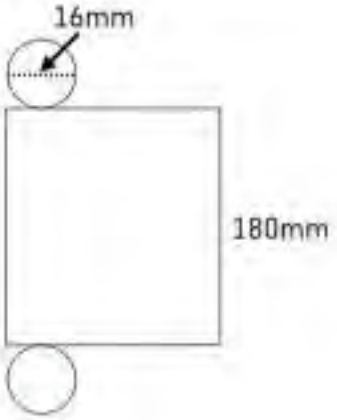
Surface Area Using Nets - Cylinders

Part 1 Solve the questions below

1)

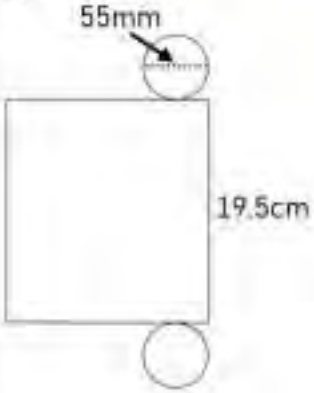
Surface Area: _____

2)



Surface Area: _____

3)



Surface Area: _____

Surface Area: _____

Part 2 Solve the question below

A can of soup has the dimensions shown on the diagram. Draw a net of the can and calculate the surface area of the can.

Name: _____ 101

Curriculum Connection
SS8.3

Surface Area - Cylinders

Instruction Solve the questions below

1)

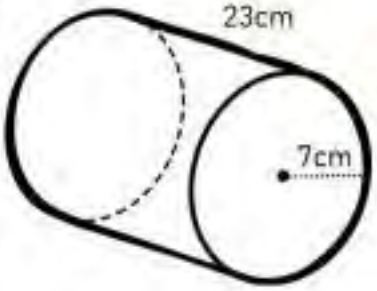
3cm

Surface Area: _____

2)

Surface Area: _____

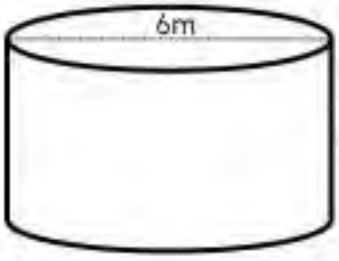
3)



Surface Area: _____

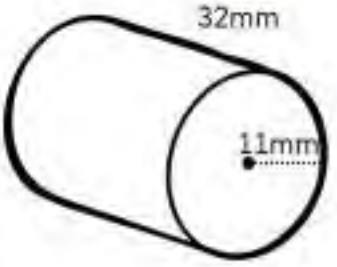
Surface Area: _____

5)



Surface Area: _____

6)



Surface Area: _____

Name: _____ 103

Curriculum Connections
SS8.3

Surface Area - Cylinders

Instruction Solve the questions below

1) A can of soup has a diameter of 9cm and a height of 19cm. What is the surface area of the can?

2) A can of tuna has a radius of 7.5cm and a height of 42mm. What is the surface area of the can?

3) A battery is composed of cylinders. The main battery cylinder has a radius of 6mm. The height of the main cylinder is 8cm. The smaller cylinder on top of the battery has a diameter of 8mm and a height of 2mm.

What is the total surface area of the battery?

4) A barrel has a diameter of 74cm and a height of 1.62m. What is the surface area of the barrel?

Curriculum Connection
SS8.3

Exit Cards

Cut Out Cut out the exit cards below and have students complete them at the end of class

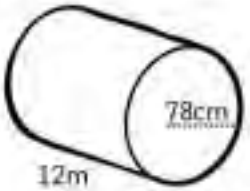
Name: _____

1) Find the surface area for the cylinder.
(Surface Area=2πr 2 +2πrh)

2) A water tank is shaped like a cylinder. It has a radius of 2.5 m and a height of 5.5 m. What is the surface area of the tank, including the top and bottom?

Name: _____

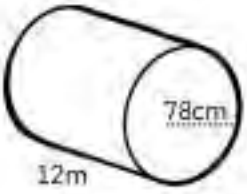
1) Find the surface area for the cylinder.
(Surface Area=2πr 2 +2πrh)



2) A water tank is shaped like a cylinder. It has a radius of 2.5 m and a height of 5.5 m. What is the surface area of the tank, including the top and bottom?

Name: _____

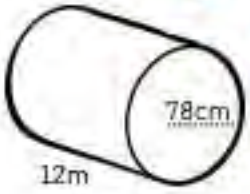
1) Find the surface area for the cylinder.
(Surface Area=2πr 2 +2πrh)



2) A water tank is shaped like a cylinder. It has a radius of 2.5 m and a height of 5.5 m. What is the surface area of the tank, including the top and bottom?

Name: _____

1) Find the surface area for the cylinder.
(Surface Area=2πr 2 +2πrh)



2) A water tank is shaped like a cylinder. It has a radius of 2.5 m and a height of 5.5 m. What is the surface area of the tank, including the top and bottom?

Name: _____ 105

Curriculum Connection
SS8.3

Surfaces Area Using Nets - Cylinders

Instruction Solve the questions below

1) A toilet paper roll is 16cm tall with a radius of 6cm. The inside cylinder is a hole. It has a diameter of 3cm.

What is th urface area of the toilet paper roll. Remember to account for the hole.

2) A wheel of brie chees tall. is 9cm long. What is the surface area of the full wheel of che

3) A pot has no lid on top. The pot is 14cm tall and has a radius of 10cm. What is the surface area of the pot?

Name: _____ 106

Curriculum Connection
SS8.3

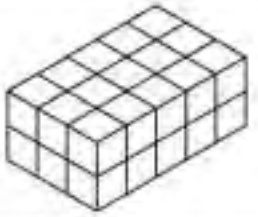
Calculating Volume Using the Base

Instruction Fill in the blanks to investigate the area of the base and the height

1)

Area of Base	Height	Volume
		18

2)

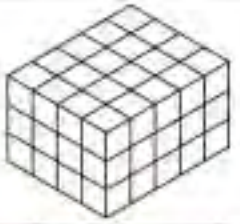


Area of Base	Height	Volume

3)

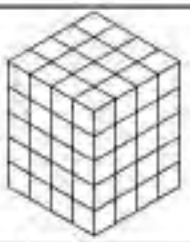
Area of Base	Height	Volume

4)



Area of Base	Height	Volume

5)

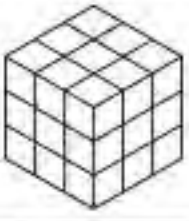


Area of Base	Height	Volume

6)

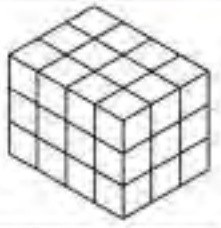
Area of Base	Height	Volume

7)



Area of Base	Height	Volume

8)



Area of Base	Height	Volume

Name: _____ 107

Curriculum Connection
SS8.3

Calculating Volume Using the Base

Part 1 Fill in the blanks to investigate the area of the base and the height

	Area of Base	Height	Volume
1)	10 cm^2		80 cm^3
2)	13 mm^2	6 mm	
3)		5 cm	75 cm^3
4)		8 mm	96 mm^3
5)		9 m	
6)	16		144 mm^3
7)			132 km^3
8)	15 m^2		210 m^3

Part 2 Answer the questions below

1)	A box of cereal has a base with a length of 12c wid 9cm. The height of the box is 22cm. What is the vo of box? 
2)	A juice box is 9cm wide and 5cm long. The height of the juice box is 12cm. What is the volume of the juice box? 
3)	A railway car is 6.5m long and 2.2m wide. The railway car is 3.1m tall. What is the volume of the railway car? 

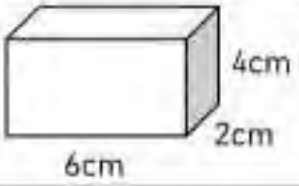
Name: _____ 108

Curriculum Connection
SS8.3

Calculating Volume of Rectangular Prisms

Rectangular Prism – Calculating Volume

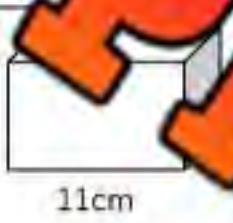
To find the volume of a rectangular prism, multiply the length by the width by the height.



$v = l \times w \times h$
$v = 6cm \times 2cm \times 4cm$
$v = 48cm^3$

Instruction Calculate the volume of the rectangular prisms

1)



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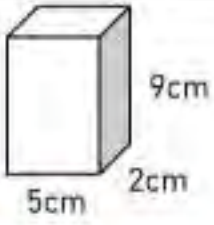

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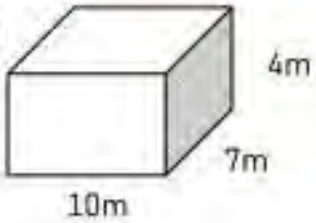
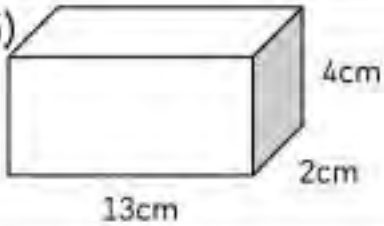
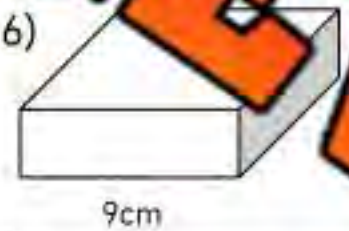


5)



6)



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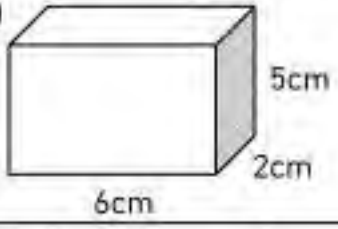

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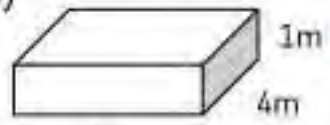
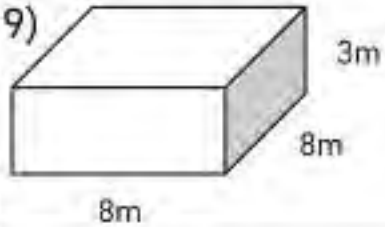


9)



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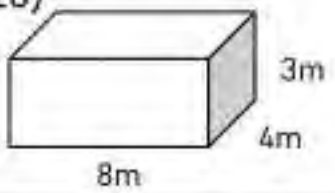


Name: _____ 110

Curriculum Connection
SS8.3

Calculating Volume of Rectangular Prisms

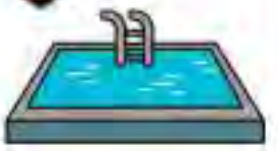
Instruction Solve the word problems below

1) A classroom has a width of 12m, height of 2m, and a length of 10m. What is the volume of the classroom?

2) A[illegible]vator i[illegible] 2m deep, and 4m long. What is the volume of the elevator?

3) A block has a height of 7cm, w[illegible]0m[illegible]d a length of 10cm. What is the volume of the block?

4) A pool is 9m long, 6m wide, and 300cm deep. What is t[illegible]he pool?



5) A lunchbox is 120mm wide, 7cm tall, and 10cm deep. What is the volume of the lunchbox?

Name: _____ 111

Curriculum Connection
SS8.3

Scavenger Hunt: Volume of Rectangular Prisms

Objective

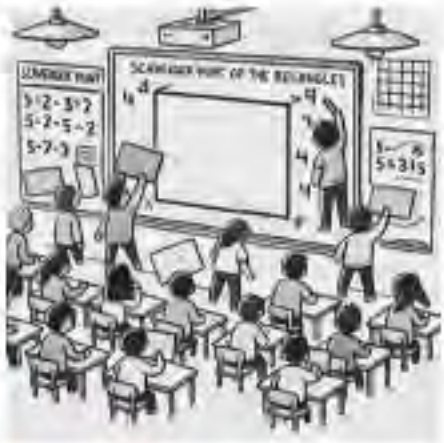
What are we learning about?

Students will practice calculating the volume of rectangular prisms, enhancing their understanding of this geometric concept through a fun and engaging scavenger hunt.

Materials

What you will need for the activity.

- volume questions (provided)
- ags o for each team to collect their card
- Tape to hid ound oom or in a designated saf oor



Instructions

How you w

1) **Prepare the Cards**: Write volume q stions a rec r prisms on index cards. Use the questions generated abov
2) **Hide the Cards**: Hide the cards around the cla a de d safe outdoor area. Tape them under chairs, desks, or into bvious spots.
3) **Divide into Teams**: Divide the class into small teams and give bag or envelope to collect their cards.
4) **Explain the Game**: Explain the game to the students. Each team wi t for a card, solve the problem on it as quickly as they can, and return to you for verification.
5) **Start the Game**: Say "Go!" and each team rushes to find their first card.
6) **Verify Answers**: When a team thinks they have the correct answer, they come back to you. If correct, they receive a checkmark and move on to find the next card.
7) **Continue Playing**: The game continues until all cards are found or you call time. The team with the most correct answers wins.
8) **Discuss**: After the game, discuss the problems and solutions each team encountered, focusing on the methods used to calculate the volume.

Name: _____ 112

Curriculum Connection
SS8.3

Index cards | Cut out the cards below

A rectangular prism has a length of 8 m, a width of 6 m, and a height of 5 m. What is its volume?

A storage container has a length of 4.5 m, a width of 2 m, and a height of 1.8 m. Find its volume.

The dimensio[illegible] shi[illegible]e are 3 m by 2[illegible] Calculate the volum[illegible] crat[illegible]

A rectangular tank is 1.2 m wide, 2.5 m long, and 0.8 m tall. What is the volume of the tank?

A wooden block measures 12 cm by 5 cm by 8 cm. Find the volume of the block in cubic centimeters.

The [illegible] a lar[illegible] tangular pool is 20[illegible] 15[illegible] depth is 3 m. Calculate[illegible] the po[illegible].

A storage box has dimensions of 40 cm by 25 cm by 30 cm. What is the volume of the box in cubic centimeters?

A rectangular prism has dimensions of 18 cm by 12 cm by 10 cm. Find the volume in cubic centimeters.

Name: _____ 114

Curriculum Connection
SS8.3

Index cards | Cut out the cards below

A rectangular box has a length of 12 cm, a width of 8 cm, and a height of 5 cm. What is the volume of the box?

The dimensions of a bookcase are 2 m by 1 m by 2.5 m. Calculate the volume of the bookcase.

A storage u[illegible].5 m[illegible] wide, and 2.8 m[illegible] volume of the st[illegible]it?

A rectangular swimming pool measures 25 m in length, 10 m in width, and 2 m in depth. Find the volume of the pool.

A rectangular prism has a width of 5 cm, a length of 10 cm, and a height of 20 cm. What is its volume?

The dim[illegible] of [illegible]she[illegible] island are 3 m by [illegible]m b[illegible] [illegible]ate the volume[illegible].

A toy box measures 60 cm in length, 45 cm in width, and 35 cm in height. Find the volume of the toy box.

A warehouse has a storage bin that is 8 m long, 4 m wide, and 3 m high. What is the volume of the bin?

Name: _____ 115

Curriculum Connection
SS8.3

Index cards | Cut out the cards below

A refrigerator has a width of 0.7 m, a depth of 0.6 m, and a height of 1.8 m. Calculate the volume of the refrigerator.

A truck container has dimensions of 12 m by 3 m by 4 m. What is the volume of the container?

A brick has d[illegible]ons [illegible]y 12 cm by 6 cm. [illegible] the brick in cubic [illegible]ers.

The volume of a rectangular prism is 96 cubic meters. The length is 8 and the width is 4 m. What is the height?

A cereal box has a length of 30 cm, a width of 8 cm, and a height of 25 cm. What is the volume of the box?

A [illegible] has [illegible]m that measur[illegible] in [illegible] in width, and 3 m in [illegible]ate the room [illegible]vo[illegible]

A fish tank has a length of 50 cm, a width of 20 cm, and a height of 30 cm. What is the volume of the fish tank?

A storage crate has dimensions of 6 m by 2.5 m by 2 m. What is the volume of the crate?

Name: _____ 116

Curriculum Connection
SS8.3

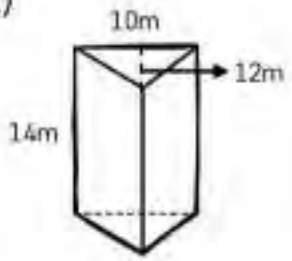
Volume – Triangular Prisms

Instruction Find the volume of the triangular prisms below

1)

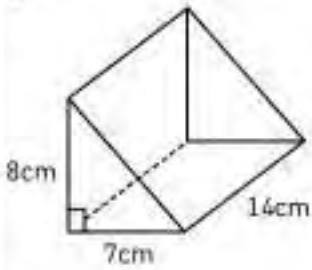
Volume: _____

2)

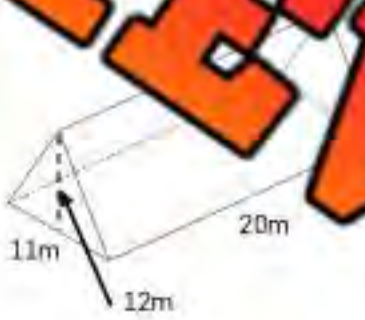


Volume: _____

3)



Volume: _____



Volume: _____

Name: _____ 117

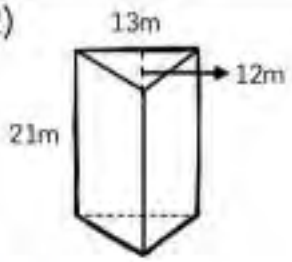
Curriculum Connection
SS8.3

Volume – Triangular Prisms

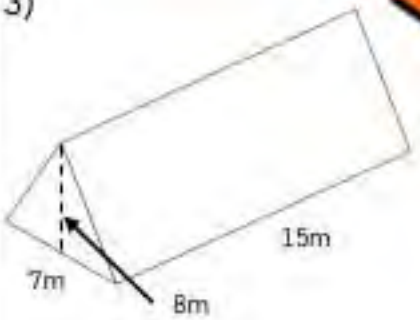
Instruction Find the volume of the triangular prisms below

1)

2)



3)



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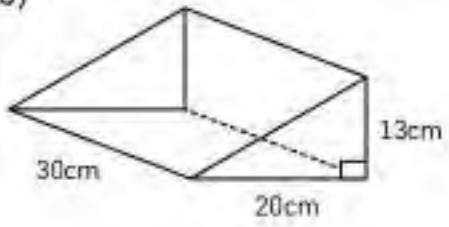
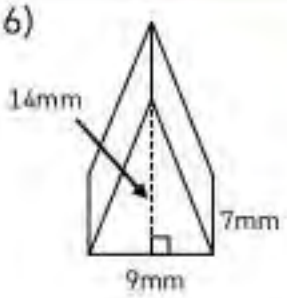


6)



Name: _____ 118

Curriculum Connection
SS8.3

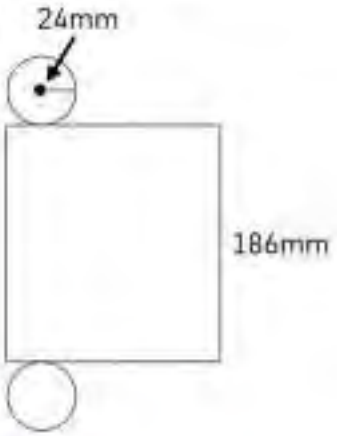
Volume - Cylinders

Part 1 — Solve the questions below

1)

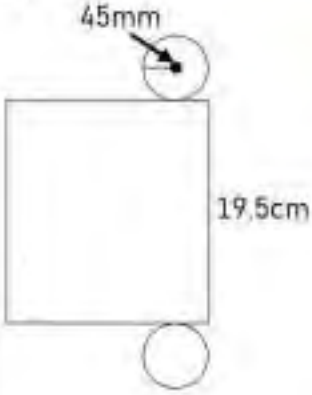
Area of the Base: _____ Volume: _____

2)



Area of the Base: _____ Volume: _____

3)



Area of the Base: _____ Volume: _____

Area of the Base: _____ Volume: _____

Part 2 — Solve the question below

A paint can is 54cm tall and has a diameter of 18cm. What is the volume of the paint can?

Name: _____ 119

Curriculum Connection
SS8.3

Volume - Cylinders

Instruction Solve the questions below

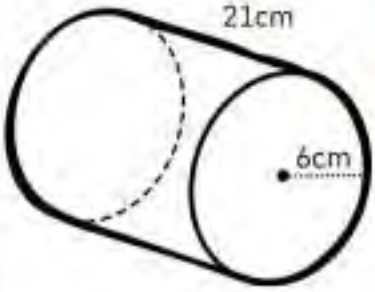
1)

Area of the Base: _____ V

2)

Area of the Base: _____ Volume: _____

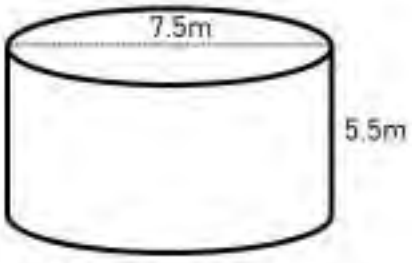
3)



Area of the Base: _____ Volume: _____

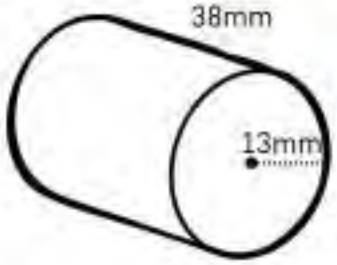
Area of the Base: _____ e: _____

5)



Area of the Base: _____ Volume: _____

6)



Area of the Base: _____ Volume: _____

Name: _____ 120

Curriculum Connection
SS8.3

Volume - Cylinders

Part 1 Fill in the blanks to investigate the area of the base and the volume

	Radius	Area of Base	Height	Volume
1)	8 mm		12 mm	
2)	mm		18 mm	
3)			9 cm	
4)			7 km	
5)	9		7 cm	
6)	12 cm		8 cm	
7)	4 m		13 m	
8)	7 m		11 m	

Part 2 Answer the questions below

1) The radius of a swimming pool is 3.6 metres. The height of the pool is 1.8 metres. What is the volume of the swimming pool?

2) A can's base has an area of 32 cm^2. The volume of the can is 288cm^3. What is the height of the can?

3) A bucket has a height of 8cm. The bucket's base has an area of 20cm^2.

a) What is the volume of the bucket?

b) If 1cm^3 of volume has the capacity to hold 1mL of water, how many mL can the bucket hold?

Curriculum Connection
SS8.3

Exit Cards

Cut Out Cut out the exit cards below and have students complete them at the end of class

Name: _____

1) Fill in the blanks to investigate the area of the base, height, and the volume.

	Radius	Area of Base	Height	Volume
1)			10cm	
2)			15cm	
			20cm	392.5cm³
	7cm	154cm²		924cm³

2) A cylindrical water tank has a base area of 200 cm² and a height of 2 meters.

a) What is the volume of the water tank in cubic centimeters (cm³)?

b) If 1 liter of water is equal to 1,000 cm³, how many liters of water can the tank hold?

Name: _____

1) Fill in the blanks to investigate the area of the base, height, and the volume.

	Radius	Area of Base	Height	Volume
1)	6cm		10cm	
2)	4cm		15cm	
3)	2.5cm		20cm	392.5cm³
4)	7cm	154cm²		924cm³

2) A cylindrical water tank has a base area of 200 cm² and a height of 2 meters.

a) What is the volume of the water tank in cubic centimeters (cm³)?

b) If 1 liter of water is equal to 1,000 cm³, how many liters of water can the tank hold?

Name: _____ 122

Curriculum Connection
SS8.3

Volume of Cylinders

Part 1 Fill in the blanks to investigate the area of the base and the volume

	Area of Base	Height	Volume
1)	8 mm^2	7 mm	
2)	15 cm^2	11 cm	
3)			114 m^3
4)			154 km^3
5)			119 mm^3
6)	18	15 m	
7)	22 km^2		
8)	25 mm^2		175 mm^3

Part 2 Answer the questions below

A hot cocoa jar is 12cm tall. There are only 4 cm left [illegible] The radius of the jar is 7cm.

a) What is the volume of cocoa left in the jar?

b) How much more cocoa would be needed to fill the jar?

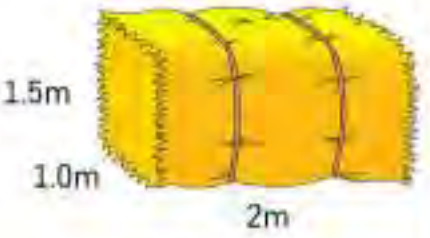
Name: _____ 123

Curriculum Connection
SS8.3

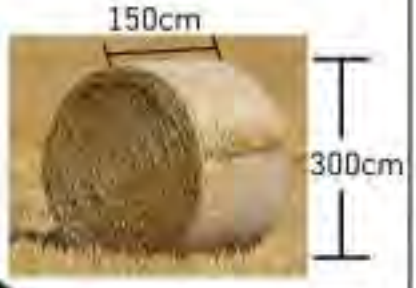
Volume of Cylinders

Instruction Answer the questions below

1) There are two types of hay bales – one that is in the shape of a cylinder and one that is in the shape of a rectangular prism. The cylinder-shaped hay bale is 300cm tall and 150cm long. The rectangular-shaped hay bale has the following dimensions: 1.5m by 1.0m by 2.0m.



a) Which type of hay bale contains more hay?



b) Joel thinks that a cylinder-shaped hay bale out of 3 rectangular-shaped bales. Is he right? Explain.

2) You are planning to make candles to sell. What would the dimensions of the candles be?

a) Draw a picture of one of the candles and label the dimensions.

b) What is the volume of the candle?

c) For every $10cm^3$, it costs you 30 cents. How much would the candle cost you in total?

Name: _____ 124

Curriculum Connection
SS8.3

Activity: "Cylinder Volume Toss Challenge"

Objective

What are we learning about?

Students will reinforce their understanding of finding the volume of cylinders through a fun, team-based activity that involves answering volume problems and shooting a paper ball into a bin.

Materials

What you will need for the activity.

- [illegible]ms
- [illegible]g she[illegible]h team
- Paper ball[illegible]h)
- Bins or ba[illegible]per te
- Desks (one pe[illegible]

Instructions

How you[illegible]ity

1. Arrange the classroom so that the[illegible]nough[illegible]ultiple teams to work simultaneously. Place a desk about 6 feet awa[illegible]m a [illegible]asket.
2. Place a stack of index cards with area pro[illegible]on ea[illegible]
3. Provide each team with a recording sheet and a[illegible]
4. Divide the students into teams of about five membe[illegible]
5. Each team stands in a line behind their respective desk.
6. The first student in line flips over an index card and solves the[illegible]d to the volume of a cylinder on the recording sheet.
7. Once the answer is recorded, the student attempts to shoot the paper[illegible]ll into the bin.
8. If the student makes the shot, they place a tally mark on the team's tally sheet for a point. If they miss, no tally is given.
9. The student then goes to the end of the line, and the next student steps up to the desk to repeat the process.
10. The activity continues until all index cards have been solved.
11. Once all index cards are completed, the teacher collects the recording sheets and reviews the answers with the class.
12. For each incorrect answer, the team loses one point.
13. The team with the highest number of points after deductions is declared the winner.

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Curriculum Connection
SS8.3

Index Cards | Cut out the cards below

1)

A water tank has a radius of 2 m and a height of 4 m. What is the volume of the tank?

2)

A cylindrical candle has a radius of 3 cm and a height of 8 cm. What is the volume of the candle?

3)

A cylindrical [illegible] of 6 cm and a [illegible] its volum[illegible]

4)

A cylindrical barrel has a diameter of 2 m and a height of 5 m. Find the volume of the barrel.

5)

A can of paint has a diameter of 10 cm and a height of 20 cm. Calculate the volume of the can.

A gas ta[illegible] vo[illegible] of 5000 cm³ and a rad[illegible] of [illegible] height of t[illegible]

7)

The volume of a cylinder is 1000 cm³ and the height is 10 cm. Find the radius of the base.

8)

A cylindrical container has a radius of 7 cm and a height of 15 cm. What is its volume?

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Curriculum Connection
SS8.3

Index Cards | Cut out the cards below

9)

A cylinder has a diameter of 8 cm and a height of 15 cm. What is the volume?

10)

A cylinder has a volume of 3140 cm^3 and a height of 10 cm. What is the radius of its base?

11)

A cylindric[illegible] area of 78.5 cm[illegible] cm. What is the v[illegible] container?

12)

A cylindrical jar has a diameter of 14 cm and a height of 20 cm. Find its volume.

13)

A cylindrical swimming pool has a radius of 5 m and a height of 2 m. What is the pool's volume?

The volu[illegible] cyl[illegible] is 1500 cm^3. If the radi[illegible] is 5 [illegible] he[illegible]

15)

A soda can has a radius of 4 cm and a height of 12 cm. Find the volume of the can.

16)

A cylindrical water bottle has a radius of 4 cm and a height of 18 cm. What is the volume?

Index Cards | Cut out the cards below

17)

A cylindrical pipe has a radius of 4 cm and a height of 10 cm. What is the volume of the pipe?

18)

A cylindrical water tank has a radius of 3 m and a height of 8 m. What is the volume of the tank?

19)

A large silo [illegible] ame[illegible] m and a height of 2[illegible] volume of th[illegible]

20)

A container has a base area of 100 cm^2 and a height of 25 cm. Find the volume of the container.

21)

A cylindrical vase has a radius of 6 cm and a height of 15 cm. What is the volume of the vase?

[illegible]

A soda [illegible] a [illegible]ter [illegible] 7 cm and a heigh[illegible] 12 [illegible] the volume [illegible]

23)

The volume of a cylindrical drum is 2000 cm^3 and the radius is 5 cm. Find the height of the drum.

24)

A cylinder has a volume of 1200 cm^3 and a height of 10 cm. What is the radius of its base?

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Curriculum Connection
SS8.3

Cylinder Volume Toss Challenge

Answers | Record your answers below

Question	Answer
1	
2	
3	
4	
5	
6	
7	
8	
9	
10	
11	
12	

Question	Answer
13	
14	
15	
16	
17	
18	
19	
20	
21	
22	
23	
24	

Tally Chart | Record your makes in the tally chart below

Tallies – Made Shots	Total

Wrong Answers	Final Score

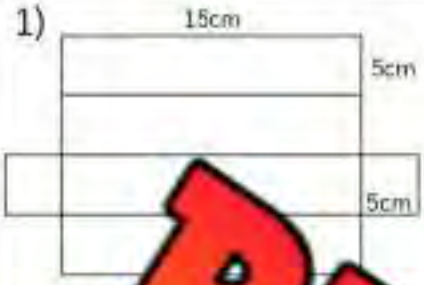
Name: _____ 129

Curriculum Connection
TQ

Unit Test – Surfaces Area and Volume

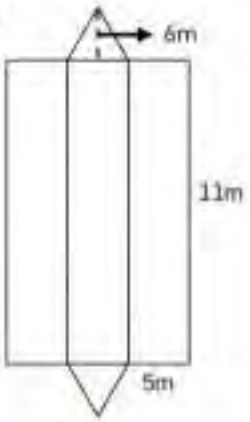
Part 1 Find the surface area of the 3D objects using the nets below

1)



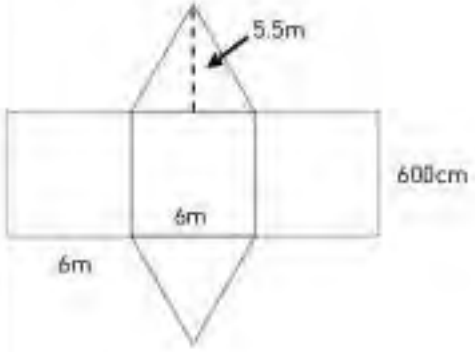
Surface Area: _____

2)



Surface Area: _____

3)



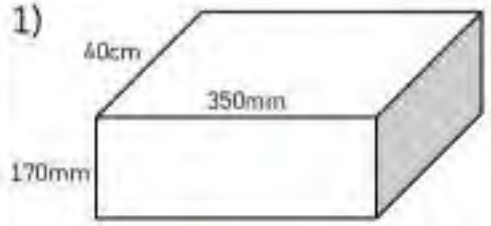
Surface Area: _____

Surface Area: _____

Curriculum Connection
TQ

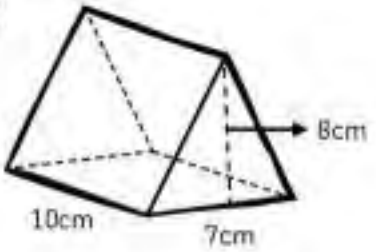
Part 2 Find the surface area of the objects below

1)



Surface Area: _____

2)



Surface Area: _____

3)

Surface Area: _____

4)

Surface Area: _____

Part 3 Solve the question below

Becky takes the lid off a can of soup. The can's dimensions are labelled on the picture.

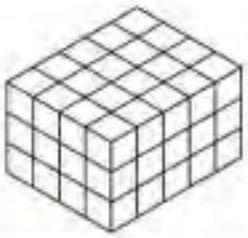
a) What is the surface area of the can without the lid?

b) What is the surface area of the lid?

Curriculum Connections
TG

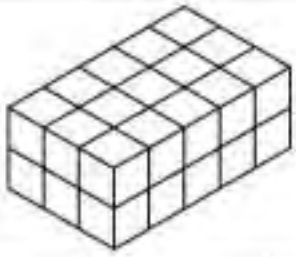
Part 4 Fill in the blanks to investigate the area of the base and the volume

1)



Area of Base	Height	Volume

2)



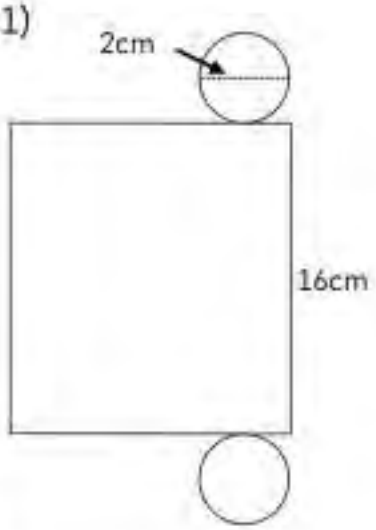
Area of Base	Height	Volume

Part Fill in the blanks to investigate the area of the base and the volume

	Area of Base	Height	Volume
1)	11 [illegible]		110 cm^3
2)	15 mm^2		
3)		[illegible]	96 cm^3
4)		11 mm	132 mm^3

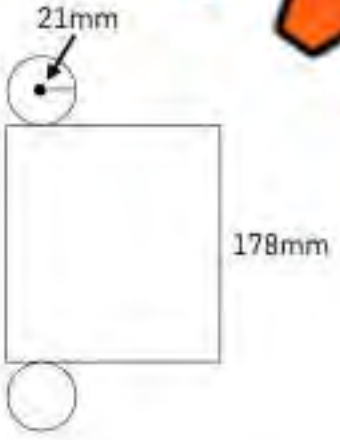
Part 6 Find the area of the base and the [illegible]

1)



Area of the Base: _____ Volume: _____

2)

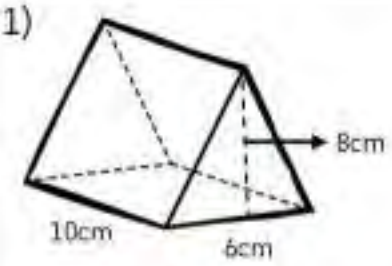


Area of the Base: _____ Volume: _____

Curriculum Connection
TQ

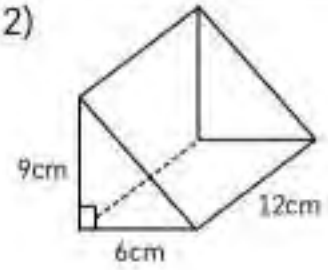
Part 7 Find the volume of the triangular prisms

1)



Volume: _____

2)



Volume: _____

Part 8 Answer the [illegible]s b[illegible]

1) The radius of a swimming p[illegible].2 me[illegible]eight of the pool is 1.6 metres.

a) What is the volume of the pool?

b) If $1cm^3$ of volume has the capacity to [illegible] of water, how many mL can the pool hold?

2) A can's base has an area of 37 cm^2. The volume of the [illegible] is 333 cm^3. What is the height of the can?

3) A bucket has a height of 17cm. The bucket's base has an area of $16cm^2$. What is the volume of the bucket?

Name: _____ 134

Curriculum Connection
SS8.4

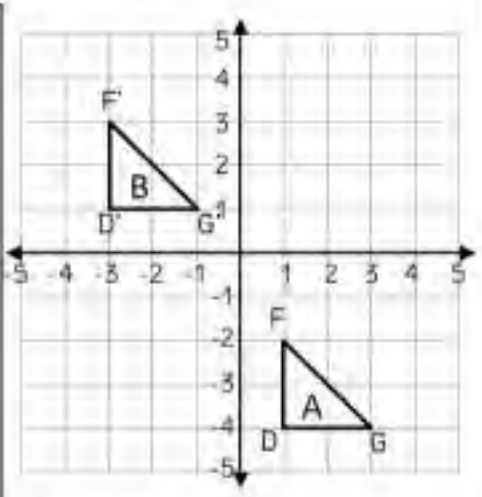
Translations – Mapping Rules

Mapping Rules for Translations

Each point on a shape slides according to the mapping rule.

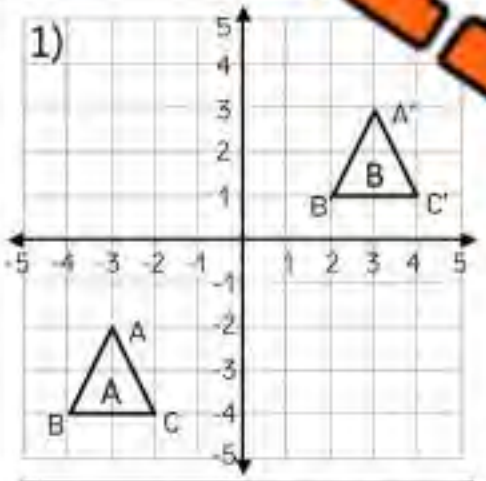
The rule is (x, y) → (x + a, y + b)

1) Choose 1 coordinate from the shape to translate
2) We need to move the x coordinate -4 spaces to the left. This means we subtract 4.
3) We need to move the y coordinate +5 spaces up. This means we add 5.
4) The mapping rule is: (x, y) → (x – 4, y + 5)
5) Remember, if we move to the left or down, we are subtracting a number (subtracting) and if we move right or up, we are adding a positive number.

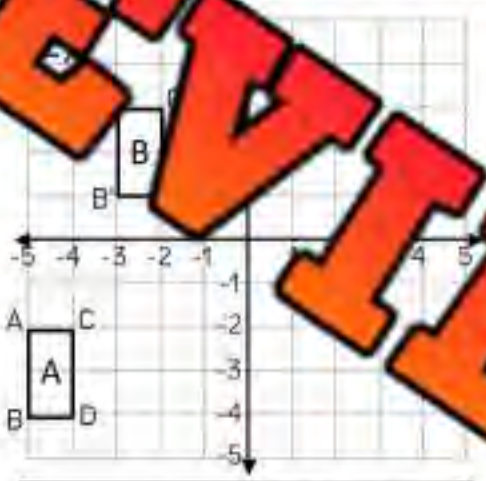


Instruction	Find the mapping rule that translates figure A to figure B

1)

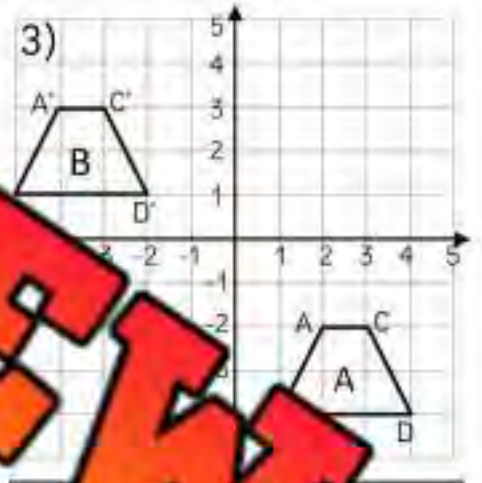


Mapping Rule	(x☐ __, y☐ __)



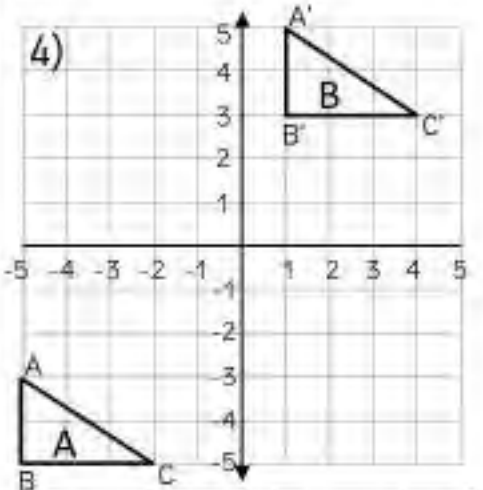
Mapping Rule	(x☐ __, y☐ __)

3)



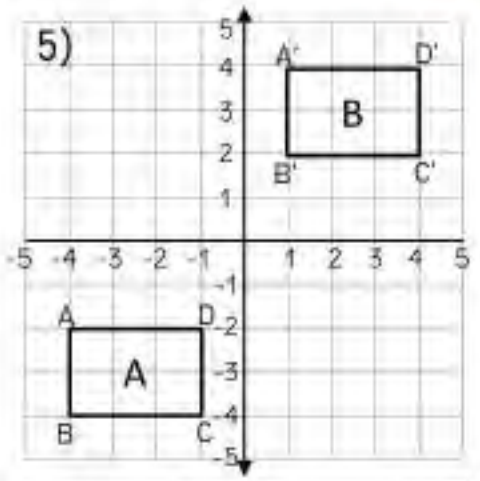
Mapping Rule	(x☐ __, y☐ __)

4)



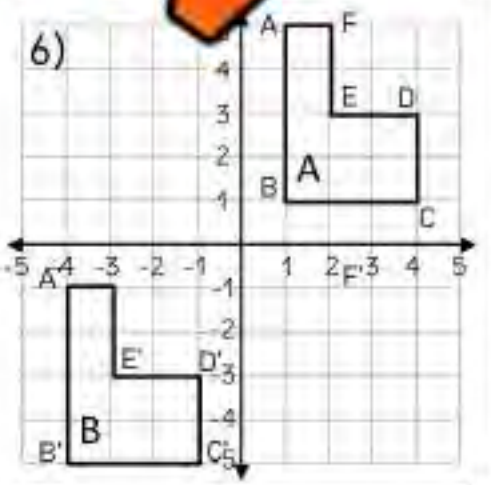
Mapping Rule	(x☐ __, y☐ __)

5)



Mapping Rule	(x☐ __, y☐ __)

6)



Mapping Rule	(x☐ __, y☐ __)

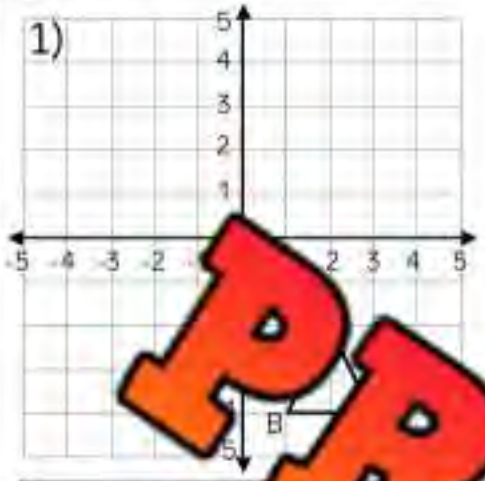
Name: _____ 136

Curriculum Connection
SS8.4

Translations – Mapping Rules

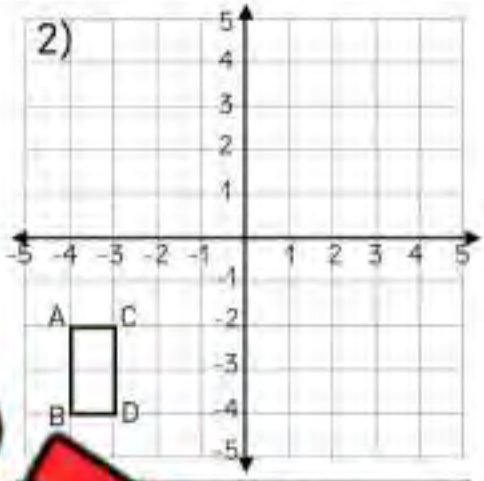
Instruction | Translate the shape using the mapping rule

1)



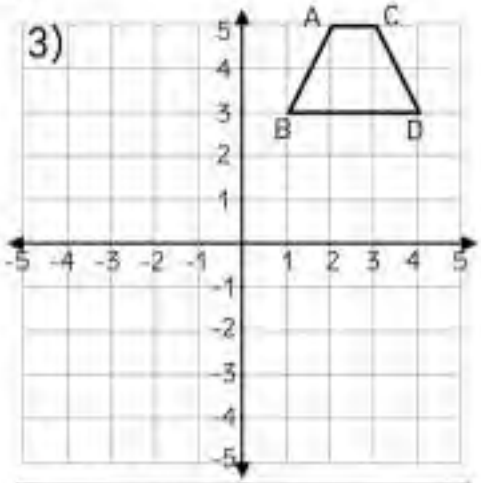
Mapping Rule	

2)



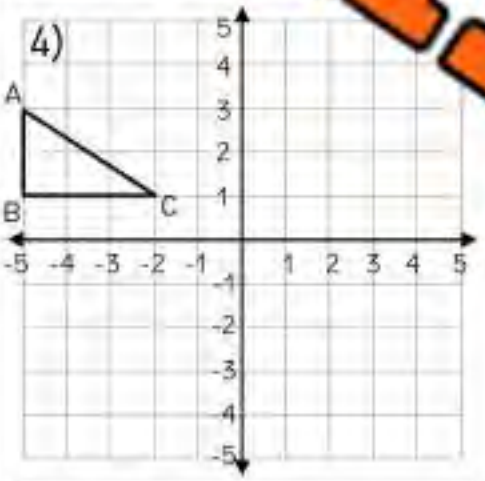
Mapping Rule	(x + 5, y + 4)

3)

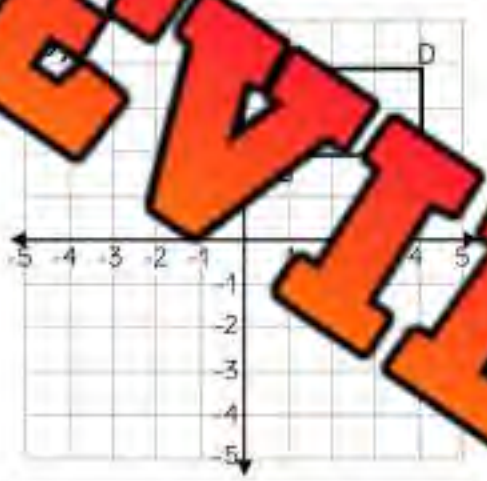


Mapping Rule	(x – 5, y – 6)

4)

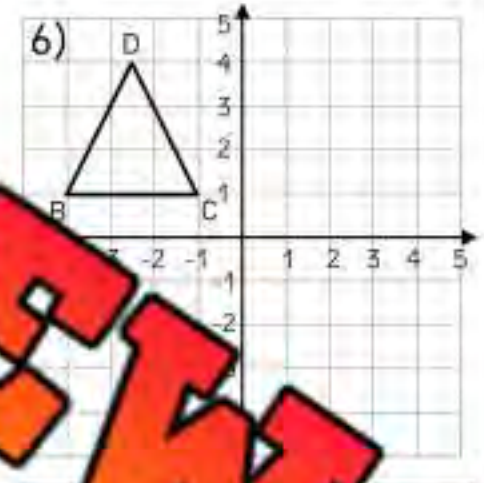


Mapping Rule	(x + 6, y – 4)



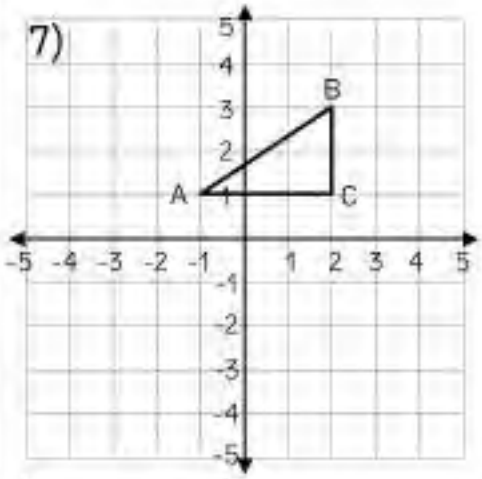
Mapping Rule	(x – 5, y – 4)

6)



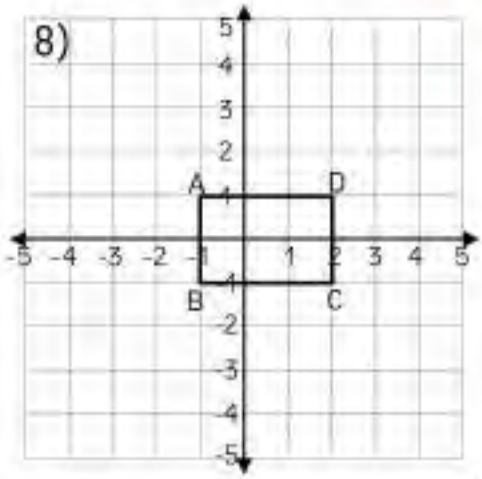
Mapping Rule	(x + 6, y – 5)

7)



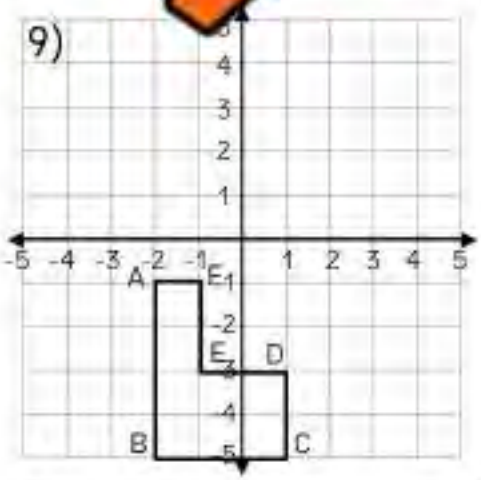
Mapping Rule	(x – 4, y – 5)

8)



Mapping Rule	(x + 3, y – 4)

9)



Mapping Rule	(x + 4, y + 6)

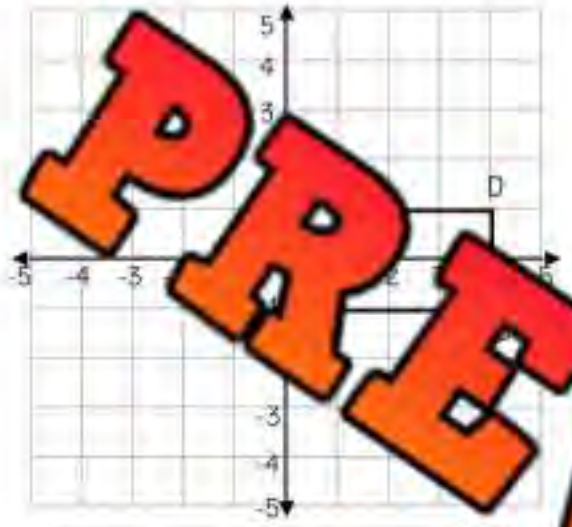
Curriculum Connection
SS8.4

Exit Cards

Cut Out Cut out the exit cards below and have students complete them at the end of class

Name: _____

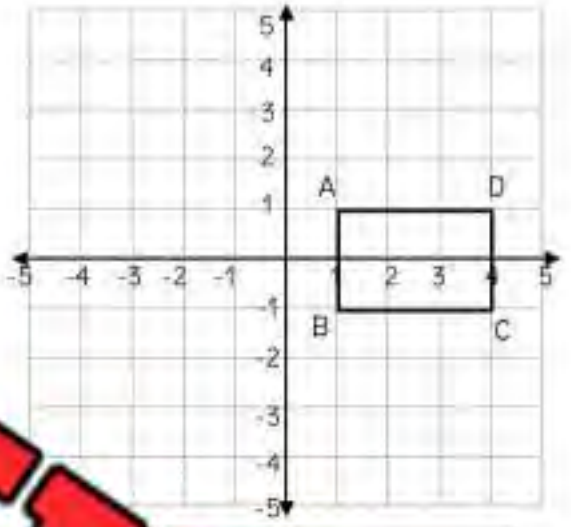
Translate the shape using the mapping rule.



Mapping Rule	(x - 4, y - 3)

Name: _____

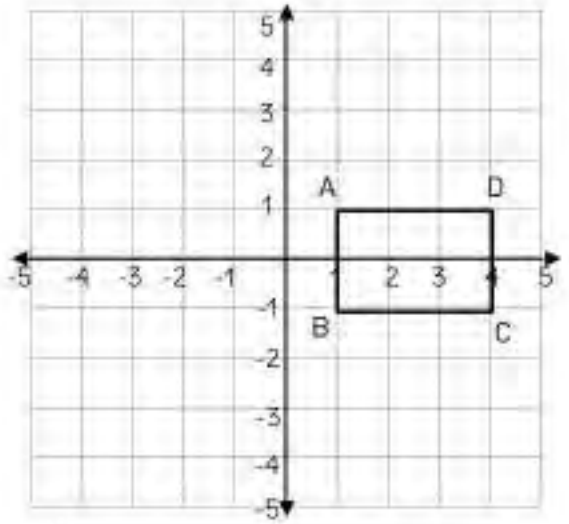
Translate the shape using the mapping rule.



Mapping Rule	(x - 4, y - 3)

Name: _____

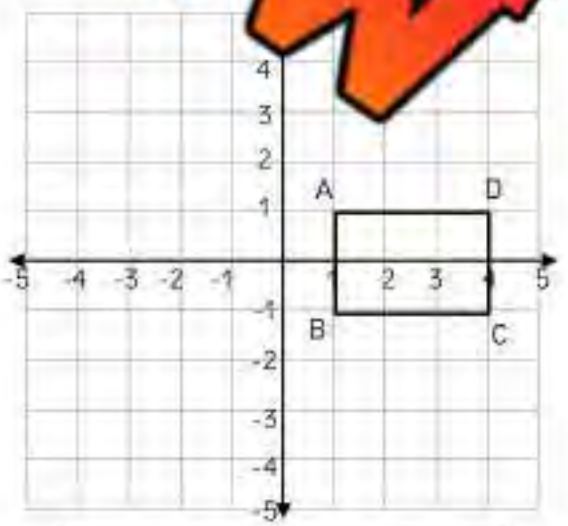
Translate the shape using the mapping rule.



Mapping Rule	(x - 4, y - 3)

Name: _____

Translate the shape using the mapping rule.



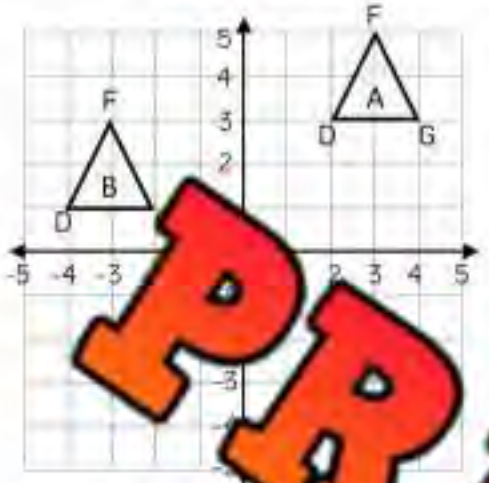
Mapping Rule	(x - 4, y - 3)

Name: _____ 142

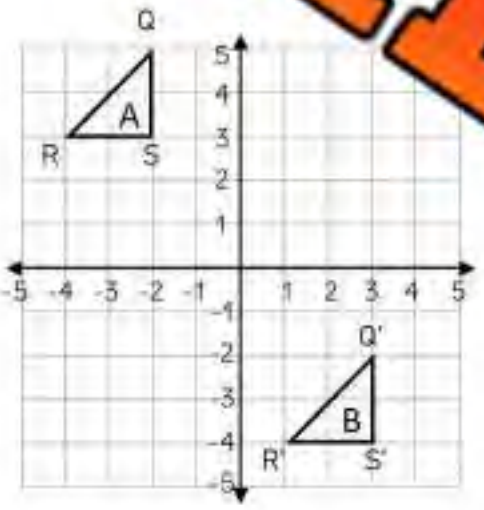
Curriculum Connections
SS8.A

Transformations - Translations

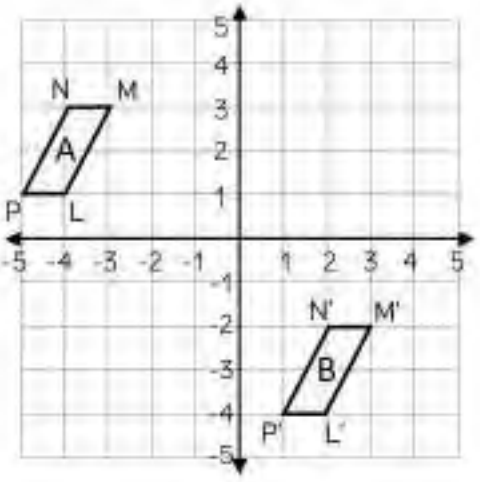
Instruction 1) Fill in the coordinates 2) Describe the translation 3) Translate shape C



Coordinates A	Coordinates B
Mapping Rule (x, y) → (x, y) → (x + a, y + b)	
Translate Shape B to Shape C (x + 4, y – 5)	**Coordinates C**



Coordinates A	Coordinates B
Mapping Rule (x, y) → (x, y) → (x + a, y + b)	
Translate Shape B to Shape C (x, y + 6)	**Coordinates C**



Coordinates A	Coordinates B
Mapping Rule (x, y) → (x, y) → (x + a, y + b)	
Translate Shape B to Shape C (x + 2, y + 5)	**Coordinates C**

Name: _____ 143

Curriculum Connections
SS8.4

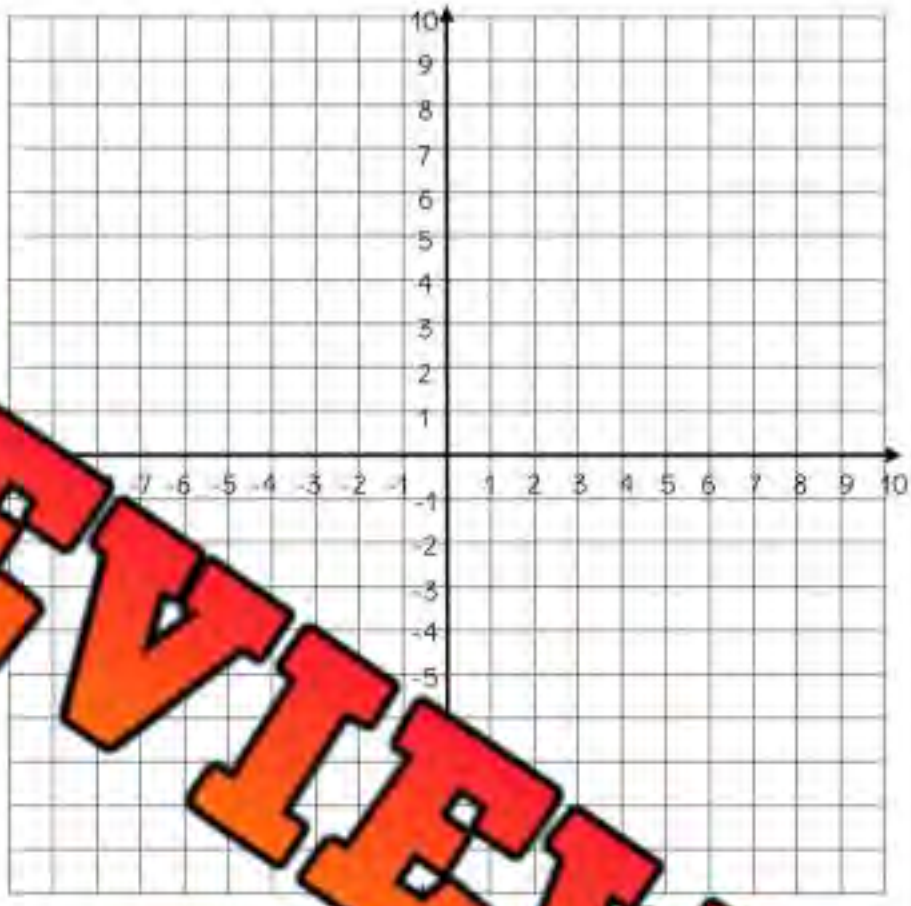
Translations – New Coordinates

Part 1 Draw the shapes using the coordinates provided. Then translate the shape

Shape A
P(1,4), Q(2,2), R(7,2), S(8,4)
Trans[illegible] the shape A
[illegible] 3

Shape [illegible]
F(-8,4), G[illegible]
Translate th[illegible] B
Right 3, down [illegible]

Shape C
J(-9,-8), K(-4,-5), L(-0,-8)
Translate the shape C
Right 5, up 2



Part 2 Give the coordinates of each point after the transla[illegible]

	Original Coordinate	Translation	New [illegible]inates
1)	P(5, -2)	(x – 6, y + 4)	P(-1, 2)
2)	S(-3, 7)	(x + 4, y – 8)	
3)	Q(-6, -2)	(x + 3, y – 5)	
4)	L(8, -4) P(-5, 11)	(x – 2, y + 6)	
5)	T(-10, 9) Y(-12, -8)	(x + 9, y + 8)	
6)	S(-15, -12) R(13, 11)	(x – 8, y – 7)	
7)	N(-22, 9) K(18, -13)	(x – 12, y + 14)	
8)	P(26, -23) E(-21, 21)	(x + 15, y + 21)	

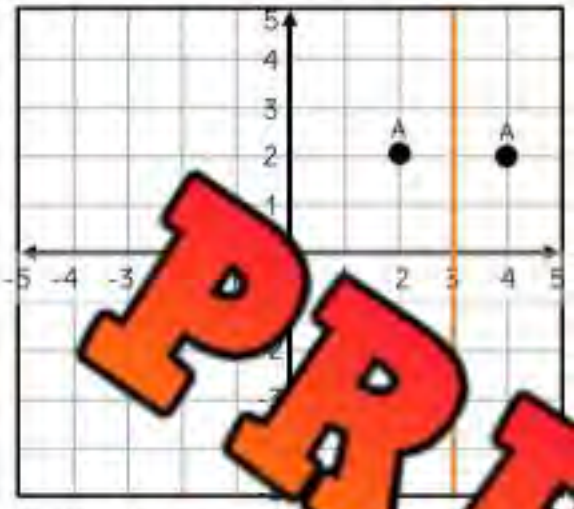
Name: _____ 144

Curriculum Connection
SS8.4

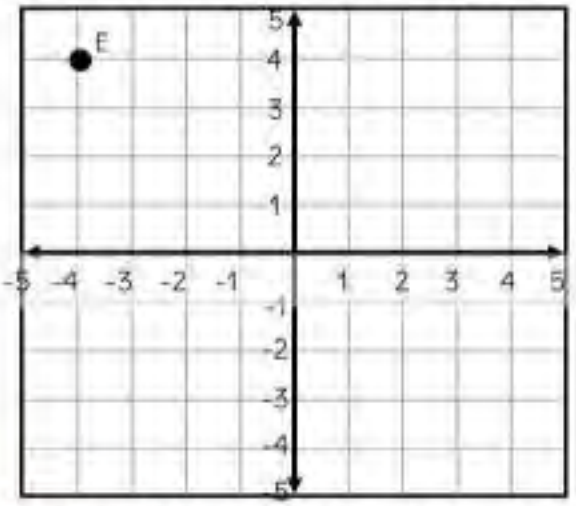
Reflecting a Point Using a Mirror Line

Instructions Graph the new position of each point. The first one is done for you

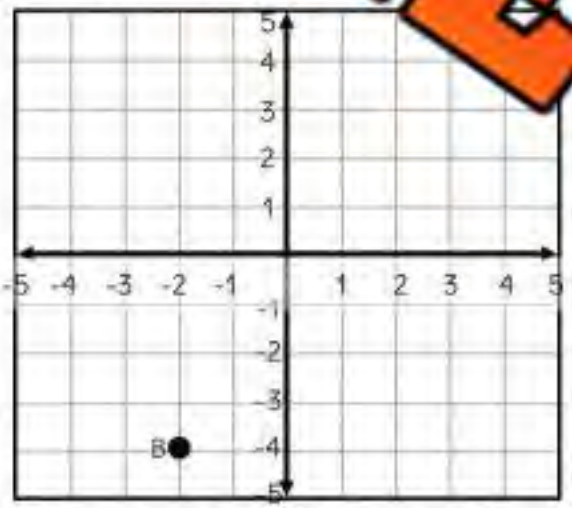
1) Reflection across the line x = 3



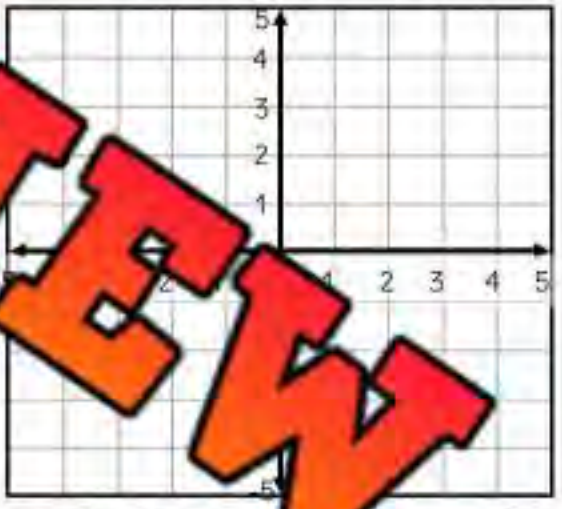
2) Reflection across the line y = 2



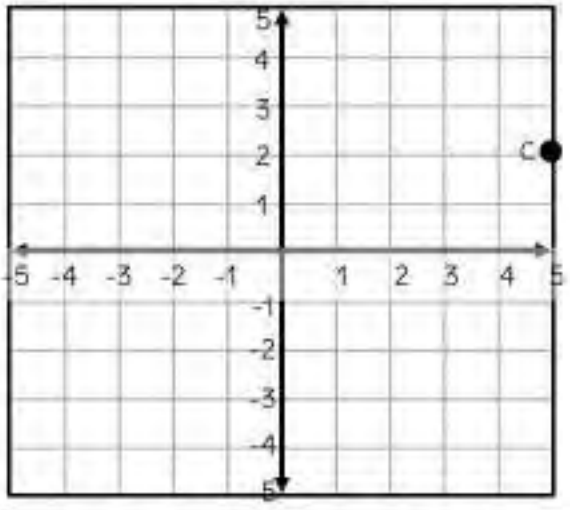
3) Reflection across the [illegible]



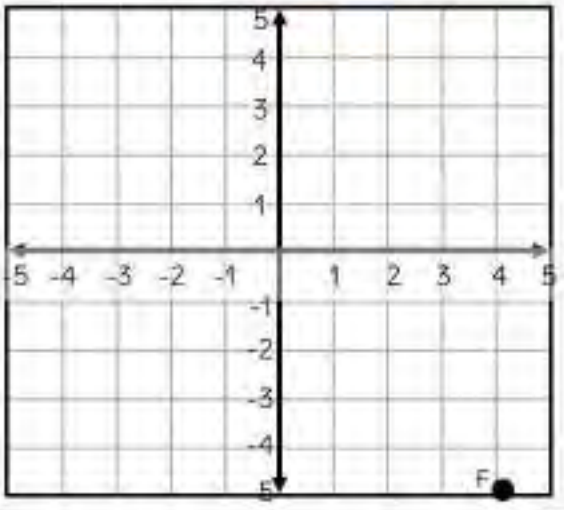
4) Reflection across the line x = -1



5) Reflection across the line x = 2



6) Reflection across the line y = -3



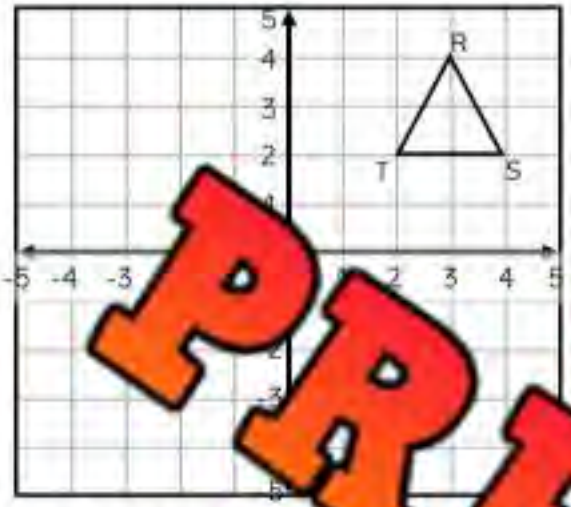
Name: _____ 146

Curriculum Connections
SS8.4

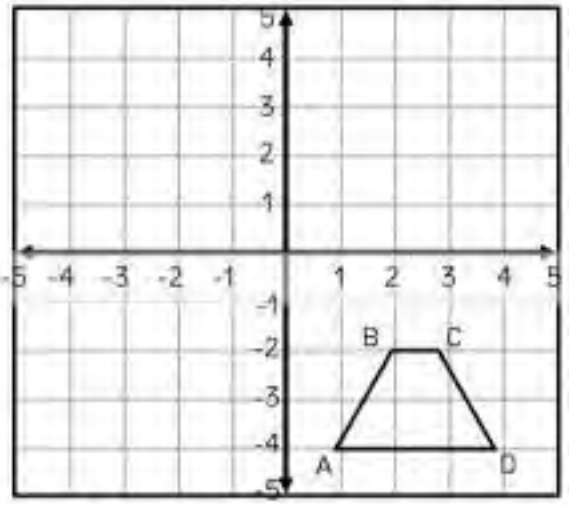
Reflecting a Shape Using a Mirror Line

Instructions Graph the new position of each shape after the given reflection

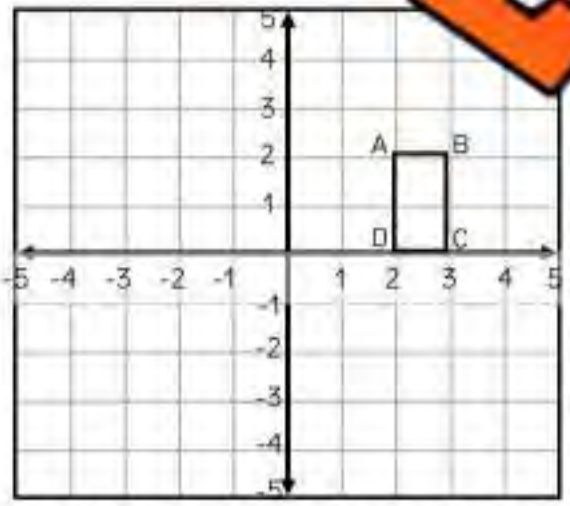
1) Reflection across the y-axis



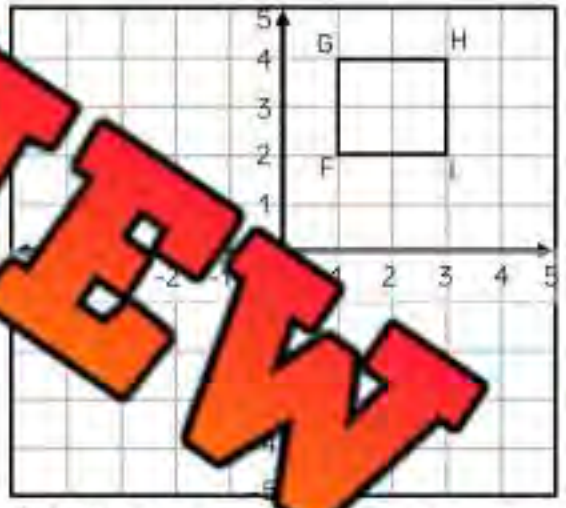
2) Reflection across the x-axis



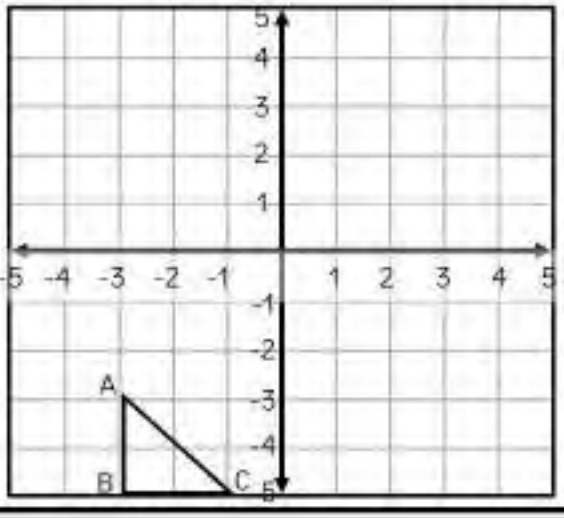
3) Reflection across the [illegible]



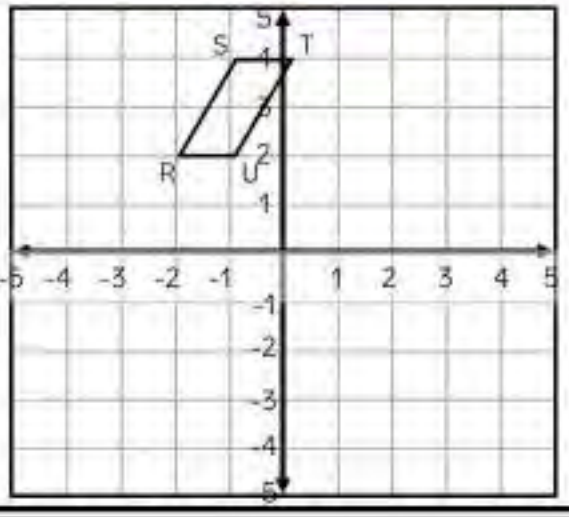
4) Reflection across the line x = -1



5) Reflection across the line y = -1



6) Reflection across the line x = 1



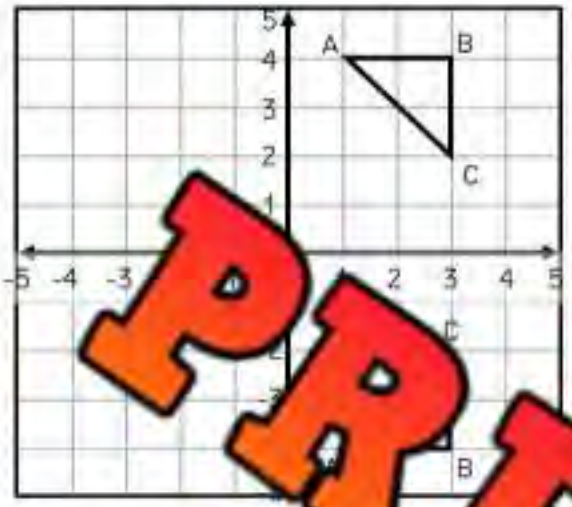
Name: _____ 147

Curriculum Connections
SS8.4

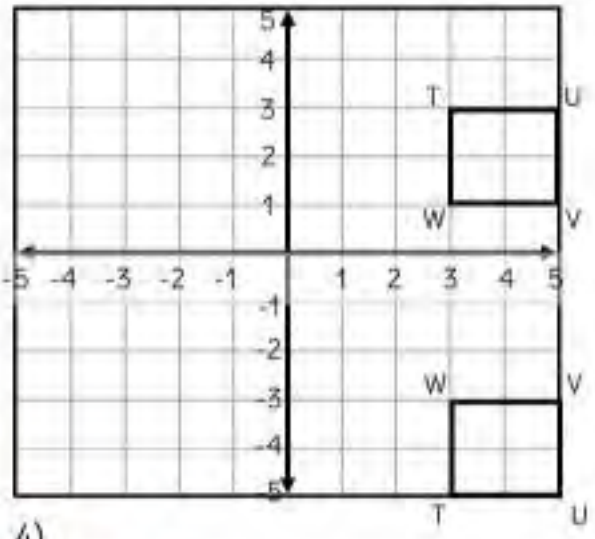
Reflections – Determine the Rule

Instructions Describe the rule for the reflection line – Ex. Reflection across the line x = 2

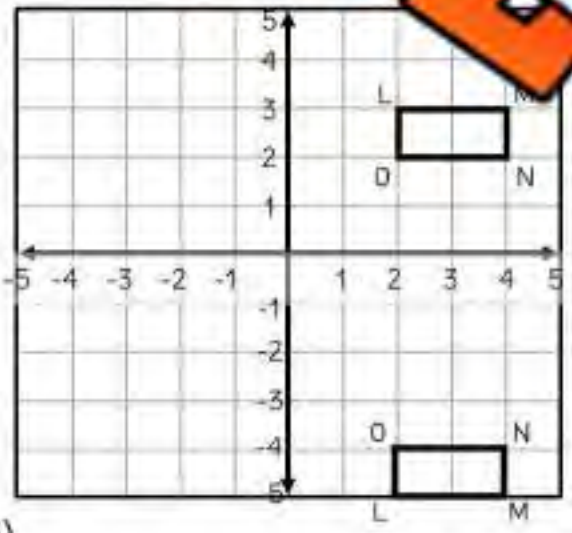
1) _____



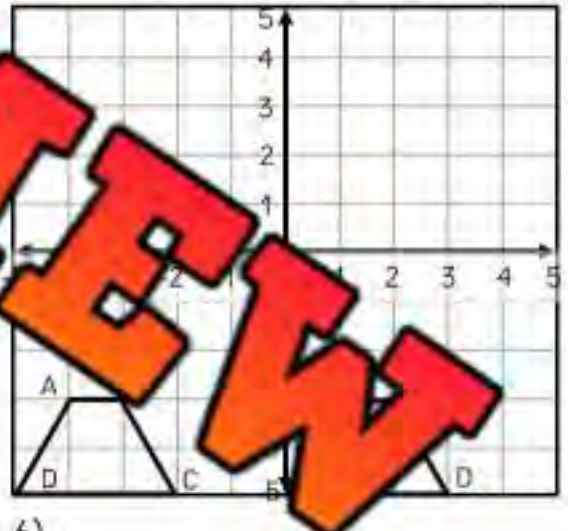
2) _____



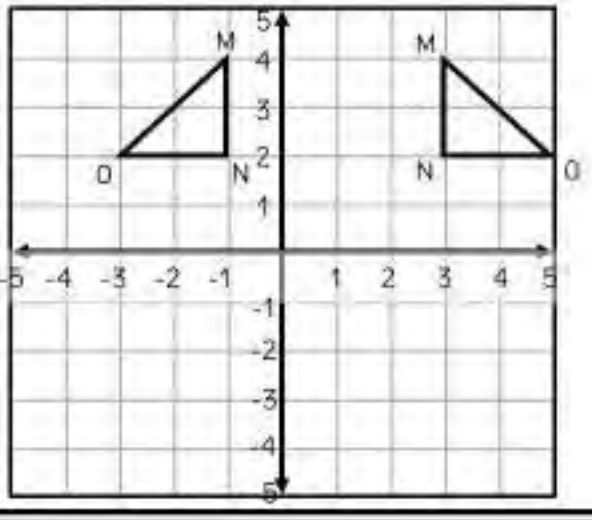
3) _____



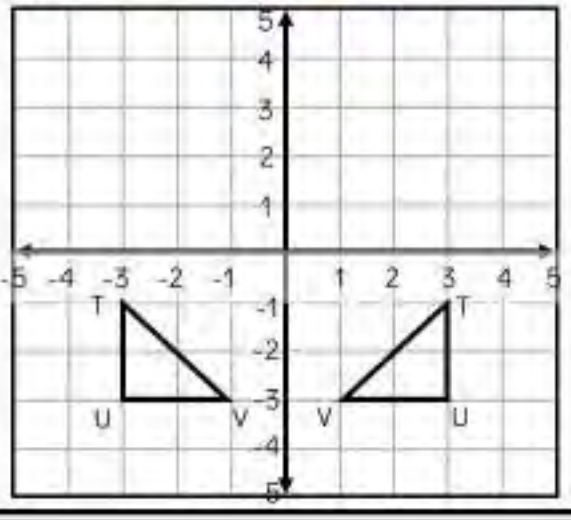
4) _____



5) _____



6) _____



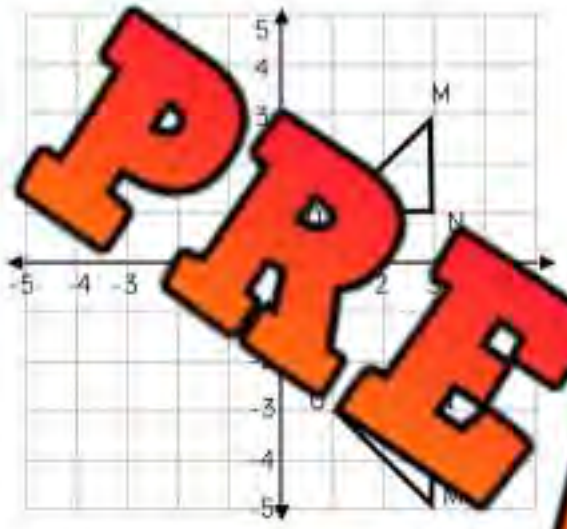
Curriculum Connection
SS8.4

Exit Cards

Cut Out Cut out the exit cards below and have students complete them at the end of class

Name: _____

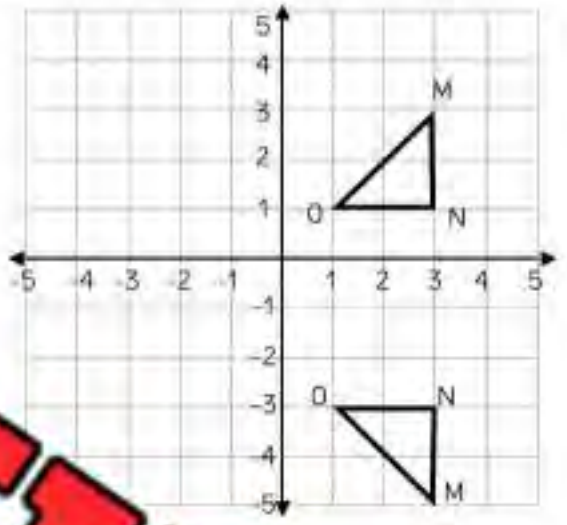
Describe the rule for the reflection line



Answer: _____

Name: _____

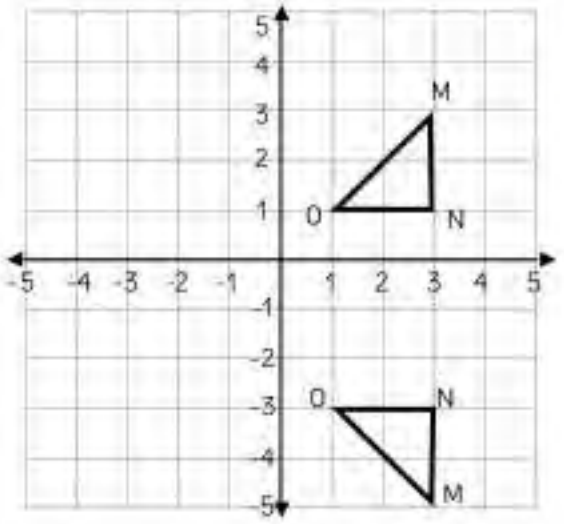
Describe the rule for the reflection line



Answer: _____

Name: _____

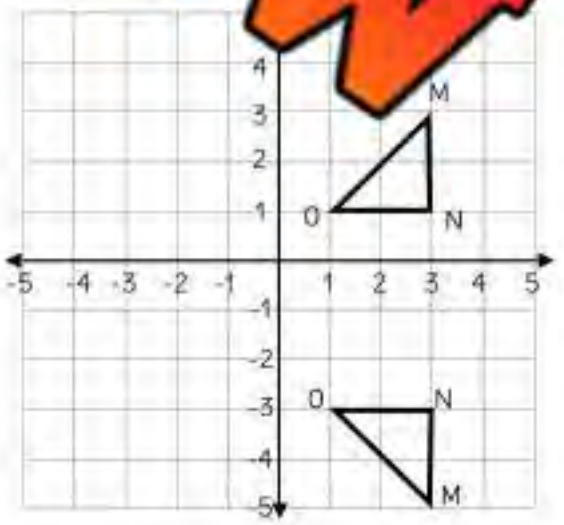
Describe the rule for the reflection line



Answer: _____

Name: _____

Describe the rule for the reflection line



Answer: _____

Name: _____ 149

Curriculum Connections
SS8.4

Reflections – Mapping Rules

Mapping Rules for Reflections

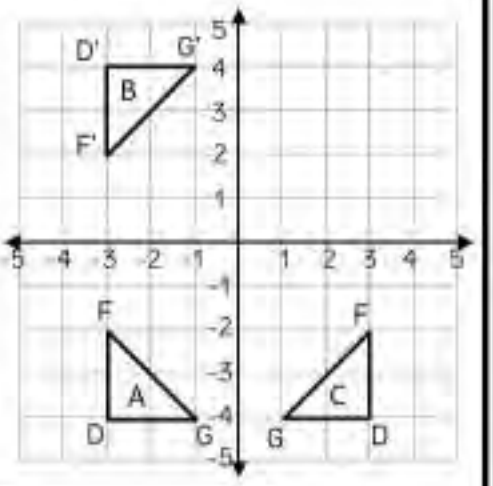
Each point on a shape moves according to the mapping rule.

The rule for a reflected shape in the x-axis is (x, y) → (x, -y)

The rule for a reflected shape in the y-axis is (x, y) → (-x, y)

In the example of Shape A being reflected to Shape B, point F (-3, -2) has been reflected across the x-axis, which means the new coordinates for F are (-3, 2).

If Shape A is reflected across the Y axis to Shape C, point F becomes



Instructions Use the mapping rules to write the new coordinates

	Original Coordinates	Reflected across the	New Coordinates
1)	P(5, 4)		P(-5, 4)
2)	S(6, -3)	x-axis	
3)	Q(-5, 7)	y-axis	
4)	P(-8, -2)	y-axis	
5)	T(-4, 8) Y(-12, -17)	x-axis	
6)	S(-14, -6) R(5, 15)	x-axis	
7)	N(-6, 8) K(6, -15)	y-axis	
8)	P(14, -7) E(-10, 17)	x-axis	
9)	S(-15, -18) R(7, 12)	y-axis	
10)	N(-9, 14) K(8, -21)	x-axis	

Name: _____ 150

Curriculum Connection
SS8.4

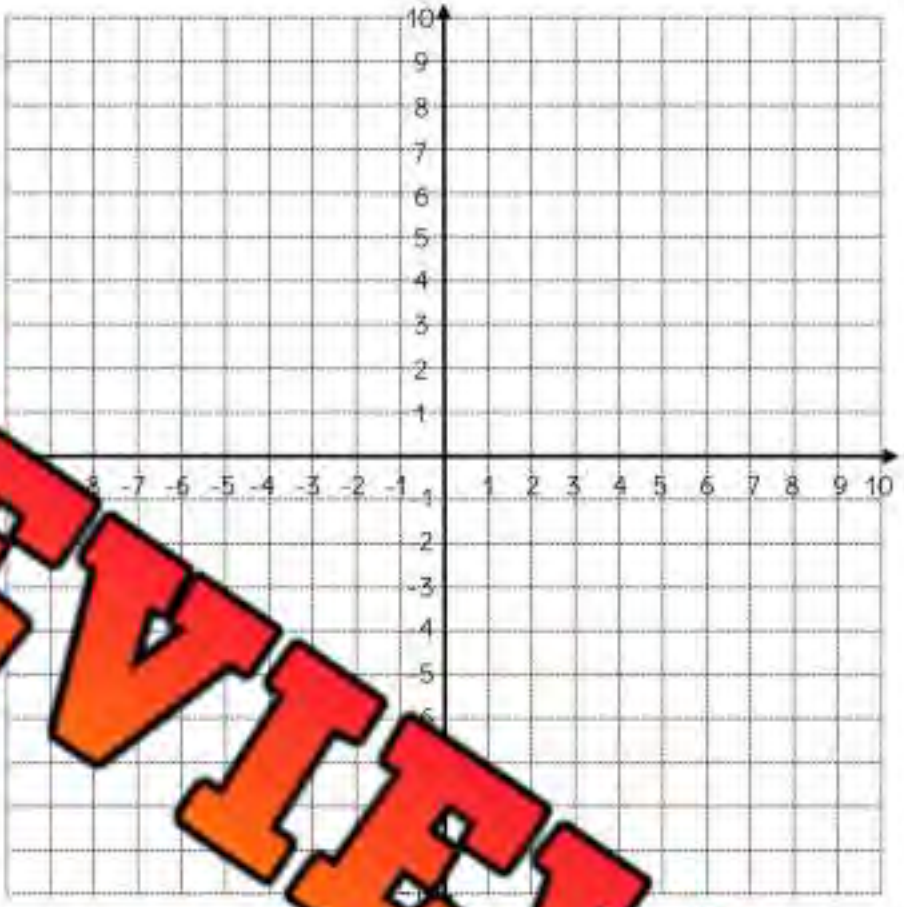
Reflections - Coordinates

Part 1 Draw the shapes using the coordinates provided. Then reflect the shapes

Shape A
P(6,4), Q(2,2), R(7,2)
Reflect over the x-axis
New Coordinates
P(,), Q(,), R(,)

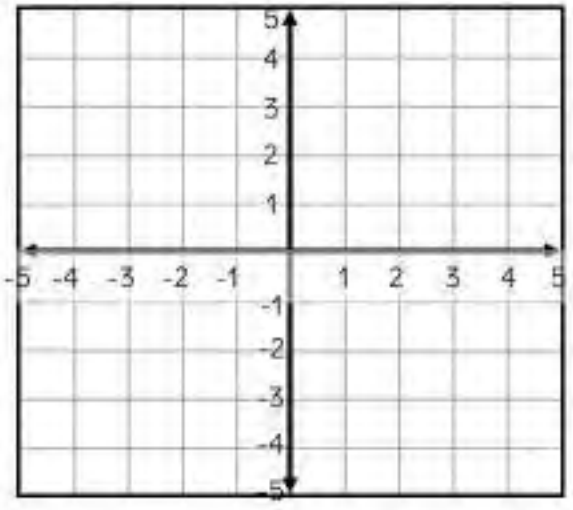
Shape B
F(,), G(-4,)
Reflect over the
New Coordi
F(,), G(,), H(,)

Shape C
J(-3,-9), K(-5,-2), L(-9,-5)
Reflect over the y-axis
New Coordinates
J(,), K(,), L(,)

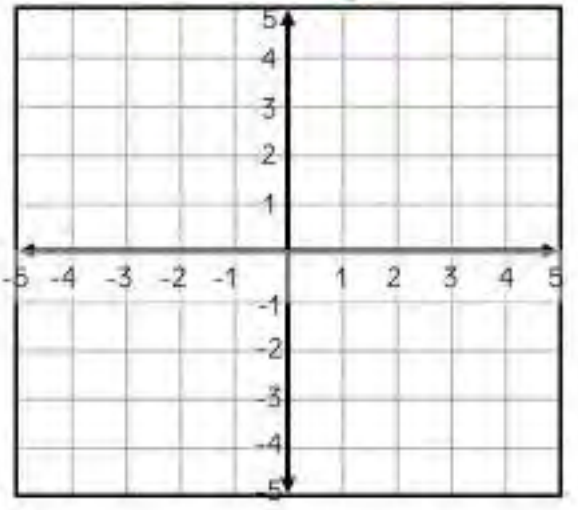


Part 2 Draw your own shape and then perform the reflectio

1) Reflection across the y-axis



2) Reflection acros line x = -1



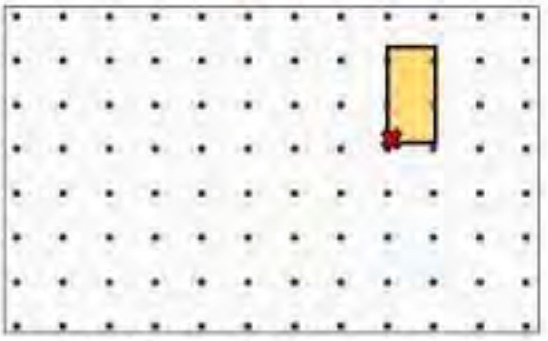
Name: _____ 152

Curriculum Connection
SS8.4

Drawing Rotations

Instructions Rotate the shapes around the point marked ✖

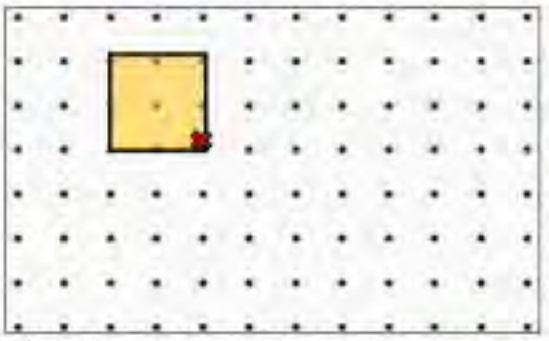
1) 90° clockwise rotation



2) 180° clockwise rotation

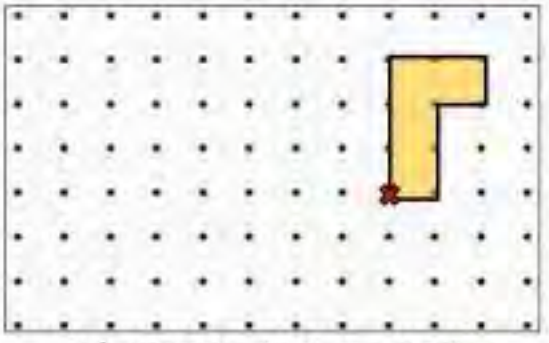
3) 90° counter-clockwise rotation

4) 360° clockwise rotation

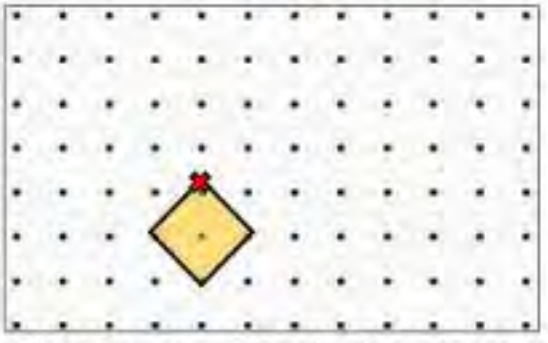


5) 90° counter-clockwise rotation

6) 180° counter-clockwise rotation



7) 90° clockwise rotation



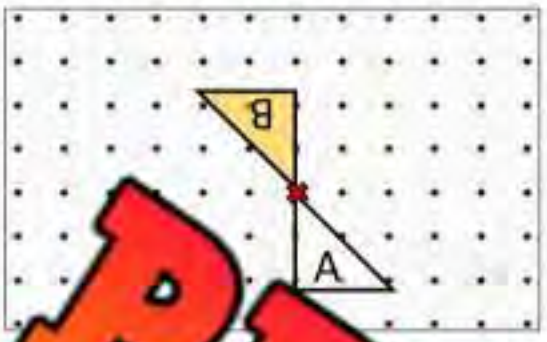
8) 180° counter-clockwise rotation

Name: _____ 153

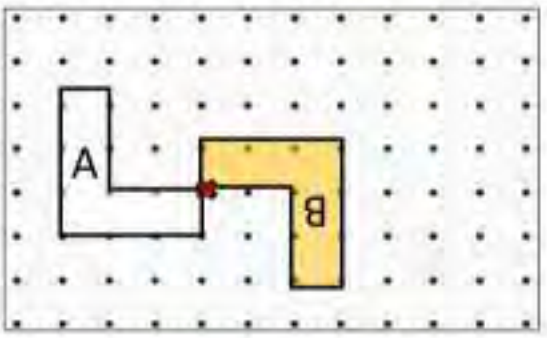
Curriculum Connection
SS8.4

Describing Rotations

Instructions Describe the rotations. Shape A is the original shape

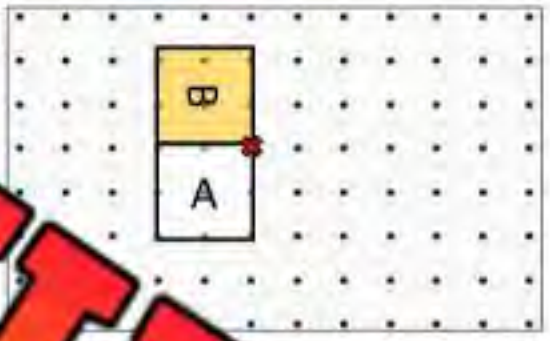


1) _____

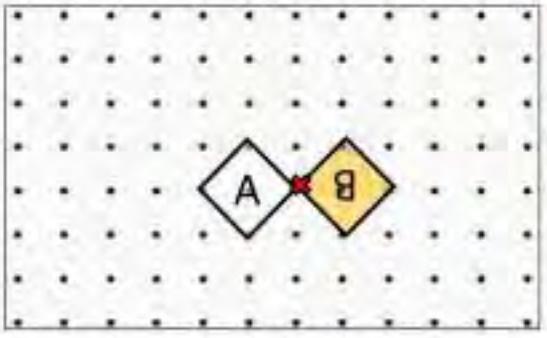


2) _____

3) _____

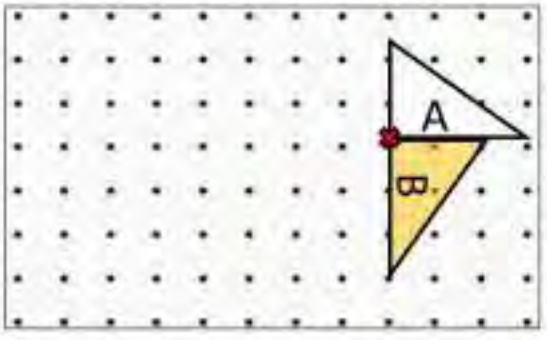


4) _____

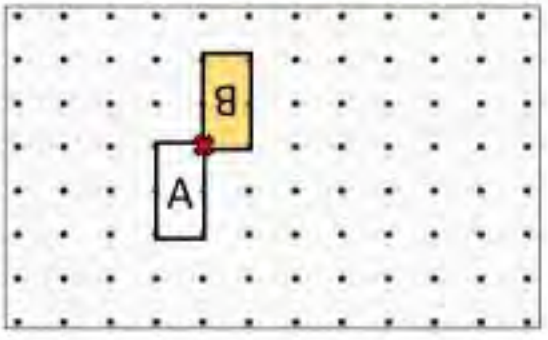


5) _____

6) _____



7) _____



8) _____

Name: _____ 155

Curriculum Connections
SS8.4

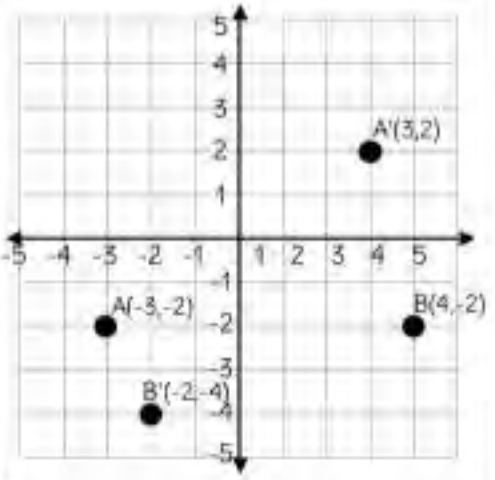
Rotating a Point

Mapping Rules for Rotations

Each point on a shape moves according to the mapping rule.

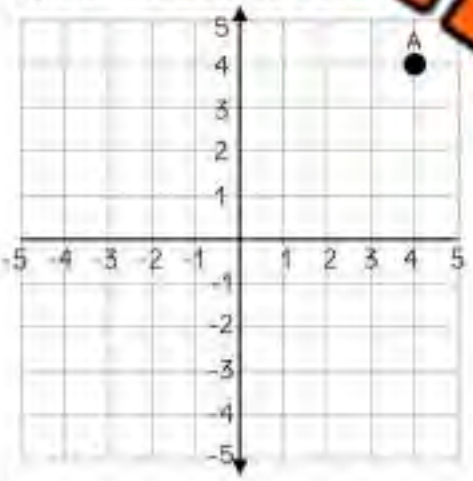
- a shape rotated 90° counterclockwise has a mapping rule of: $(x, y) \rightarrow (-y, x)$.
- a shape rotated 180° counterclockwise has a mapping rule of: $(x, y) \rightarrow (-x, -y)$.
- a shape rotated 270° counterclockwise has a mapping rule of: $(x, y) \rightarrow (y, -x)$.

In the example, A was rotated 180° counter-clockwise
In the example, B was rotated 90° clockwise.



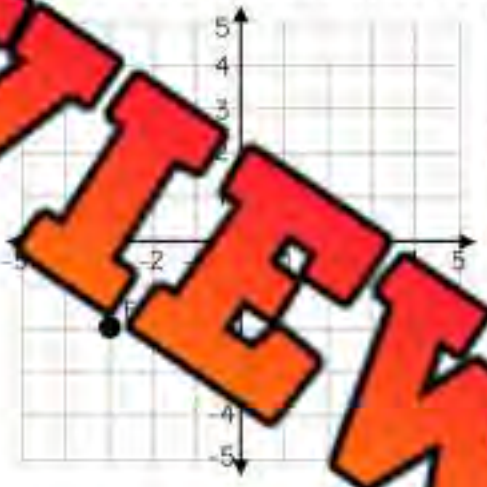
Instructions Plot the new position after rotating around the origin

1) 90° clockwise rotation



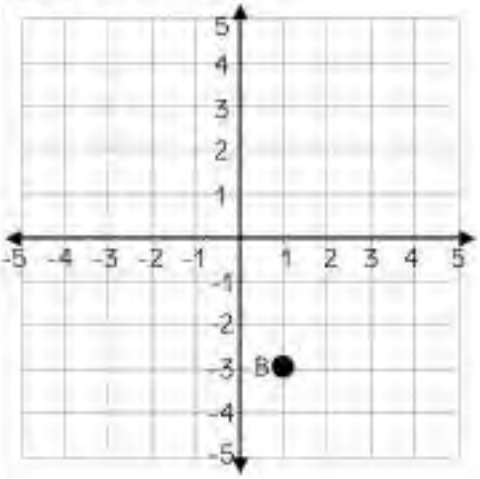
Original Coordinates
A(,)
Rotated Coordinates
A(,)

2) 90° counterclockwise rotation



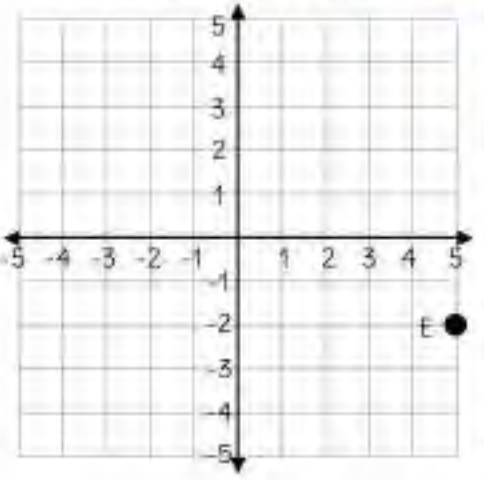
Original Coordinates
E(,)
Rotated Coordinates
(,)

3) 180° rotation



Original Coordinates
B(,)
Rotated Coordinates
B(,)

4) 90° clockwise rotation



Original Coordinates
E(,)
Rotated Coordinates
E(,)

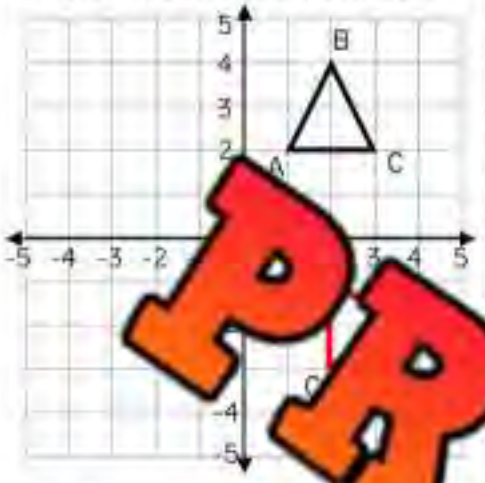
Name: _____ 157

Curriculum Connection
SS8.4

Rotating Shapes

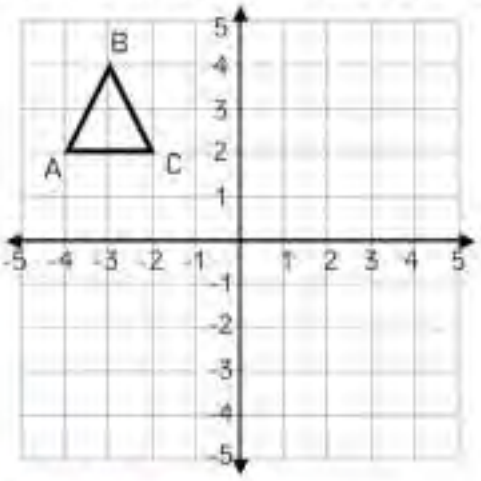
Instructions Graph the new position of each shape after the given rotation

1) 90° clockwise rotation



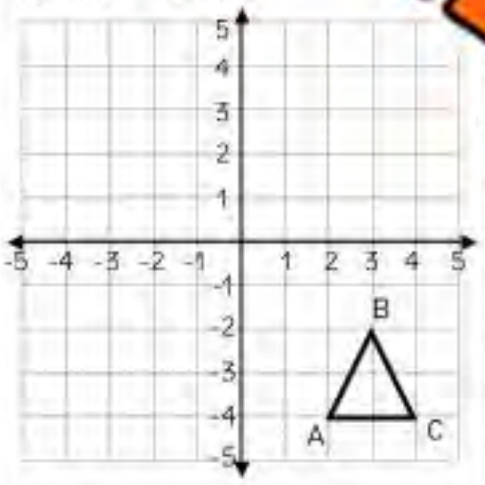
Original Coordinates
A(1, 2)
B(2, 4)
C(3, 2)
Rotated Coordinates
A(2, -1)

2) 90° counterclockwise rotation



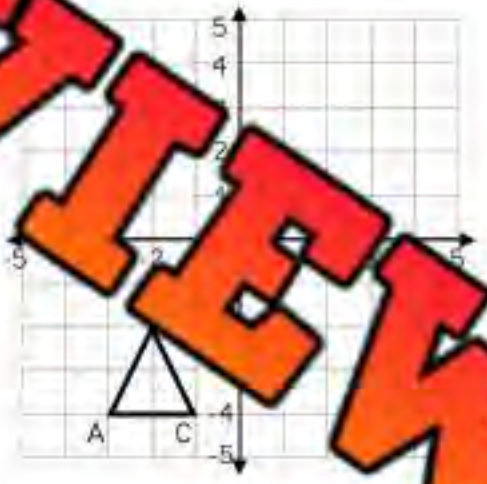
Original Coordinates
A(,)
B(,)
C(,)
Rotated Coordinates
A(,)
B(,)
C(,)

3) 180° rotation



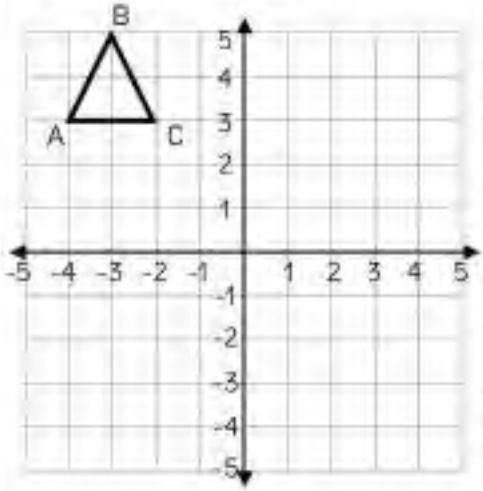
Original Coordinates
A(,)
B(,)
C(,)
Rotated Coordinates
A(,)
B(,)
C(,)

90° clockwise rotation



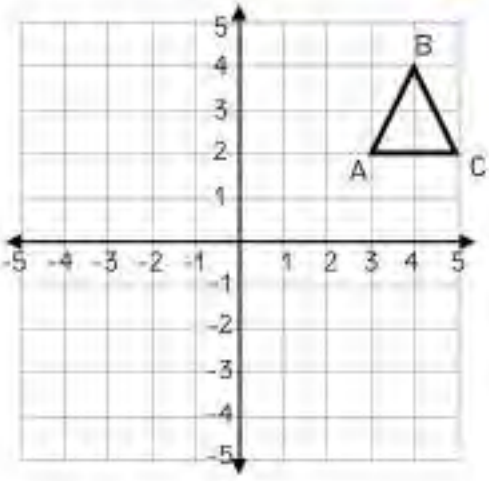
Original Coordinates
A(,)
B(,)
C(,)
Rotated Coordinates
(,)
(,)
C(,)

5) 90° clockwise rotation



Original Coordinates
A(,)
B(,)
C(,)
Rotated Coordinates
A(,)
B(,)
C(,)

6) 90° counterclockwise rotation



Original Coordinates
A(,)
B(,)
C(,)
Rotated Coordinates
A(,)
B(,)
C(,)

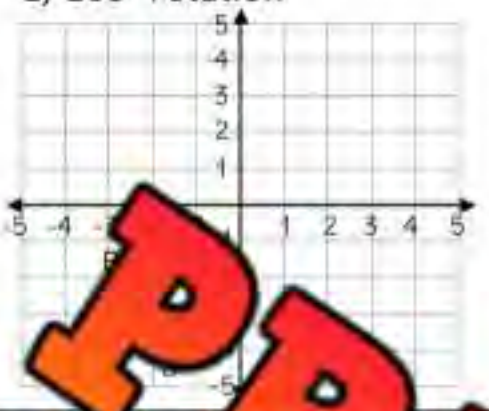
Name: _____ 158

Curriculum Connections
SS8.4

Rotating Shapes

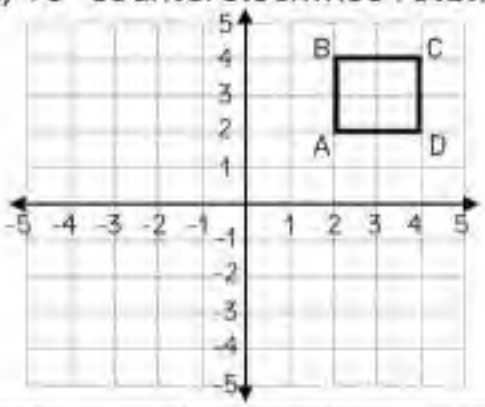
Instructions Graph the new position of each shape after the given rotation

1) 180° rotation



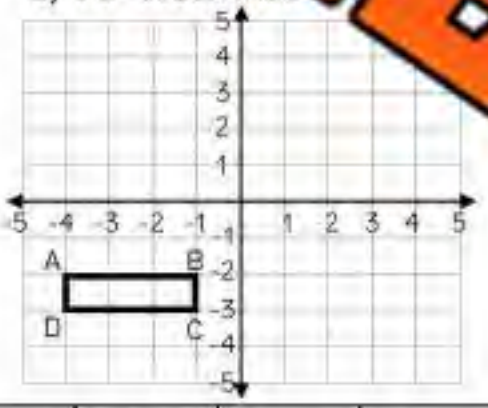
Original	A(,)			
Rotated	A(,)			

2) 90° counterclockwise rotation



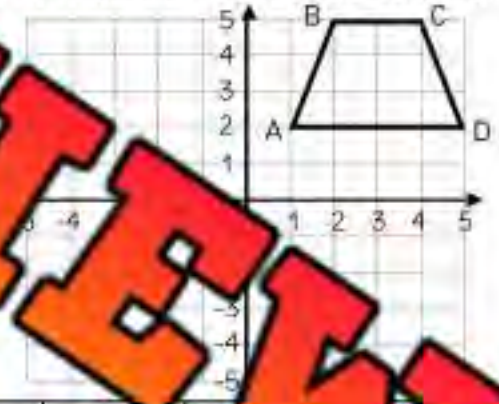
Original	A(,)	B(,)	C(,)	D(,)
Rotated	A(,)	B(,)	C(,)	D(,)

3) 90° clockwise



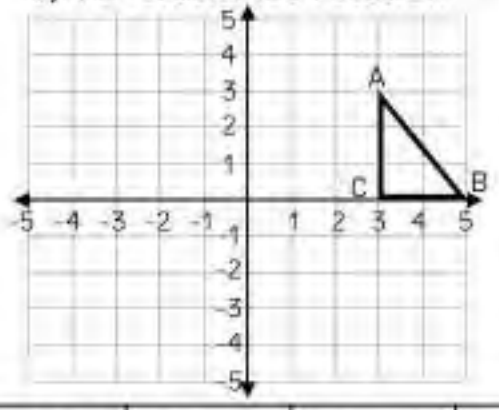
Original	A(,)	B(,)	C(,)	D(,)
Rotated	A(,)	B(,)	C(,)	D(,)

4) 90° counterclockwise rotation



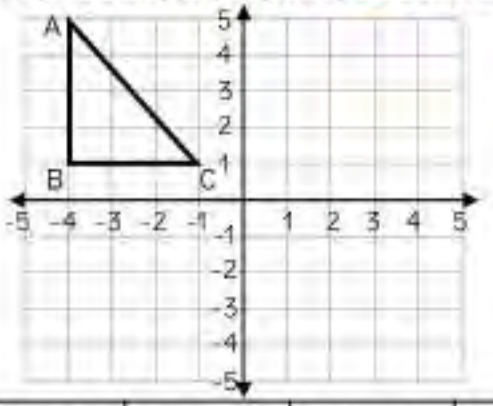
Original	A(,)	B		(,)
Rotated	A(,)	B(,)		D(,)

5) 90° clockwise rotation



Original	A(,)	B(,)	C(,)
Rotated	A(,)	B(,)	C(,)

6) 90° counterclockwise rotation



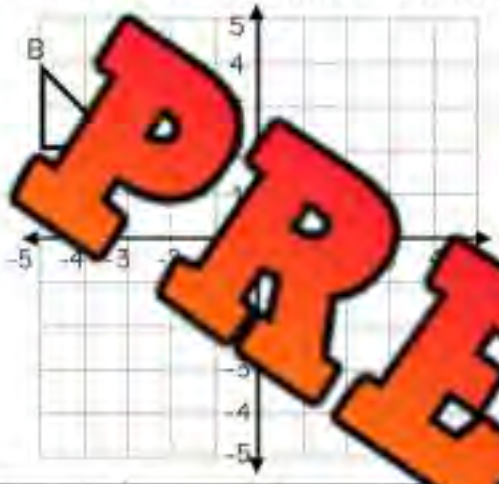
Original	A(,)	B(,)	C(,)
Rotated	A(,)	B(,)	C(,)

Exit Cards

Cut Out Cut out the exit cards below and have students complete them at the end of class

Name: _____

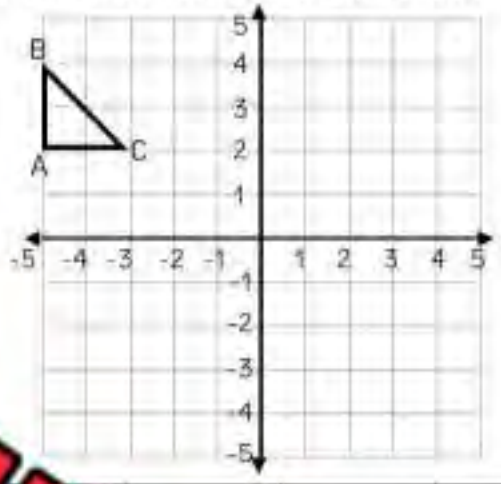
Graph the new position of shape after the 180° counterclockwise rotation.



Original	A(,)	B(,)	C(,)
Rotated	A(,)	B(,)	C(,)

Name: _____

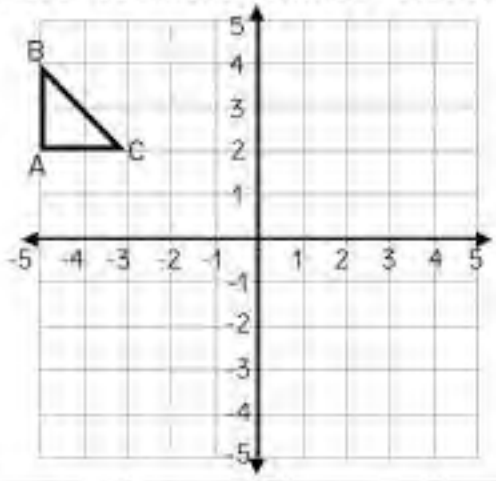
Graph the new position of shape after the 180° counterclockwise rotation.



C	A(,)	B(,)	C(,)
ed	)	B(,)	C(,)

Name: _____

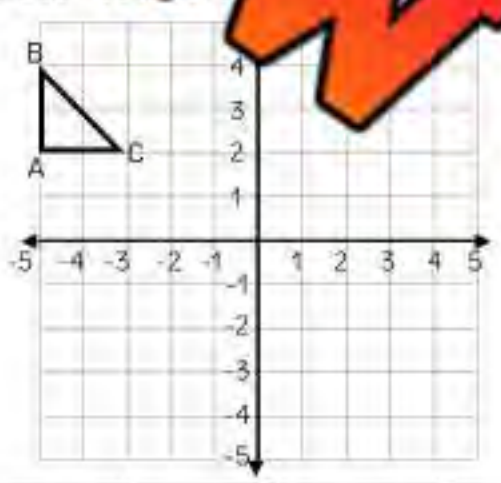
Graph the new position of shape after the 180° counterclockwise rotation.



Original	A(,)	B(,)	C(,)
Rotated	A(,)	B(,)	C(,)

Nam _____

Graph t osi h after the 180° co erc p



Original	A(,)	B(,)	C(,)
Rotated	A(,)	B(,)	C(,)

Name: _____ 160

Curriculum Connection
SS8.4

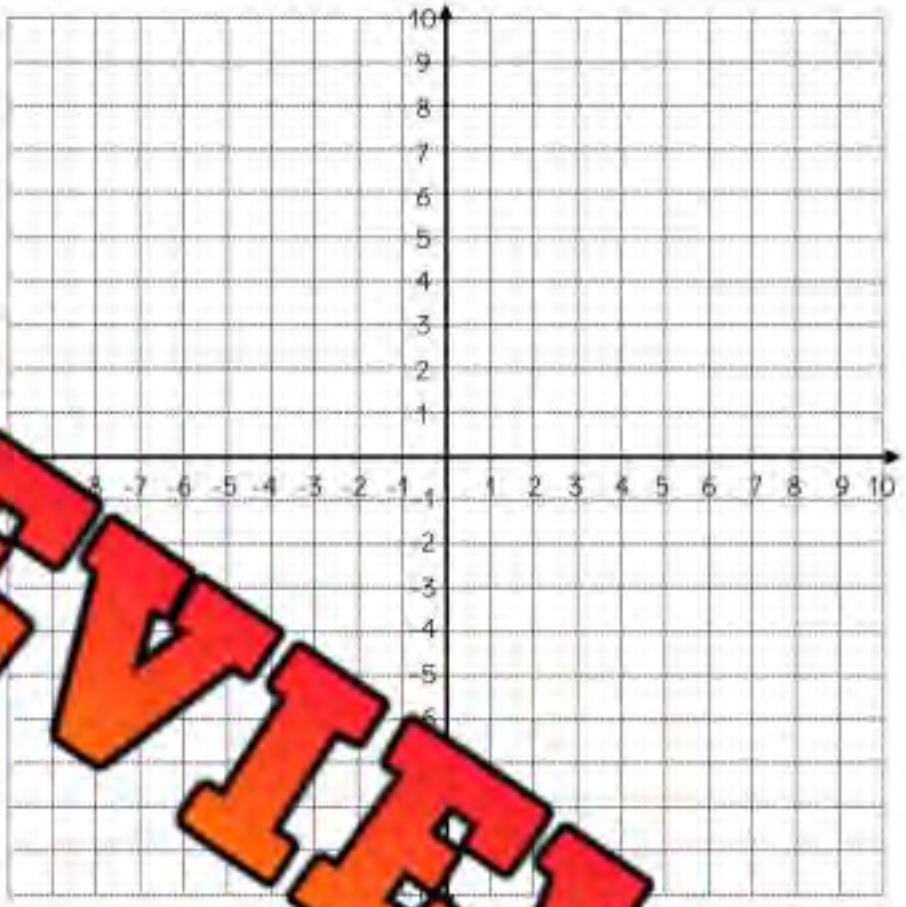
Rotations – Coordinates

Part 1 Draw the shapes using the coordinates provided. Then rotate the shape about the origin

Shape A
P(9,2), Q(6,4), R(3,2)
90° counterclockwise rotation
New Coordinates
P(,), R(,)

F(-), G(-
180
New Coordi
F(,), G(,), H(

Shape C
J(-2,-9), K(-8,-6), L(-2,-2)
90° counterclockwise rotation
New Coordinates
J(,), K(,), L(,)



Part 2 Give the coordinates of each point after the rota

	Original Coordinate	Rotation Instructions	New Coordinates
1)	P(5, 4)	90° counterclockwise rotation	P(-4, 5)
2)	S(2, 6)	180° rotation	
3)	Q(-3, 7)	360° rotation	
4)	P(-5, -8)	90° counterclockwise rotation	
5)	T(-6, 3) Y(-2, -5)	90° clockwise rotation	
6)	S(-8, -4) R(5, 7)	180° rotation	
7)	N(-5, 5) K(6, -7)	90° clockwise rotation	
8)	P(6, -3) E(-6, 5)	180° rotation	

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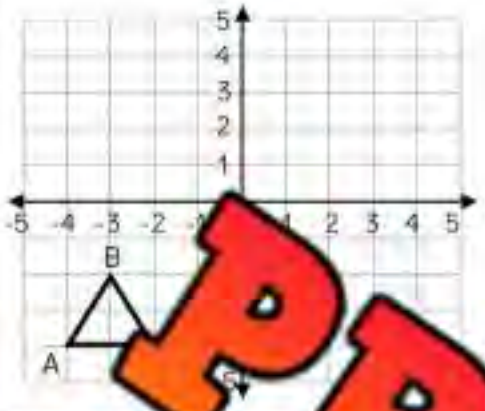
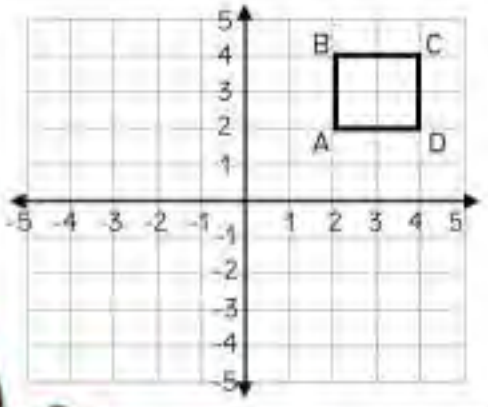
Curriculum Connection
SS8.4

Performing Multiple Transformations

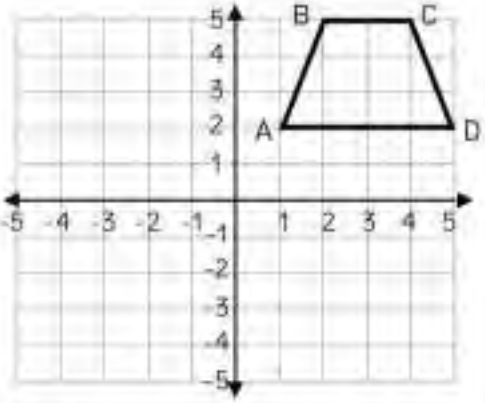
Instructions Complete the following combination of transformations



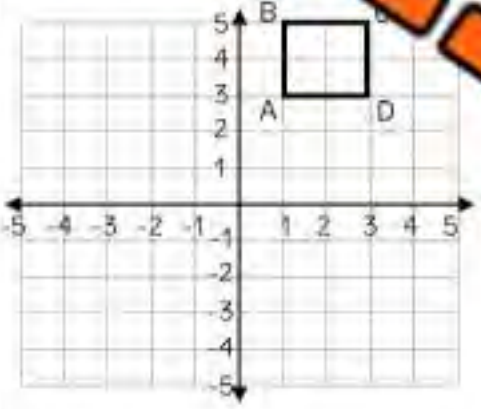
1) 180° rotation, down 3



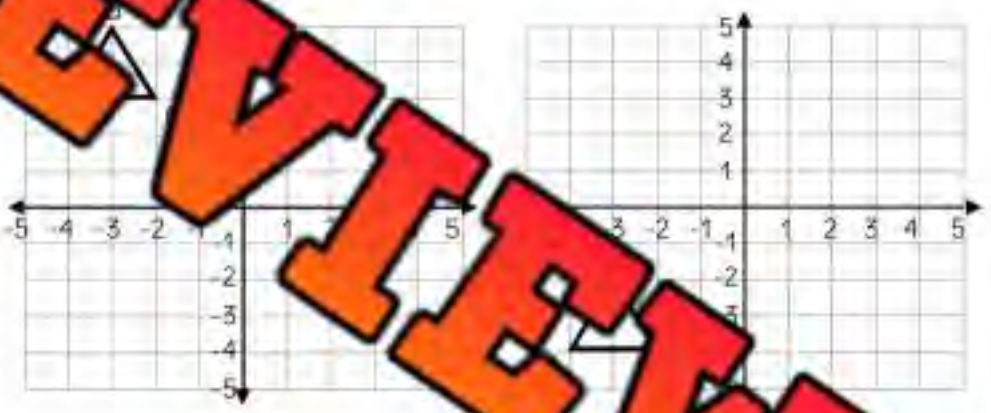
2) ct across the x-axis te left 4



3) Rotate 90° clockwise and reflect across the y-axis

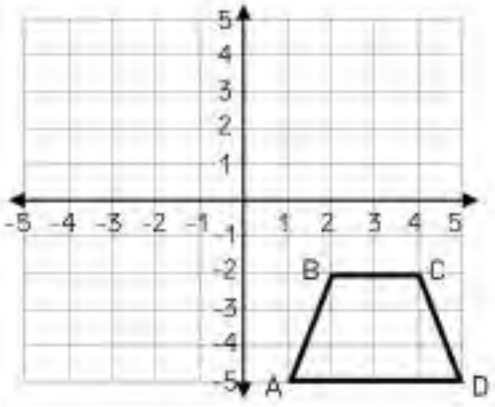


4) 90° counterclockwise rotation, translate right 3

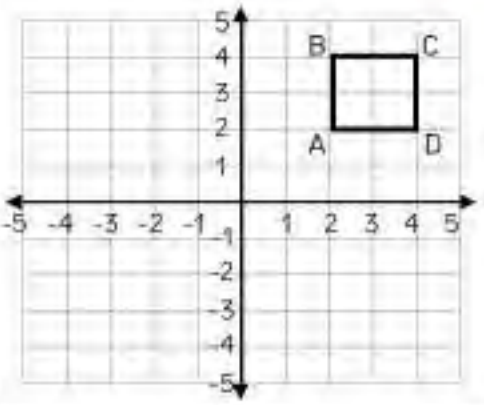


5) Translate down 3 and reflect across the y-axis

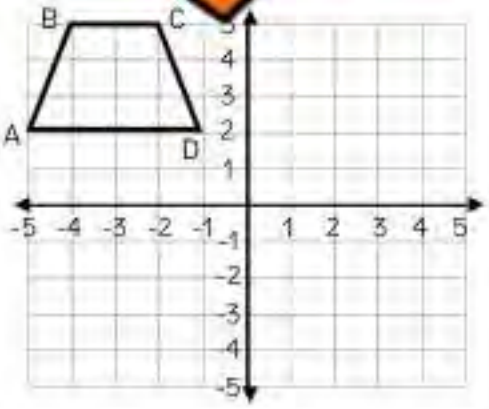
6) -axis up 4



7) 180° rotation, translate down 5



8) Reflect across the x-axis and translate left 6



9) Rotate 90° clockwise and reflect across the x-axis

Name: _____ 170

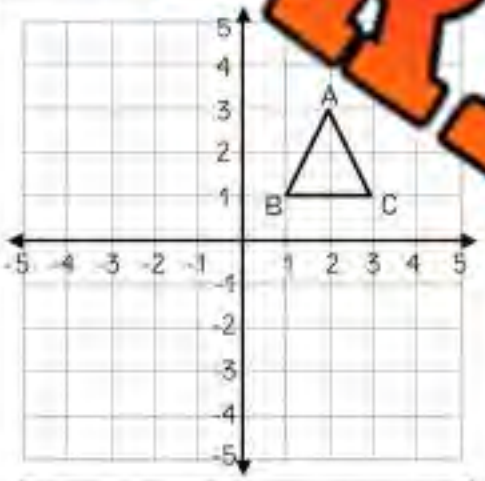
Curriculum Connection: TQ

Geometry Test

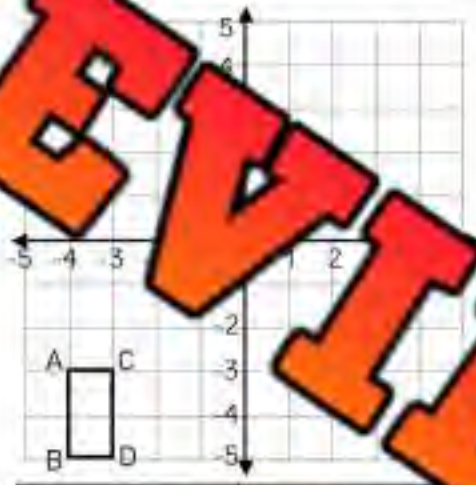
Part 1 — Give the coordinates of each point after the translation

	Original Coordinate	Translation – Mapping Rule	New Coordinates
1)	P(3, -4)	(x – 4, y + 6)	P(-3, 0)
2)	S(-5, 8)	(x + 12, y – 8)	
3)	(-9, -5)	(x + 5, y – 9)	
4)	L(| -3, -8)	(x – 6, y + 11)	
5)			(x + 12, y + 7)	

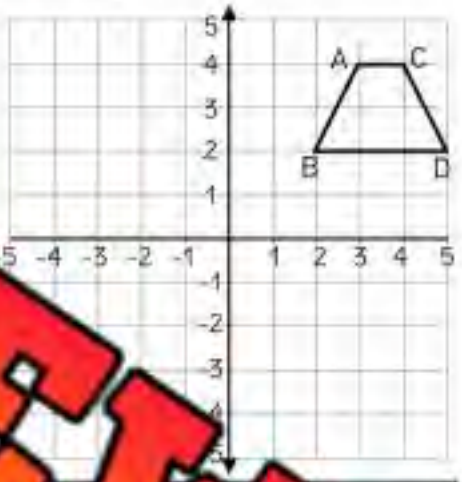
Part 2 — e shape using the mapping rule



Mapping Rule	(x – 5, y – 5)

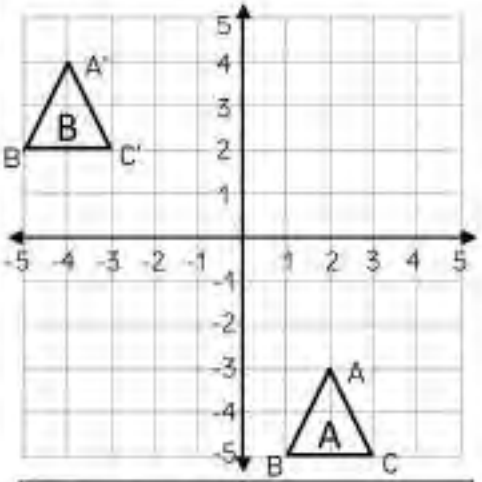


Mapping Rule	(x + 5, y + 7)

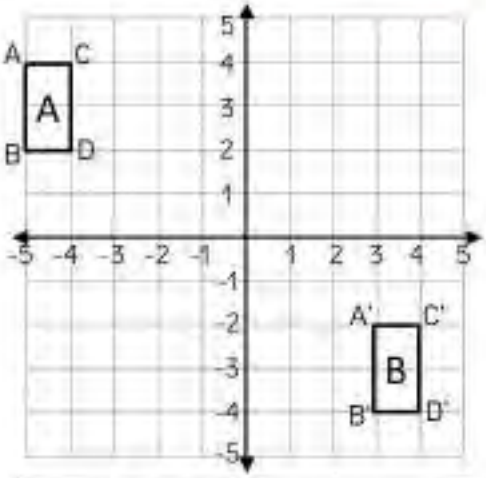


Map	– 5)

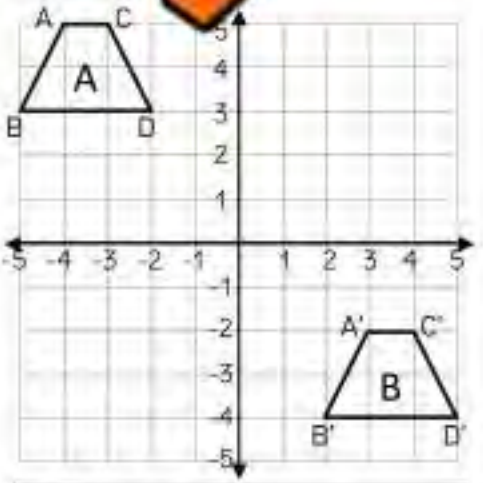
Part 3 — Fill in the mapping rule of the translations below



Mapping Rule	



Mapping Rule	

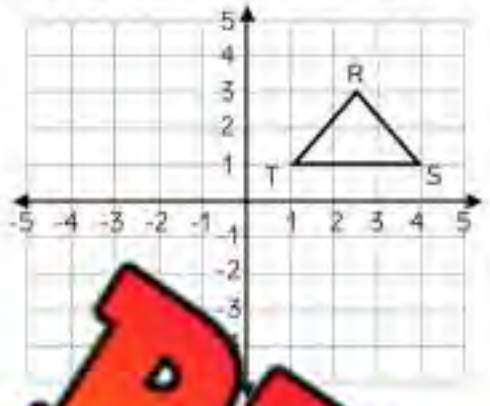


Mapping Rule	

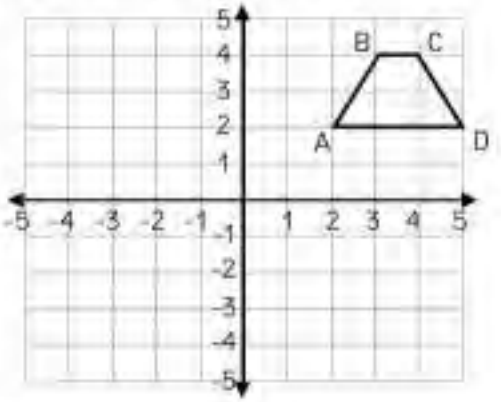
Curriculum Connection
TG

Part 4 Graph the new position of each shape after the given reflection

1) Reflection across the line y = -1



2) Reflection across the line x = 1

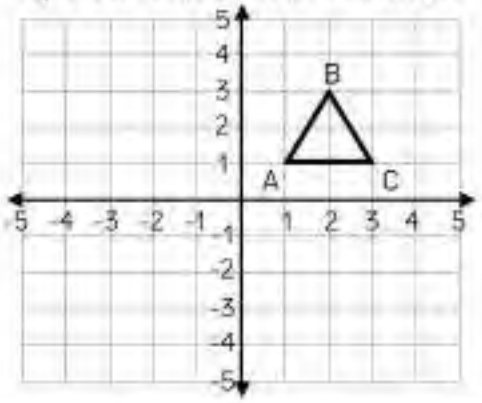


Part 5 Use [illegible]g rules to write the new coordinates after the reflection

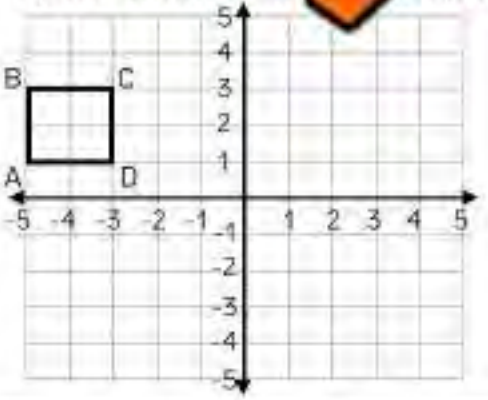
	Original [illegible]te(s)	[illegible]tion across the	New Coordinates
1)	P(7, 3)	[illegible]s	
2)	S(9, -2)	[illegible]	
3)	Q(-5, 4)	[illegible]is	
4)	P(-7, -3)	y-axi[illegible]	
5)	T(-6, 8) Y(-13, -17)	x-axis	

Part 6 Graph the new position of each shape after the [illegible]ven

1) 270° clockwise rotation



2) 90° counterclo[illegible]e rotation



Original	A(,)	B(,)	C(,)
Rotated	A(,)	B(,)	C(,)

Original	A(,)	B(,)	C(,)	D(,)
Rotated	A(,)	B(,)	C(,)	D(,)

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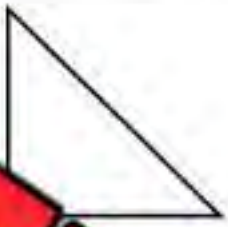
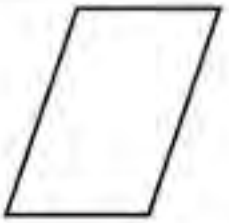
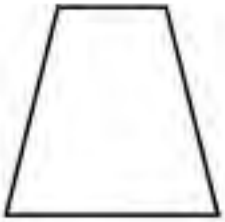
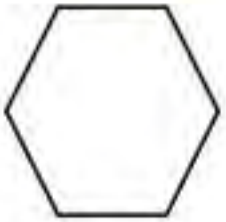
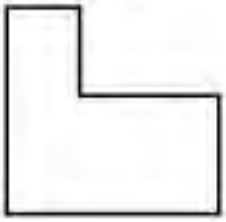
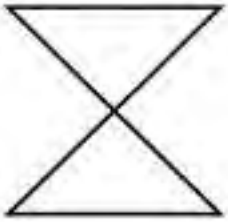
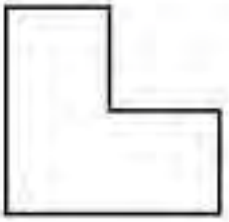
Curriculum Connections
SS8.4

Intro to Tessellations

A **tessellation** is a tiling pattern in which shapes are fitted together with no gaps or overlaps. In the example tessellation, a white and grey chevron are tiled with no gaps and are not overlapping.

Questions Can the shapes below be used by themselves in a tessellation?

		
1) Yes No	2) Yes No	3) Yes No
		
4) Yes No	5) Yes No	6) Yes No
		
7) Yes No	8) Yes No	9) Yes No
		
10) Yes No	11) Yes No	12) Yes No

Name: _____ 174

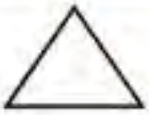
Curriculum Connections
SS8.4

Tessellating with Regular Polygons

Polygons will only tessellate if their interior angles add up to a multiple/factor of 360°. A triangle's interior angles always add up to 180°.

Instructions Use the information above to fill in the tables

Terms	Definition – What does the term mean?
Regular P	
Interior	
Sum of Angles	

Regular Polygon	Number of Triangles	Sum of Interior Angles (Number of Triangles x 180)	Multiple/Factor of 360° Yes/No
1) 			
2) 			
3) 			
4) 			
5) 			
6) 			
7) 			
8) 			

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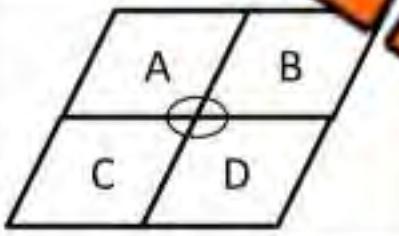
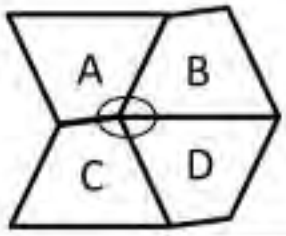
Curriculum Connections
SS8.4

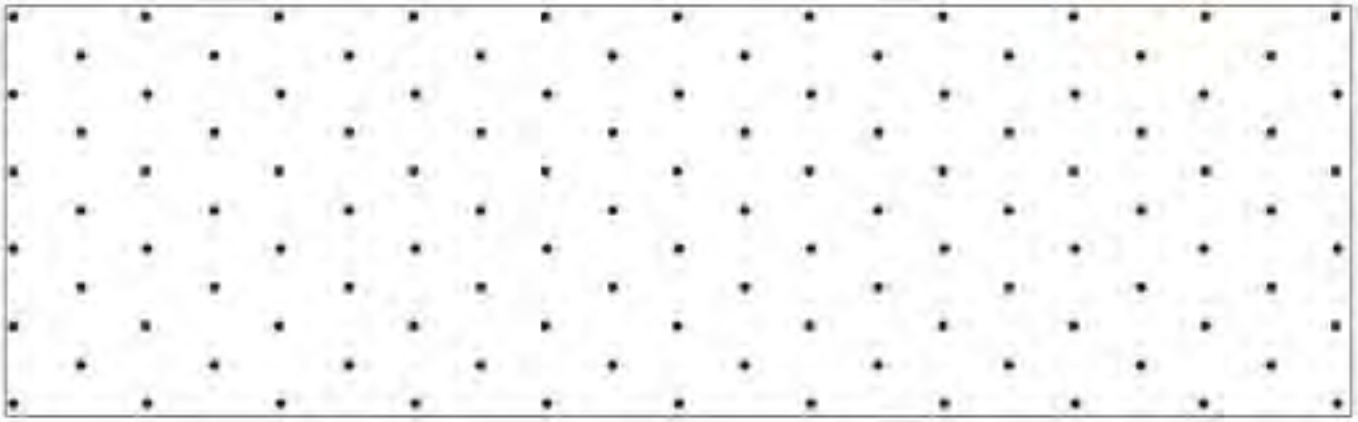
Tessellating with Quadrilaterals

Every quadrilateral can be used to tessellate the plane. This is because a quadrilateral's interior angles always add up to 360°. A regular quadrilateral is easy to tessellate, whereas an irregular quadrilateral is sometimes more challenging to fit together.

Part 1 Fill in the table below

Tes[illegible]tion	Sum of the Circled Angles	Describe Transformation
		*From Shape A to Shape D*
		*From Shape A to Shape B*
		*[illegible] A to Shape C*

Part 2 Create a tessellation using one or multiple quadrilaterals



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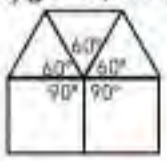
Curriculum Connections
SS8.4

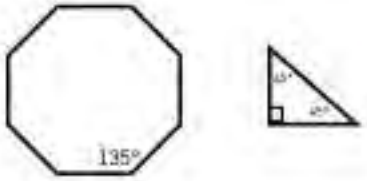
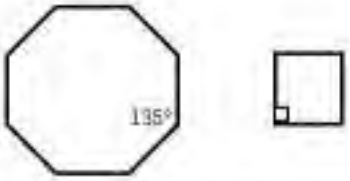
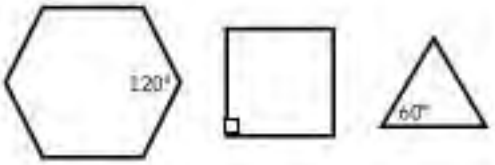
Tessellating with Different Polygons

Tessellations with different polygons are often used in artwork. When artists combine polygons, they need to ensure the vertices have interior angles that add to 360°.



Using 2 squares and 3 triangles have central vertices adding to 360° (60 + 60 + 60 + 90 + 90 = 360°)

Questions Can the polygons be combined to create a tessellation? Explain

	Yes/No	Explanation
1) 		
2) 		
3) 		
4) 		
5) 		

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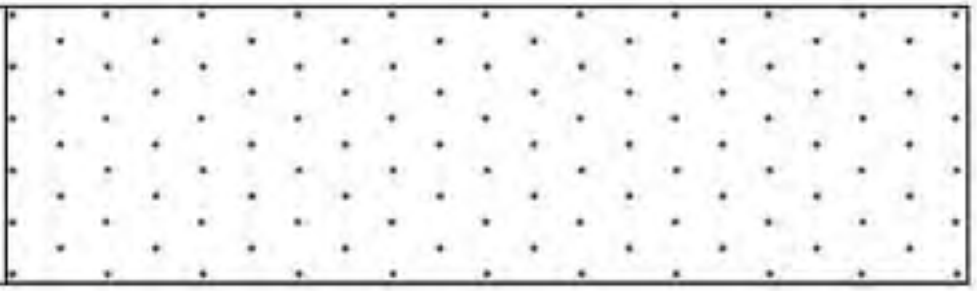
Curriculum Connection
SS8.4

Drawing Tessellations – Combining Polygons

Draw Draw a tessellation using the combination of polygons below

1) Pentagon and Triangle

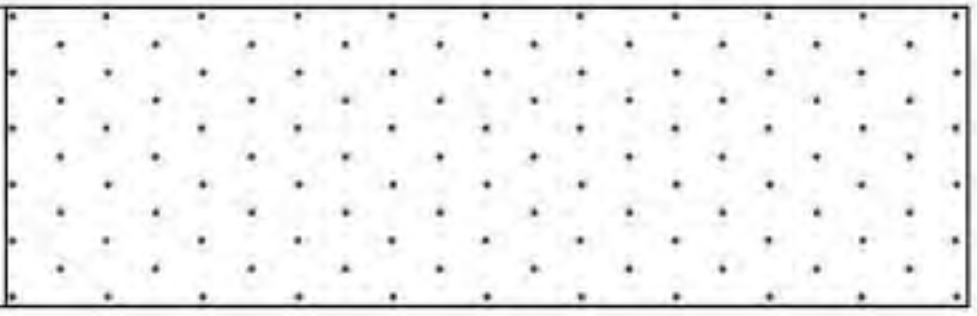


2) Sq[illegible]an[illegible]

3) Octagon and Quadrilateral

4) Octagon and 2 Triangles

5) Hexagon, Quadrilateral, Triangle

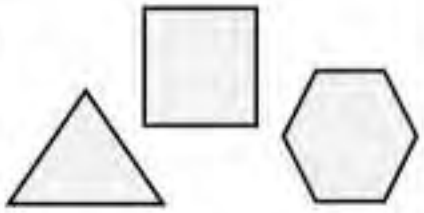


Name: _____ 178

Curriculum Connection
SS8.4

Regular Tessellations

A **regular tessellation** is composed of identically sized and shaped regular polygons. To create a regular tessellation, choose one of the regular polygons and tile them. Add colours afterwards to add to the pattern.



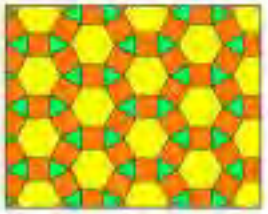
Create Create a regular tessellation below using regular triangles, squares, or hexagons

Name: _____ 179

Curriculum Connection
SS8.4

Semi-Regular Tessellations

A **semi-regular tessellation** is composed of multiple regular polygons. Only 8 combinations of regular polygons create semi-regular tessellations. To create a semi-regular tessellation, choose two or more regular polygons and tile them together.



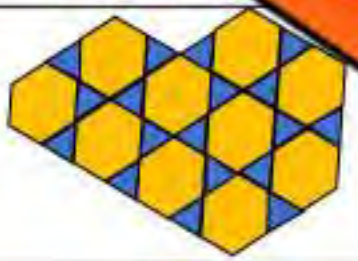
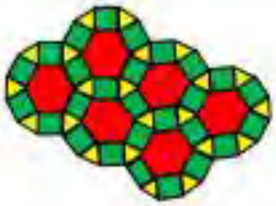
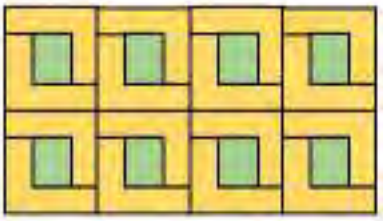
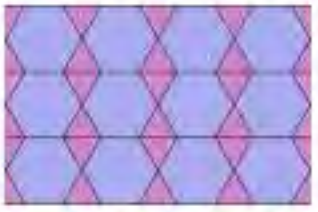
Create Create a semi-regular tessellation below. Add colour to your tessellation

Name: _____ 181

Curriculum Connection
SS8.4

Types of Tessellation

Questions What type of tessellation are the examples below?

Tessellation	Type of Tessellation Regular, Semi-Regular, Irregular
1) 	
2) 	
3) 	
4) 	
5) 	
6) 	

Curriculum Connection
SS8.4

Exit Cards

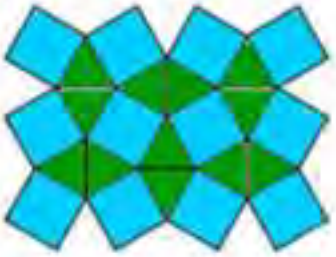
Cut Out Cut out the exit cards below and have students complete them at the end of class

Name: _____

What type of tessellation is the example below? Explain.

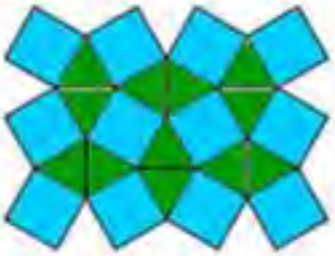
Name: _____

What type of tessellation is the example below? Explain.



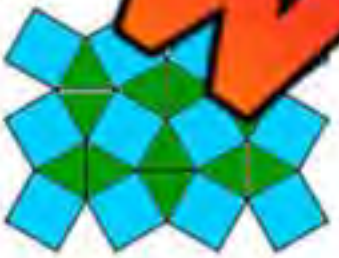
Name: _____

What type of tessellation is the example below? Explain.



Name: _____

What type of tessellation is the example below? Explain.



Name: _____ 183

Curriculum Connection
SS8.4

Creating Translation Tessellation

Directions Follow the instructions to create your own translation tessellation

When creating a tessellation, we move a "tile" repeatedly to create a pattern. We can move the tile in 4 different ways – translations, reflections, rotations, and dilations.

A **translation tessellation** is a tessellation that has been created by the translating (sliding) of a tile.

Instructio

1) Use[illegible]e with strong paper, like cardboard, cardstock or index cards.

2) [illegible] a desi[illegible] pencil from one corner of the square to an adjacent corner. D[illegible]go[illegible]y and do not stop halfway.

3) Cut along yo[illegible]cil li[illegible] have two pieces. The piece that you designed is calle[illegible]

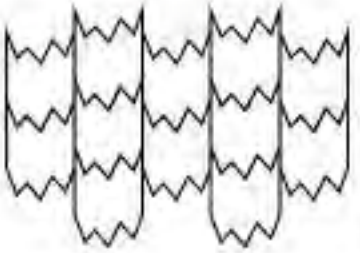
4) Translate (slide) the nibb[illegible]ce t[illegible]side and tape the straight edges together. These two pieces need t[illegible]rectl[illegible]no overlapping.

5) Place your tile on one of the four corners. To avoid having gaps, h[illegible]e corner of the paper align with the original square you started with. The first tile you trace can hang off the edge of the paper.

6) Since this is a translation tessellation, you will translate (slide) the tile so that it fits together like a puzzle.

7) Continue translating the tile until the page is covered.

8) Colour your tessellation in a pattern



Name: _____ 184

Curriculum Connection
SS8.4

Creating Translation Tessellation

Directions Follow the instructions to create your own translation tessellation

When creating a tessellation, we move a "tile" repeatedly to create a pattern. We can move the tile in 4 different ways – translations, reflections, rotations, and dilations.

A **reflection tessellation** is a tessellation that has been created by the reflecting (flipping) of a tile.

Instructi

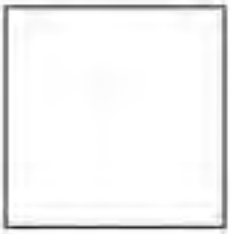
1) Us… with strong paper, like cardboard, cardstock or index cards.

2) Cr… a des… pencil from one corner of the square to an adjacent corner. D… ago… and do not stop halfway.

3) Repeat the ste… ve… two designs to cut out

4) Cut both designs out. … d n… ieces.

5) **Reflect (flip)** the cut-out pieces a… slide… cross to their opposite side. Tape the edges together making s… they li… wit… verlapping.

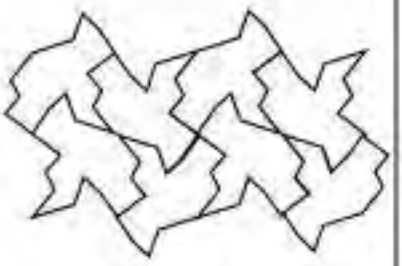


6) Place your tile on one of the four corners. To avoid having gaps, have the corner of the paper align with the original square you started with. The first tile you trace can hang off the edge of the paper.

7) Reflect (flip) the tile to fit it next to your original tile.

8) Continue reflecting the tile until the page is covered.

9) Colour your tessellation in a pattern



Name: _____ 185

Curriculum Connection
SS8.4

Creating Rotational Tessellation

Directions Follow the instructions to create your own rotational tessellation

When creating a tessellation, we move a "tile" repeatedly to create a pattern. We can move the tile in 4 different ways – translations, reflections, rotations, and dilations.

A **rotational tessellation** is a tessellation that has been created by the rotating (turning) of a tile.

Instructio

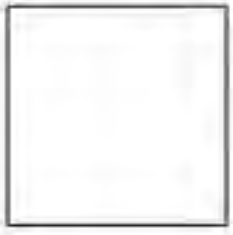
1) Us with strong paper, like cardboard, cardstock or index cards.

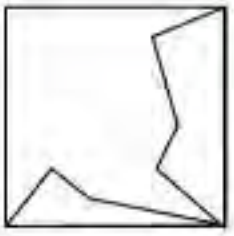
2) Cr a des pencil from one corner of the square to an adjacent corner. T rea ject, such as a bird or other animal. Do not draw diagonally ot sto

3) Repeat the step ab you o designs to cut out

4) Cut both designs out. You ld s.

5) **Rotate** the cut-out pieces by turni hem to ad sides – do not flip them. Tape the edges together making su line t overlapping.



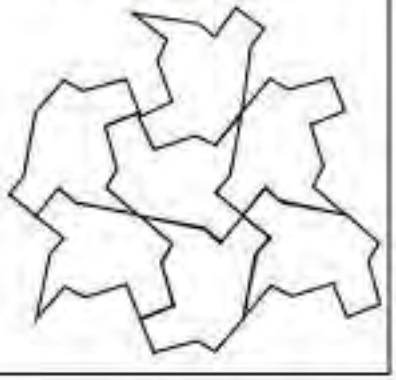


6) Place your tile on one of the four corners. To avoid having gaps, have the corner of the paper align with the original square you started with. The first tile you trace can hang off the edge of the paper.

7) Rotate (turn) the tile to fit it next to your original tile.

8) Continue rotating the tile until the page is covered.

9) Colour your tessellation in a pattern



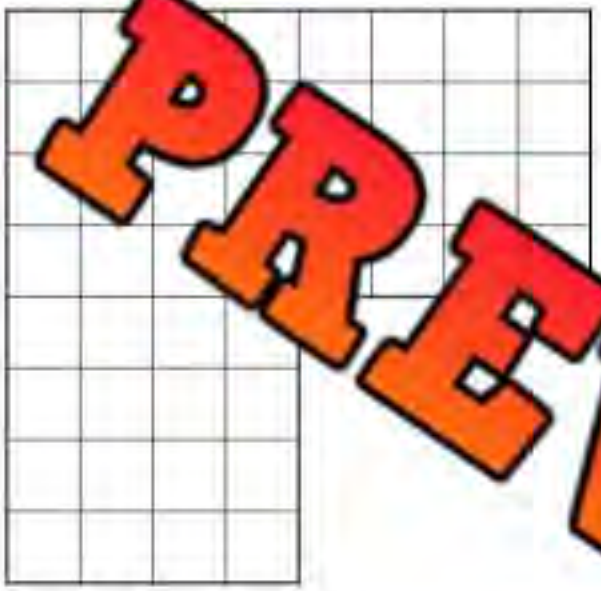
Name: _____ 187

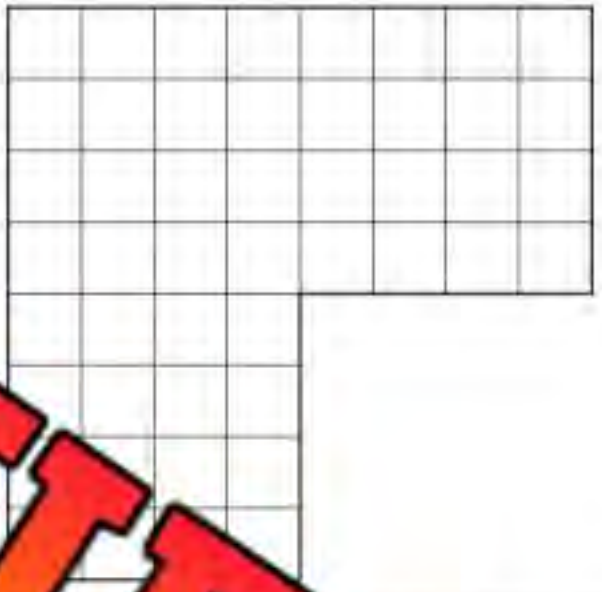
Curriculum Connections
SS8.4

Tessellation word Problems

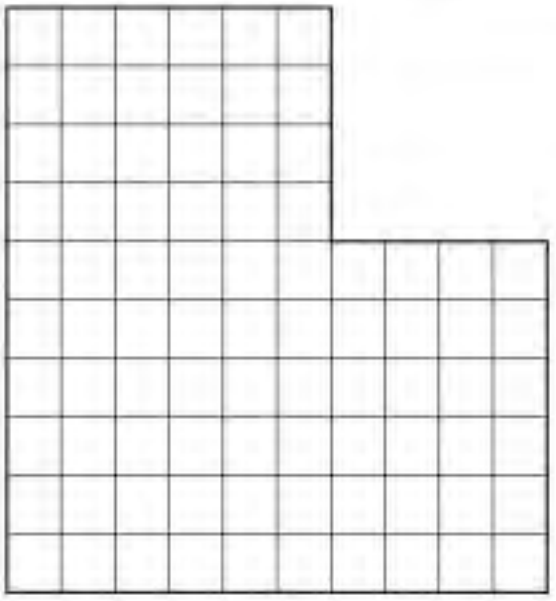
Instruction Answer the questions below

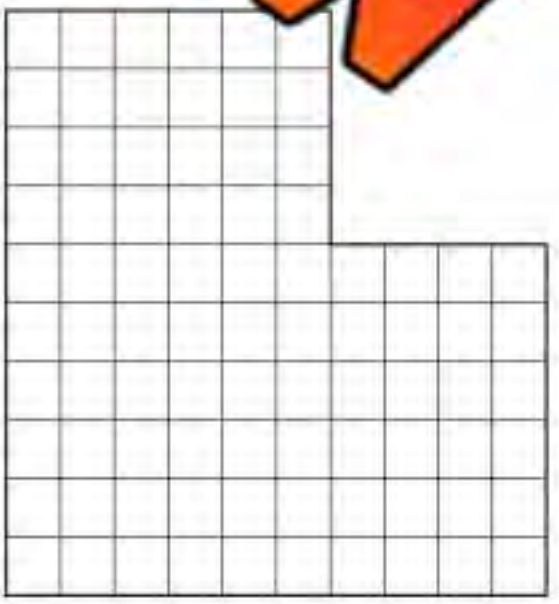
1) Bella is dividing her farmland into 4 equal sections for 4 different types of animals. She needs the sections to be exactly the same size. Find a single unbroken shape that will tessellate her land into 4 equal sections. Two copies of her farmland is pictures below – one for practice and one for your solution.





2) Asher owns land that he is giving to his three ch[illegible] sure he gives the exact same amount of land to each of his children. [illegible]ring y[illegible]plit it fairly. Use a single unbroken shape to tessellate the land into 3 e[illegible]tio[illegible]h different section using a different colour.



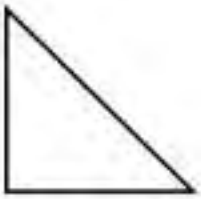


Name: _____ 188

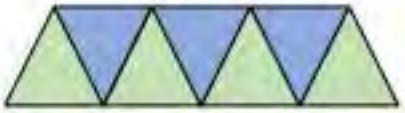
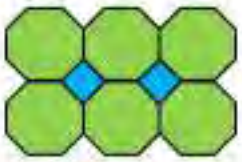
Curriculum Connection
TQ

Unit Quiz - Tessellations

Part 1 Can the shapes below be used by themselves in a tessellation?

		
1) Yes No	2) Yes No	3) Yes No
		
4) Yes No	5) Yes No	6) Yes No

Part 2 What type of tessellation are th[illegible]ples?

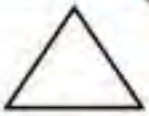
Tessellation	Type of Tessellation Regular / Re[illegible]gular
1) 	
2) 	
3) 	

Curriculum Connection
TQ

Part 3 Draw a tessellation using the combination of polygons below

Pentagon and Triangle	

Part 4 in the table below

Regular Polygon	Angle	Sum of Interior Angles	Will the Polygon Tesselate?
1) 			
2) 			
3) 			
4) 			
5) 			
6) 			
7) 			
8) 			

Grade 8

Statistics and Probability Strand

	Curriculum Expectations	Pages
SP8.1	Analyze the modes of displaying data and the reasonableness of conclusions	5 – 97
SP8.2		2
TQ	Tests and quizzes	98-100, 133-135

Name: _____ 5

Curriculum Connection
SP8.1

Qualitative Data

Qualitative data - data that uses words (categories) instead of numbers (quantitative). The data is commonly in the form of choices or favourites.

Examples
Favourites - food, drink, pet, sport, etc.
Choices - where you live, class you are in, colour hair you have, car you drive, etc.

Part 1 Re[illegible] description of the data and circle yes if it is qualitative data and no if it isn't

[illegible] of boat	Yes	No
How f[illegible]at can travel	Yes	No
3) How [illegible] to run 100m	Yes	No
4) Which tra[illegible]ur favourite	Yes	No
5) Favourite movie [illegible]ist	Yes	No
6) Favourite song from an al[illegible]	Yes	No
7) What time you go to bed at [illegible]ght	Yes	No
8) The mean (average) rainfall in Apr[illegible]	[illegible]s	No
9) How much your shoes weigh		No
10) Favourite country to travel to		[illegible]

Part 2 Write your own qualitative data descriptions below

1)
2)
3)
4)
5)

Name: _____ 7

Curriculum Connection
SP8.1

Qualitative vs Quantitative Data

Quantitative data	**Qualitative data**
Data that uses numbers (measured, counted) - length, height, area, weight, time, etc.	data that uses words (categories) - choices, favourites, foods, colours, etc.

Part 1 Read the description of the data and circle if it is quantitative or qualitative

1) Length[illegible]t's feet	Quantitative	Qualitative
2) Po[illegible]s in North and South America	Quantitative	Qualitative
3) Ani[illegible]hat hi[illegible]	Quantitative	Qualitative
4) Number of [illegible]by c[illegible]s in the Olympics	Quantitative	Qualitative
5) How many movi[illegible] wat[illegible]h	Quantitative	Qualitative
6) Brand of shoes you're [illegible]	Quantitative	Qualitative
7) Favourite drink at a café	Quantitative	Qualitative
8) How many steps you get a day	Quantitative	Qualitative
9) Favourite type of exercise	[illegible]itative	Qualitative
10) How many hours of sleep you get a night	[illegible]	Qualitative

Part 2 Write a quantitative and qualitative descri[illegible]r [illegible]ic[illegible]low

1) Topic - Sports	
Quantitative	
Qualitative	

2) Topic - School	
Quantitative	
Qualitative	

3) Topic – Social Media	
Quantitative	
Qualitative	

Name: _____ 8

Curriculum Connection
SP8.1

Quantitative vs Qualitative Observations

Image #1

Image #2

Part 1 Write observations about image #1 and put an x if it is quantitative or qualitative

Observations	Quantitative	Qualitative
1) The volcano [illegible] tonnes [illegible] year	x	
2) The volcano relea[illegible]va		
3) The volcano released 1[illegible]k la		
4) They poured 2 million litres [illegible]d w[illegible]		
5) The lava cooled and became igneous		
6) The heated water provided heat for 5,000 hom		
7) The mountain was brown		
8) 200,000 litres of magma went back underground		
9) The air quality was poor in the surrounding area		
10) Airplanes could not fly in the area as vision was poor		

Part 2 Write quantitative and qualitative observations about image #2

Observations	Quantitative	Qualitative
1)		
2)		
3)		
4)		
5)		

Curriculum Connection
SP8.1

Exit Cards

Cut Out Cut out the exit cards below and have students complete them at the end of class

Name: _____

Read the observations about the image and put an "x" if it is quantitative or qualitative.

Observations	Quantitative	Qualitative
1) The st… d for 3 hours		
2) Tho… and heavy		
3) …bol…ing		
4) The …h was l…		
5) The tempe… d to 1…		
6) The wind was st… d ho…		
7) 200 mm of rain fell dur… …m		
8) The storm was violent and s…		
9) The wind speed reached 60 km/h		
10) The sky was filled with flashes of light		

Name: _____

Read the observations about the image and put an "x" if it is …tita… …e.

Observations	Quantitative	Qualitative
1) The storm lasted for 3 hours		
2) The clouds were dark and heavy		
3) There were 4 bolts of lightning		
4) The rain was loud and fast		
5) The temperature dropped to 15°C		
6) The wind was strong and howling		
7) 200 mm of rain fell during the storm		
8) The storm was violent and scary		
9) The wind speed reached 60 km/h		
10) The sky was filled with flashes of light		

Name: _____ 10

Curriculum Connection
SP8.1

Primary vs Secondary Data

Primary Data	**Secondary Data**
Data that you have collected yourself **Example** - asking your classmates their favourite food	Data that has been collected by someone else **Example** - finding data on the internet

Part 1 Read the description of the data and circle if it is primary or secondary data

1) You ... es what their favourite pizza topping is	Primary	Secondary
2) You ... ure th... f the teachers in your school	Primary	Secondary
3) You record ... alorie... different types of drinks	Primary	Secondary
4) You look up the la... ... in your city	Primary	Secondary
5) You research how many ... ey ... ed per game in his first 10 seasons	Primary	Secondary
6) You record how many sit-ups your c... tes ca... minute	Primary	Secondary
7) You weigh 5 different cookies you buy from a...	...mary	Secondary
8) You research how many kids in Canada do gymnasti...	P...	Secondary
9) You look up the speeds of 5 different computers for sale	...	...dary
10) You measure the heights of the kids in your class	...m...	...econdary

Part 2 Write your own primary and secondary data descriptions that you are interested in

1) Primary	
2) Secondary	
3) Primary	
4) Secondary	

Name: _____ 11

Curriculum Connection
SP8.1

Discrete or Continuous Data?

Discrete and continuous data are both forms of quantitative data. This means both are numerical, meaning the data is acquired through counting or measuring.

Discrete data is collected when the answers to a survey are only numbers. It is quantitative data that has no relationship between the numbers. For example, "how many pets you have" is discrete data because there is no relationship between 1 and 2 pets. You cannot have 1 and a half pets, only 1 or 2. Discrete data is counted.

With **continuous data**, there is a relationship between the numbers. For example, "how much rain there was last week?" You can have 1 and a half millimetres of rain, which means there is a relationship between 1 and 2. Continuous data is measured.

Question: Will the data from the research question be discrete or continuous?

Tip: Ask yourself: Can split the answer in half.

Research Question	Discrete/Continuous
1. How many cm of snowfall were	
2. How many siblings do you have?	
3. What was the average temperature in July?	
4. How many minutes did you read this week?	
5. How many video games do you own?	
6. How many kilometres did you run this week?	
7. How many sports do you play?	
8. What grade are you in?	
9. How many litres of milk do you drink a week?	
10. How many cars does your family have?	

Name: _____ 12

Curriculum Connection
SP8.1

Discrete or Continuous Data?

Questions | Researching a car

You are purchasing a new car over the phone. You ask the car salesman the questions below. Is the data he gives you **discrete** or **continuous**?

Data Collected	Discrete/Continuous
1) How many doors does the car have?	
2) How old is the car?	
3) How many litres does the gas tank hold?	
4) How many wheels does the car have?	
5) How fast does the car go?	
6) How many passengers can the car hold?	
7) How many speakers are in the car?	
8) How many kilometres has the car driven already?	
9) How much does the car cost?	
10) How long does it take to get up to 60km/hour?	
11) How long is the car?	
12) How many decibels do the speakers produce?	

Name: _____ 13

Curriculum Connection
SP8.1

Data – Qualitative, Discrete, or Continuous?

Part 1 Researching a basketball team

You are the manager of a basketball team and are researching your next opponent. You decide to collect data based on the questions below. Is the data qualitative, discrete, or continuous?

Data Collected	Qualitative/Discrete/ Continuous
1) How many players are on the team?	
2) How tall are their players?	
3) How many points do they score a game?	
4) What colour are their jerseys?	
5) Which teams have they played before?	
6) How many games have they played?	
7) How old are their players?	
8) How many wins do they have this year?	
9) How many seconds do they take before they shoot?	
10) Which type of defense do they play – zone or man?	
11) How many three pointers do they take a game?	
12) What is the name of their mascot?	

Part 2 Write one example of each type of data

Type of Data	Example
Qualitative	
Discrete	
Continuous	

Name: _____ 14

Curriculum Connection
SP8.1

MEAN

Mean = the average in a set of data

Step 1: Add up the numbers in the data set

Step 2: Divide the sum by the amount of numbers in the set.

Example:

Data set: 5, 6, 8, 5

Step 1: 5 + 6 + 8 + 5 = 24

Step 2: 24 ÷ 4 = (6)

Part 1 — Find the mean for each data set below

	Data	Total – Add Numbers	Mean
1)	16, 19, 1		
2)	41, 48, 58, 53		
3)	121, 105, 129, 117		
4)	5.2, 6.8, 4.3, 7.7		
5)	12.5, 14.8, 15.7, 9		
6)	-5, -7, -9, -3		
7)	-22, -31, -28, -26		
8)	-78, -95, -141, -62		
9)	7, -8, 4, -11		
10)	3.8, -4.2, 2, -1.6		

Part 2 — Answer the word problems below

1) Emma is trying to figure out her handicap in golf. A handicap is your average score. She golfed 10 times this year and had the following scores. What is her handicap?

-4, -8, 5, 4, -2, -5, 0, 7, -3, -4

2) Hudson recorded his screen time in minutes for the last 5 days. What was his average screen time for the last 5 days in minutes and hours?

147, 168, 262, 241, 197

Name: _____ 15

Curriculum Connection SP8.1

Finding Missing Data Point Using Mean

We can determine the missing number in a series if we know the mean by using the following formula:

$$Mean = \frac{Sum\ of\ given\ numbers + x\ (unknown\ number)}{total\ numbers}$$

Example: 25, 27, ?, 30 Mean = 26

Steps

1) Multi[illegible] number of total numbers you have by the mean (26 x 4 = 104)
2) Add [illegible]bers you know (25 + 27 + 30 = 82)
3) Fi[illegible](subtract) between 104 and 82 (104 – 82 = 22) – Answer = 22

Questions [illegible] below to find the missing data point

	Data Set		Calculations	Missing Data Point
Ex)	9, 16, ?, 22, 12, 19	15	1) [illegible] 2) [illegible] + 19 = 78 3) [illegible] – 78	12
1)	8, ?, 7, 13, 12, 11	11		
2)	27, 19, 14, ?, 53	29		
3)	37, 22, 48, ?, 62, 77	50		
4)	-8, -5, -13, ?	-8		
5)	-15, ?, 17, -17, -7	-2		

Name: _____ 16

Curriculum Connection
SP8.1

Finding Missing Data Point Using Mean

Questions | Answer the word problems below

1) The average temperature last week was -5°C. The temperatures for each day of the week have been represented in the table below. The table is missing the temperature for Friday. Calculate the missing temperature.

Day	Mon	Tues	Wed	Thurs	Fri	Sat	Sun
Tem		-7	-4	-8		3	-4

2) Gas prices for the last ... were ... age of $1.34 per litre. The prices for each day are listed below, e... day ... Calculate the missing value for day 3.

Day	1	2	3	4	5			8	9	10
Price	1.31	1.45		1.36	1.21	7			1.24	1.22

3) A diver plunged an average of -6.8m in her 8 dives last week. The depth of her dives are recorded in the table below, but her last dive is missing. Calculate the depth of her last dive.

Dive	1	2	3	4	5	6	7	8
Depth	-5.7	-4.2	-8.6	-7.4	-2.2	-6.7	-7.2	

Curriculum Connection
SP8.1

Exit Cards

Cut Out Cut out the exit cards below and have students complete them at the end of class

Name: _____

1) The mean depth for water dives is -4.8 m. Find the missing depth for Dive 4.

Dive	1	2	3	4	5	6	7	8	9
Depth	-5.9	-4.5	-6.8		-2.5	-3.8	-4.7	-5.6	-3.9

2) The mean daily price over the 9 days is $1.38. Find the missing price for Day 4.

Day	1	2	3	4	5	6	7	8	9
Price	1.41	1.38	1.42		1.30	1.44	1.39	1.36	1.35

Name: _____

1) The mean depth for water dives is -4.8 m. Find the missing depth for Dive 4.

Dive	1	2	3	4	5	6	7	8	9
Depth	-5.9	-4.5	-6.8		-2.5	-3.8	-4.7	-5.6	-3.9

2) The mean daily price over the 9 days is $1.38. Find the missing price for Day 4.

Day	1	2	3	4	5	6	7	8	9
Price	1.41	1.38	1.42		1.30	1.44	1.39	1.36	1.35

Name: _____ 18

Curriculum Connection
SP8.1

Task Cards: Mean Detective

Objective — What are we learning about?

To help students understand and solve for a missing data point in a set by using the mean (average).

Materials — What you will need for the activity.

- 2
- Se e shee for answers
- Pencils

Instructions — How c mple activity

1. Introduce the concepts cov d in
2. Organize the students into pairs an ovide e air heir sets of task cards.
3. Give each pair an answer recording sheet t dow ses.
4. Encourage teamwork by having students collabora eir p on finding solutions.
5. Allow students to select any task card to begin with, emphasiz n complete the cards in any order they prefer.
6. Instruct students to record the letter of their chosen answer (A, B, or C) on their answer sheet beside the task card's number.
7. Consider using a timer to create a dynamic challenge, adjusting the duration to fit the lesson's objectives and complexity.
8. After the activity, review the answers collectively, discussing any challenging questions and strategies used to solve them.
9. Have students reflect on the activity, sharing the methods they applied and obstacles they overcame.

Name: _____ 19

Curriculum Connection: SP8.1

Task Cards | Cut out the task cards below

Card 1:
Find the missing value in the series: 45.2, ?, 48.6, 49.8, 44.1, 47.5, if the mean is 47.

a) 46.8
b) 46.5
c) 46.0

Card 2:
The temperatures in a city over six days were: 14.5°C, 16.1°C, 13.9°C, ?, 17.3°C, 15.8°C. The mean temperature was 15.2°C. What was the temperature on the missing day?

a) 14.9°C
b) 13.6°C
c) 14.7°C

Card 3:
The average h[illegible] is 23.4 cm. The heigh[illegible]tants [illegible] cm, 24.1 cm, 23.2 cm, [illegible] cm, [illegible]. What is the height [illegible]?

a) 23.2 cm
b) 24.0 cm
c) 22.9 cm

Card 4:
The temperatures recorded over five days were: -3.5°C, -4.0°C, ?, -5.2°C, -3.9°C. If the mean temperature was -4.2°C, what was the missing temperature?

a) -4.4°C
b) -4.2°C
c) -4.0°C

Card 5:
The mean of the numbers 11.5, 13.2, 14.1, ?, 13.7, and 12.8 is 13.2. Find the missing number.

a) 13.5
b) 12.5
c) 13.9

Card 6:
In [illegible] player scored 22, 17, [illegible] 21 po[illegible] the average score [illegible] point[illegible] was the [illegible]sing[illegible]?

a) [illegible]
b) 19
c) 23

Card 7:
A worker earned an average of $450 per week over 6 weeks. His weekly earnings were $470, $440, $455, $465, and $425. How much did he earn in the 6th week?

a) $445
b) $435
c) $450

Card 8:
The average distance of five runners in a run was 12.4 km. Four of the runners ran distances of 12.8 km, 11.9 km, 12.1 km, and 12.6 km. What was the missing runner's distance?

a) 12.2 km
b) 12.6 km
c) 12.5 km

Name: _____ 20

Curriculum Connection: SP8.1

Task Cards | Cut out the task cards below

Card 9:
A scuba diver recorded the following depths: -12.3 m, -15.1 m, ?, -14.2 m, -13.5 m. If the mean depth was -13.9 m, what was the missing depth?

a) -13.7 m
b) -14.4 m
c) -12.9 m

Card 10:
The average weekly grocery bill for a family over 5 weeks was $170. If they spent $150, $180, $165, and $190 in four of those weeks, what was the grocery bill in the fifth week?

a) $165
b) $175
c) $185

Card 11:
The he[illegible] of 7 [illegible]e: 155 cm, 160 cm, 152 cm, [illegible] cm, [illegible] 162 cm. The mean [illegible] 159 [illegible] the mis[illegible]ei[illegible]

a) 162 cm
b) 158 cm
c) 160 cm

Card 12:
The average score in a series of six rounds of a video game was 68. The scores for five rounds were: 62, 71, 64, 70, and 67. What was the score in the sixth round?

a) 70
b) 69
c) 65

Card 13:
The average value of 6 bank transactions was $-14.50. Five of the transactions were: $-10, $-15, $-12, $-18, and $-13. What was the sixth transaction amount?

a) $-14
b) $-16
c) $-19

Card 14:
[illegible] is s[illegible] laptop. Over 6 mo[illegible] erage[illegible]ly savings was $2[illegible] ave[illegible] $215, $220, $245, and $2[illegible] fiv[illegible]uch did she save in[illegible]

a) $235
b) $225
c) $250

Card 15:
The average score for a class in six math quizzes was 82. If the students scored averages of 78, 84, 81, 85, and 79 in the first 5 quizzes, what was the missing average?

a) 85
b) 80
c) 83

Card 16:
In a survey, the average number of books read by students in a month was 6. If six students read 5, 6, 7, 5, and 6 books, how many books did the missing student read?

a) 7
b) 6
c) 5

Name: _____ 21

Curriculum Connection: SP8.1

Task Cards | Cut out the task cards below

Card 17:
A baker baked an average of 120 cupcakes per week over 5 weeks. The cupcakes baked in four weeks were: 115, 125, 118, and 123. How many cupcakes did the baker bake in the fifth week?

a) 122
b) 120
c) 119

Card 18:
The mean of the values 27.6, 25.9, 26.4, 24.8, and ? is 26.5. What is the missing number?

a) 28.2
b) 26.8
c) 27.8

Card 20:
A business earned an average of $-5,400 per week over 4 weeks, and their earnings in 3 of those weeks were $-5,800, $-5,200, and $-5,600. What were their earnings in the missing week?

a) $-5,200
b) $-5,000
c) $-5,400

Card 21:
The mean of the numbers 48.9, 50.2, 49.1, ?, and 50.6 is 49.5. What is the missing number?

a) 48.7
b) 48.8
c) 49.3

Card 23:
A car traveled at speeds of 80, 75, 85, 82, and ? km/h over 5 hours. If the average speed was 81 km/h, what was the missing speed?

a) 80 km/h
b) 78 km/h
c) 83 km/h

Card 24:
The average score of 7 players on a basketball team is 10.5 points. The points scored by 6 players are 9, 12, 11, 10, 8, and 13. How many points did the missing player score?

a) 10.5
b) 10
c) 12

Name: _____ 22

Curriculum Connection
SP8.1

Task Cards: Mystery Mean Detectives

Answers | Record your answers below

1	
2	
3	
4	
5	
6	
7	
8	
9	
10	
11	
12	

13	
14	
15	
16	
17	
18	
19	
20	
21	
22	
23	
24	

Name: _____ 23

Curriculum Connection
SP8.1

Outliers in Data Sets

An **outlier** in a data set are values that are significantly different from other measures. They may mean that something has gone wrong in the data collection, or they may represent a valid measure that needs further explanation.

Part 1 — Circle any outliers in the data sets below

1)	25, 3[illegible]30, 3, 29, 36, 34, 71	4)	-4, -8, -6, -21, -9, -7, 12, -5
2)	148[illegible]79, 294, 147	5)	-9.4, -29.6, -8.7, -7.9, -10.1, -9.6
3)	1[illegible]6.4, 15[illegible].5, 11.4, 21.7	6)	1.1, 0.5, -0.4, -1.5, 13, -0.8, -24.2, 1.3

Part 2 — A[illegible]he qu[illegible]low

1) Owen practiced his 400[illegible]ay. A[illegible] the stopwatch that automatically record his times on a comput[illegible]hes[illegible]ere: 49.5, 52.3, 138.1, 51.7, 49.8, 52.2.

a) Which of his scores was an outlier?

b) What might have caused the outlier score?

2) Tony looked at how many steps he took last wee[illegible]f o[illegible]took over the last 7 days are recorded below:

11243, 13178, 9135, 20891, 12485, 3[illegible]287

a) Which of the values are outliers?

b) Explain why he may have an outlier of 3878 steps?

c) Why might Tony have an outlier of 20891 steps?

3) Chris owns a pizza shop. His profits for the last 7 days are listed below.

$142, $165, $152, $177, $843, $0, $162

a) Which of the values are outliers?

b) Explain what could have led to Chris earning $0 profits on day 6?

c) Explain what could have led to Chris earning $843 on day 5?

Name: _____ 24

Curriculum Connection
SP8.1

Calculating Mean - Outliers

Outliers have a big impact on the mean of a data set. For example, if John records his last 5 long jumps and jumps the following distances:

6.5m, 6.8m, 1.5m, 6.2m, 6.1m

John explains after that on his third jump, he slipped and didn't perform a full jump. The data set has an outlier that doesn't reflect John's ability to jump. We can see th[illegible]fference when we use an outlier in our calculation of the mean

Mean Wi[illegible]
Mean[illegible]

Part 1

[illegible]sing the outlier and without the outlier

	Data Se[illegible]	[illegible] Outlier(s)	Mean Without Outlier(s)
1)	14, 16, 15, 48, 17		
2)	-5, -2, 38, -4, -6, -1		
3)	0.5, 0.8, -24.7, -0.4, 0.3		
4)	-16.7, 15.7, 13.9, 14.2, 16.4		
5)	-5.3, 13.4, -6.8, -6.1, -25.9		

Part 2

Answer the word problem below

1) Explain what happened in question 5. Why was the mean similar even [illegible]e outliers?

2) Cole has been playing very well in golf. His last 10 golf scores are listed below.

-2, 18, 3, -4, -1, 1, 4, -6, -4, -3

a) What is his handicap over the last 10 games?

b) If he removes the outlier, what would his handicap be?

Name: _____ 25

Curriculum Connection: SP8.1

Calculating Mode and Median - Outliers

Part 1 Calculate the mode using the outlier(s) and without the outlier(s)

	Data Set	Mode With Outlier(s)	Mode Without Outlier(s)
1)	11, 18, 13, 17, 25, 88, 21, 12, 11, 18		
2)	138, [illegible] 144, 465, 144, 138, 144		
3)	[illegible] 15.8, 15.5, 15.8		
4)	[illegible] -12, -[illegible] 7, -12, -7		
5)	-0.5, 0.[illegible], 0.9, [illegible]		

Do outliers have an [illegible] plain why or why not.

Part 2 Calculate the median using the o[illegible](s) [illegible] outlier(s)

	Data Set	Median With Outlier(s)	Med[illegible]ier(s)
1)	15, 13, 19, 16, 17, 19, 67		
2)	108, 105, 308, 106, 107, 109		
3)	24.3, -8.2, 25.7, 24.6, 27.2, 26.1		
4)	-14, -19, -17, -22, 21, -24		
5)	-1.3, 0.1, 0.6, -0.5, 13.8, -1.2		

Do outliers have an effect on the median? Explain why or why not.

Name: _____ 26

Curriculum Connection
SP8.1

Mean, Median, Mode – Outliers Word Problem

Questions Answer the questions below

Alex loves golf. He has kept track of his last 10 shots for 4 different clubs. He wrote down the distance in yards he hit each of the clubs in the table below.

	1	2	3	4	5	6	7	8	9	10
Pitching	132	143	137	24	134	136	132	130	133	132
7	164	161	237	168	163	164	168	164	158	153
		204	193	198	199	209	42	201	198	198
Driver		293	315	307	322	299	303	314	52	311

a) Calculate the [illegible] distance for each of the four clubs Alex used?

	Pitching Wedge	7 Iron	3 Iron	Driver
Mean				

b) Calculate the median distance for each of the four clubs Alex used?

	Pitching [illegible]			Driver
Median				

c) Calculate the mode of each club.

	Pitching Wedge	7 Iron	3 Iron	Driver
Mode				

d) Look for some outliers in the data. What could have caused these outliers?

e) To calculate the average distance of all four clubs combined, find the mean of the medians for each club.

Name: _____ 27

Curriculum Connection
SP8.1

Horizontal Bar Graph - Population

Grayson displayed the population density of the 10 provinces in Canada in a horizontal bar graph.

a) Which province has the greatest population density?	
b) Which province has the lowest population density?	
c) Did Grayson collect primary or secondary data?	
d) Is the data quantitative or qualitative?	
e) What is the average (mean) population density of all the provinces?	
f) Is the mean population density of Alberta and BC higher or lower than Manitoba and Nova Scotia?	
g) What surprised you about the data in the graph? List 2 things.	
_____ _____ _____	

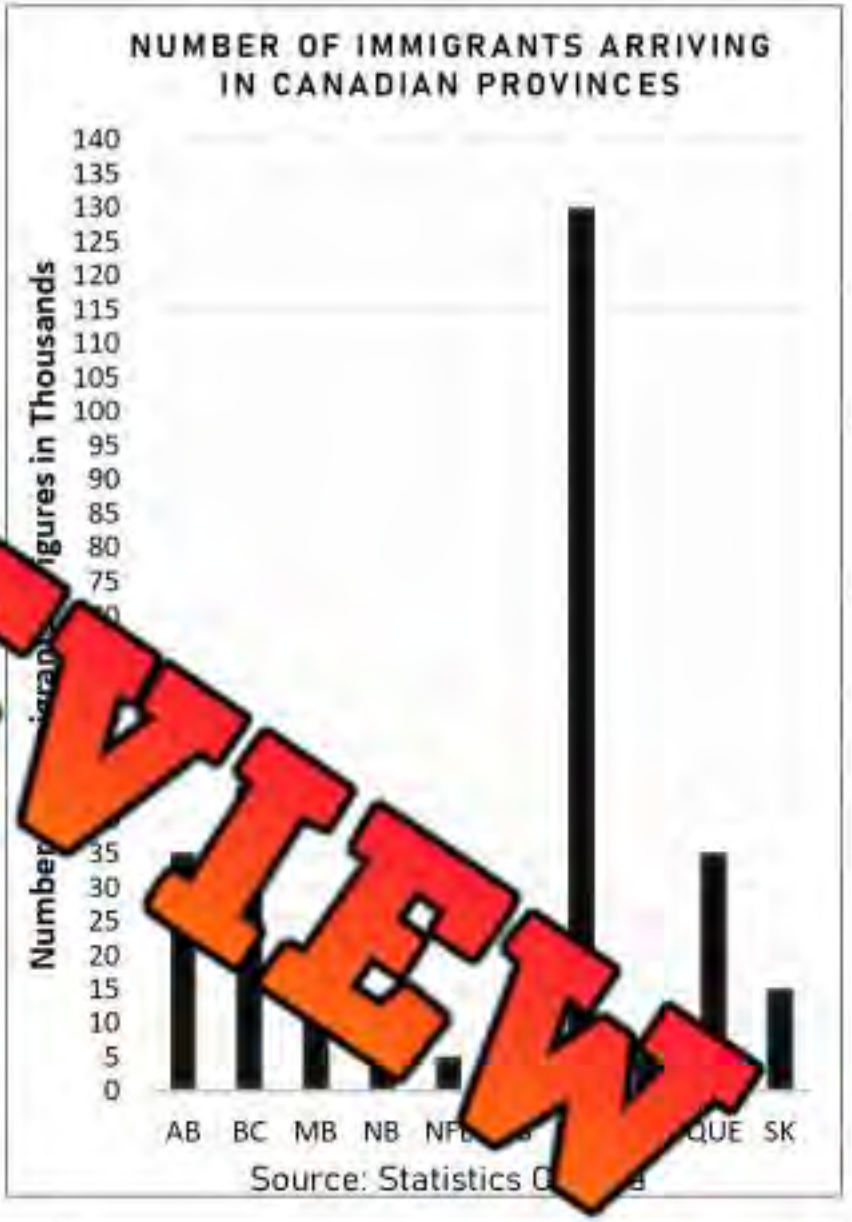
Name: _____ 28

Curriculum Connection SP8.1

Vertical Bar Graph – Immigration

Canada is a popular place for people from other countries to move to. The number of immigrants who moved to Canadian provinces is represented in the bar graph. Fill in the frequency table below.

Frequency Table	
MB	
NB	
NFL	
NS	
ON	
PEI	
QUE	
SK	
Mean of Canada	
Mode of Canada	
Median of Canada	



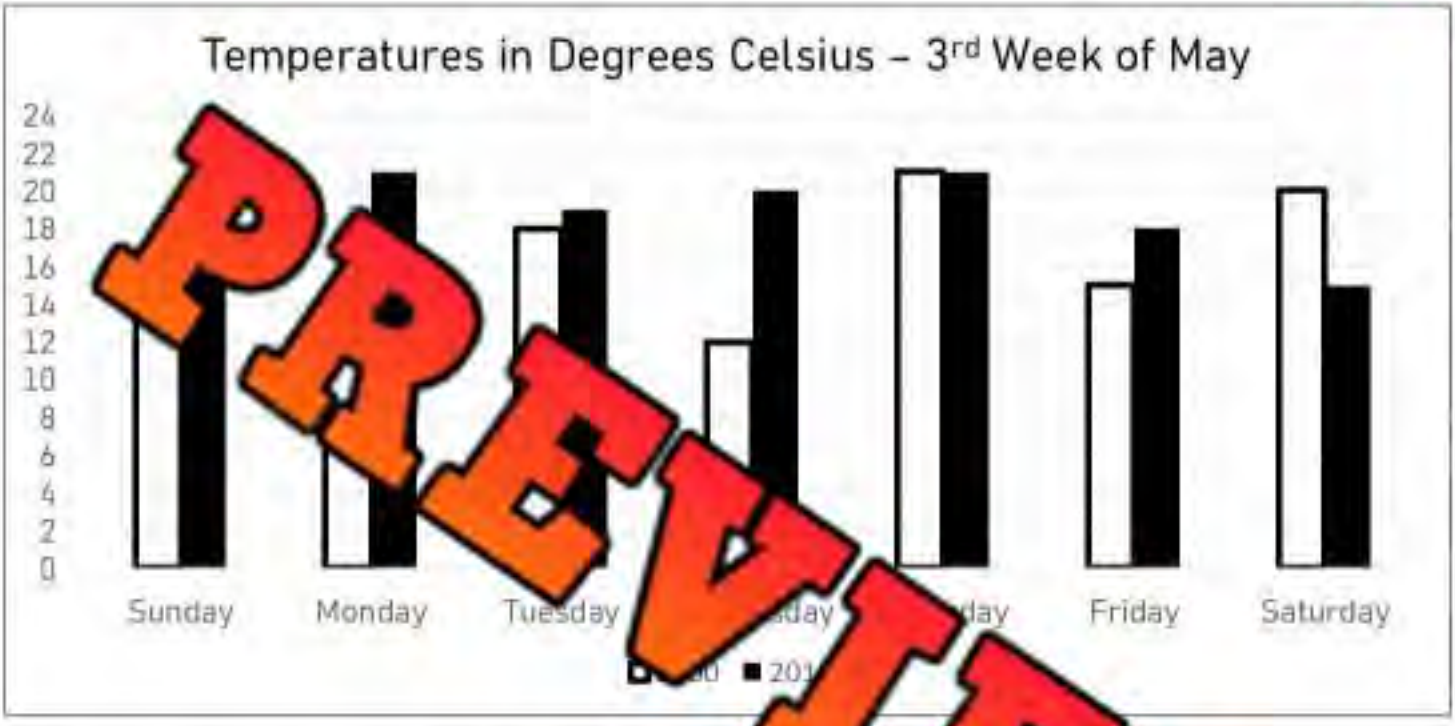
a) How many more immigrants moved to Ontario than New Brunswick?	
b) Did more immigrants move to Ontario than all the other provinces combined?	
c) Is the data quantitative or qualitative?	
d) Was the data collected from a primary or secondary source?	
e) In your opinion, what is one reason why more people immigrate to Ontario?	

Name: _____ 32

Curriculum Connection
SP8.1

Interpreting a Double Bar Graph

The temperature in degrees Celsius for the 3rd week of May has been represented in the double bar graph below.



a) Which day was warmest in 2000 during this week?
b) Which day was the coldest in 2015 during this week?
c) What was the mean temperature in 2015 during this week?
d) What was the median temperature in 2000 during this week?
e) What conclusions can you draw from the data?
f) What could be the cause of the trend you noticed in the graph?

Name: _____ 33

Curriculum Connection
SP8.1

Activity Title: Flip the Data

Objective

What are we learning about?

Students will engage in a fun and active game where they read data from a bar graph and answer questions to earn the opportunity to flip a bottle or cup. This activity combines data interpretation skills with a physical challenge, adding excitement and a competitive element to learning.

Materials

What you will need for the activity.

- B… or cups …g
- A sm…tboar… …r t…display bar graphs
- Timer (sto… …artp… …pp)
- Question card… on t… data
- Scoreboard to ke… …

Instructions

How you wi… mp…

1. Divide the class into small teams, ideally of 5 …ude… …h.
2. Prepare a series of bar graphs to display … mart… …with corresponding question cards that ask about t… …g…
3. One team at a time comes to the front where the g… …lay…
4. Display the first bar graph on the smartboard.
5. The first student from the active team reads the graph and sel… …card. Start the timer when the question is first shown.
6. The student answers the question based on the data presented in the graph. The teacher checks the answer.
7. If the student answers correctly, they flip their bottle or cup repeatedly until they land it upright. When they do, the next teammate can take their turn.
8. If the student's answer is incorrect, they must try another question card before they can attempt to flip.
9. The team's turn ends either when all members have successfully flipped their bottle/cup or when the timer reaches a set limit (e.g., 3 minutes).
10. Record the team's time or number of successful flips on the scoreboard.
11. Repeat steps 4-10 for each team. The team with the fastest time wins.

Name: _____ 34

Curriculum Connection
SP8.1

Graph 1 | What did you learn from the graph?

Name: _____ 35

Curriculum Connection
SP8.1

Graph 2 What did you learn from the graph?

Name: _____ 38

Curriculum Connection
SP8.1

Graph 5 What did you learn from the graph?

Name: _____ 39

Curriculum Connection
SP8.1

Graph 6 | What did you learn from the graph?

Name: _____ 40

Curriculum Connection
SP8.1

Graph 7 What did you learn from the graph?

Name: _____ 41

Curriculum Connection
SP8.1

Questions Choose a question to ask the student who is about to flip their bottle

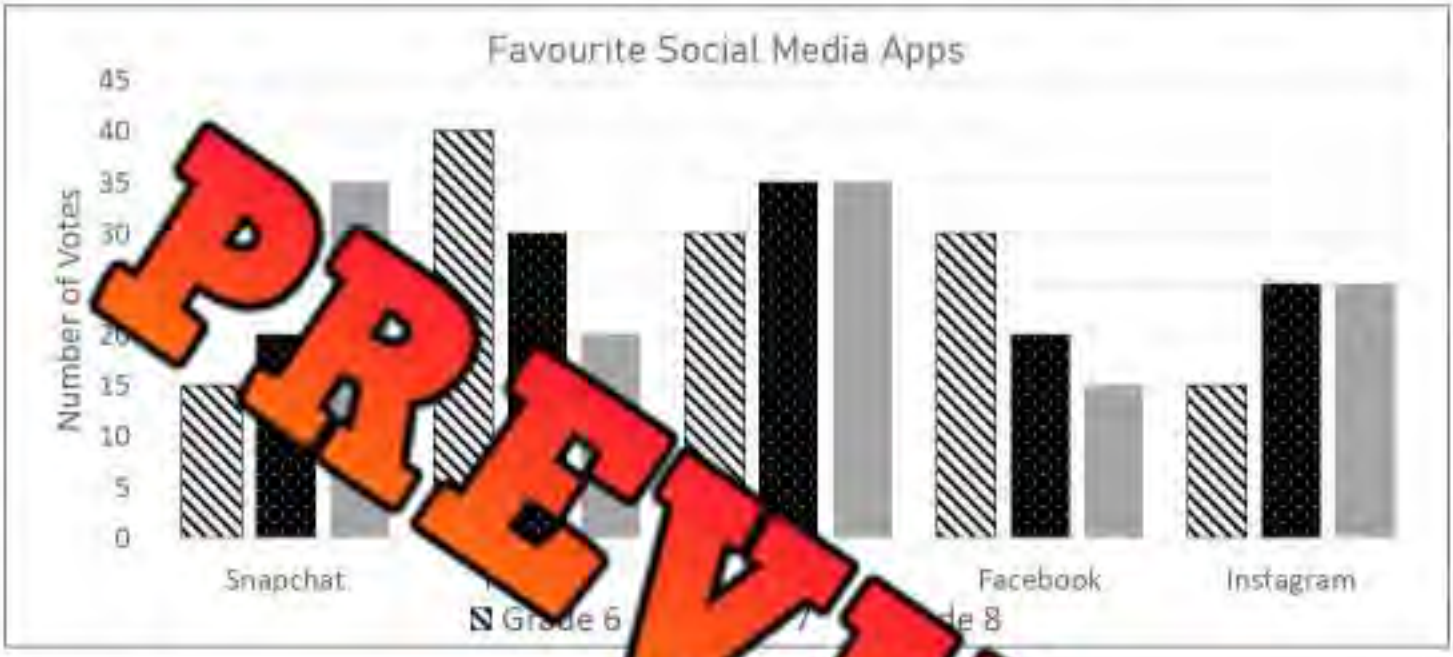
What is the title of the graph?
What is the title of the Y-axis?
What is the title of the X-axis?
What does each bar on the graph represent?
Which ca[illegible]y shows the highest values for both bars?
Which c[illegible]ows the lowest values for both bars?
How [illegible]displayed on the graph?
What is the ra[illegible]n on the Y-axis?
What is the tota[illegible]er of [illegible]sented by all bars?
What is the differenc[illegible]twee[illegible]highest and lowest categories for both bars?
Are there any categories that [illegible]ich ones?
How does the value of one specific c[illegible]ory co[illegible]ers?
What could be a possible reason for the hig[illegible]alue?
What could be a possible reason for the lowest va[illegible]
What trends can you observe from the graph?
How might this data be useful?
If you could add another category to this graph, what would it be?
How would you describe the overall distribution of data?
What insights or conclusions can you draw from this graph?
How might the information on the graph impact decisions or opinions?
What are the 2 sets of data representing?
Name one surprising fact from this data
What scale was used in this graph?
What is a different scale that you could use in this graph?

Name: _____ 44

Curriculum Connections SP8.1

Multiple-Bar Graph – Favourite Social Media

The students in grade 6, 7, and 8s were asked which social media app was their favourite. The results have been sorted by grade in the multiple-bar graph below.



Part 1 Fill in the frequency table by re… the m… graph above

	6				8	
	#	%	#			%
Snapchat	15/130	12				
YouTube						
Tik Tok						
Facebook	30/130	23				
Instagram						
Total	/130					

Part 2 Answer the questions below

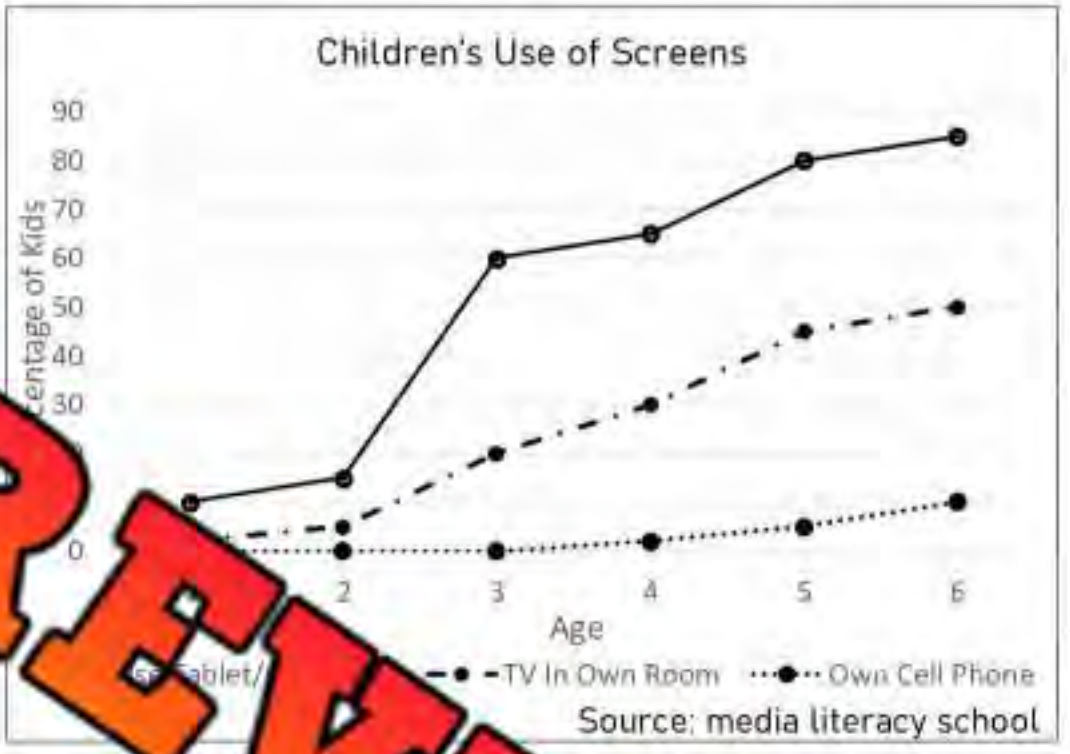
a) How many students in each grade were surveyed?	
b) Which social media was the most popular? How many votes did it get?	

Name: _____ 45

Curriculum Connection
SP8.1

Interpreting a Broken-Line Graph

Children are using screens younger and younger. The multiple-line graph represents the percentage of children w[illegible]either use a tabl[illegible] compute[illegible] TV in thei[illegible] roo[illegible] own a cell phone.



Questions Answer the ques[illegible] below.

1) What percentage of 5-year-olds use a tablet/[illegible]ter[illegible]

2) What percentage of 6-year-olds own a cell phone?

3) Is there a relationship between the two variables – age a[illegible]rce using screens?

4) At what age do most children start using a tablet/computer? Why do you think that is?

5) What do you think about this data? Is it good that children are using screens? Explain.

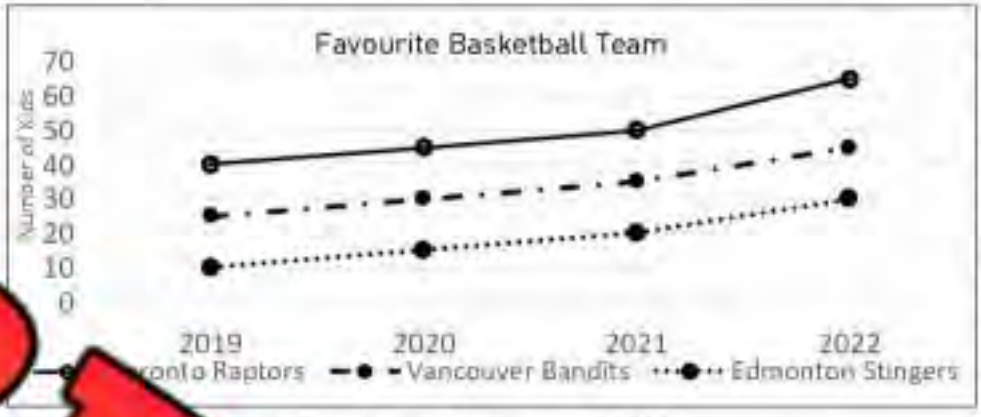
Curriculum Connections
SP8.1

Exit Cards

Cut Out Cut out the exit cards below and have students complete them at the end of class

Name: _____

The graph represents how many students in a school like each of the Canadian basketball teams (Toronto Raptors, Va... Bandits, and ... Stingers) ... team. Th... over ... 2019 to ...



1) How many stud... the To... as their favourite team in 2021?

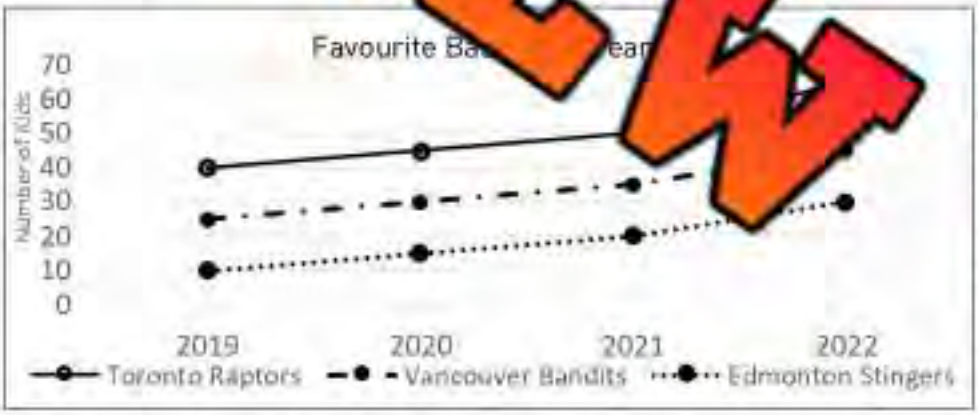
2) How much did the popu... ...ncouv... ...s increase between 2019 and 2022?

3) What is the trend for the Edmo... ...ger... ...the 4-year period?

4) What conclusions can you draw about how ... basket... ...Canada?

Name: _____

The graph represents how many students in a school like each of the Canadian basketball teams (Toronto Raptors, Vancouver Bandits, and Edmonton Stingers) as their favourite team. The data is collected over a 4-year period from 2019 to 2022.



1) How many students listed the Toronto Raptors as their favourite team in 2021?

2) How much did the popularity of the Vancouver Bandits increase between 2019 and 2022?

3) What is the trend for the Edmonton Stingers' popularity over the 4-year period?

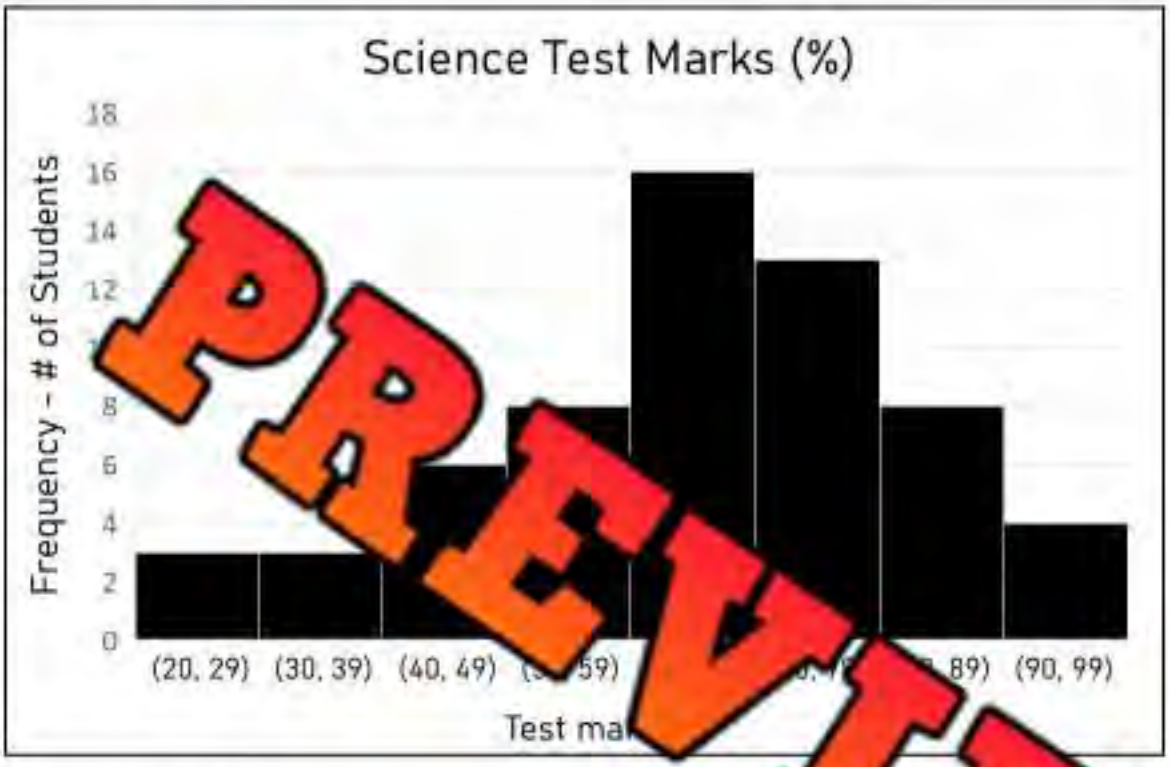
4) What conclusions can you draw about how popular basketball is in Canada?

Name: _____ 49

Curriculum Connection
SP8.1

Interpreting a Histogram

The science teacher posted a histogram of the results of the last test.



Questions Fill in the tables below

Frequency Table	
0-9	
10-19	
20-29	
30-39	
40-49	
50-59	
60-69	
70-79	
80-89	
90-99	

a) Which test score was mo[illegible]?	
b) Did most people pass or fail?	
c) How many students failed the test (<[illegible])?	
d) How big are the intervals? What range of marks do they include?	
e) How many students took the test?	
f) How many students got an A (80%+)?	
g) Based on the results, do you think the test was easy, hard, or fair? Explain your thinking.	

Name: _____ 50

Curriculum Connection
SP8.1

Creating a Histogram

A **histogram** is used to display the frequency of numerical data. We can use a histogram to display continuous or discrete data, but only with quantitative data. If the data is qualitative, we would use a bar graph instead.

Directions Display the data below in a histogram

A restaura[illegible]r wanted to know what age groups used his restaurant the most[illegible] asked 30 customers their age. His data is pres[illegible]w. Represent the data in a histogram.

15	18		5	25	28	13	33	55	57
62	21				0	30	44	41	58
68	61	72		5	1	8	42	53	64

Name: _____ 51

Curriculum Connection
SP8.1

Collecting Data - Histogram

Data Collection Collect primary or secondary data and represent it in a histogram

Question of Interest	

Use the b w to organize your data.

Interpreting The Data Answer ues low

1) Was your data collected from a primary or secon rce?

2) Why did you choose to learn more about this topic?

3) What conclusions can you draw from your data? What did you learn?

4) What further research should be done in relation to the topic you chose?

Name: _____ 52

Curriculum Connection
SP8.1

Creating a Histogram

Use the data you collected to plot your graph. Remember the following labels:

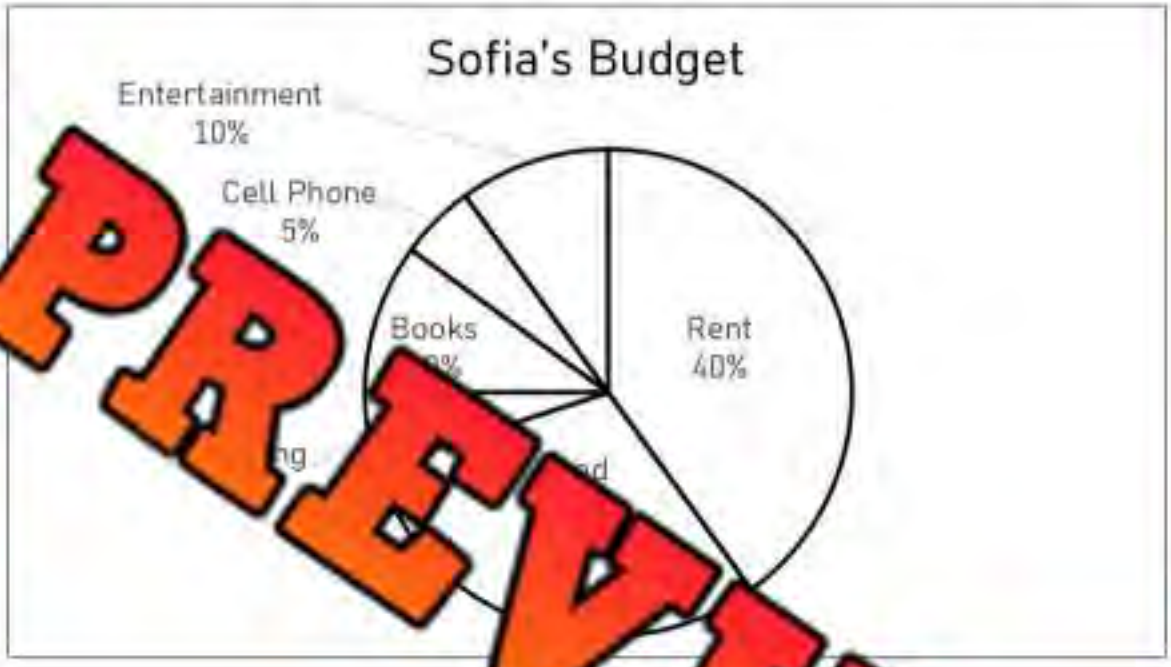
X axis label ☐ Y axis label ☐ Title ☐ Scale ☐ Intervals/Bins ☐

Name: _____ 53

Curriculum Connection
SP8.1

Circle Graph - Budget

Sofia is heading to college soon. She has $1000 to spend in total on the things she needs. She created a circle graph to better understand where her money is going.



Part 1 Fill in the frequency tabl… adin… …le graph

	Rent	Food	Clothing	Bo…	…ell Pho…	…ntertainment
%						
$ Spent						

Part 2 Answer the questions below

1) What will Sofia spend most of her money on?	
2) Which two expenses will account for 70% of her money?	
3) How much money will she spend on everything except rent?	
4) What percentage do all 6 expenses add up to?	
5) What are your thoughts on her budget? How might your budget be the same or different?	
_____ _____	

Curriculum Connection
SP8.1

Exit Cards

Cut Out Cut out the exit cards below and have students complete them at the end of class

Name: _____

Alex is planning a vacation. He has $1500 to spend in total on various activities and needs. He created a circle graph to better understand how he will allocate his money.

Alex's Vac udget

1) What will Alex spend most of his money on?	
2) Which two categories together account for 65% of his vacation budget?	
much money will Alex ood and entertainment	
do all 5 egories	

Name: _____

Alex is planning a vacation. He has $1500 to spend in total o iou needs. He created a circle graph to better understand how he will a .

Alex's Vacation Budget

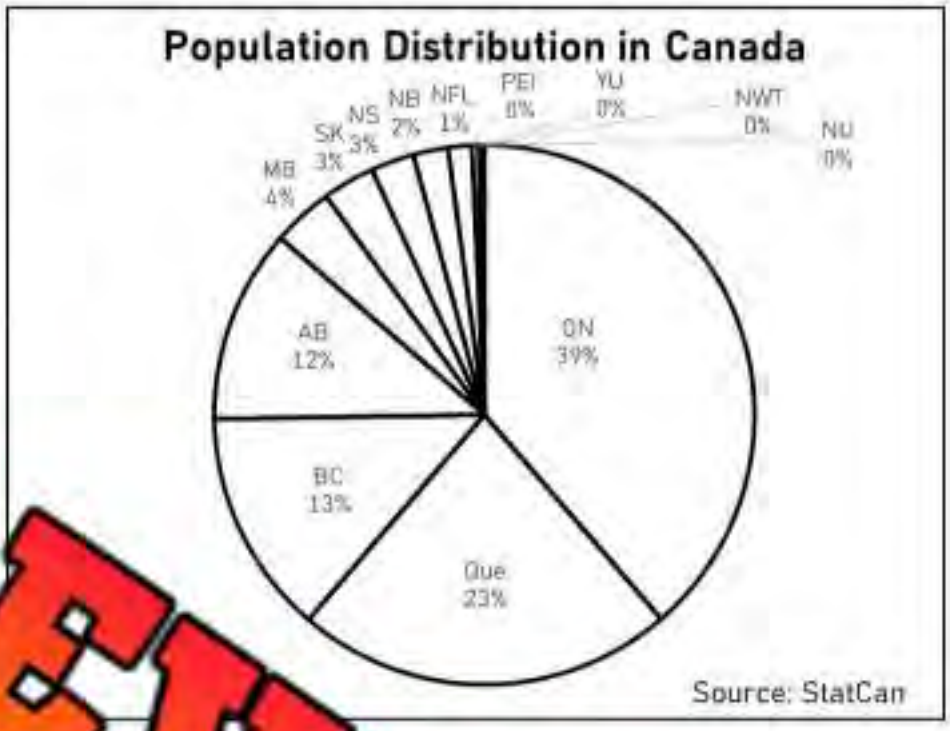
1) What will Alex spend most of his money on?	
2) Which two categories together account for 65% of his vacation budget?	
3) How much money will Alex spend on food and entertainment combined?	
4) What percentage do all 5 categories add up to?	

Name: _____ 55

Curriculum Connection
SP8.1

Circle Graph – Population Distribution

The population of each province and territory in Canada has been displayed in the circle graph.



Part 1

Fill in the freque… by …g the circle graph

Province	AB	BC	MB	NB	NFL	NS		PEI		SK	NWT	YU	NU
Population Distribution %													

Part 2

Answer the questions below

1) What percentage of Canadians live in Ontario and Quebec?

2) Do half of Canadians live in Ontario and Alberta?

3) Do half of Canadians live in Alberta, BC, and Quebec?

4) Martin thinks that more than 4 of 5 Canadians live in 4 provinces in Canada. Is he correct? Explain.

5) Why do you think not many Canadians live in the territories? Explain.

Name: _____ 56

Curriculum Connection
SP8.1

Drawing a Circle Graph – Global Emissions

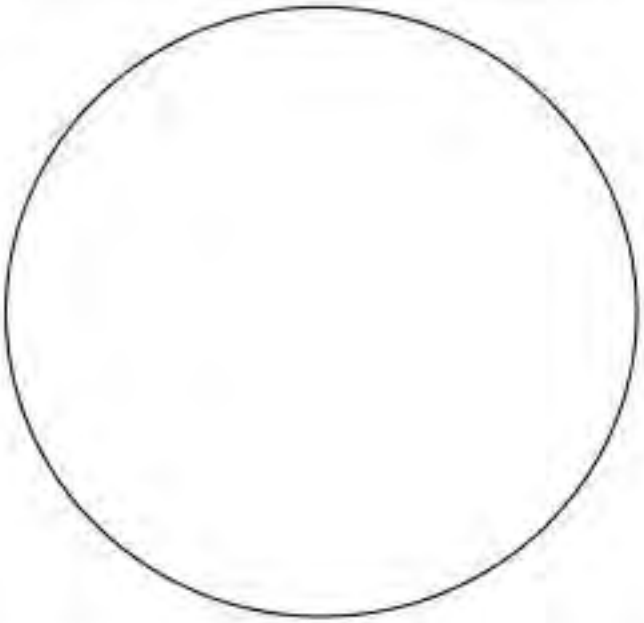
According to the World Resources Institute, Canada accounts for approximately 2% of global greenhouse emissions. The emissions each country produces are listed in the table below.

Part 1 Fill in the table below to determine the angle measurements for the circle graph

	Relative Frequency (as a percentage)	Fraction	Decimal	Angle Measure
Ch	30	30/100	0.30	0.30 x 360 = 108°
	15	15/100	0.15	0.15 x 360 = 54°
Europe	9			
Russia	5			
India				
Japan				
Brazil	2			
Canada	2			
Others	29			

Part 2 Use a protractor to draw the angles for a circle g

_____



1) How many times does China produc

2) Why do graphs sometimes use an "other" category?

_____

_____

_____

3) Why do you think China produces so many emissions?

_____

_____

_____

Name: _____ 57

Curriculum Connection
SP8.1

Collecting Qualitative Data – Circle Graph

Data Collection | Collect categorical data that you can plot using a circle graph

Question of Interest (Ex. Favourite _____ or which app you use most)	

Draw a table that will help you collect and organize your data.

Interpreting The Data

1) Was your data collected from a primary or secondary source?

2) What conclusions can you draw from your data? List your findings.

3) How will graphing this data as a circle graph help readers understand the data?

Name: _____ 58

Curriculum Connection
SP8.1

Creating a Circle Graph

Use the data you collected to plot your graph. Remember the following labels:

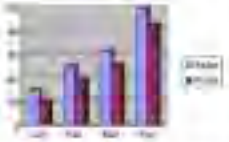
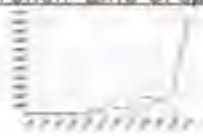
☐ Title ☐ Labels for each section ☐ Percentages/totals

Name: _____ 61

Curriculum Connection SP8.1

Types of Graphs - Information

There are many different types of graphs. Each graph has features that make it better for certain data sets. Read about the different graphs below and when we use each one.

Types of Graph	Explanation	When We Use Them
Circle Graph 	- A graph that is made by dividing a circle into sections hat represent parts of a whole. art adds up to 100%.	- When we are displaying the relative frequency of variables - Used with one set of data - Show how categories represent part of a whole data set for one variable
Bar G ph 	ata using mns	- When we want to compare categories between different groups - Used to display 1 data set/1 variable - Used with discrete data
Line Plot 	- A graph ays points or sym (che x's) above a number l - The dots are not co d	Used to show the frequency of data ck and simple way to organize smaller values with 1 variable
Multiple-Bar Graph 	- A graph that shows the relationship between different sets of data - The bars are presented beside each other for clear comparisons	To di anship between ata: F ple – gender di adu outh - Displ wit - Used for qualit ata
Scatter Plot 	- A graph that displays data points for two continuous variables - Both the y and x axis represent a different variable	- When we have two e data - Often used to display data represented in a table of values - Used to show the relationship between two variables
Histogram 	- A graph similar to a bar-graph that shows frequencies for different intervals	- Used when the x-axis uses numbers (intervals). For example - age ranges - Display data with 1 variable
Broken-Line Graph 	- A graph that displays data as points that are connected with a line	- Used to track changes over periods of time - Used with continuous data

Name: _____ 62

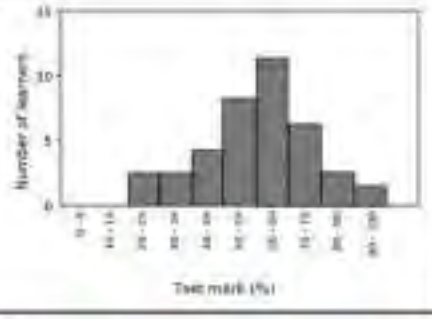
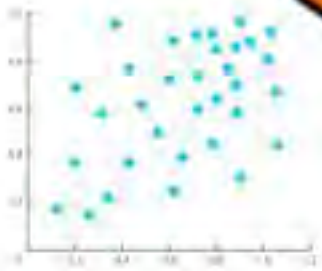
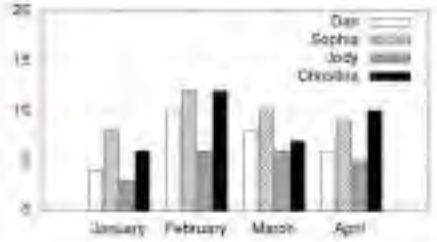
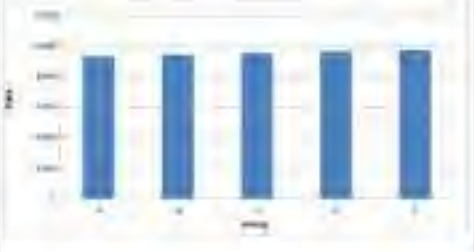
Curriculum Connection
SP8.1

Types of Graphs - Questions

Part 1 Circle the graph you would use to represent the data

	Description	Graph A	Graph B
1)	You want a simple graph that displays one data set visually	Multiple Bar Graph	Bar Graph
2)	You w[illegible] show the relationship between two varia[illegible]	Histogram	Scatter Plot
3)	Yo[illegible] aph that has smaller values	Line Plot	Bar Graph
4)	[illegible] displa[illegible] ets of data from grade 7s and grade 8	Bar Graph	Multiple Bar Graph
5)	You want t[illegible] ontinu[illegible]	Broken-Line	Circle Graph
6)	You have catego[illegible] present each category as pa[illegible] ole	Broken Line Graph	Circle Graph
7)	You are displaying how m[illegible] oals [illegible] scored in intervals of 1-5, 6-10, 11[illegible] 15-2[illegible]	Broken-Line Graph	Histogram

Part 2 Label the names of the graphs

		
1)	2)	3)
		
4)	5)	6)

Exit Cards

Cut Out Cut out the exit cards below and have students complete them at the end of class

Name: _____

Circle the graph you would use to represent the data

Description	Graph A	Graph B
1) You are showing the percentage of time students spend learning the different school subjects.	Circle Graph	Multiple Bar Graph
2) You want to represent the number of points different teams scored in a basketball game.	Broken-Line Graph	Bar Graph
3) The relationship between the number of hours of sleep and the energy levels of students.	Line Plot	Scatter Plot
4) You are displaying the distribution of students' test scores within specific ranges.	Histogram	Circle Graph

Name: _____

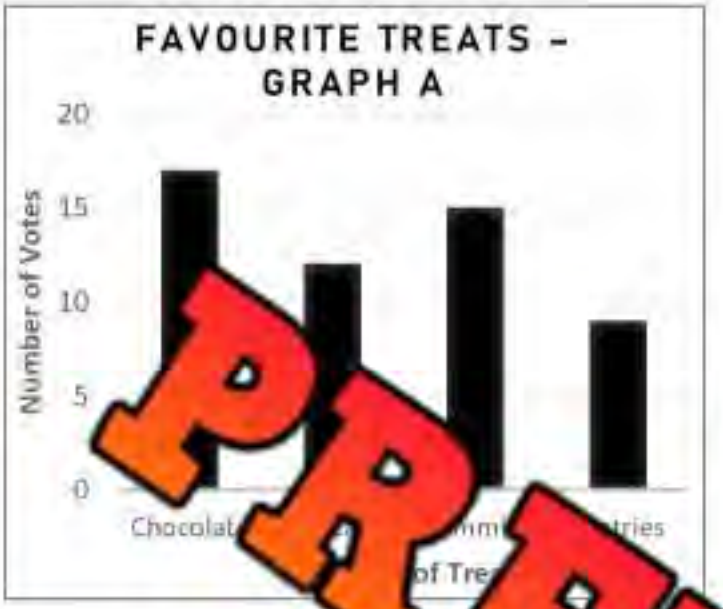
Circle the graph you would use to represent the data

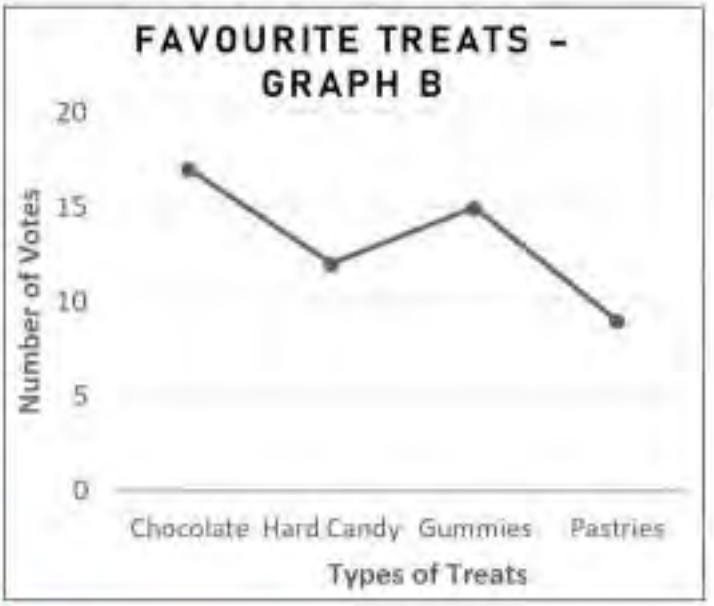
Description	Graph A	Graph B
1) You are showing the percentage of time students spend learning the different school subjects.	Circle Graph	Multiple Bar Graph
2) You want to represent the number of points different teams scored in a basketball game.	Broken-Line Graph	Bar Graph
3) The relationship between the number of hours of sleep and the energy levels of students.	Line Plot	Scatter Plot
4) You are displaying the distribution of students' test scores within specific ranges.	Histogram	Circle Graph

Name: _____ 64

Curriculum Connection
SP8.1

Displaying Data Using Different Graphs





Questions	Answ ues

a) Which graph displays the data more appriate our choice.

b) Should a line graph be used with discrete data? Explain w w

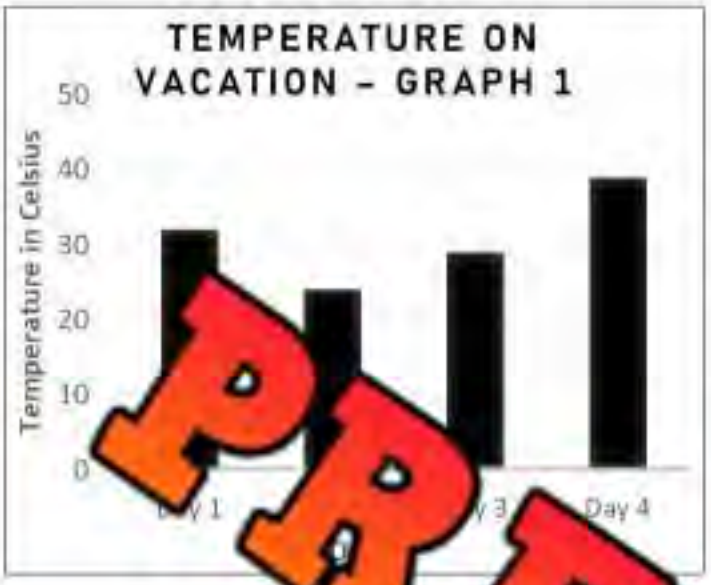
c) Which scale do you find easier to read? Explain which scale you would have chosen.

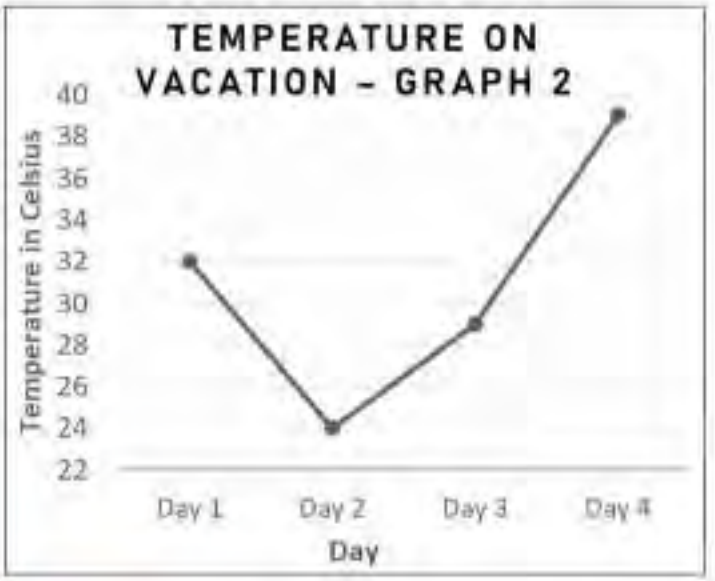
d) What information is missing from these graphs?

Name: _____ 65

Curriculum Connection
SP8.1

Displaying Data Using Different Graphs





Questions

Answer the questions below

a) Which graph displays the data more [illegible] Explain your choice.

b) Should a bar graph be used with continuous data? Explain your [illegible]

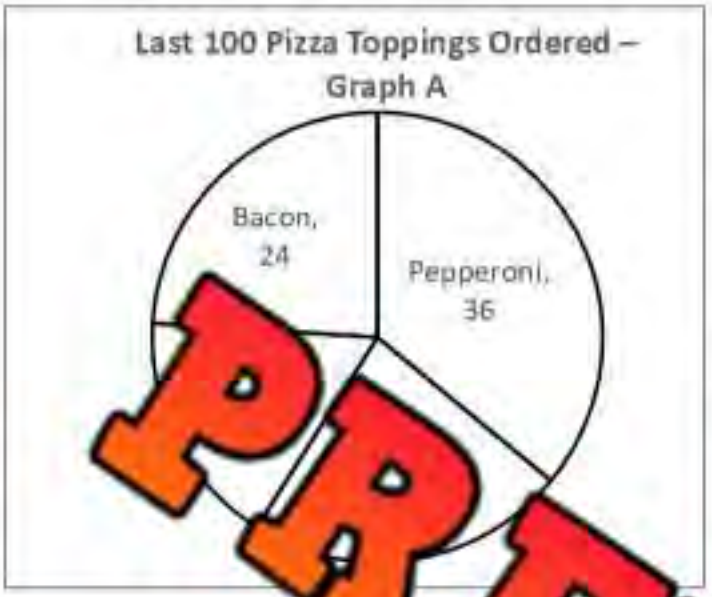
c) Which scale do you find easier to read? Explain which scale you would have chosen.

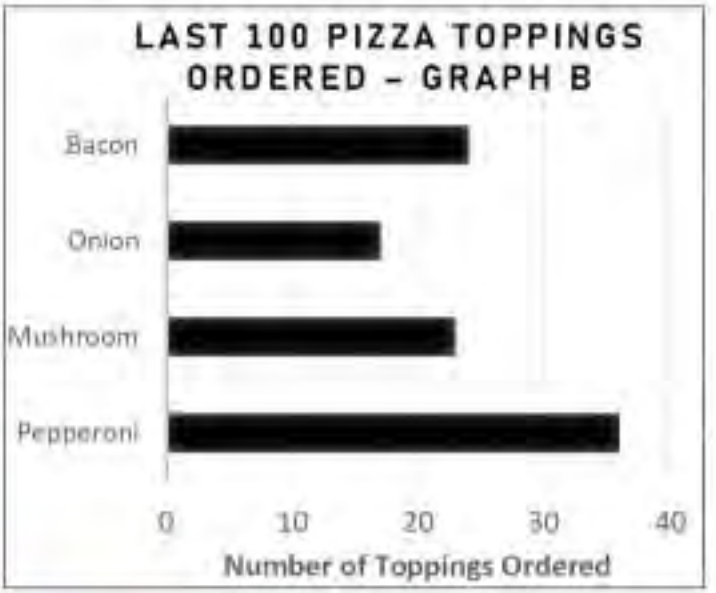
d) At the end of day 1, can we infer the temperature began to cool? Explain how the line graph supports this inference.

Name: _____ 66

Curriculum Connection
SP8.1

Displaying Data Using Different Graphs





Questions	Answer[illegible]estions

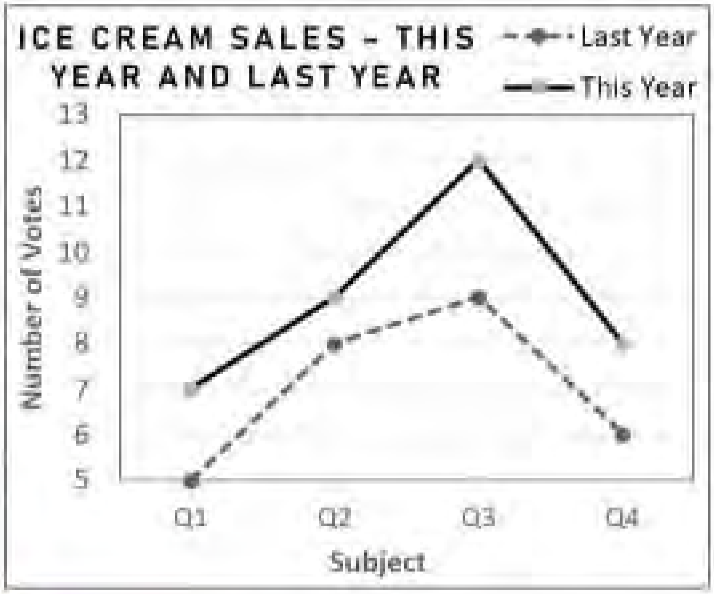
a) Which graph displays the data more [illegible]ely[illegible]in your choice.

b) If we think of the results as a ratio, we could say 36 of th[illegible]0 ([illegible] were pepperoni. Which graph shows a ratio of one topping compare[illegible] all[illegible]

c) Which graph is easier to read? Which one would you choose to display this data? Explain.

d) What is another example of data that would be best displayed as a circle graph?
Ex. Percentage of people who drive, walk, bus or bike to work.

Displaying Data Using Different Graphs



Questions Answer the questions below

a) Both of these graphs display the same data. Which graph gives us more information about the ice cream sales? Explain.

____

____

____

b) When is it a good option to use a double-line graph?

____

____

c) Provide an example of a data set that you would use a double line graph to represent.

____

____

____

d) Is the data continuous or discrete? Explain how you know.

____

____

____

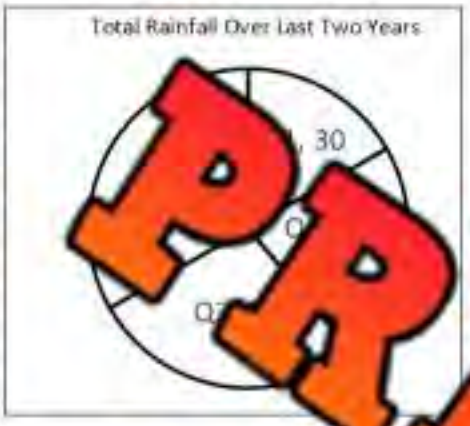
Curriculum Connection
SP8.1

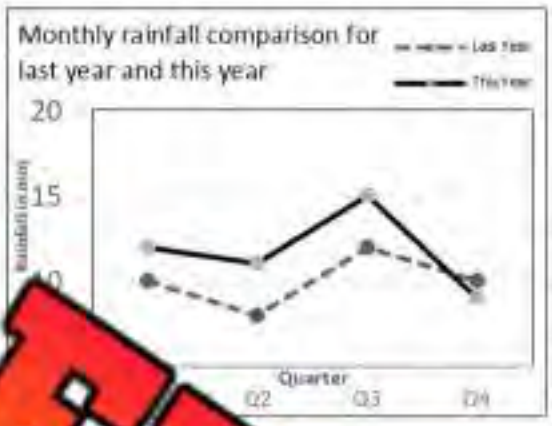
Exit Cards

Cut Out Cut out the exit cards below and have students complete them at the end of class

Name: _____

The graphs below show the monthly rainfall (in mm) over the last two years.



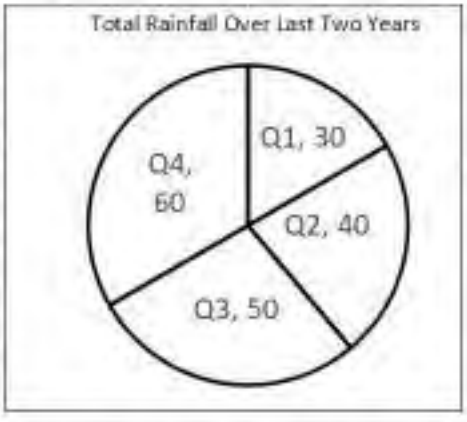


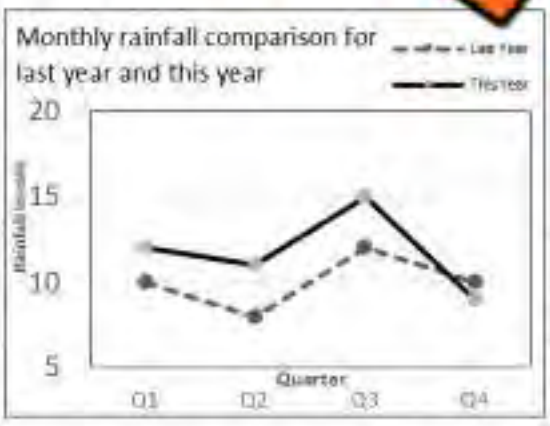
a) Both of these graphs display the same data. Which one gives us more detailed information about the monthly rainfall? Explain.

b) When is it useful to use a [illegible] instead of a circle graph?

Name: _____

The graphs below show the monthly rainfall (in mm) over the last two years.





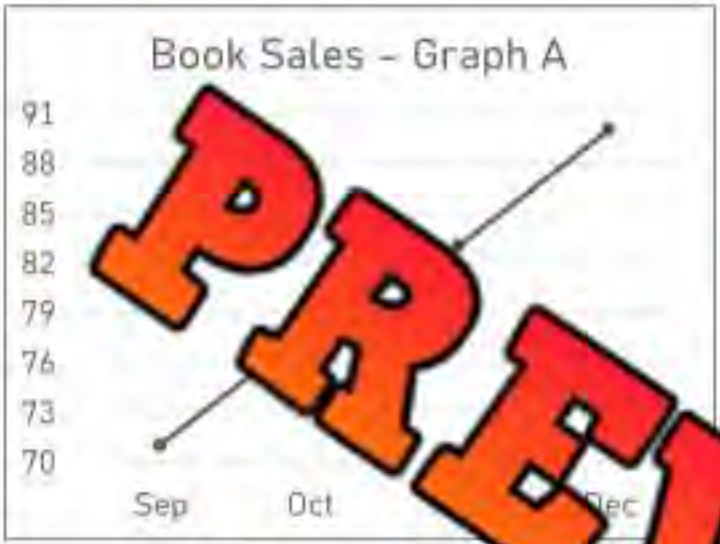
b) When is it useful to use a line graph instead of a circle graph?

Name: _____ 70

Curriculum Connection
SP8.1

Misleading Graphs

Imagine you are selling a book you wrote. You want to show your customers that your book is a hot seller, so they should buy it now before it sells out. Which graph would you choose for an infographic?



Questions What do you notic[illegible] the t[illegible]ph[illegible]?

a) Which graph would you use to show cust[illegible] that [illegible] have been growing massively? Why?

b) How are the graphs different? Do they have the same data?

c) How many sales were made from September to December?

d) Does graph A make it seem like more books were sold? Explain.

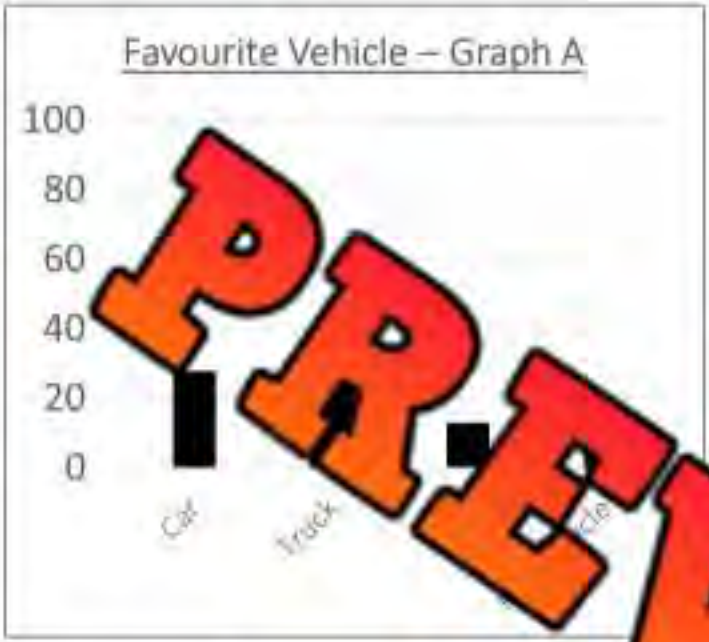
d) Why is it important to read a graph carefully?

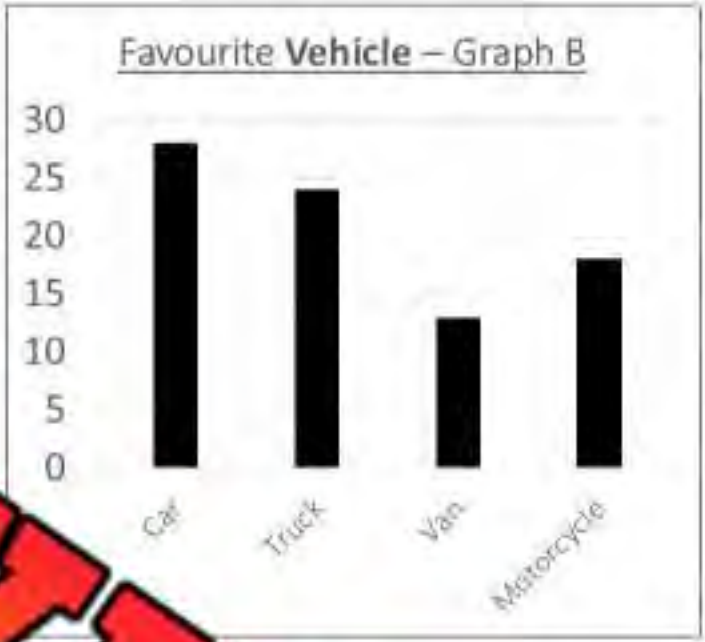
Name: _____ 72

Curriculum Connection
SP8.1

Misleading Graphs

The two graphs below display the same data. Examine both graphs and answer the questions below.





Questions What do you notice about [illegible] graphs?

a) What is the scale in Graph A?

b) What is the scale in Graph B?

c) Which graph uses more of the space?

d) Which graph is better? Why?

e) What other scales could you use for the data? What would the graph look like?

Go up by ____, the bars would _____

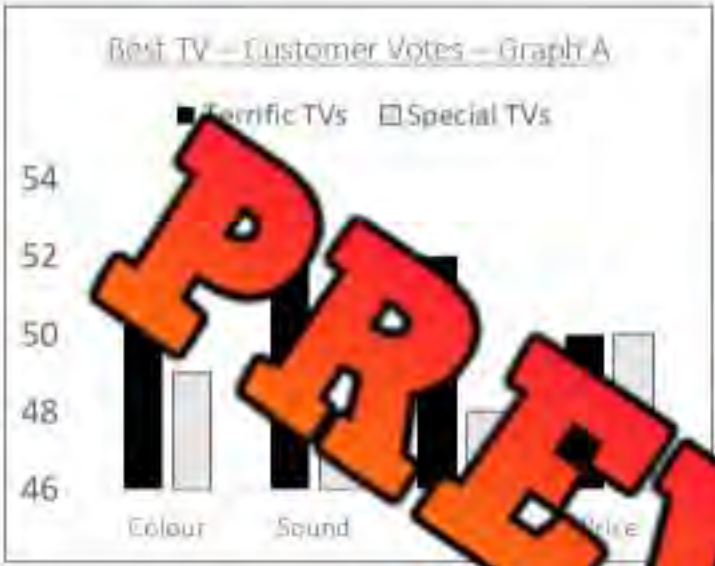
Go up by ____, the bars would _____

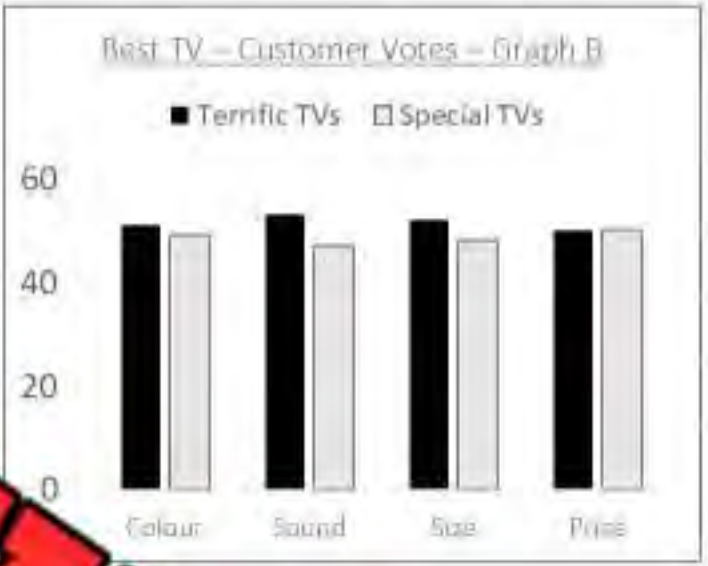
Name: _____ 74

Curriculum Connection
SP8.1

Misleading Graph – Multiple-Bar Graph

Terrific TVs sells televisions. Their biggest competition is a company named, Special TVs. Terrific TVs completed a study that compared the two brands. The results are below.





Questions What do you noti[illegible] the [illegible]s?

a) Which graph would you use if you were [illegible] TVs?

b) How many more votes in total did Terrific TVs get over Special TV[illegible]

c) Is Terrific TVs a lot better than Special TVs? Explain.

d) Do you think it is fair that businesses create misleading graphs like this one? Explain.

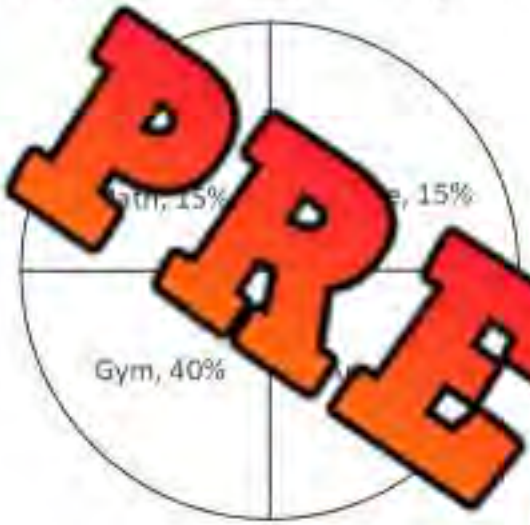
Name: _____ 75

Curriculum Connection
SP8.1

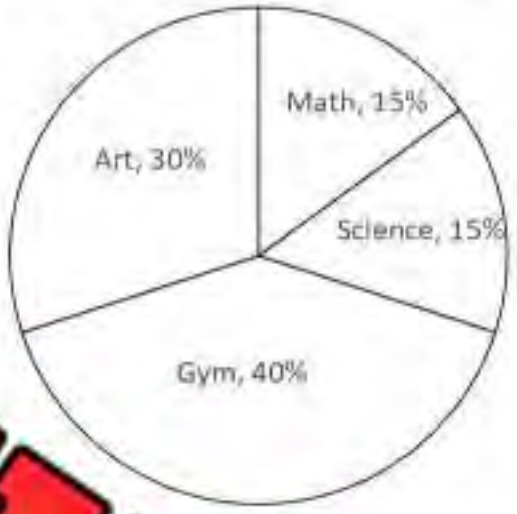
Misleading Graph – Circle Graph

A Science and Technology school is trying to advertise that Science is a popular subject for students. A study that surveyed 100 students asking their favourite subject was completed. The results have been displayed in 2 graphs below.

Graph A - Most Popular Subjects



Graph B - Most Popular Subjects



Questions What do you notice about the two graphs?

a) Which of the two graphs is misleading? Explain why.

b) Which graph would you use if you were the science and technology school? Explain.

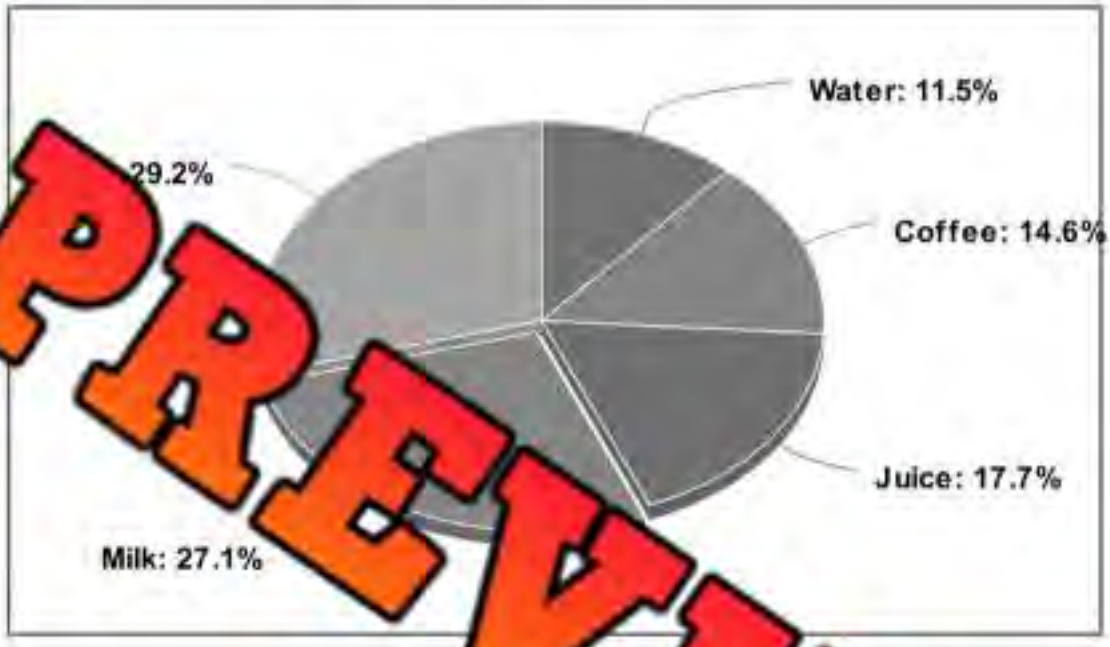
c) Do you think people would fall for this misleading graph? Explain your opinion.

Name: _____ 76

Curriculum Connection
SP3.1

Misleading Graph – Circle Graph

The dairy industry performed a study to find out which beverage was the most popular. They asked 100 people aged 8-64. The results are below.



Questions Answer the questions b

a) Why is this circle graph misleading?

b) Why is it important to look at who completed a study before you trust their data?

c) Can you trust all data? What kinds of things can businesses do to create data that is misleading?

Curriculum Connection
SP8.1

Exit Cards

Cut Out Cut out the exit cards below and have students complete them at the end of class

Name: _____

A tech company conducted a survey to find out which social media platforms were the most popular. They asked 200 teenagers, aged 13–17. The results are displayed below:

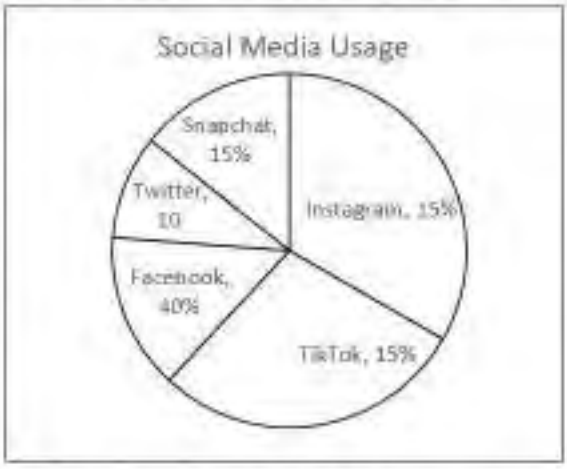
a) Why is this circle graph misleading?

b) Why is it important to look at the group being surveyed (teenagers) before trusting the data?

c) Can you trust all data? What are some ways companies can create misleading data through surveys?

Name: _____

A tech company conducted a survey to find out which social media platforms were the most popular. They asked 200 teenagers, aged 13–17. The results are displayed below:



a) Why is this circle graph misleading?

b) Why is it important to look at the group being surveyed (teenagers) before trusting the data?

c) Can you trust all data? What are some ways companies can create misleading data through surveys?

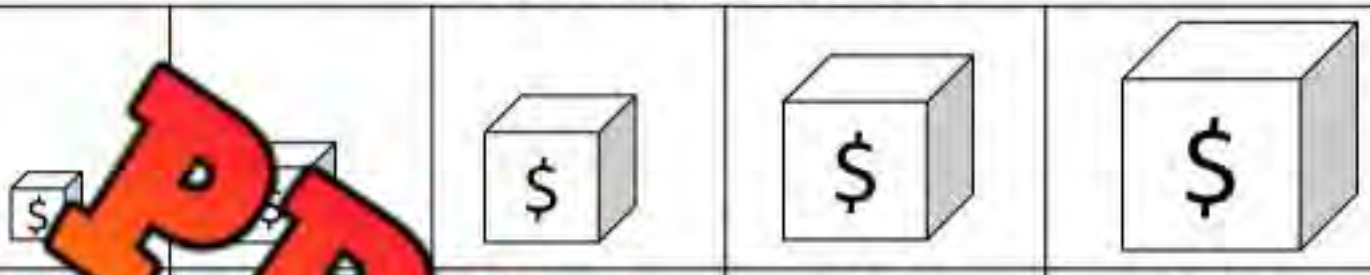
Name: _____ 78

Curriculum Connection
SP8.1

Misleading Pictograph – Company Earnings

Newco Software Company has been operating for the last 5 years. Their earnings each year have been represented in the pictograph below.

Newco's Earnings – Last 5 Years



Year 1	Year 2	Year 3	Year 4	Year 5
$15 405	[illegible]	[illegible]	$64 851	$81 235

Questions What do yo[illegible]abo[illegible]graph above?

a) How much more earnings did Ne[illegible]ake in [illegible]n Year 1?

b) What do you notice or wonder about the grap[illegible]? things.

c) Why is the graph misleading? Hint: look at the size difference between Year 1 and Year 5. Remember your understanding of volume.

d) Approximately how many times larger is the Year 5 cube than the Year 1 cube?

Name: _____ 79

Curriculum Connection
SP8.1

Misleading Pictograph – Favourite Drink

The grade 11 students at Jasper High School were asked what their favourite drink was. The results have been displayed in the pictograph below.

Favourite Drinks – Grade 11 Students

Questions What do you notice about the pictograph?

a) What do you notice or wonder about the graph? Write at least 2 things.

b) Why is the graph misleading? Explain at least 2 misleading parts of the graph.

c) Approximately how many times larger is the soda can than the water? Think volume instead of just height. How does this affect our understanding of the data?

Name: _____ 81

Curriculum Connection
SP8.1

Truth or Lie? Graph Edition

Objective What are we learning about?

Students will learn to identify and explain misleading elements in graphs, developing critical thinking skills and understanding how data can be manipulated in visual representations.

Materials What you will need for the activity.

- A [illegible] printe[illegible] graphs (some accurate, some misleading)
- Smartboa[illegible]or to [illegible] the graphs

Instructions How [illegible] activity

1. Begin by explaining the concept of [illegible] the students, highlighting common ways graphs can be many[illegible]ed (e.g. [illegible]ales, omitting data, exaggerating differences).
2. Show each graph one at a time on the smart[illegible] sure all students can see the graph clearly.
3. After showing each graph, ask the students to use fing[illegible] decision. They show one finger if they believe the graph is true misleading) and they show two fingers if they believe the grap[illegible]ding in some way).
4. Once all students have made their decisions, invite a few students to explain their reasoning. Ask them to point out specific elements of the graph that make it true or misleading, such as the use of a misleading scale or omitted data.
5. Facilitate a class discussion to reinforce key concepts, summarizing the points made by the students and providing additional examples if necessary.
6. Repeat steps 3-6 for each graph in the set. Encourage students to look for new elements that might be misleading as they view different graphs.
7. After all graphs have been discussed, ask the students to reflect on what they have learned. Provide them with questions to think about or answer in their math journals or as a group.

Name: _____ 82

Curriculum Connection
SP8.1

Graph What do you notice about the graph?

Two friends, Alex and Jamie, tracked the hours they spent exercising from Monday to Friday. The graph compares their daily workout routines over the course of the week.

Name: _____ 83

Curriculum Connection
SP8.1

Graph What do you notice about the graph?

A local bakery recorded its monthly sales over the first half of the year. The graph illustrates the sales trends, aiming to show a rapid increase in income.

Name: _____ 84

Curriculum Connection
SP8.1

Graph What do you notice about the graph?

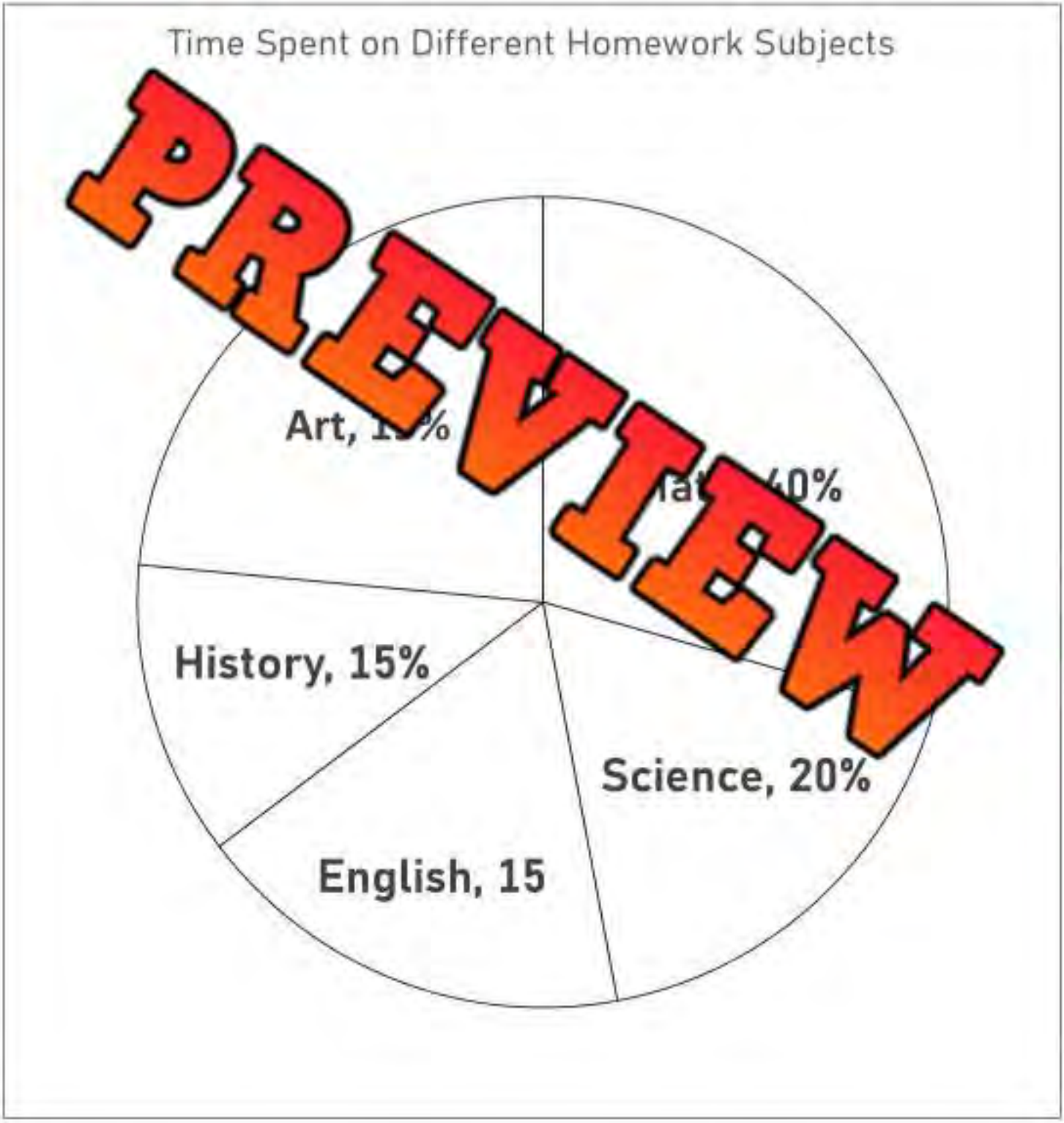
Two households tracked their internet usage from January to May to monitor their data consumption. The graph displays how much data each household used each month.

Name: _____ 86

Curriculum Connection
SP8.1

Graph What do you notice about the graph?

A group of students tracked how much time they spent on different homework subjects—Math, Science, English, History, and Art. The circle graph displays how their time was divided between the subjects.



Name: _____ 87

Curriculum Connection
SP8.1

Graph What do you notice about the graph?

The graph shows how temperatures fluctuated in a city over the course of a week, from Monday to Sunday.

Name: _____ 88

Curriculum Connection
SP8.1

Graph What do you notice about the graph?

A movie theater recorded their attendance numbers for each day from Monday to Friday. The bar graph shows the number of people who attended the movies daily.

Name: _____ 89

Curriculum Connection
SP8.1

Graph What do you notice about the graph?

A recycling facility is against the use of plastic for packaging, so they track the types of waste processed—paper, plastic, metal, and glass—and displayed them as a percentage of the total waste processed at their facility.

Name: _____ 90

Curriculum Connection
SP8.1

Graph What do you notice about the graph?

This graph compares the average salaries in two professions—Engineering and Marketing—over five years. The graph was made by professionals in the field of engineering and marketing who believe their incomes have not increased enough.

Name: _____ 92

Curriculum Connection
SP8.1

Creating a Misleading Graph

Part 1 Draw two graphs – one that is misleading and one that is honest

Imagine you are selling donuts as a business. Draw an honest graph and a misleading graph that you could use to show your customers that donuts are the most popular dessert.

Misleading Graph

Desserts	# of votes
	24
nuts	26
Cupca	2
Ice Cream	

Part 2 What do you notice about the two graphs?

a) How did you make the graphs different?

_____

_____

b) Why is it important that we understand how to read graphs carefully?

_____

_____

_____

_____

Name: _____ 93

Curriculum Connection
SP8.1

Creating an Infographics

Directions Display the data set in different ways. Write in the boxes and draw pictures

The Canadian Government is worried about how much screen time kids are having each week! Check out the results that speak for themselves!

Ages	8	9	10	11	12	13	14	15
Screen (		5	7	8	12	15	19	24

Name: _____ 98

Curriculum Connection TE

Unit Test – Data Analysis

Part 1 Read the description of the data and circle if it is discrete or continuous

1) Temperature changes over a month-long time period	Discrete	Continuous
2) How many siblings each student has in class	Discrete	Continuous
3) How ta[illegible]ree grows over a one year time period	Discrete	Continuous
4) The w[illegible]ifferent hockey skates	Discrete	Continuous
5) T[illegible]8 students	Discrete	Continuous

Part 2 [illegible] graph[illegible]ould use to represent the data

	Description	Graph A	Graph B
1)	You want to display data [illegible]ow[illegible] each part to the whole group	Line Graph	Circle Graph
2)	You have data with age intervals. [illegible]eans y[illegible] data has numbers on the x and y axis	[illegible]raph	Histogram
3)	You want a simple graph that displays your [illegible] visually	[illegible]raph	Bar Graph
4)	You want to graph continuous data	[illegible]Gra[illegible]	[illegible]raph
5)	You are displaying two sets of data from men and women	Bar G[illegible]	[illegible] Bar [illegible]raph

Part 3 Fill in the table below by explaining the graph and when we use them

Types of Graph	Explanation	When We Use Them
Line Graph		

Types of Graph	Explanation	When We Use Them
Bar Graph		
Circle Graph		
Double-Bar Graph		

Part 4 Read the data below and decide which type of graph you would u… the data

You surveyed your classmates asking which sport is their favourite. The results are listed below.

Baseball	Gymnastics	Dance	Hockey	Football
21	35	22	18	12

Which type of graph would you use to represent the data? Explain your choice.

Curriculum Connection
TO

Fantastic Footwear is running an ad campaign comparing their products versus their competitor, Super Shoes.

Part 5 What ... two graphs?

a) Which graph would you use ... Footwear? Why?

b) How many more votes in total did Fantastic Footw... ...ve ... S...es?

c) Are Fantastic Footwear shoes a lot better than Super Shoes? Exp...

d) How did Fantastic Footwear create this misleading graph? Explain how they setup the graph to make it appear that their company is much better than Super Shoes.

Name: _____ 101

Curriculum Connection
SP8.2

Independent Events – Darts

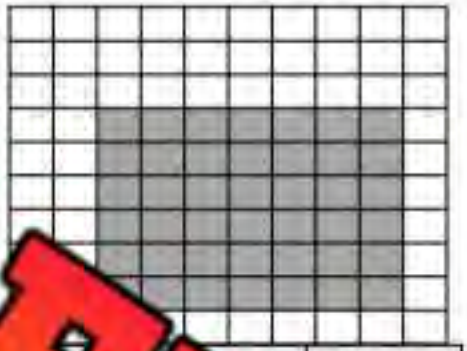
Independent events are two or more events that could happen at the same time without affecting the outcomes of the other events. Imagine below, that the shaded in area is a target and the white part is the wall. What is the probability of you hitting each target if you had two throws?

Questions What is the probability of you hitting each target if you had two throws?

1)

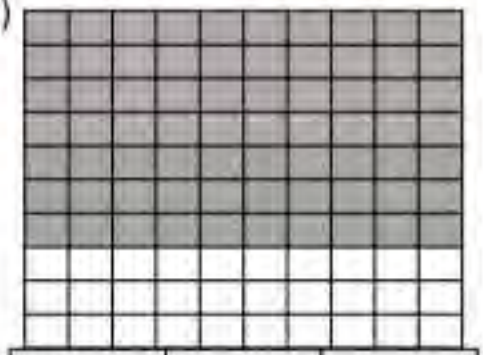
Fraction	Decimal	Percent

2)



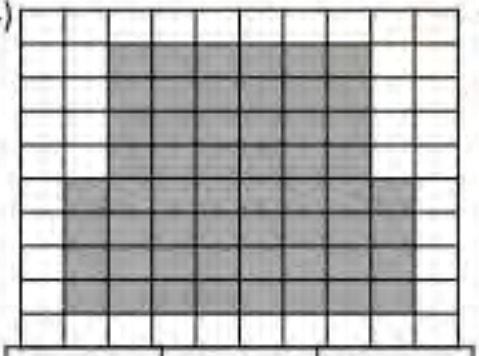
Fraction	Decimal	Percent

3)



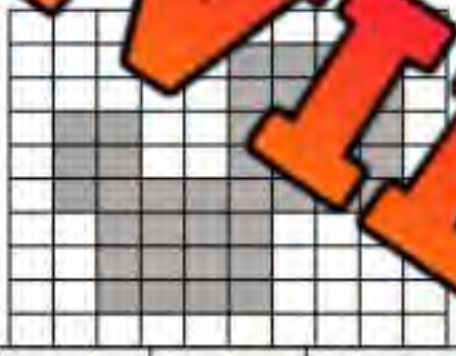
Fraction	Decimal	Percent

4)



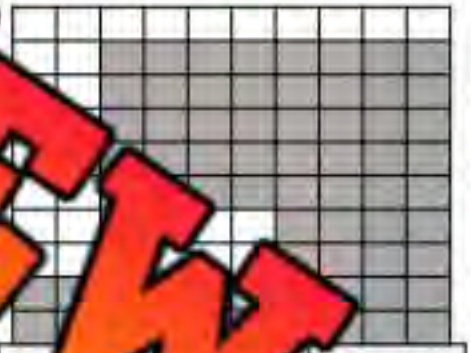
Fraction	Decimal	Percent

5)



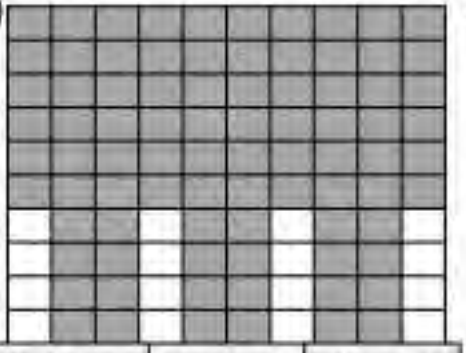
Fraction	Decimal	Percent

6)



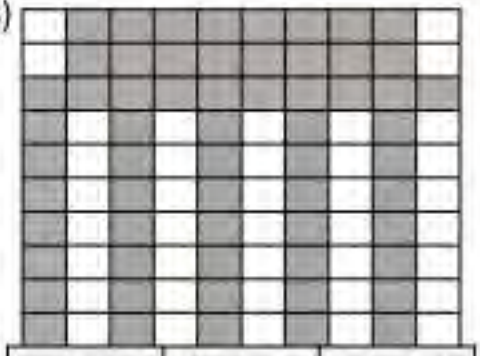
Fraction	Decimal	Percent

7)



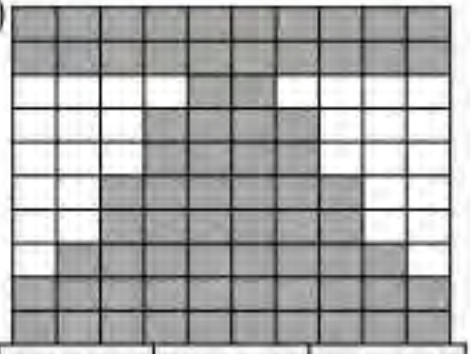
Fraction	Decimal	Percent

8)



Fraction	Decimal	Percent

9)



Fraction	Decimal	Percent

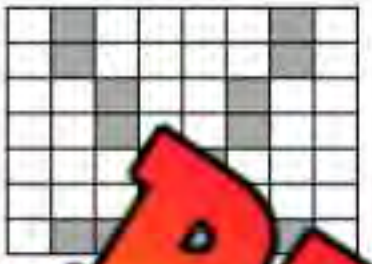
Name: _____ 102

Curriculum Connection
SP8.2

Independent Events – Darts

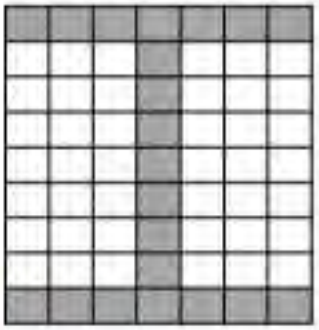
Questions What is the probability of hitting the target if you had two throws?

1)



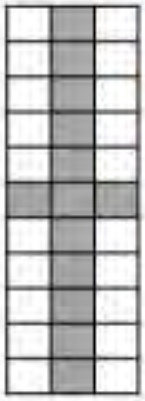
Fraction	
Decimal	
Percent	

2)



Fraction	
Decimal	
Percent	

3)



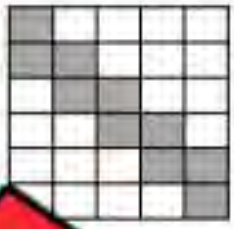
Fraction	
Decimal	
Percent	

4)

Fraction	
Decimal	
Percent	

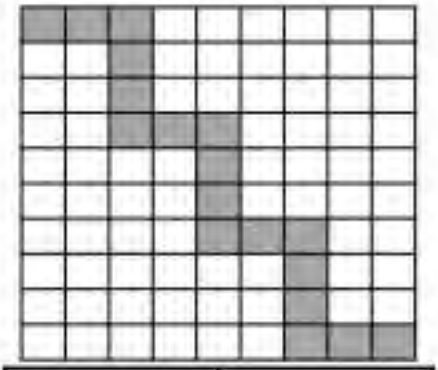
Fraction	
Decimal	
Percent	

6)



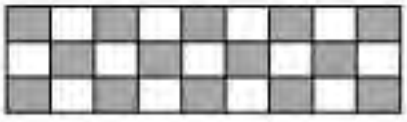
Fraction	
Decimal	
Percent	

7)



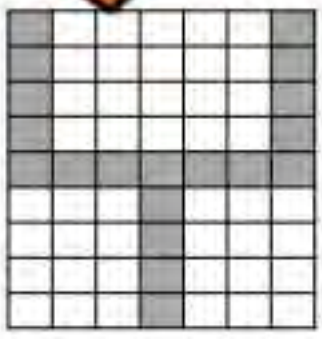
Fraction	
Decimal	
Percent	

8)



Fraction	
Decimal	
Percent	

9)



Fraction	
Decimal	
Percent	

Name: _____ 103

Curriculum Connection
SP8.2

Independent Events – Rolling a Dice

Rolling a Dice

A dice has 6 sides. Each side has a number of dots between 1 and 6. When you roll a dice, you have an unlikely chance of rolling a certain number.

Questions	What is the probability of...

1) Rolling

	Decimal	Percent

2) Rolling a 5

	cimal	Percent

3) Rolling an odd number?

Fraction	mal	Percent

4) Rolling two six-sided dice and getting a 5?

Fraction	Decimal	rce

5) Rolling two six-sided dice and getting a 1, 2, or 3?

Fraction	Decimal	Percent

6) Rolling two six-sided dice and getting an even number?

Fraction	Decimal	Percent

7) Rolling two six-sided dice and getting a 6?

Fraction	Decimal	Percent

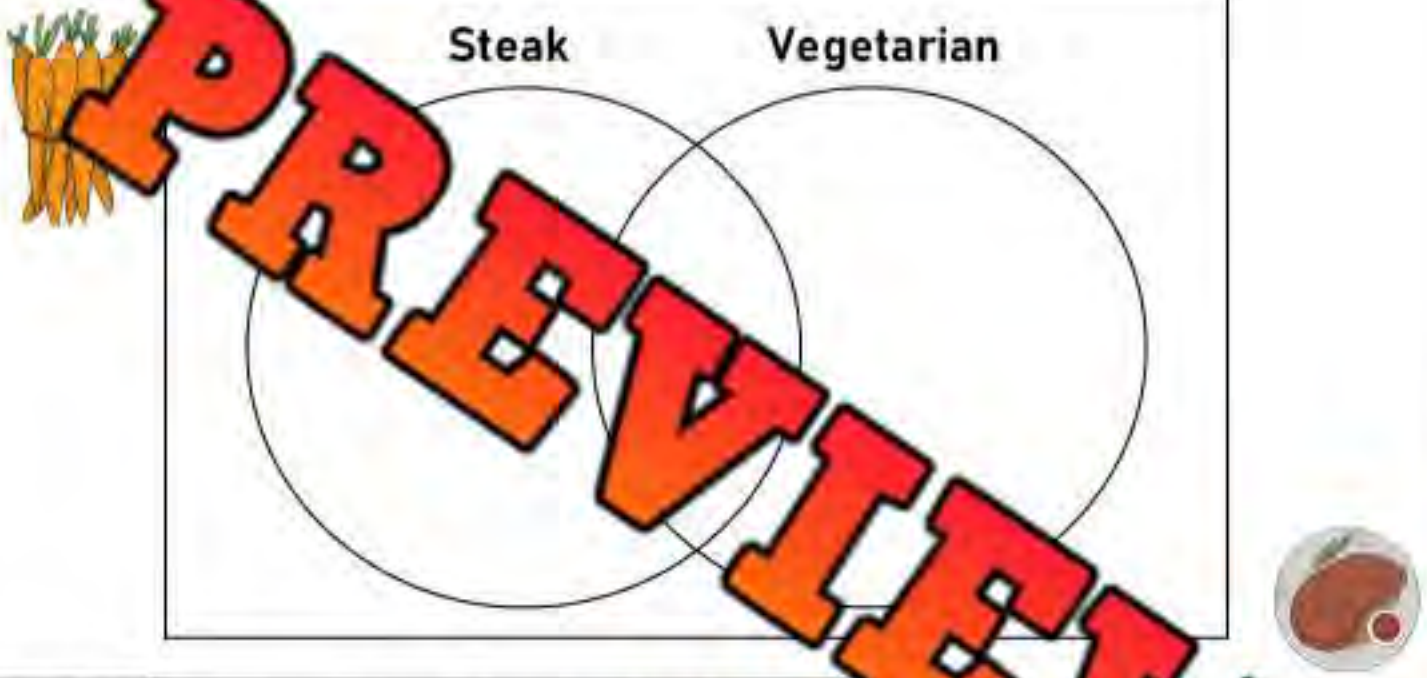
Name: _____ 104

Curriculum Connection SP8.2

Calculating Probability – Venn Diagram

At a wedding reception, the guests had 2 options for dinner – steak or vegetarian. Of the 50 guests at the reception, 30 are having steak, 20 are having vegetarian and 6 hungry guests are having both.

Part 1 Fill in the Venn diagram with the data above



Part 2 Answer the questions below

	Questions – What is the probability that a randomly selected guest...	Fraction	Deci	Percent
1)	ordered steak			
2)	ordered vegetarian			
3)	ordered steak or vegetarian but not both			
4)	ordered steak and vegetarian			
5)	didn't order a meal			
6)	ordered steak but not vegetarian			
7)	ordered vegetarian but not steak			

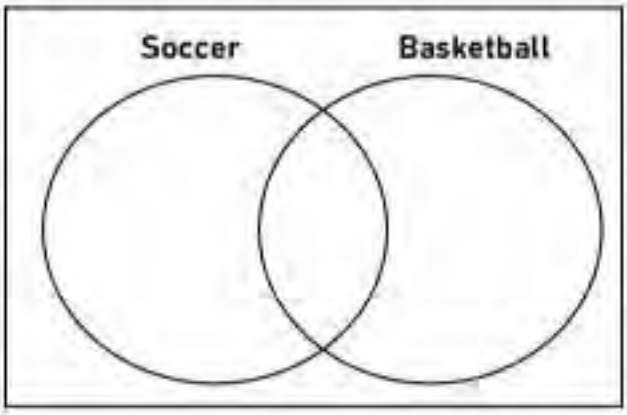
Curriculum Connection
SP8.2

Exit Cards

Cut Out Cut out the exit cards below and have students complete them at the end of class

Name: _____

At a local sports event, participants had two options for activities – soccer or basketball. Out of the 60 participants, 35 are playing soccer, 25 are pla basketball, and 10 participants are playin ports.



2) What is the ... a ra ... elected participant...	Fraction	Decimal	Percent
a) played soccer?			
b) played basketball?			
c) played soccer or basketball ... h?			
d) played both soccer and basketball			
e) didn't participate in any activity?			

Name: _____

At a local sports event, participants had two options for activities – soccer or basketball. Out of the 60 participants, 35 are playing soccer, 25 are playing basketball, and 10 participants are playing both sports.

2) What is the probability that a randomly selected participant...	Fraction	Decimal	Percent
a) played soccer?			
b) played basketball?			
c) played soccer or basketball but not both?			
d) played both soccer and basketball?			
e) didn't participate in any activity?			

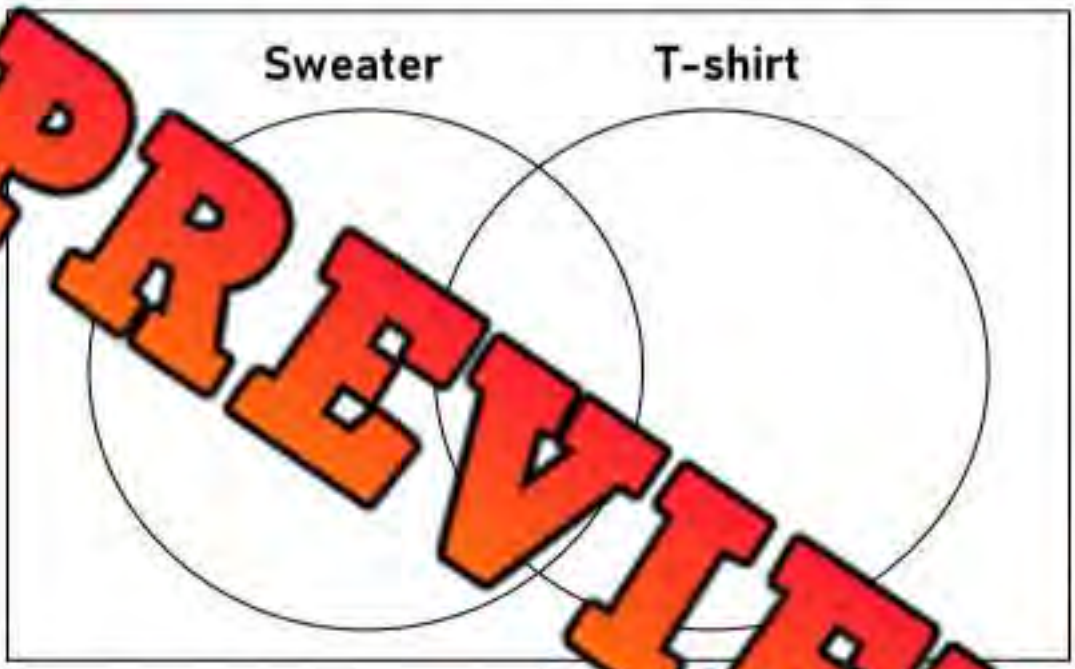
Name: _____ 106

Curriculum Connection
SP8.2

Calculating Probability – Venn Diagram

In a class of 30 students, 14 are wearing a sweater, 16 are wearing a t-shirt and 7 are wearing both.

Part 1 Fill in the Venn diagram with the data above



Part 2 Answer the questions below

What is the probability that a randomly selected student is wearing...		Fraction	Deci	Percent
1)	a sweater			
2)	a sweater but not a t-shirt			
3)	a t-shirt			
4)	a t-shirt but not a sweater			
5)	neither a sweater nor a t-shirt			
6)	a sweater and a t-shirt			
7)	a sweater or a t-shirt but not both			

Name: _____ 107

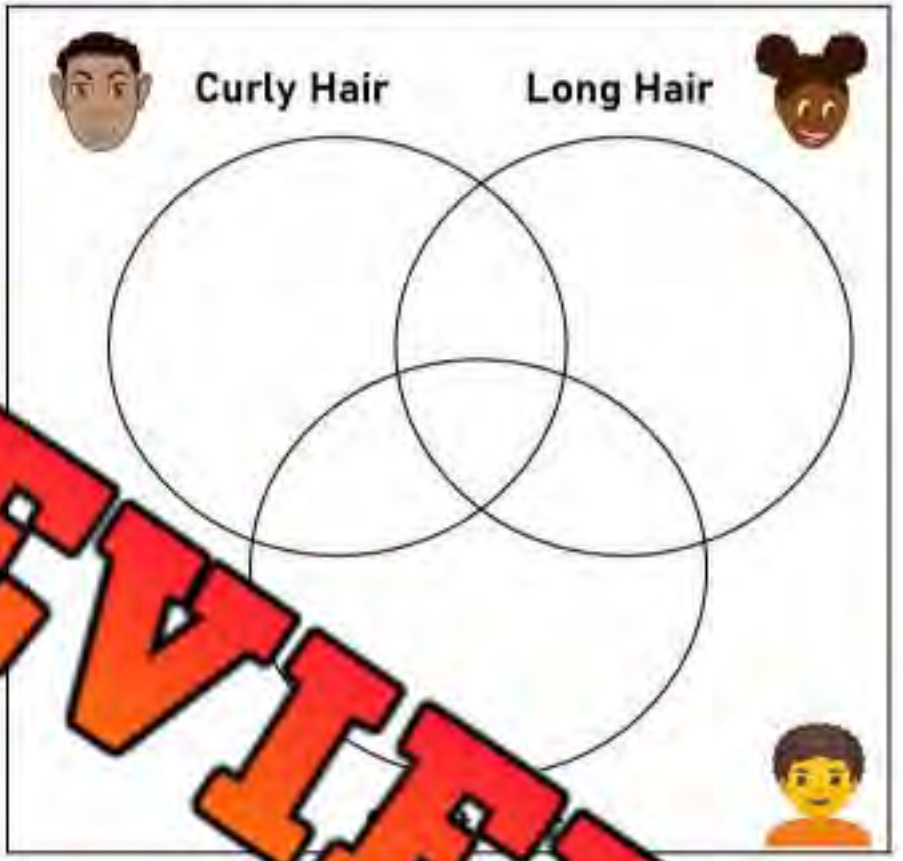
Curriculum Connection
SP8.2

Calculating Probability – Venn Diagram

Part 1 Fill in the Venn diagram with the data below

21 students were surveyed about their hair

Curly	Long	Short
Elle		Logan
Henry		Henry
Lu		
Sofia	Lily	
Nova	Lu	fia
Riley	Nova	ey
Julian	Julian	Lu
Nora	Nora	David
	Elena	Ben
	Owen	Eddie
	Violet	



Part 2 Answer the questions below

What is the probability that a randomly selected student...		Fraction	De	Percent
1)	has curly hair			
2)	has long hair			
3)	has short hair			
4)	does not have curly hair			
5)	has curly short hair			
6)	has curly long hair			
7)	has short hair that isn't curly			
8)	has long hair that isn't curly			

Name: _____ 108

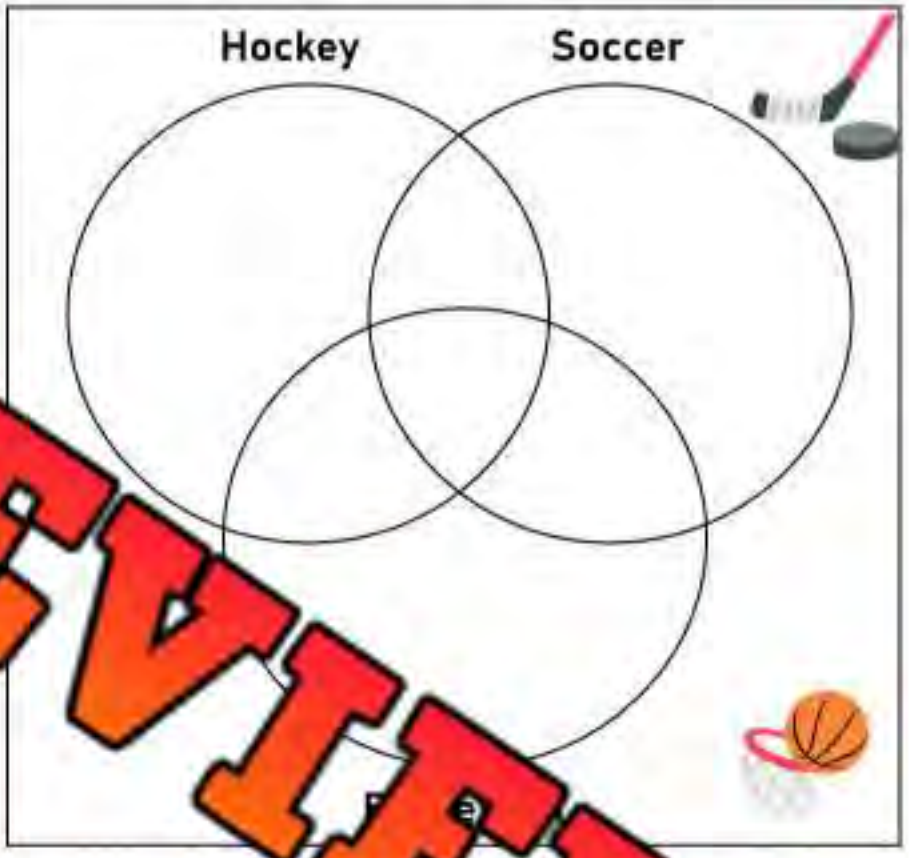
Curriculum Connections
SP8.2

Calculating Probability – Venn Diagram

Part 1 Fill in the Venn diagram with the data above

100 people were surveyed about which sports they play

- 33 pl ketball
- 45 pl
- 41
- 8 play bo and hockey
- 9 play both soc basketball
- 6 play all three sports



Part 2 Answer the questions below

What is the probability that a randomly selected person...		Fraction	De	Percent
1)	plays hockey			
2)	plays just hockey and not soccer or basketball			
3)	plays soccer			
4)	plays basketball and soccer but not hockey			
5)	plays basketball			
6)	plays all three sports			
7)	doesn't play hockey, soccer, nor basketball			
8)	plays hockey and soccer but not basketball			

Name: _____ 109

Curriculum Connection
SP8.2

Calculating Probability – Venn Diagram

Questions Answer the questions below using Venn diagrams

1) In a class of 24 students:
- 12 play the guitar
- 13 play the piano
- 5 play both the guitar and the piano

	What is the prob[illegible]t a ra[illegible]elected student...	Percent
a)	plays the piano	
b)	plays just the guitar and not th[illegible]	
c)	plays neither the guitar nor the piano	

2) In a company, there were 80 workers
- 50 workers like coffee
- 41 workers like tea
- 20 workers like both coffee and tea

	What is the probability that a randomly selected worker...	Percent
a)	likes coffee and tea	
b)	likes just tea and not coffee	
c)	likes neither coffee nor tea	

Name: _____ 110

Curriculum Connection SP8.2

Theoretical Probability of Two Events – Tree Diagrams

A tree diagram is used to show the probability of an outcome happening when we have more than one event

Combinations
HHH
HHT
HTH
HTT
THH
THT
TTH
TTT

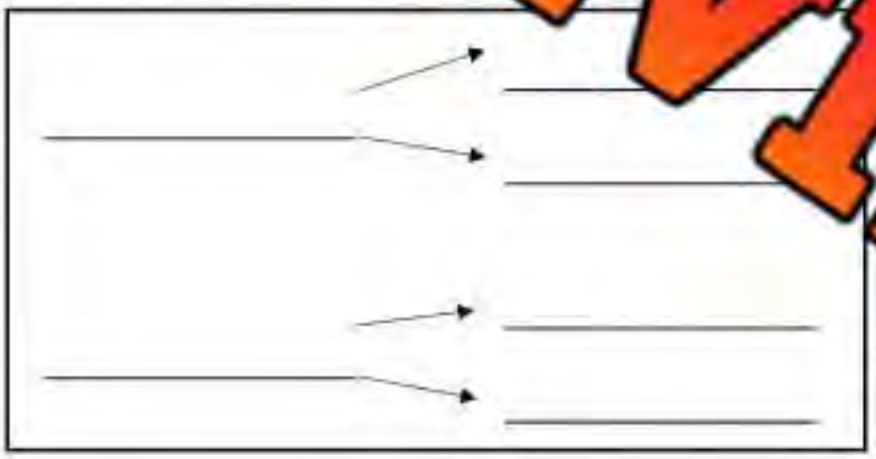
If you flip a coin three times, you could have 8 different combinations of outcomes.

HHH, HHT, HTH, HTT, THH, THT, TTH, TTT

This means you have a 1/8 probability of flipping three heads or tails in a row.

Questions Dra[illegible]agram [illegible] how many different combinations you could have

Rebecca was allowed t[illegible] can[illegible] one drink at a Halloween party. The types of drinks and candy are lis[illegible]



[illegible]binations

Candy
- Chocolate
- Gummies

[illegible]inks

1) How many combinations could Rebecca have? _____

2) What is the probability she will choose...	Fraction	Decimal	Percent
a) chocolate and soda			
b) chocolate and juice			
c) gummies and soda			
d) gummies or chocolate and juice			

Name: _____ 111

Curriculum Connection: SP8.2

Tree Diagrams – Independent Events

Questions Draw a tree diagram to show how many different combinations you could have

An ice cream shop sells different cones, ice cream, and toppings. Their menu is listed below.

Cones	Ice Cream	Toppings
ar Cone (S)	Vanilla (V)	Butterscotch (B)
e (W)	Chocolate (C)	Fudge (F)

Combinations

1) How many combinations of ice cream could you have? _____

2) What is the probability of a customer ordering a...	Fraction	Decimal	Percent
a) sugar cone with vanilla ice cream and fudge			
b) sugar cone with chocolate ice cream and butterscotch			
c) waffle cone with chocolate or vanilla and fudge			
d) waffle or sugar cone with vanilla ice cream and fudge or butterscotch			
e) sugar cone with chocolate and fudge or butterscotch			
f) sugar or waffle cone with vanilla or chocolate ice cream and butterscotch or fudge toppings			

Name: _____ 112

Curriculum Connection
SP8.2

Tree Diagrams – Independent Events

Questions Draw a tree diagram to help you find the probability of different combinations

Georgia is creating an avatar for a video game she is playing. She can choose the characters hair style, hair colour and accessories.

Hair Style	Accessories	Hair Colour
Curly	Necklace	Brown
Spiky	Bracelet	Blond
Long		Red
		Purple

1) How many combinations could you use to create your avatar? _____

2) What is the probability of choosing...	Fraction	Decimal	Percent
a) curly red hair with a necklace			
b) curly purple, brown or blond hair with a bracelet			
c) spiky or long brown hair with a necklace or bracelet			
d) long brown, blond, red, or purple hair with a necklace			
e) spiky, curly, or long hair that is brown, blond or purple with a bracelet			

Name: _____ 113

Curriculum Connection
SP8.2

Drawing Tree Diagrams

Questions Draw a tree diagram to help you find the probability of different combinations

You are having a surprise dessert at a party you are having. Your parents said it is either cookies or brownies. They also told you the options for the treats and icing. What is the probability of them choosing a specific combination of baked good, treat, and icing.

Baked Goods	Treats	Icing
Cookies (C)	Chocolate Chips (CC)	Vanilla (V)
Brownies (B)	Smarties (S)	Chocolate (CH)
	Raisins (R)	Caramel (CA)

1) How many combinations of food could you have? _____

2) **What is the probability of your parents choosing...**	**Fraction**	**Decimal**	**Percent**
a) Cookies with chocolate chips and vanilla icing			
b) Brownies with raisins and caramel icing			
c) Cookies or brownies with smarties and vanilla icing			
d) Cookies or brownies with raisins or smarties and vanilla or chocolate icing			
e) Cookies with chocolate chips, smarties or raisins and vanilla or caramel icing			

Curriculum Connection
SP8.2

Exit Cards

Cut Out Cut out the exit cards below and have students complete them at the end of class

Name: _____

Draw a tree diagram to help you find the probability of different combinations

You are designing an avatar, and you have the following options for customizing its outfit. You can choose one shirt colour, one pants type, and one shoe type for the avatar:

Shirt Colour	Pants Type	Shoe Type
Red (R)	Jeans (J)	Sneakers (SK)
Blue (B)	Shorts (S)	Boots (BO)
Green (G)		

Name: _____

Draw a tree diagram to help you find the probability of different combinations

You are designing an avatar, and you have the following options for customizing its outfit. You can choose one shirt colour, one pants type, and one shoe type for the avatar:

Shirt Colour	Pants Type	Shoe Type
Red (R)	Jeans (J)	Sneakers (SK)
Blue (B)	Shorts (S)	Boots (BO)
Green (G)		

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Curriculum Connection
SP&P

Determining Probability of Multiple Events

Questions	Solve each problem

1) A customer walks in Premiere Pizza where you can order one type of pizza and a drink for $6. The menu is below.

Pizza	Drink
[illegible]oni	Soda
[illegible]	Juice
[illegible]	Milk

a) How [illegible]y comb[illegible] the customer order?

b) What is the prob[illegible]he c[illegible] orders bacon pizza wi[illegible]

c) What is the probability the cus[illegible] orders onion or pepperoni pizza with juic[illegible] soda?

2) Your teacher teaches 3 classes in the morning. The options for each class are below.

Class 1	Class 2	Class 3
Math	Music	Social Studies
Language	French	Science
Health	Drama	Gym

a) How many combinations could your teacher choose?

b) What is the probability your teacher chooses math, music or drama, and gym?

[illegible]s the probability your teacher choos[illegible]h, drama or French, and science or [illegible]

3) At a fancy restaurant, you can order a surprise dinner. They tell you the options for the meat, vegetables, and dessert.

Meat	Vegetables	Dessert
Chicken	Potatoes	Cake
Steak	Salad	Brownie
Fish	Corn	

a) How many combinations could the chef make?

b) What is the probability the chef makes steak or chicken with potatoes and cake?

c) What is the probability the chef makes chicken or fish with corn or salad and brownie?

4) [illegible]om[illegible]e you with your o[illegible]tions[illegible]ow.

Top	[illegible]om	[illegible]	[illegible]
Shirt	Jeans	[illegible]	[illegible]que
Sweater	Shorts	Sa[illegible]	Cap
Jersey	Jogs		

a) How many combinations could your mom pick?

b) What is the probability your mom picks a shirt with pants and shoes and a cap?

c) What is the probability your mom picks a jersey or shirt with jogs and sandals or shoes with a toque?

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Curriculum Connection
SP8.2

Independent Events – Dice Challenge

Part 1 Find the probability of each sum when two dice are rolled

1) What is the probability of you rolling two six-sided dice and getting a sum of the two dice greater than 7?

2) What is the probability of you rolling two six-sided dice and getting a sum of the two dice greater than 10?

3) What is the probability of you rolling two six-sided dice and getting a sum of the two dice less than 4?

+	1	2	3	4	5	6
1						
2						
3						
4						
5						
6						

Part 2 Find the probability of each product when two dice are rolled

x	1	2	3	4	5	6
1						
2						
3						
4						
5						
6						

1) What is the probability of you rolling two six-sided dice and getting a product of the two dice greater than 12?

2) What is the probability of you rolling two six-sided dice and getting a product of the two dice less than or equal to 15?

3) What is the probability of you rolling two six-sided dice and getting a product of the two dice greater than or equal to 24?

Name: _____ 117

Curriculum Connection
SP8.2

Independent Events – Money Bag

Wow, it's your lucky day! A millionaire walks up to you and gives you 3 chances at pulling out a $100 bill from a bag of money. Each time you pull money out, you will put it back.

Inside the bag, there is 1 of each Canadian currency denomination ($0.05, $0.10, $0.25, $1, $2, $5, $10, $20, $50, $100).

Question: What is the probability of the following scenarios

	Scenario / Probability	Answer – Show Your Work
1)	Selecting a Toonie on your first pull?	
2)	Selecting a $100 bill on your first pull?	
3)	Selecting a Quarter or a Loonie in your first two pulls?	
4)	Having terrible luck and selecting a Nickel, Dime, and a Quarter in your 3 pulls?	
5)	Selecting a $20, $50, or $100 bill in your 3 pulls	
6)	Selecting a $100 bill on any of your 3 pulls?	

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Curriculum Connection
SP8.2

Independent Events – Prize Box

Question: [illegible] the prize each time you choose, what are the probabilities below?

	Scenario	Answer – Show Your Work
1)	You get one pick. What [illegible] bility of getting stuck w[illegible]	
2)	You get one pick. What is [illegible] pro[illegible] getting a phone?	
3)	You get two picks. What is the probability [illegible] picking a set of headphones and a pencil [illegible] your first two picks?	
4)	You get two picks. What is the probability of picking a phone with either of the two picks?	
5)	You get three picks. What is the probability of picking a basketball, set of headphones, or phone in any of the 3 picks?	
6)	You are picking from the prize box fifth. One phone, one hairbrush, and two baseballs are already gone. You get four picks. What is the probability of you picking a phone with any of the four picks?	

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Curriculum Connection SP8.2

Theoretical vs Experimental Probability

Theoretical Probability
What should happen

Example - The theoretical probability of flipping a heads is 1 time out of 2 or ½.

Experiment Probability
What did happen after the event (experiment)

Example – You flipped a coin 10 times and got 7 heads. The experimental probability is 7/10.

Part 1 Write the theoretical probability of the events happening below

	Question	Fraction	Decimal	Percent
1)	W robability of flipping a heads?			
2)	Wha ne the bability of flipping a tails?			
3)	What is the proba f flipping a heads if you flipped the c mes?			
4)	What is the theoreti y of a heads and then rolling a dice and 2?			
5)	What is the theoretical probab y of getting an odd number and then flippin ?			

Part 2 Experimental Probability - Flip a 0 tim ord your results

1) How many heads and tails do you think you will flip

	Tails
2	20

2) Perform the experiment by flipping a coin 20 times. Record how many he and tails you get.

	Tallies	Frequency	Fraction	Decimal	Percent
Heads					
Tails					

3) Was the theoretical probability and experimental probability the same? Should it be the same? Explain.

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Curriculum Connection SP8.2

Theoretical vs Experimental Probability

Examples of Theoretical and Experimental Probability
Theoretical: You should roll a 3 once every 6 rolls = 1/6
Experimental: You rolled a 3 twice when you rolled a dice six times = 2/6

Part 1 Circle if the example is theoretical or experimental

Example	Theoretical	Experimental
1) There [illegible] of rain today	Theoretical	Experimental
2) Yo[illegible] and got heads 3 times	Theoretical	Experimental
3) You have a 1/[illegible] heart from a deck of cards	Theoretical	Experimental
4) A scratch ca[illegible] of winning a prize	Theoretical	Experimental
5) Your batting averag[illegible] get a hit 1 in 4	Theoretical	Experimental
6) You made 4 of 10 three p[illegible]	Theoretical	Experimental
7) Seabiscuit won the race even th[illegible]	Theoretical	Experimental
8) The Toronto Raptors won 4/7 games [illegible]	Theoretical	Experimental
9) You have a 1/80 chance of winning a giveaway [illegible]	[illegible]	Experimental
10) You won a cross-country race with 90 people in [illegible]	[illegible]	Experimental

Part 2 Is the example theoretical or experimental? What is the probability [illegible]?

Example	Theoretical or Experimental	Fraction	Decimal	Percent
1) You should make 8 in 10 free throws				
2) You buy one raffle ticket out of 90 that are sold.				
3) You rolled a dice 10 times and got a 3, 4 times.				
4) You pulled 20 cards from a deck of cards and got 5 red ones.				
5) There is a 35% chance of precipitation				

Exit Cards

Cut Out Cut out the exit cards below and have students complete them at the end of class

Name: _____

Answer the following questions.

1) You roll a fair die, and based on theory, each number should appear once every 6 rolls = 1/6.

Circle Answer: Theoretical or Experimental

2) A bag contains 5 blue marbles and 5 red marbles. The probability of picking a blue marble is 1/2.

Circle Answer: Theoretical or Experimental

3) Fill the table

Example	Theoretical or Experimental	Fraction	Decimal	Percent
The probability of selecting an ace from a deck of cards is 4/52				

Name: _____

Answer the following questions.

1) You roll a fair die, and based on theory, each number should appear once every 6 rolls = 1/6.

Circle Answer: Theoretical or Experimental

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3) Fill the table

Example	Theoretical or Experimental	Fraction	Decimal	Percent
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Circle Answer: Theoretical or Experimental

3) Fill the table

Example	Theoretical or Experimental	Fraction	Decimal	Percent
The probability of selecting an ace from a deck of cards is 4/52				

Activity – Math Hot Seat: Probability Showdown

Objective What are we learning about?

Students will practice differentiating between theoretical and experimental probability by participating in a fun and interactive game, enhancing their ability to understand probability concepts.

Materials What you will need for the activity.

- Index cards with probability questions (theoretical and experimental)
- Chairs arranged in a circle
- Stopwatch or timer
- Whiteboard and markers

Instructions How you will implement the activity.

1. Prepare a stack of index cards with various probability questions. Ensure some questions ask students to identify theoretical probabilities and others to calculate experimental probability.
2. Arrange chairs in a circle with one "hot seat" in the center.
3. Explain the rules of the game to the students. One student will sit in the hot seat while the rest sit in the surrounding chairs.
4. The teacher will read a probability question from the stack. The student in the hot seat has a limited time (e.g., 30 seconds) to answer the question.
5. If the student in the hot seat answers correctly within the time limit, they stay in the hot seat for the next round. If they answer incorrectly or run out of time, they switch places with another student from the circle.
6. Continue the game until each student has had the opportunity to sit in the hot seat multiple times, or until the designated game time is up.
7. Keep track of the number of correct answers each student provides while in the hot seat. The student with the most correct answers at the end of the game wins.

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Curriculum Connection: SP8.2

Index Cards | Use the math problems below

#	Probability Question	Answer
1	A coin is flipped 50 times and lands on heads 22 times. What is the experimental probability of heads as a percent?	44%
2	A die is rolled 10 times, and it lands on a 5 two times. What is the experimental probability of rolling a 5 as a percent?	20%
3	A deck of cards is shuffled, and one card is drawn. What is the theoretical probability of drawing a red card as a percent?	50%
4	A jar contains 25 marbles, and 7 are red. What is the probability of randomly selecting a red marble as a fraction?	7/25
5	A spinner is spun 20 times and lands on green 6 times. What is the experimental probability of landing on green as a fraction?	6/20 or 3/10
6	What is the theoretical probability of rolling a 6 on a standard die? Provide your answer as a fraction.	1/6
7	A bag has 10 blue and 10 red balls. What is the probability of drawing a red ball as a percent?	50%
8	In 25 coin flips, 14 land on tails. What is the experimental probability of tails as a fraction?	14/25
9	A die is rolled 5 times, and it lands on 3 once. What is the experimental probability of rolling a 3 as a percent?	20%
10	A jar has 50 candies, and 12 are blue. What is the probability of picking a blue candy as a percent?	24%
11	What is the theoretical probability of drawing an Ace from a standard deck of cards? Provide your answer as a fraction.	4/52 or 1/13
12	A spinner is divided into 4 equal sections. What is the theoretical probability of landing on one section as a percent?	
13	A die is rolled 20 times and lands on an even number 8 times. What is the experimental probability of rolling an even number as a fraction?	8/20 or 2/5
14	A jar has 30 marbles, and 6 are green. What is the probability of picking a green marble as a fraction?	6/30 or 1/5
15	What is the theoretical probability of flipping a coin and getting heads? Provide your answer as a percent.	50%
16	In a jar of 20 candies, 8 are red. What is the probability of picking a red candy as a percent?	40%
17	A spinner is spun 50 times and lands on red 18 times. What is the experimental probability of landing on red as a fraction?	18/50 or 9/25
18	What is the theoretical probability of rolling a number greater than 4 on a die? Provide your answer as a fraction.	2/6 or 1/3

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Curriculum Connection: SP8.2

Index Cards | Use the math problems below

#	Probability Question	Answer
19	A deck of cards has 52 cards. What is the theoretical probability of drawing a black card as a percent?	50%
20	A die is rolled 25 times and lands on a 2 six times. What is the experimental probability of rolling a 2 as a percent?	24%
21	A coin is flipped 10 times and lands on tails 7 times. What is the experimental probability of tails as a fraction?	7/10
22	What is the theoretical probability of drawing a heart from a standard deck? Provide your answer as a percent.	25%
23	A bag contains 15 marbles; 5 red, 5 blue, and 5 yellow. What is the probability of drawing a blue marble as a percent?	33.33%
24	A coin is flipped 40 times and lands on heads 22 times. What is the experimental probability of this as a fraction?	22/40 or 11/20
25	A die is rolled 2 times and lands on 6 both times. What is the experimental probability of rolling a 6 as a percent?	100%
26	What is the theoretical probability of rolling an even number on a die? Provide your answer as a fraction.	3/6 or 1/2
27	In 20 flips of a coin, 8 land on tails. What is the experimental probability of tails as a percent?	40%
28	A jar contains 10 marbles, 3 are blue. What is the probability of drawing a blue marble as a percent?	30%
29	A spinner has 8 equal sections, and it is spun 20 times, landing on red 7 times. What is the experimental probability of landing on red as a fraction?	7/20
30	What is the theoretical probability of drawing a King from a standard deck of cards? Provide your answer as a fraction.	1/13
31	A die is rolled 6 times, and it lands on a 4 two times. What is the experimental probability of rolling a 4 as a fraction?	2/6 or 1/3
32	In a bag of 25 candies, 9 are red. What is the probability of picking a red candy as a fraction?	9/25
33	A coin is flipped 15 times and lands on heads 6 times. What is the experimental probability of heads as a fraction?	6/15 or 2/5
34	A jar has 50 marbles, 18 are blue. What is the probability of picking a blue marble as a percent?	36%
35	What is the theoretical probability of rolling a number less than 3 on a die? Provide your answer as a fraction.	2/6 or 1/3
36	A spinner has 6 equal sections. What is the theoretical probability of landing on one section as a fraction?	1/6

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Curriculum Connection: SP8.2

Index Cards | Use the math problems below

#	Probability Question	Answer
37	A die is rolled 12 times and lands on a 5 four times. What is the experimental probability of rolling a 5 as a fraction?	4/12 or 1/3
38	A jar contains 20 candies, and 8 are yellow. What is the probability of picking a yellow candy as a percent?	40%
39	A spi[illegible]pun 30 times and lands on blue 12 times. What is the expe[illegible]robability of landing on blue as a fraction?	12/30 or 2/5
40	[illegible]obability of drawing a face card from a standard de[illegible] cards? [illegible]r answer as a fraction.	12/52
41	In 10 rolls [illegible]nds o[illegible] number 4 times. What is the experimental p[illegible]ity o[illegible]n number as a fraction?	4/10 or 2/5
42	A coin is flipped 5 time[illegible] on t[illegible]. What is the experimental probability [illegible]a f[illegible]	3/5
43	A jar has 10 marbles, and 3 are gree[illegible]s the p[illegible]ty of picking a green marble as a percent?	30%
44	A spinner is spun 25 times and lands on yello[illegible]s. W[illegible] experimental probability of landing on yellow as a[illegible]	8/25
45	A deck of cards has 52 cards. What is the theoretical prob[illegible] drawing a Jack as a fraction?	
46	A die is rolled 30 times, and it lands on a 6 nine times. What is the experimental probability of rolling a 6 as a fraction?	/30 or 3/10
47	A spinner is spun 10 times, and it lands on red 4 times. What is the experimental probability of landing on red as a percent?	40%
48	What is the theoretical probability of drawing a club from a standard deck of cards? Provide your answer as a percent.	25%
49	A die is rolled 4 times, and it lands on a 2 twice. What is the experimental probability of rolling a 2 as a fraction?	2/4 or 1/2
50	A jar contains 25 marbles, 10 are red, and 5 are blue. What is the probability of picking a blue marble as a percent?	20%

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Curriculum Connection
SP8.2

Theoretical vs Experimental Probability - # of Events

The theoretical and experimental probability of an event happening is not guaranteed to be the same. Performing more trials in an experiment will cause the experimental probability to be closer to the theoretical probability.

Example – if you flip a coin 2 times, it is easy to picture getting heads twice in a row. That would mean the experimental probability of getting a heads was 100% or 2/2. However, if you flipped the coin 100 times, it is almost impossible to get 100 heads in a row.

Part 1

ny times should you get a 1, 2, 3, 4, 5, or 6 when performing the lls below?

	1	2	3	4	5	6
6 rolls						
12 rolls						
60 rolls						
600 rolls						
1200 rolls						

Part 2

Follow the instructions bel omp xperiments

1) Roll the dice 6 times. Tally your results.

1	2			5	6

2) Roll the dice 60 times. Record how many of each number you get.

	1	2	3	4	5	6
Tallies						
Total						

3) Did the experimental probability get closer to the theoretical probability when you rolled the dice more times? Explain why this happens.

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Curriculum Connection SP8.2

Rolling Doubles

Part 1 What is the theoretical probability of rolling doubles when rolling 2 dice

1) Fill in the table to help discover the theoretical probability of rolling doubles when rolling two dice.

Tip: $\frac{\text{favourable outcomes}}{\text{total possible outcomes}}$

2) What is the theoretical probability of rolling doubles as a fraction and percent?

First Throw \ Second Throw	1	2	3	4	5	6
1	(1,1)	(1,2)	(1,3)	(1,4)	(1,5)	(1,6)
2						
3						
4						
5						
6						

Part 2 What is the experimental probability of rolling doubles when rolling 2 dice

1) Roll 2 six-sided dice 24 times. Keep track of how many rolls you complete using the table below. Put a tally every time you roll doubles.

Number of Rolls	Doubles

2) Was your experimental probability the same as the theoretical probability? Explain.

3) Was your experimental probability the same as the other students in your class? Explain why or why not.

4) If you performed 1000 rolls, do you think your experimental probability would be closer or further from the theoretical probability? Explain.

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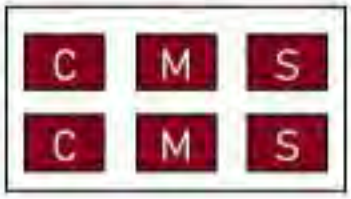
Curriculum Connection
SP8.2

Tree Diagrams – Independent Events

Questions Draw a tree diagram to help you find the probability of different combinations

There is a bag full of the following different flavoured chocolates:

- 2 coconut (C)
- 2 mint (M)
- 2 salte[illegible]aramel (S)



Draw a tr[illegible]m for the following scenario:
You pull [illegible] and then put it back in the bag before pulling another chocolate

Tree Diagram	Combinations
1st D[illegible] 2nd Draw	

1) How many combinations of chocolates could you draw? _____

2) **What is the probability of drawing...**	**Fraction**	**Decimal**	**Percent**
a) coconut and then mint			
b) mint and then coconut			
c) salted-caramel and then coconut or mint			
d) coconut, mint, or salted caramel and then mint			

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Curriculum Connection
SP8.2

Tree Diagram – 4 Events

Questions Draw a tree diagram to help you find the probability of different combinations

Lane flips a coin 4 times. Draw a tree diagram that lists all the possible outcomes she could get as she flips the coins.

2) How many combinations could Lane get? _____

3) What is the probability that she flips the following...	Fraction	Percent
a) 2 heads and 2 tails		
b) 1 heads and 3 tails		
c) 1 tails and 3 heads		
d) 4 heads		
e) 4 tails		

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Curriculum Connection: SP8.2

Number Simulation – Independent Events

Part 1 Theoretical Probability – Answer the questions below

Pretend you are drawing two numbers from 1-15. Since these are independent events, you can select the same number more than once.

If you pick[illegible] 3 numbers, what is the theoretical probability of...	
1) Pickin[illegible]d numbers?	
2) Pick[illegible]	
3) P[illegible]a 2, 5, a[illegible]	

If you comple[illegible] draw[illegible]mbers)	
4) 10 trials, how ma[illegible] [illegible]ll odd numbers?	
5) 30 trials, how many tim[illegible] you[illegible] numbers?	
6) 100 trials, how many times w[illegible]d yo[illegible]bers?	

Part 2 Experimental Probability – P[illegible]n th[illegible]iment below

Set up the experiment by cutting the numbers out [illegible]d put[illegible]em in a bag. Perform the number of trials below by selecting 3 num[illegible] the [illegible]ter you select a number, you put the number back in the bag befor[illegible]tin[illegible]er.

Complete...	
1) 10 trials - how many times did you get all odd numbers?	
2) 30 trials - how many times did you get all odd numbers?	
3) 100 trials - how many times did you get all odd numbers?	

1	2	3	4	5	6	7	8
9	10	11	12	13	14	15	

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Curriculum Connection
SP8.2

Tree Diagram – Free Throws

Part 1 Draw a tree diagram to help you find the probability of different combinations

Roger is a 72% free throw shooter. When he goes to the free throw line to shoot two free throws, he has a 72% chance at making the first shot and a 72% chance at making the second shot.

Fill in the blanks on the tree diagram below.

Part 2 Answer the questions below

What is the probability that Roger...	Decimal	Percent
1) makes the first free throw and misses the second		
2) misses the first free throw and makes the second		
3) makes both free throws		
4) misses both free throws		

Name: _____ 132

Curriculum Connection
SP8.2

Tree Diagram – Dunk Contest

Questions Draw a tree diagram to help you find the probability of different combinations

Ryan is in his first dunk contest. He will try to perform 3 different dunks in the contest. He has practiced each dunk and has an 80% chance of completing each dunk.

Draw a tree diagram below to show Ryan's chances at completing the dunks.

What is the probability that Ryan will...	Decimal	Percent
1) make all three dunks		
2) make his first dunk and miss his next two		
3) miss his first dunk and then make his next two		
4) miss his first and second dunk and make his third		
5) make his first and second dunk and miss his third		

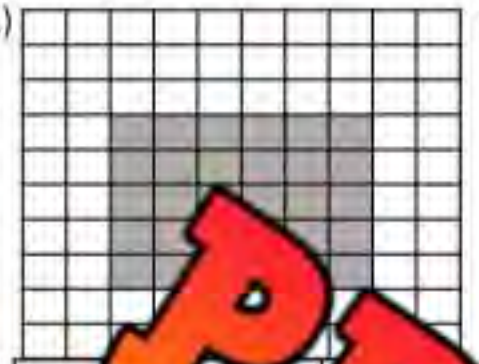
Name: _____ 133

Curriculum Connection
TG

Unit Quiz - Probability

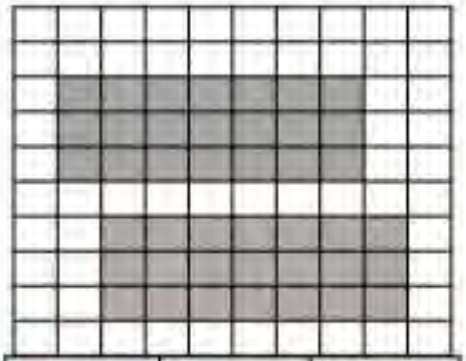
Part 1 Represent the probability of hitting the target using a fraction, decimal and percent

1)



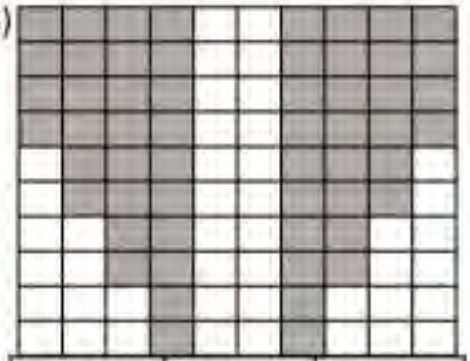
Fraction	Decimal	Percent

2)



Fraction	Decimal	Percent

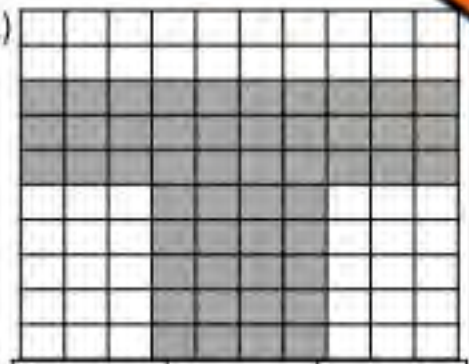
3)



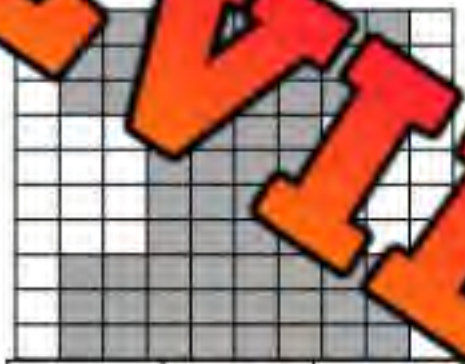
Fraction	Decimal	Percent

Part 2 What [illegible] hitting the target if you get 2 throws?

1)

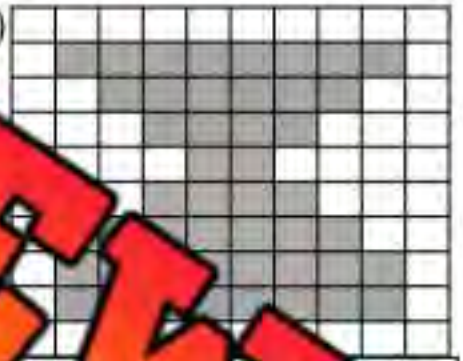


Fraction	Decimal	Percent



Fraction	Decimal	Percent

3)



Fra	ercent

Part 3 What is the probability of...

1) Rolling a 1?

Fraction	Decimal	Percent

2) Rolling a 5 or 6?

Fraction	Decimal	Percent

3) Rolling an odd number?

Fraction	Decimal	Percent

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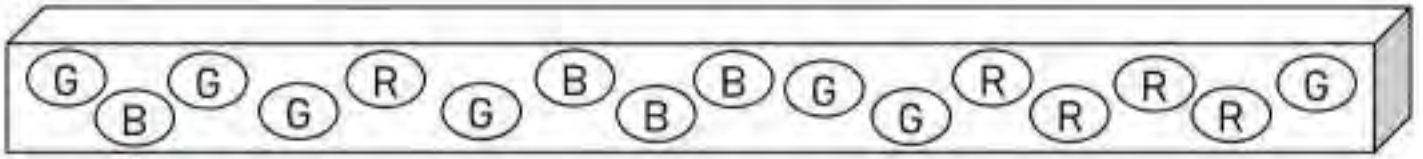
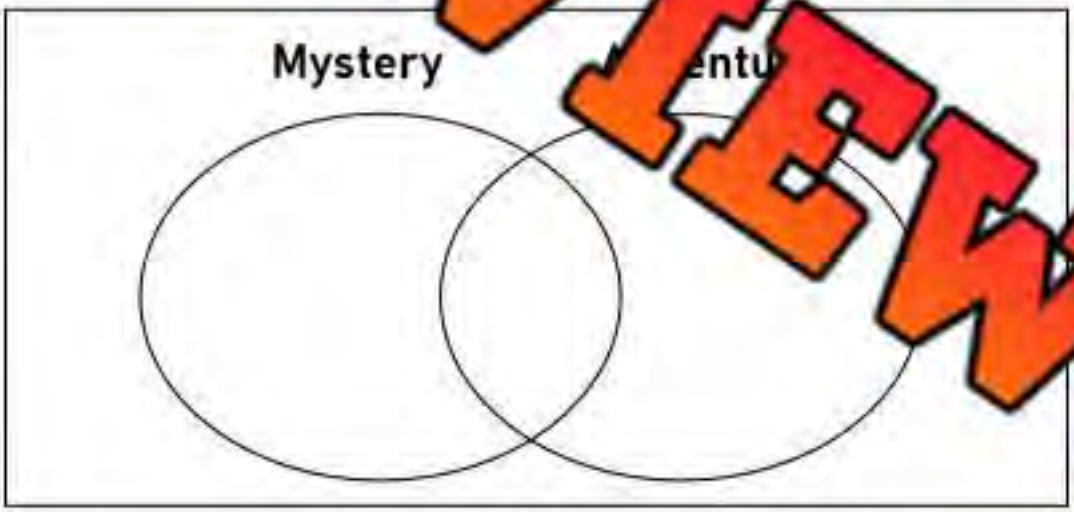
Part 4 Assuming you put the candies back in the box, determine the probabilities below



	Scenario – Probability of 4 candies and getting...	Answer – Show Your Work
1)	4 blue candies	
2)	2 bl s and 2 red candies	
3)	ed candy	

Part 5 Fill enn d th the data below

In a class of 30 students, nts y books, 17 like adventure books and 15 like both types of bo



	What is the probability that a student...	Fraction	Decimal	Percent
1)	likes mystery books and not adventure books			
2)	likes adventure books			
3)	likes neither adventure nor mystery books			

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Part 6 Draw a tree diagram to help you find the probability of different combinations

For high school, you will be given 1 arts course, 1 math course, and 1 science course. The school will choose which courses you get at random. Draw a tree diagram to understand the probability of getting different courses.

Math	Science	Arts
Algebra (A)	Chemistry (C)	Music (M)
Statistics (S)	Biology (B)	Drama (D)
Geometry (G)	Physics (P)	Visual Arts (V)

1) How many combinations of courses could you have? _____

What is the probability of you getting...	Fraction	Decimal	Percent
2) algebra or geometry, chemistry, and drama			
3) statistics, physics or biology, and drama or music			
4) geometry or algebra, biology or chemistry, and drama			
5) algebra or statistics, chemistry or physics, and drama or visual arts			