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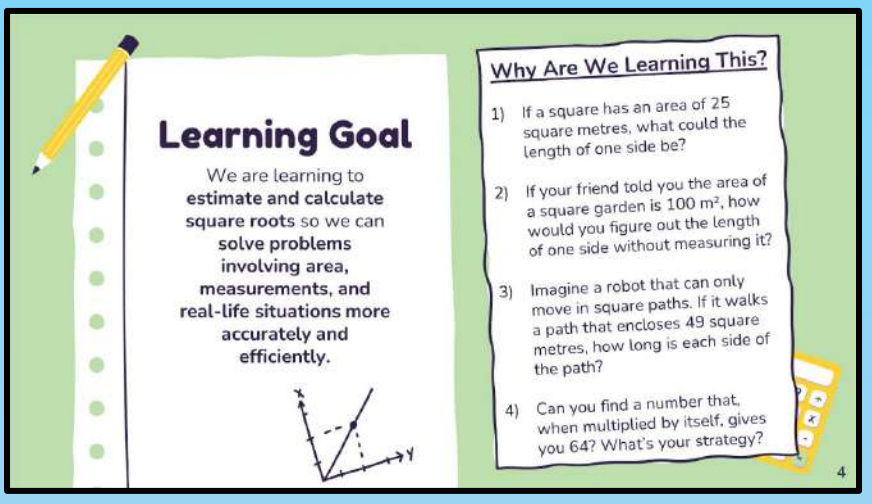
Google Slides Lessons Preview

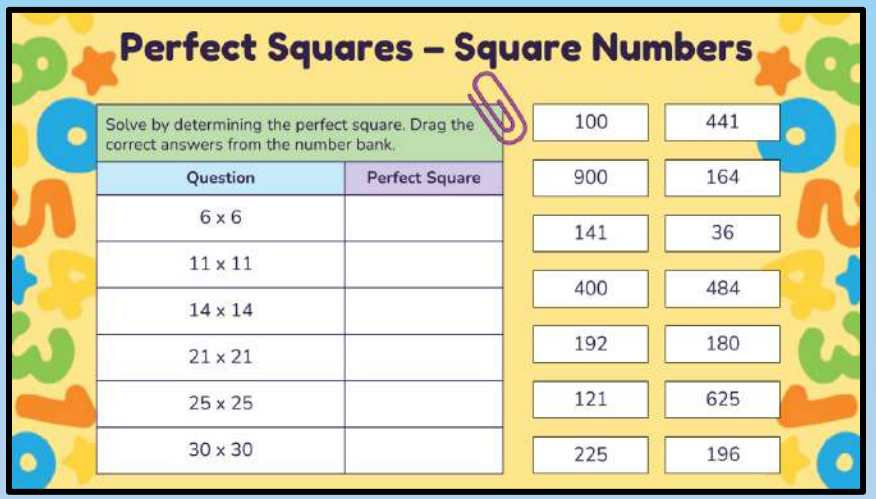
BC Math Curriculum Number Unit – Grade 8

3-Part Lesson Format

Part 1 – Minds On!

- Learning Goals
- Discussion Questions
- Quotes
- And More!



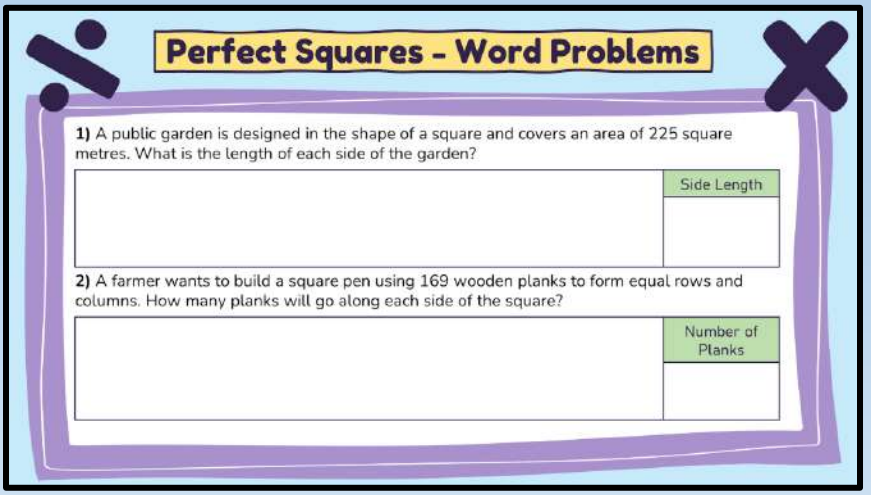


Part 2 – Action!

- Writing
- Matching
- Drag and Drop
- Drawing
- And More!

Part 3 – Consolidation!

- Exit Cards
- Quizzes
- Reflection
- And More!



BC Math Curriculum
Number Unit – Grade 8

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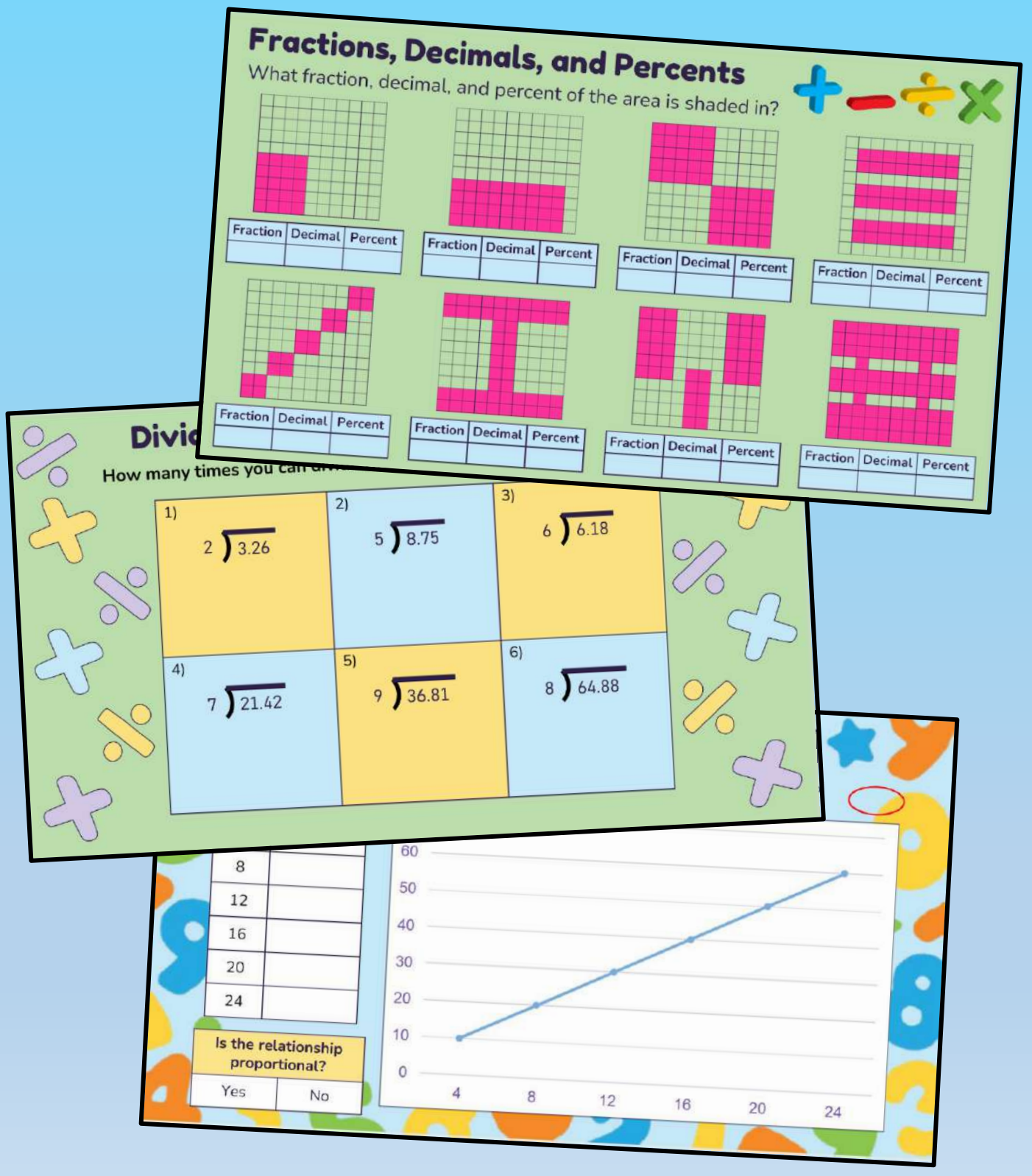
Number Unit – Grade 8



Workbook Preview

Grade 8

Numbers

	Curriculum Expectations	Pages
N.1	Perfect squares and cubes	5 – 16
N.2		
N.3		
N.4	Numerical proportional reasoning (rates, ratio, proportions, and percent)	70 – 101
N.5	operations with fractions (addition, subtraction, multiplication, division, and order of operations)	105 - 167

Name: _____ 5

Curriculum Connection
N.1

Perfect Squares – Square Numbers

A **perfect square** is any number that is a product of two identical numbers. In other words, when we multiply two of the same numbers together, the answer is a perfect square. Perfect squares are also referred to as square numbers.

Examples – 9 is a perfect square (3 x 3) | 4 is a perfect square (2 x 2)

Part 1 Solve by determining the perfect square

	Question	Perfect Square
1)	1 x 1 =	
2)	2 x 2 =	
3)	3 x 3 =	
4)	4 x 4 =	
5)	5 x 5 =	
6)	6 x 6 =	

	Question	Perfect Square
7)	7 x 7 =	
8)	8 x 8 =	
9)	9 x 9 =	
10)	10 x 10 =	
11)	11 x 11 =	
12)	12 x 12 =	

Part 2 Solve the word problem below

1) Richard built a square deck. One of the side lengths is 9m. What is the area of the deck?

2) The area of a square tile is 121cm^2. What are the side lengths?

Exit Cards

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

Name: _____

1) Find out the area of the squares below

	Question	Perfect Square
1)	7 x 7 =	
2)	8 x 8 =	
3)	11 x 11 =	
4)	13 x 13 =	

2) The area of a square tile is 196cm^2. What are the side lengths?

_____

Name: _____

1) Find out the area of the squares below

	Question	Perfect Square
1)	7 x 7 =	
2)	8 x 8 =	
3)	11 x 11 =	
4)	13 x 13 =	

2) The area of a square tile is 196cm^2. What are the side lengths?

_____

Name: _____

1) Find out the area of the squares below

	Question	Perfect Square
1)	7 x 7 =	
2)	8 x 8 =	
3)	11 x 11 =	
4)	13 x 13 =	

2) The area of a square tile is 196cm^2. What are the side lengths?

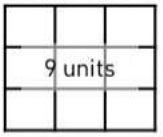
_____

Name: _____ 7

Curriculum Connection
N.1

Area of a Squares – Square Root

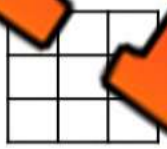
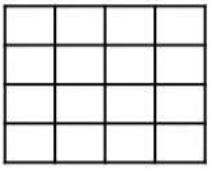
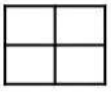
When we calculate the area of a square, we use a square number to determine the area.

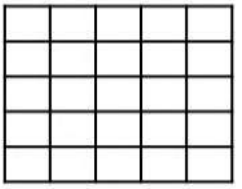
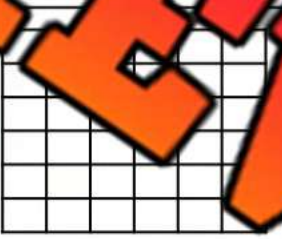
Example: 

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

	Question	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
N.1

Perfect Squares – Exponents

When we multiply a number by itself, we can use an exponent. An **exponent** refers to the number of times a number is multiplied by itself. A **perfect square** is the square of an integer. This means it is the number that is the product of two equal factors. Therefore, it is when we use an exponent to the power of 2.

Example – 16 is a perfect square (4 x 4) or 4^2

Part 1 by determining the perfect square

	Question	Perfect Square
1)	1^2	
2)	2^2	
3)	3^2	
4)	4^2	
5)	5^2	
6)	6^2	

	Question	Perfect Square
7)	7^2	
8	8^2	
	9^2	
10)	10^2	
12)		

Part 2 Find out the area of the squares below

When we calculate the area of a square, we are multiplying the length by the width or base times height. Since a square has the same side lengths, the formula is: s^2

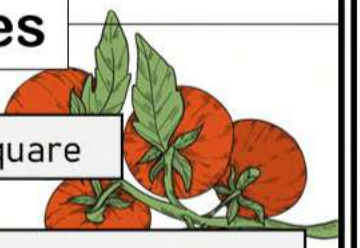
	Question	Area
1)	☐ 6cm	
2)	11cm ☐	

	Question	Area
3)	☐ 7mm	
4)	9m ☐	

Name: _____ 9

Curriculum Connection
N.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 dance floor has an area of 144 square meters. What is the length of each side of the dance floor?

	Perfect Square	Square Number (x^2)

3) Tim wants to create a square-shaped mosaic using identical tiles. If he places the tiles in equal rows and columns, how many tiles will be in each row and column?

	Perfect Square	Square Number (x^2)

4) A square-shaped bedroom has a floor area of 64 square meters. What is the 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: _____ 10

Curriculum Connection
N.1

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
N.1

Perfect Squares & Square Roots

Part 1 Fill in the table below

	Equation	Exponent	Answer	Square Root of Answer
1)	1 x 1 =	1^2	1	1
2)	x 5 =			
3)			36	
4)				9
5)	8			
6)			9	
7)			0	
8)		2^2		
9)				7
10)	11 x 11 =			
11)				
12)			144	

Part 2 Solve the word problem below

1) You have a square rug that has an area of 10 000cm. What is the length of one side of the carpet?

2) A square flower garden has a side length of 9m. What is the area of the flower garden?

Name: _____ 12

Curriculum Connection
N.1

Comparing Square Roots & Perfect Squares

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

1)	3^2	☐	$\sqrt{100}$
2)	$\sqrt{}$	☐	6
3)	54	☐	5^2
4)	2^2	☐	
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) $\sqrt{144}$, $\sqrt{49}$, $\sqrt{10}$
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) $\sqrt{625}$	

Curriculum Connection
N.1

Exit Cards

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

Name: ____________________

1) Find out the area of the squares below

Q	Area
cm	

2) What two square nu ve digits that add up to 13?

____

Name: ____________________

1) Find out the area of the squares below

Question	Area
5cm	
12m	

2) What two square numbers have ts that add up to 13?

____

Name: ____________________

1) Find out the area of the squares below

Question	Area
5cm	
12m	

2) What two square numbers have digits that add up to 13?

____

Name ____________________

1) Find out are below

Question	a
5cm	
12m	

2) What two square numbers have digits that add up to 13?

____

Name: _____ 17

Curriculum Connection
N.2

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 ...nal or irrational number?

	Question	Rati... ...tiona...
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

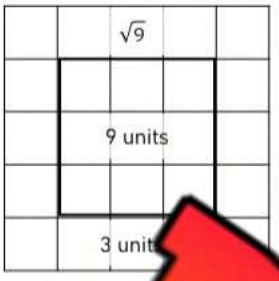
Rational Numbers	Irrational Numbers

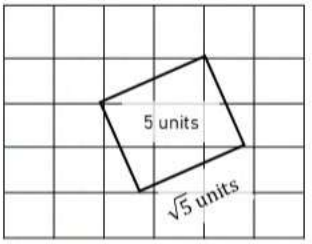
Name: _____ 18

Curriculum Connection
N.2

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 ...t... between $\sqrt{25}$ and $\sqrt{36}$, which means it is in between 5 and 6. This mean... ...tim... ...t the square of $\sqrt{31}$ is around 5.5. Since 31 is closer to 36 than 25, ...better ... ...ould be 5.6.

Practice Esti... ...he s... ...e ... ...of the numbers below by filling in the table

	Non-Perfect Square	Lowe... ...t Squa...	...rfect ...	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)	$\sqrt{130}$				

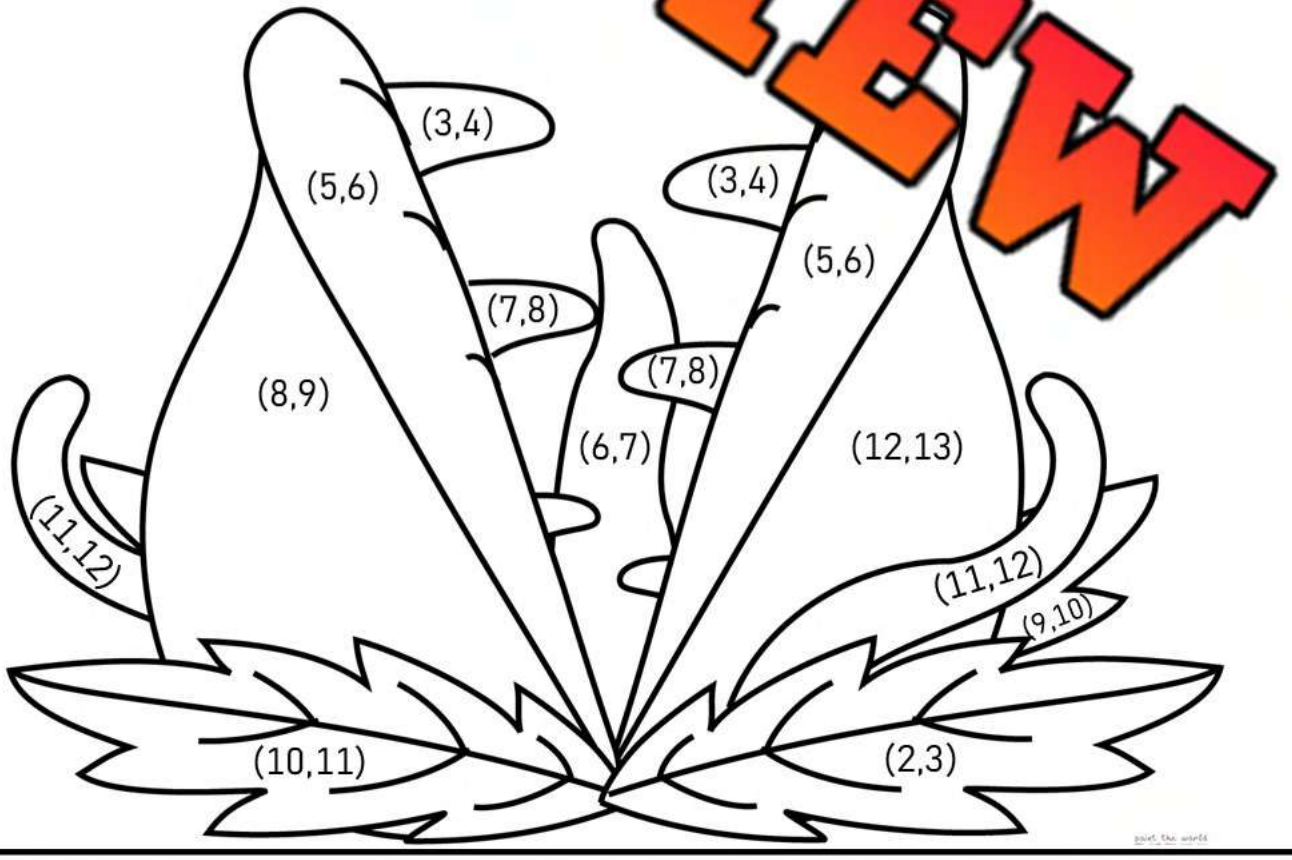
Name: _____ 19

Curriculum Connection
N.2

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)	$\sqrt{47}$	√	√	Purple
4)	$\sqrt{6}$	√	√	Green
5)	$\sqrt{}$	√	√	Light Green
6)	$\sqrt{}$	√	√	Dark Green
7)	$\sqrt{54}$		√	Yellow
8)	$\sqrt{8}$		√	Dark Green
9)	$\sqrt{152}$		√	Green
10)	$\sqrt{89}$	√		Dark Green



Name: _____ 20

Curriculum Connection
N.2

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: _____ 21

Curriculum Connection
N.2

Square Roots - Area

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

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

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

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

1)	A = 49	A = 54	A = 64	4)	[illegible]	A = 45	A = 49
	side length =	side length =	side length =		[illegible]	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: _____ 22

Curriculum Connection
N.2

Estimating Square Roots

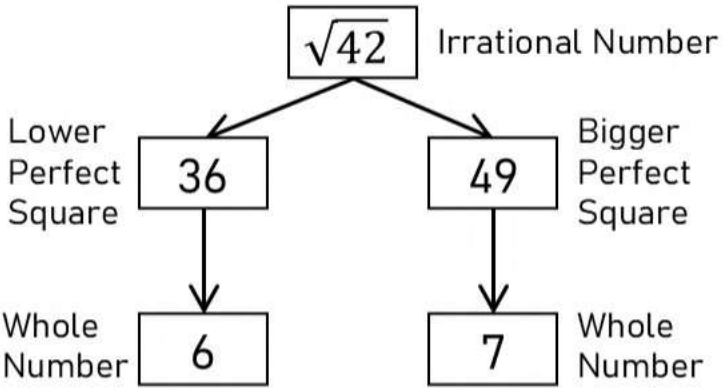
Step 1: Find the two perfect squares above and below the irrational number.

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 # − Lower P.S.

Step 3: Express the number using the lower # as the numb[illegible] simplified fraction from a[illegible]

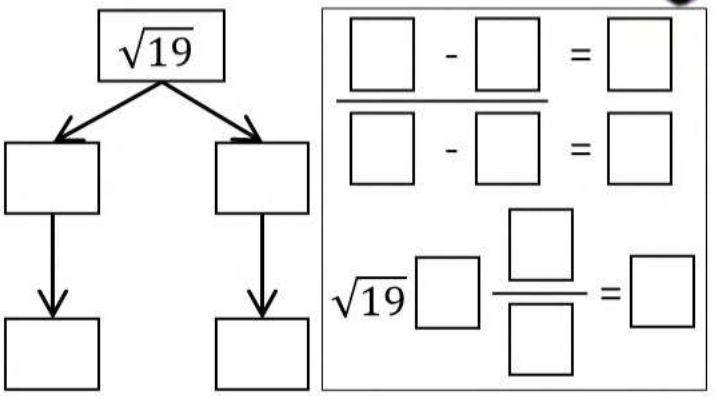
Step 4: Change the fraction to a[illegible] (rounded to the near[illegible]

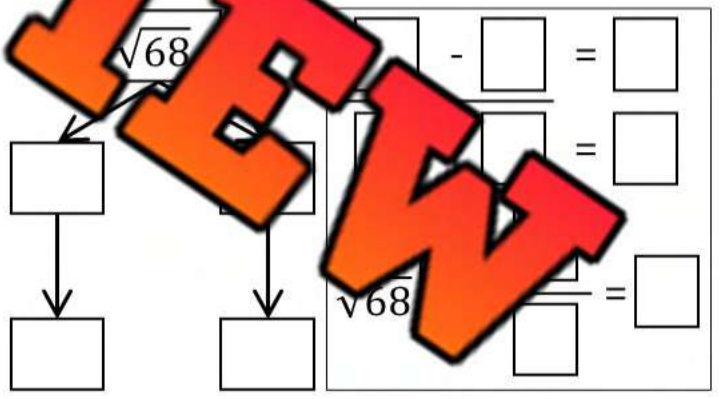


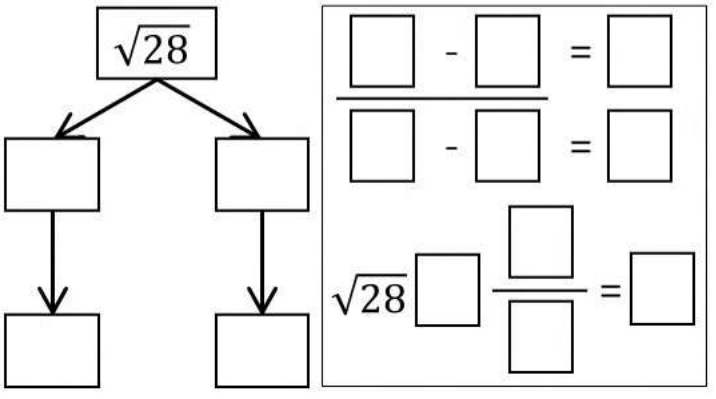
$$\frac{42 - 36 = 6}{49 - 36 = 13}$$

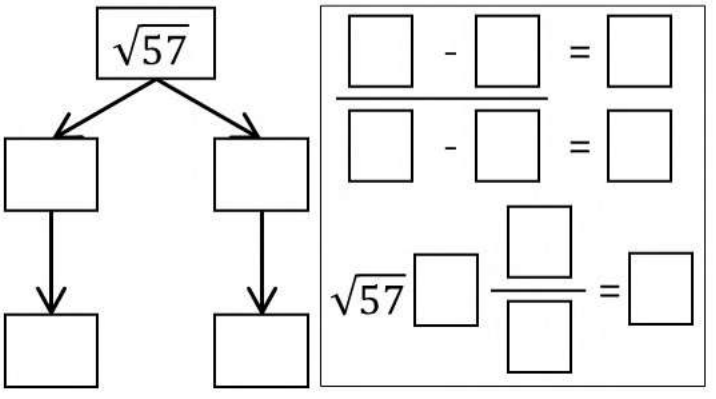
$$= 6\frac{6}{13} \text{ or } 6.46$$

Practice Fill in the blanks by fol[illegible]e st[illegible]bove







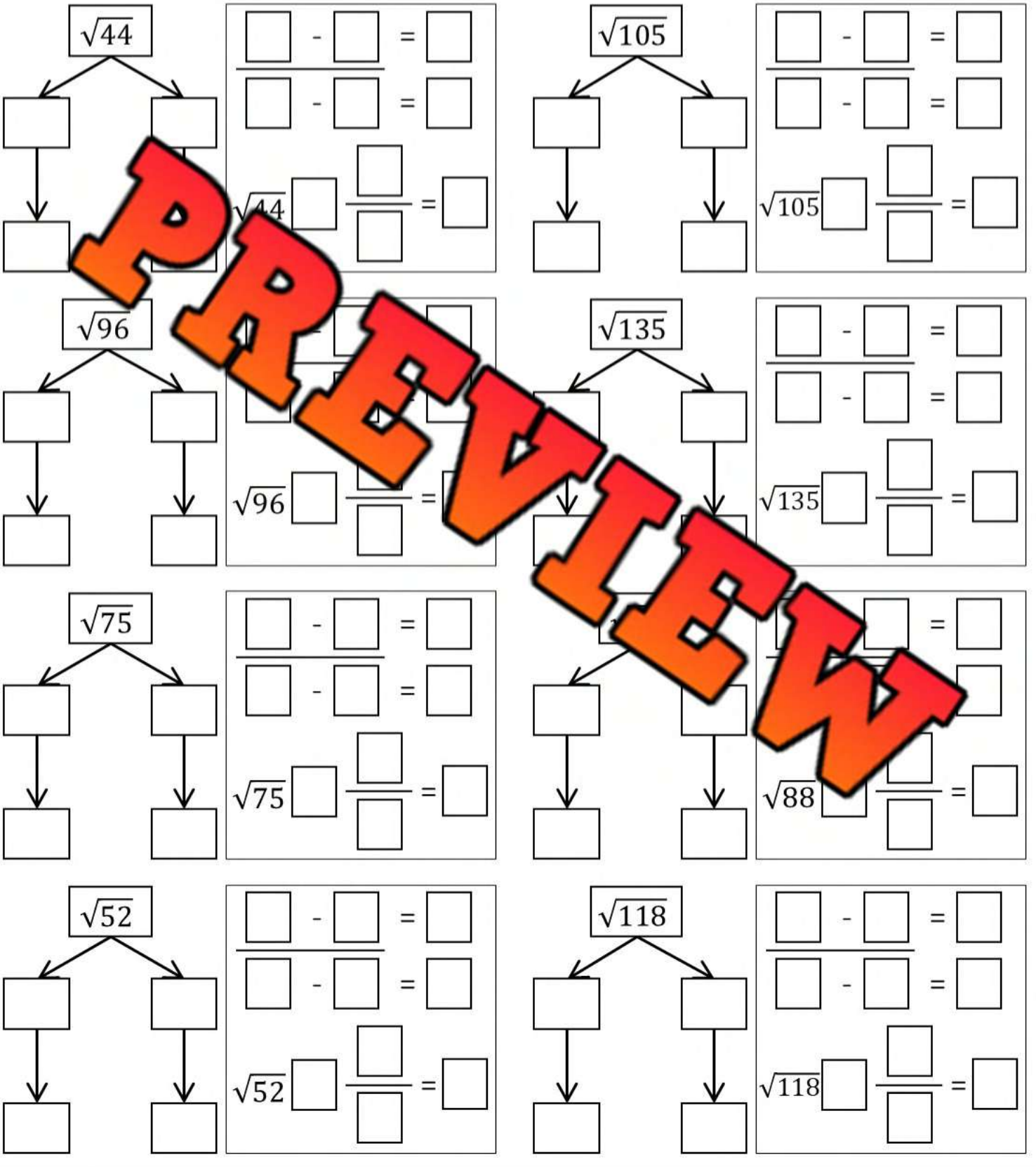


Name: _____ 23

Curriculum Connection
N.2

Estimating Square Roots

Practice Estimate the square roots of the irrational numbers



Name: _____ 24

Curriculum Connection
N.2

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)	75	☐	8
4)	7	☐	6
5)	$\sqrt{29}$	☐	

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, $\sqrt{147}$, 11 23

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

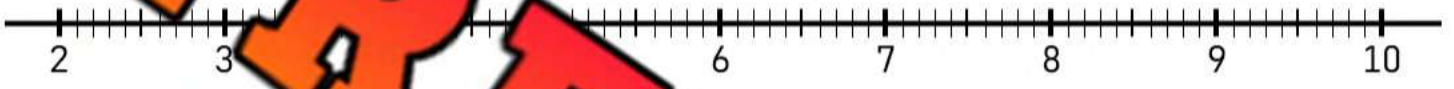
Name: _____ 25

Curriculum Connection
N.2

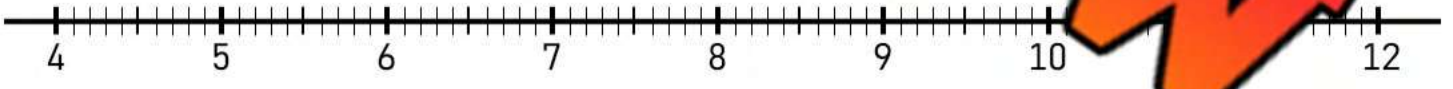
Square Roots – Number Line

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 ☐ $\sqrt{142}$	

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) 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: _____

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: _____ 27

Curriculum Connection
N.2

Square Roots - Word Problems

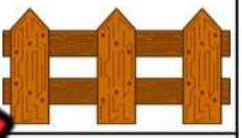
Word Problems | Answer the word problems below

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.

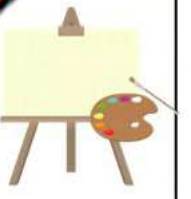
2) Weste[illegible]s cre[illegible]e around his square yard. The area of his yard is 140m².

a) What are th[illegible]ength[illegible]rd to the nearest hundredth?

b) The fencing comes in metre leng[illegible]low ma[illegible]tr[illegible] should he buy?



3) Livia made a rectangular painting for her friend. I[illegible]s a[illegible]e of [illegible]6cm². 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.

Name: _____ 29

Curriculum Connection
N.2

Adding and Subtracting Square Roots

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

Example 1
$\sqrt{36} - \sqrt{25}$
$= 6 - 5$
$= 1$

Example 3
$\sqrt{75 - 11}$
$= \sqrt{64}$
$= 8$

Example 3
$\sqrt{23 - \sqrt{49}}$
$= \sqrt{23 - 7}$
$= \sqrt{16}$
$= 4$

Example 4
$\sqrt{\sqrt{144} - \sqrt{64}}$
$= \sqrt{12 - 8}$
$= \sqrt{4}$
$= 2$

Ques… … expressions below

1) $\sqrt{25} - \sqrt{9}$	… 18	3) $\sqrt{64} + \sqrt{36}$
4) $\sqrt{89 - \sqrt{64}}$	5) $\sqrt{15 - \sqrt{3…}$	… + $\sqrt{81}$
7) $\sqrt{\sqrt{100} - \sqrt{36}}$	8) $\sqrt{\sqrt{100} + 111}$	9) $\sqrt{\sqrt{144} … \sqrt{9}$
10) $\sqrt{121} + \sqrt{81}$	11) $\sqrt{\sqrt{81} - \sqrt{25}}$	12) $\sqrt{168 - 24}$

Name: _____ 30

Curriculum Connection
N.2

Multiplying & Dividing Square Roots

We can simplify expressions with square roots by evaluating the square root and performing the multiplication or division operations afterwards. Round to the nearest hundredth.

Example 1
$\sqrt{64} \times \sqrt{25}$
$= 8 \times 5$
$= 40$

Example 3
$\sqrt{54 \div 6}$
$= \sqrt{9}$
$= 3$

Example 3
$\sqrt{64 \div \sqrt{16}}$
$= \sqrt{64 \div 4}$
$= \sqrt{16}$
$= 4$

Example 4
$\sqrt{\sqrt{81} \times \sqrt{4}}$
$= \sqrt{9 \times 2}$
$= \sqrt{18}$
$= 4.24$

Questi… …the answers to the expressions using BEDMAS

1) $\sqrt{36} \times \sqrt{9}$		3) $\sqrt{144} \div \sqrt{4}$
4) $\sqrt{\sqrt{81} \div 9}$	5) $\sqrt{\sqrt{64} \times 8}$	…$\sqrt{121}$
7) $\sqrt{\sqrt{81} \times \sqrt{100}}$	8) $\sqrt{\sqrt{100} \div 5}$	9) $\sqrt{\sqrt{49}$ …
10) $\sqrt{144} \div \sqrt{9}$	11) $\sqrt{\sqrt{64} \times \sqrt{49}}$	12) $\sqrt{5 \times 20}$

Name: _____ 31

Curriculum Connection
N.2

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 yo[illegible]mplet[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]fying expressions.
2. Organize the students into pairs and pro[illegible]ach p[illegible] their sets of task cards containing square root operations.
3. Give each pair an answer recording sheet to n[illegible]w 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: _____ 33

Curriculum Connection
N.2

Task Cards | Cut out the task cards below

Task Card 11:

Calculate:

$\sqrt{121 - 81}$ = ___

Task Card 12:

Calculate:

$\sqrt{\sqrt{9}$ [illegible] 6 =

Task Card 13:

Calculate:

$\sqrt{36 \div 4}$ = ___

Task Card 14:

Calculate:

$\sqrt{81 + 49}$ = ___

Task Card 15:

Calculate:

$\sqrt{100 - 64}$ = ___

Task Card 16:

Calculate:

$\sqrt{\sqrt{36} - \sqrt{16}}$ = ___

Task Card 17:

Calculate:

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

Task Card 18:

Calculate:

$\sqrt{$ [illegible] 5 = ___

Task C

Calculate:

$\sqrt{25 + 16}$ = ___

Task Card 20:

Calculate:

$\sqrt{225} \div \sqrt{15}$ = ___

Name: _____ 34

Curriculum Connection
N.2

Task Cards | Cut out the task cards below

Task Card 21:

Calculate:

$\sqrt{\sqrt{16} \times \sqrt{4}} =$ ___

Task Card 26:

Calculate:

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

Task Card 22:

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

Task Card 27:

Calculate:

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

Task Card 23:

Calculate:

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

Task Card 28:

[illegible]ulate:

$\sqrt{\quad} =$ ___

Task Card 24:

Calculate:

$\sqrt{\sqrt{144} + \sqrt{49}} =$ ___

Task C[illegible]

Calculate:

$\sqrt{\sqrt{144} \div \sqrt{9}} =$ ___

Task Card 25:

Calculate:

$\sqrt{\sqrt{81} - 3} =$ ___

Task Card 30:

Calculate:

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

Name: _____ 35

Curriculum Connection
N.2

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: _____ 37

Curriculum Connection
N.2

Order of Operations – Square Roots

When we have a square root in an expression, solve it first. Afterwards, follow the BEDMAS rules.

Example 1

$\sqrt{144} - 3^2 + 8$
$= 12 - 3^2 + 8$
$= 12 - 9$
$= 11$

Example 2

$7^2 - 10 \times \sqrt{9}$
$= 7^2 - 10 \times 3$
$= 49 - 10 \times 3$
$= 49 - 30$
$= 19$

Example 3

$6^2 \div \sqrt{36} - 2$
$= 6^2 \div 6 - 2$
$= 36 \div 6 - 2$
$= 6 - 2$
$= 4$

Instruction Evaluate the answers to the expressions using BEDMAS

1) $\sqrt{100} - 5^2 + 15$	[illegible]	3) $8^2 \div \sqrt{64} - 3$
4) $\sqrt{121} - 2^2 + 22$	5) $6^2 \div \sqrt{144} - 2$	[illegible]
7) $10^2 \div \sqrt{25} - 12$	8) $(\sqrt{121} - 8) \times 2^3$	9) $8^2 \div \sqrt{4} \times 3$

Name: _____ 38

Curriculum Connection
N.2

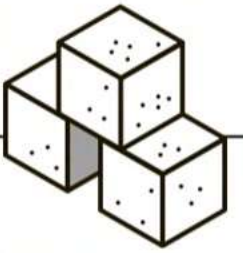
Cube Roots

A **cube root** tells you the side length of a cube when you know its volume.

Example: a cube with volume 125 cm³ has side $\sqrt[3]{125} = 5$, because $5 \times 5 \times 5 = 125$.

How to find cube roots:

1) Remember common cubes (1, 8, 27, 64, 125, 216, 343)
2) Factor the number
3) Or use the $\sqrt[3]{}$ button on a calculator.



Part 1 — Find the cube roots below

	Expression	Cube Root
1)	$\sqrt[3]{8}$	
2)	$\sqrt[3]{64}$	
3)	$\sqrt[3]{343}$	
4)	$\sqrt[3]{216}$	
5)	$\sqrt[3]{1000}$	

	Expression	Cube Root
6)	$\sqrt[3]{1728}$	
7)	$\sqrt[3]{27}$	
8)	$\sqrt[3]{\quad}$	
9)		
10)	$\sqrt[3]{\quad}$	

Part 2 — Solve the word problems below

Questions	Answer
1) A cube-shaped dice container has volume 2 744 cm³. What is the side length?	
2) A sugar cube sculpture is a perfect cube with volume 4 096 cm³. Find the side length.	
3) A wooden cube box holds 4 913 cm³ of sand. What is its side length?	

Name: _____ 39

Curriculum Connection
N.2

Cubed Integers vs. Cube Roots

Cubed integer: n^3 means $n \times n \times n$. Example: $2^3 = 8$.

Cube root: $\sqrt[3]{a}$ is the number that makes a when cubed. Example: $\sqrt[3]{64} = 4$.

Compare them: $\sqrt[3]{64} < 2^3 \quad \rightarrow \quad (4 < 8)$

Part 1 — the integers below

	Expression	Cubed Integer
1)	1^3	
2)	2^3	
3)	3^3	
4)	4^3	
5)	5^3	

	Expression	Cubed Integer
6)	6^3	
7)	7^3	
8)	8^3	
9)		

Part 2 — Compare the expressions below using <, >, =

	Expressions		
1)	$\sqrt[3]{64}$	☐	3^3
2)	$\sqrt[3]{343}$	☐	8^3
3)	$\sqrt[3]{512}$	☐	2^3
4)	$\sqrt[3]{125}$	☐	1^3
5)	$\sqrt[3]{216}$	☐	9^3

	Expressions		
6)	$\sqrt[3]{729}$	☐	2^3
7)	$\sqrt[3]{1\,000}$	☐	4^3
8)	$\sqrt[3]{125}$	☐	3^3
9)	$\sqrt[3]{1\,728}$	☐	4^3
10)	$\sqrt[3]{2\,197}$	☐	2^3

Name: _____ 40

Curriculum Connection
N.2

Cube Roots – Perfect Cubes

A **perfect square** is a number made by multiplying a whole number by itself:
$1^2 = 1$,$2^2 = 4$,$3^2 = 9$,$10^2 = 100$. Squares show up in area of a square (side × side).

A **perfect cube** goes one step bigger: multiply a whole number three times:
$1^3 = 1$,$2^3 = 8$,$3^3 = 27$, $10^3 = 1000$. Cubes show up in volume of a cube (side × side × side).

Instruction Colour the perfect squares red and the perfect cubes blue

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
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100
101	102	103	104	105	106	107	108	109	110
111	112	113	114	115	116	117	118	119	120
121	122	123	124	125	126	127	128	129	130
131	132	133	134	135	136	137	138	139	140
141	142	143	144	145	146	147	148	149	150

Exit Cards

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

Name: _____

Fill in the table below with the cubed integers and cube roots.

Cube Root	Cubed Integers
	4^3
$\sqrt[3]{8}$	
	3^3
	9^3
$\sqrt[3]{125}$	
$\sqrt[3]{343}$	

Name: _____

Fill in the table below with the cubed integers and cube roots.

Cube Root	Cubed Integers
	4^3
$\sqrt[3]{8}$	
	3^3
	9^3
$\sqrt[3]{125}$	
$\sqrt[3]{343}$	

Name: _____

Fill in the table below with the cubed integers and cube roots.

Cube Root	Cubed Integers
	4^3
$\sqrt[3]{8}$	
	3^3
	9^3
$\sqrt[3]{125}$	
$\sqrt[3]{343}$	

Name: _____

Fill in the table below with the cubed integers and cube roots.

Cube Root	Cubed Integers
	4^3
$\sqrt[3]{8}$	
	3^3
	9^3
$\sqrt[3]{125}$	
$\sqrt[3]{343}$	

Name: _____ 43

Curriculum Connection
N.3

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: _____ 44

Curriculum Connection
N.3

Activity: Beading and Percent Patterns

Objective

What are we learning about?

Students will apply their understanding of percents by creating a beading design that shows how percentages can represent parts of a whole. They will connect mathematical reasoning with First Peoples perspectives, exploring how beadwork uses balance, repetition, and pattern.

Material

What you will need for the activity.

- Colo[u]red bea
- String, co[r]d, p[a]per f[o]r out
- Pencil and r[u]l[e]r, planni[n]g
- Calculator (optio[n]al for [c]alculations)

Instructions

How you will [i]mpl[e]ment

1. Show examples of First Peoples beading that highlight [p]atterns, repetition, and symmetry.
2. Discuss how artists decide how much of each colour to use — thinking in ratios or parts of a whole — similar to how we use percents in math.
3. Students choose a total number that isn't 100 (e.g., 60, 80, 120, or 200) to encourage them to use proportions rather than counting by percent directly.
4. Each student selects four colours with percentages that add up to 100. Example: 35% blue, 25% red, 20% white, 20% yellow.
5. Students calculate the number of each colour using:
   number of beads/total beads
6. Students use beads or coloured squares to form their design, showing their proportions accurately. Encourage repeating sections or symmetry like in traditional beadwork.
7. Students verify that the total number of beads matches their percentages and that their ratios simplify correctly.
8. End by asking: How did proportions help you plan your beadwork? How does math help maintain balance or pattern in your design? Where do you see similar use of ratios or percents in real-world art or design?

Name: _____ 45

Curriculum Connection
N.3

Planning | Answer the questions below.

1) Which four colours will you use?

2) How many beads in total will you use? If just doing the paper version, count the total bea[illegible] the necklace you chose.

3) Fill in the [illegible] Exa[illegible] Red, 21/45, 0.47, 47%

Colour	[illegible]	Decimal	Percent

4) In First Peoples culture, colours have meaning. Write the co[illegible]se and describe why you chose those colours. What do they represent?

Colour	Description

Name: _____ 47

Curriculum Connection
N.3

Paper Version | Create your necklace below

Colour	Percentage

Name: _____ 49

Curriculum Connection
N.3

Paper Version | Create your necklace below

Colour	Percentage

Name: _____ 50

Curriculum Connection
N.3

Paper Version | Create your necklace below

Colour	Percentage

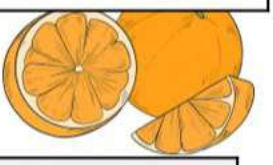
Name: _____ 51

Curriculum Connection
N.3

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: _____ 52

Curriculum Connection
N.3

Percents Greater Than 100

Situations can be described as over 100% when we can define what 100 means. For example, an athlete can give more than 100% when we define 100% as how much effort they can give for an entire game. There may be times during the game where the athlete can give 110% when they can rest at 90% during another time.

Part 1 Write your own scenarios that would result in over 100%

	Scenario Using More Than 100%
Ex.1	d ints and I scored 20. I scored 200% more points than Rob.
Ex.2	re was e rainfall in April as there was in March.
1)	
2)	
3)	
4)	
5)	

Part 2 Does the scenario make sense?

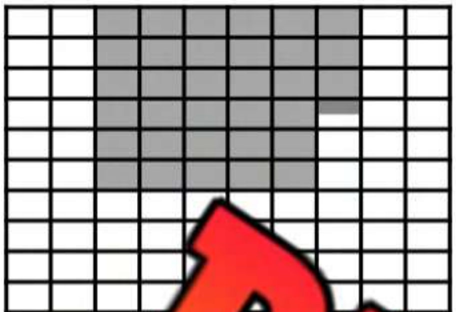
	Scenario	Yes or No
1)	My workday is 8 hours. I worked 120% of a workday today.	
2)	120% of the world's population has been sick at least once	
3)	125% of the sky is covered in clouds	
4)	My investment of $100 has grown 300%!	
5)	There was one birthday cake, and I ate 150% of it!	
6)	The teacher marked 110% of the tests she received.	
7)	You got 110% on a test because you answered the bonus question	
8)	You sold 20 drinks in the morning and 200% more in the afternoon	

Name: ______________________ 54

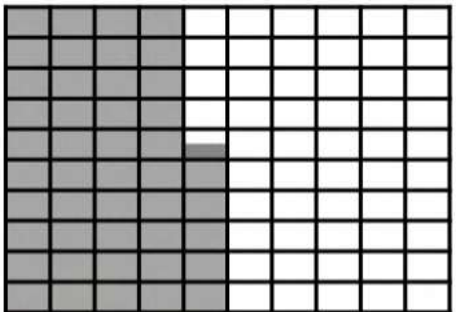
Curriculum Connection
N.3

Fractions, Decimals, and Percents

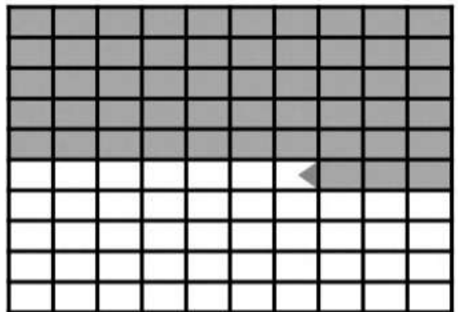
Questions What fraction, decimal and percent of the array is shaded in?



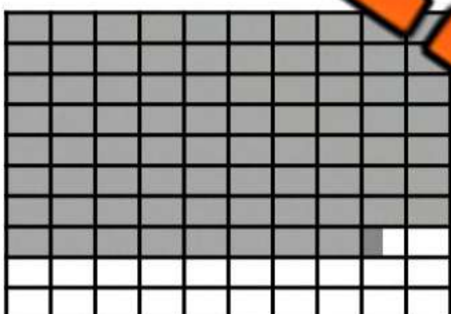
Fraction	
Decimal	
Percent	



Fraction	
Decimal	
Percent	

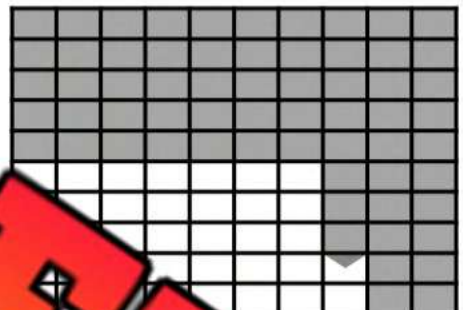


Fraction	
Decimal	
Percent	

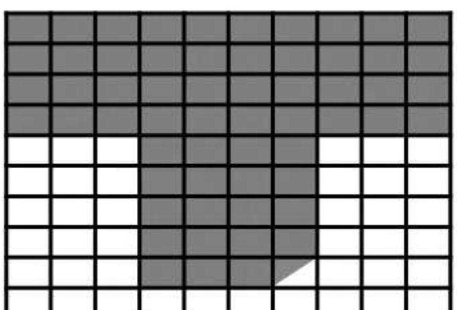


Fraction	
Decimal	
Percent	

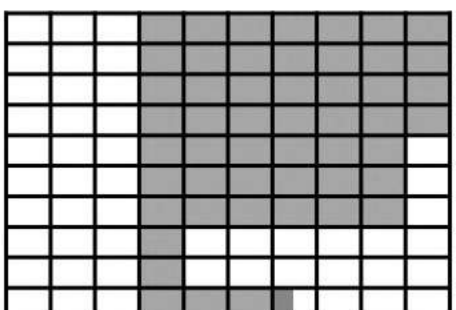
Fraction	
Decimal	
Percent	



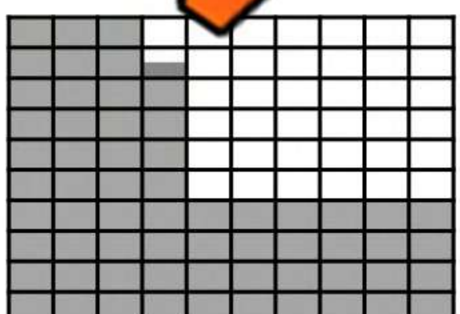
Fraction	
Decimal	
Percent	



Fraction	
Decimal	
Percent	



Fraction	
Decimal	
Percent	



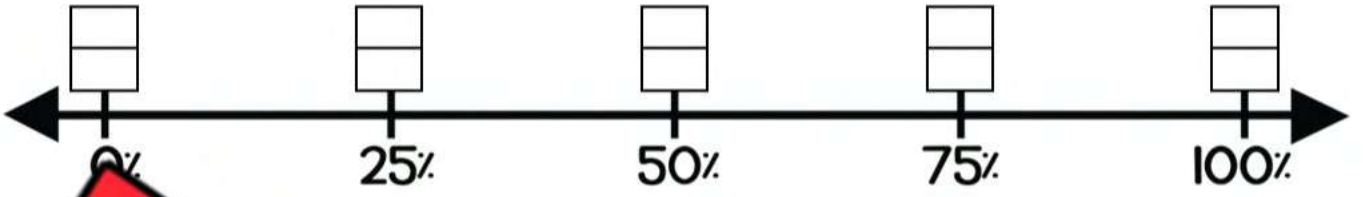
Fraction	
Decimal	
Percent	

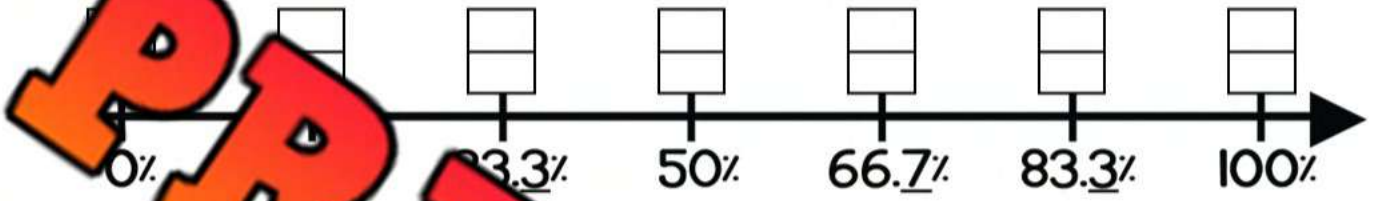
Name: _____ 57

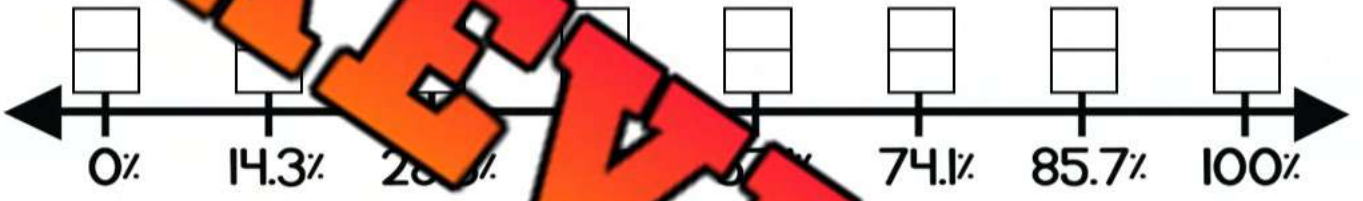
Curriculum Connection
N.3

Fraction & Percent - Number Line

Questions | Write the fraction above the percent

1) 

2) 

3) 

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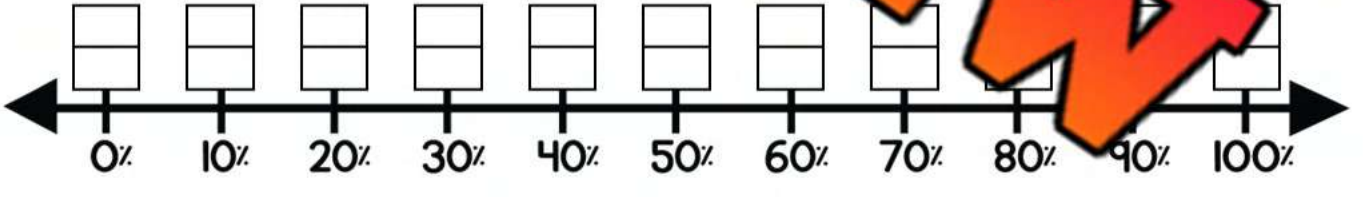
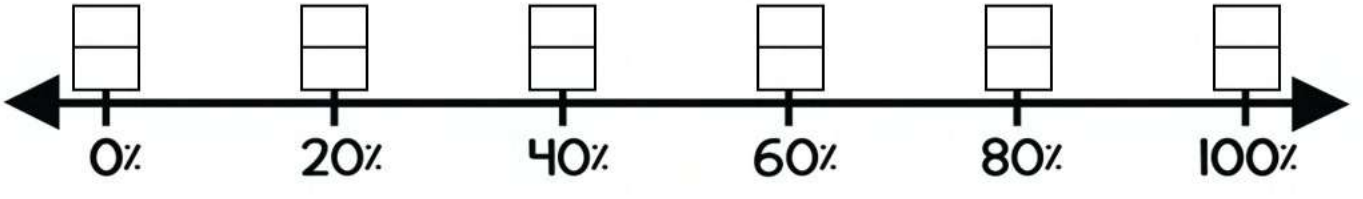
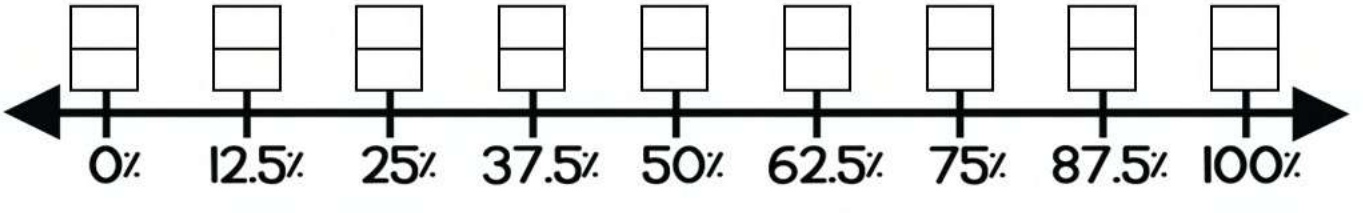
5) 

6) 

7) 

Name: _____ 58

Curriculum Connection
N.3

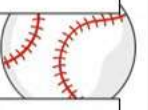
Sport Statistics – Fractions, Decimals, and Percents

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 at b doubles would he have?	
c) If Guerrero had 50 at ba any he have?	
d) Write the probability as a percentag erre l 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: _____ 60

Curriculum Connection
N.3

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] [illegible] 0.31 of the votes and Blakely received 68/200 votes.

How ma[illegible] votes [illegible] tudent 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. His [illegible]n as [illegible] 10/100. What percentage has his investment increased?

5) Zayden and his friend Norah drove 500km to Canada's Wonderlan[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: _____ 62

Curriculum Connection
N.3

Percents Greater Than 100

Part 1 Fill in the table

	Fraction	Decimal	Percent
1)	$1\frac{1}{2}$	1.50	150%
2)	$2\frac{1}{4}$		
3)		3.50	
4)			475%
5)	$\frac{}{1}$		
6)			750%
7)		7.25	

Part 2 Convert the fractions to a decim[illegible] a

	Fraction	Decimal	
1)	25/20		
2)	50/25		
3)	88/50		
4)	125/100		
5)	200/150		
6)	300/200		
7)	475/325		

Name: _____ 63

Curriculum Connection
N.3

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 [illegible]ur. He received a raise from his boss and is now earning $60 an h[illegible]oes Gavin earn now in relation to what he earned before t[illegible]raise?

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

Frac[illegible]	[illegible]ge

4) Elliott ran a 10km race last week. The winner [illegible] minutes. It took Elliot 45 minutes. What percentage [illegible] 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: _____ 64

Curriculum Connection
N.3

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) $4\frac{}{8}$ ☐	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, mbers 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?

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) 450%, $\frac{16}{4}$, 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) 450%, $\frac{16}{4}$, 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) 450%, $\frac{16}{4}$, 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: _____ 66

Curriculum Connection
N.3

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]fer. 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?

Name: _____ 67

Numbers Sense Quiz

Part 1 Provide the positive and negative square root

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

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

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

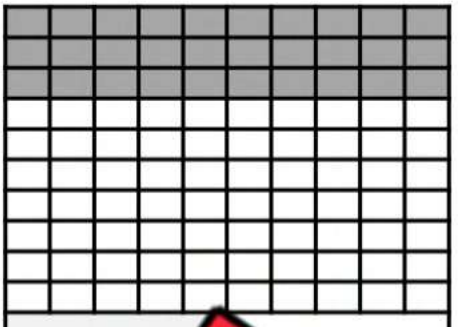
1)	5^2	☐	$\sqrt{100}$
2)	$\sqrt{64}$	☐	7
3)	$\sqrt{49}$	☐	2^2

4)	$\sqrt{}$[illegible]1	☐	11^2
5)	$\sqrt{}$	☐	-6
6)	-50		

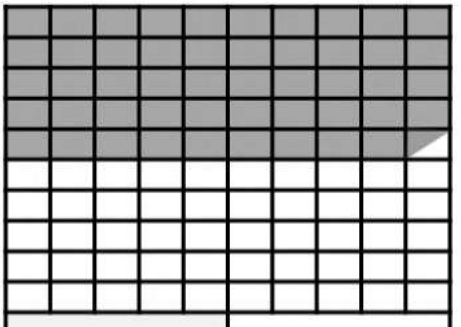
Part 3 Order from least to greatest

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, $\sqrt{4}$

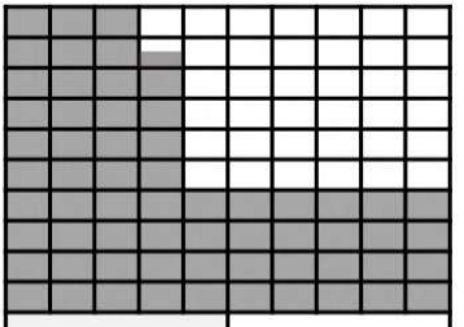
Part 4 What fraction, decimal and percent of the array is shaded in?



Fraction	
Decimal	
Percent	



Fraction	
Decimal	
Percent	



Fraction	
Decimal	
Percent	

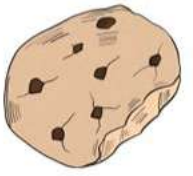
Part 5 Convert the fractions to a decimal and a percent

	Fraction	Decimal	Percent
1)	68/100		
2)	30/20		
3)	60/20		
4)	$3\frac{4}{6}$		
5)	$2\frac{1}{4}$		
6)	$\frac{8}{3}$		
7)	$5\frac{3}{4}$		
8)	$1\frac{5}{8}$		
9)	20/5		
10)	$\frac{75}{15}$		

Part 6	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?

Name: _____ 71

Curriculum Connection
N.4

Equivalent Ratios – Scaling Up and Down

Instructions 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	9	:14	12:18	12:16	3:8
4) 2:4	4:6	:7	:8	1:4	1:2
5) 10:12	20:24	5:16		:24	5:6
6) 5:10	1:2	5:20	10:10	:2	: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: _____ 72

Curriculum Connection
N.4

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 dolla[illegible]urgers

Rate =

Unit Rate = 4 do[illegible] burg[illegible]

2) 5 dollars for 10 pencils

Rate =

Unit Rate = _____

3) 10 dollars for 10 ba[illegible]

Rate =

Unit Rate = _____

4) 6 dollars for 3 coffees

Unit[illegible] = _____

5) 6 dollars for 12 chocolate bars

Rate =

Unit Rate = _____

6) [illegible] of [illegible]

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: _____ 73

Curriculum Connection
N.4

Equivalent Rates

Multiple Choice Circle the equivalent rates below

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

Name: _____ 74

Curriculum Connection
N.4

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.

- Mem y gam ach card will have a different ra an be to another equivalent rate
- A small table or clear the

Instructions How you will compl e activ

1. Divide the class into groups of 3 or 4. Give mory Game cards. (provided)
2. Have each group lay all the cards face down in a grid on a .
3. The students take turns flipping over two cards at a time, trying d 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: _____ 77

Curriculum Connection
N.4

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: _____ 78

Curriculum Connection
N.4

Cards | Memory Game Cards

7 for $2.10	14 for $4.20
$9.72	$48/6
20 for $8.00	1 for $4.00
$180/15	$90/15
$250/10	$125/5

Name: _____ 80

Curriculum Connection
N.4

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) Ra… dunks t… three pointers	…ds: _____ …: _____ …tion: _____	6) Ratio of 1 grade 8 to 1 grade 7	Words: _____ Ratio: _____ Fraction: _____
3) Ratio of 10 cars to 3 trucks	Wor… _____ Ratio: _____ Fraction: _____	…io of 3 …1 shot	Words: _____ Ratio: _____ Fraction: _____
4) Ratio of 2 coffees to 6 waters	Words: _____ Ratio: _____ Fraction: _____	8) …o … treat t… healthy sn…	…ds: _____ 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: _____ 81

Curriculum Connection
N.4

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) $\frac{6}{16}$		12:32	3:32	18:16	3:8
4) $\frac{3}{6}$	1:4		5:10	2:8	5 to 15
5) 9:12	$\frac{2}{3}$	3:4	18	$\frac{27}{}$	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	$\frac{4}{6}$	28:42	24 to 36

Name: _____ 83

Curriculum Connection
N.4

Ratios – Word Problems

Questions | Answer the word problems below

1) There are 27 students in a grade 8 class. The ratio of boys to girls is 5:4.

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

b) How ys are in the class?

c) How many the class?

2) A car dealership has s. Th cars to vans to trucks is – 10:4:6.

a) How many cars do they have?

b) How many vans do they have?

c) How many trucks do they have?

3) A banquet hall has 15 tables. The ratio of tables to chairs is 15:90.

a) How many chairs are there at each table?

b) The banquet hall bought 12 more tables. How many more chairs will they need?

Name: _____ 84

Curriculum Connection
N.4

3-Term Ratios - Beading

A **three-term ratio** compares **three parts** of something at once.
It's written like **a : b : c**.
Each number shows how much of one part there is compared to the others.

Example:
In a beading pattern, the ratio red:blue:white = **3:2:1**.
That means for every 3 red beads, there are 2 blue and 1 white.
You can mu[illegible]y or simplify all parts by the same number — **6:4:2** → **3:2:1**.

Instru [illegible]acelets that follow the 3-term ratios below. Use colours or [illegible] different designs.

1) 2:2:1

2) 3:2:1

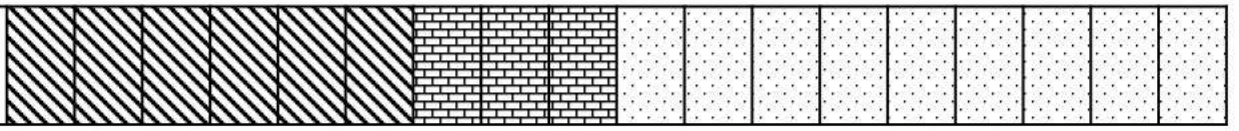
3) 1:2:1

4) 4:1:1

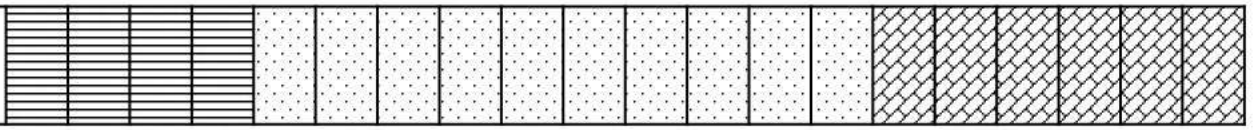
5) 1:3:2

Instructions Look at the designs and write the 3-term ratio used

1) __:__:__



2) __:__:__



Name: _____ 85

Curriculum Connection
N.4

3-Term Ratios

Instructions Write 2 equivalent 3-term ratios for the one provided

Original Ratio	Equivalent Ratio #1	Equivalent Ratio #2
1 : 2 : 1		
2 : 1 : 1		
2 : 2 :		
2 : 3 : 4		
3 : 1 : 2		
3 : 2 : 1		
3 : 3 : 1		
3 : 4 : 5		
4 : 1 : 2		
4 : 2 : 1		
4 : 3 : 2		
5 : 1 : 1		

Name: _____ 86

Curriculum Connection
N.4

3-Term Ratios- Word Problems

Instructions Answer the questions below

#	Word Problem	Answer
1	A bracelet has **24 red**, **16 blue**, and **8 white** beads. Wri red:blue:white.	
2	A **18 peanuts**, **27 raisins**, and **9** ch ite peanuts:raisins:chips.	
3	A vote **21 n 14 abstain**. Write yes:no:ab	
4	A mosaic uses **12 t 0 so 8 hexagons**. Write triang uare	
5	A shelf has **42 fiction**, **28 non-fiction**, and **1 try** books. Write fiction:non-fiction:poetry.	
6	A jar has **30 green**, **45 blue**, and **15 red** marbles. Write green:blue:red.	
7	Paint mix: **16 ml yellow**, **12 ml blue**, **20 ml white**. Write yellow:blue:white.	
8	Training log: **9 jog**, **12 run**, **15 walk** laps. Write jog:run:walk.	
9	Class pets: **14 fish**, **21 snails**, **7 frogs**. Write fish:snails:frogs.	
10	Necklace: **27 black**, **36 white**, **45 gold** beads. Write black:white:gold.	

Name: _____ 87

Curriculum Connection
N.4

3-Term Ratios- Challenge Word Problems

Instructions Answer the questions below

#	Word Problem	Answer
1	A s… is cut into three pieces whose lengths form a r… **: 5 : 7**. If the string is **105 cm** long, how l… …ce?	
2	A teacher u… **$180** … student groups in the ratio **2 : …** …ch … group receive?	
3	A garden is divided into flower beds for … **tulips : lilies = 4 : 5 : 6**. If the total area is **75** …, … much area is for each type?	
4	A paint mixture uses red : yellow : blue in the ratio **3 : 2 : 1**. If there are **36 L** of paint total, how many litres of each colour are used?	
5	A sports team spends its **$270 budget** on **uniforms : equipment : travel = 5 : 3 : 1**. How much is spent on each?	

Name: _____ 88

Curriculum Connection
N.4

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 – $ per 1 month (1/100) is different than $500 per 7 months (500/7)

Questi 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

Exit Cards

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

Name: _____

Create p[illegible]rtional rates by determi[illegible] value of the variable

1) [illegible] and $\frac{56}{32}$ y = _____

2) $\frac{15}{b}$ and [illegible]

3) $\frac{32}{8}$ and $\frac{z}{16}$ b = _____

Name: _____

Create proportional rates by determining the value of the variable

1) $\frac{y}{8}$ and $\frac{56}{32}$ y = _____

2) $\frac{15}{b}$ and $\frac{75}{25}$ b = _____

3) [illegible] and $\frac{z}{16}$ b = _____

Name: _____

Create proportional rates by determining the value of the variable

1) $\frac{y}{8}$ and $\frac{56}{32}$ y = _____

2) $\frac{15}{b}$ and $\frac{75}{25}$ b = _____

3) $\frac{32}{8}$ and $\frac{z}{16}$ b = _____

Name: _____

Create proportio[illegible] determining the value [illegible] variable

1) $\frac{y}{8}$ and $\frac{56}{32}$ y = _____

2) $\frac{15}{b}$ and $\frac{75}{25}$ b = _____

3) $\frac{32}{8}$ and $\frac{z}{16}$ b = _____

Name: _____ 91

Curriculum Connection
N.4

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		3	
(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

4)

			12	16	20
			2	114	136

Pr Proportional

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

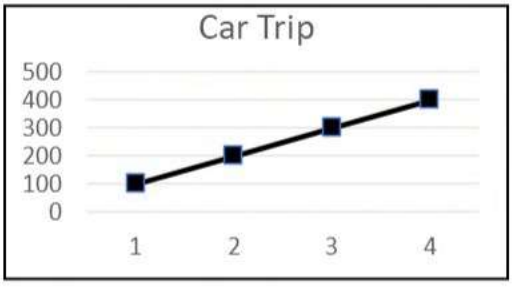
Name: _____ 92

Curriculum Connection
N.4

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.

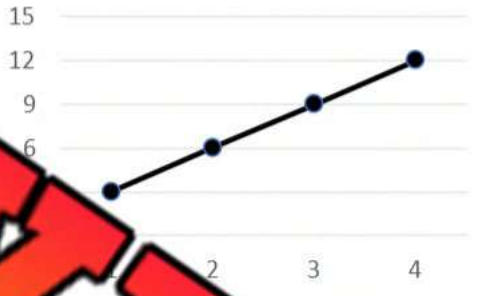


Hours	Distance (km)
1	100
2	200
3	300
4	400

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

1)

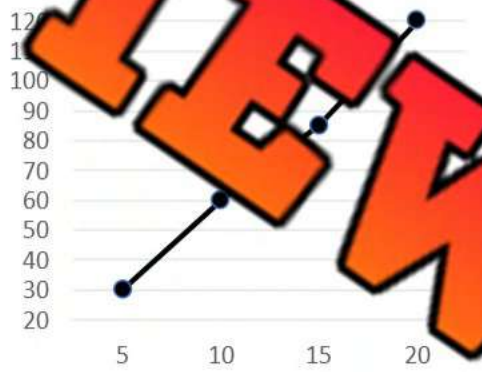
(x)	
1	
2	
3	
4	



Proportional Non-[illegible]

2)

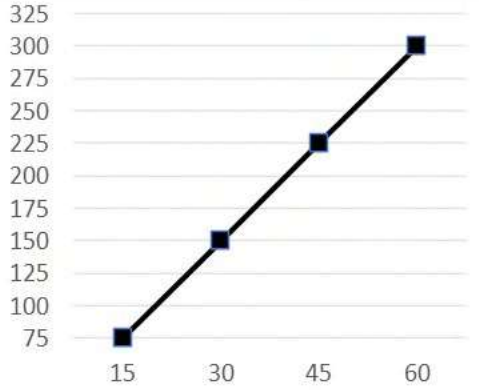
(x)	(y)
5	
10	
15	
20	



Proportional Non-Proportional

3)

(x)	(y)
15	
30	
45	
60	



Proportional Non-Proportional

Name: _____ 93

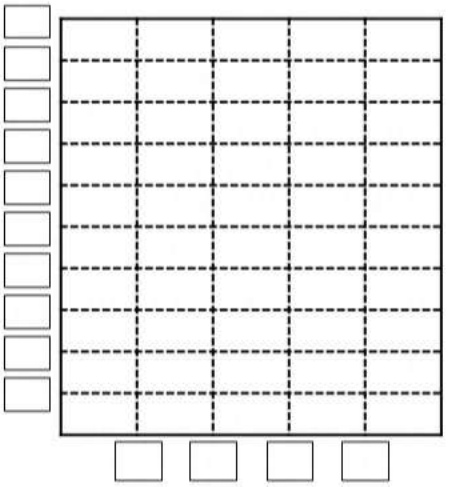
Curriculum Connection
N.4

Proportional Relationship - Graph

Questions Draw a line graph that represents the table. Is it a proportional relationship?

1)

(x)	(y)
1	5
	20
	35



Pro

Non-Proportional

2)

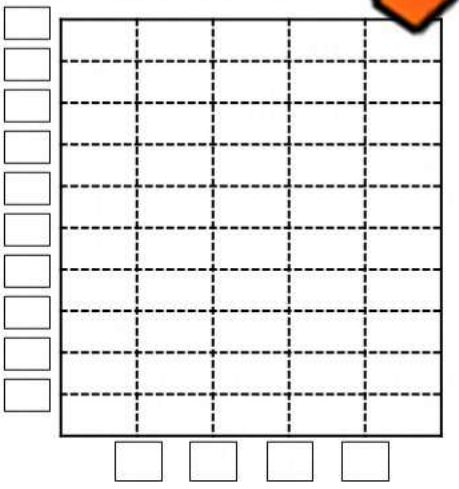
(x)	(y)
2	6
4	12
6	18
8	30

Proportional

Non-Proportional

3)

(x)	(y)
5	60
10	100
15	140
20	180



Proportional

Non-Proportional

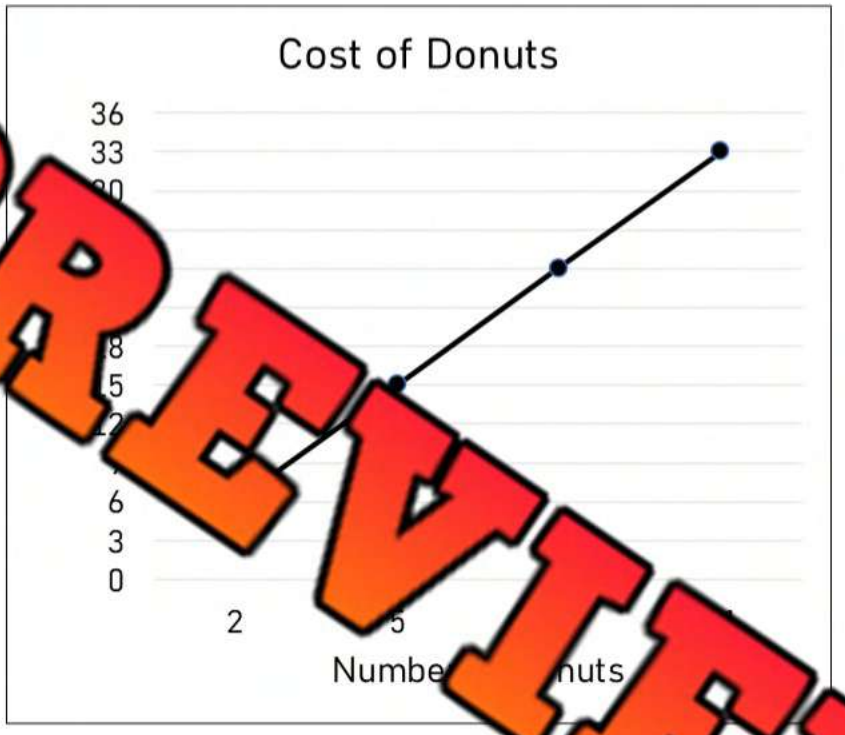
Name: _____ 94

Curriculum Connection
N.4

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: _____ 96

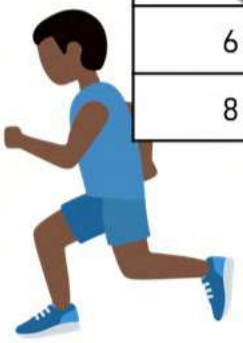
Curriculum Connection
N.4

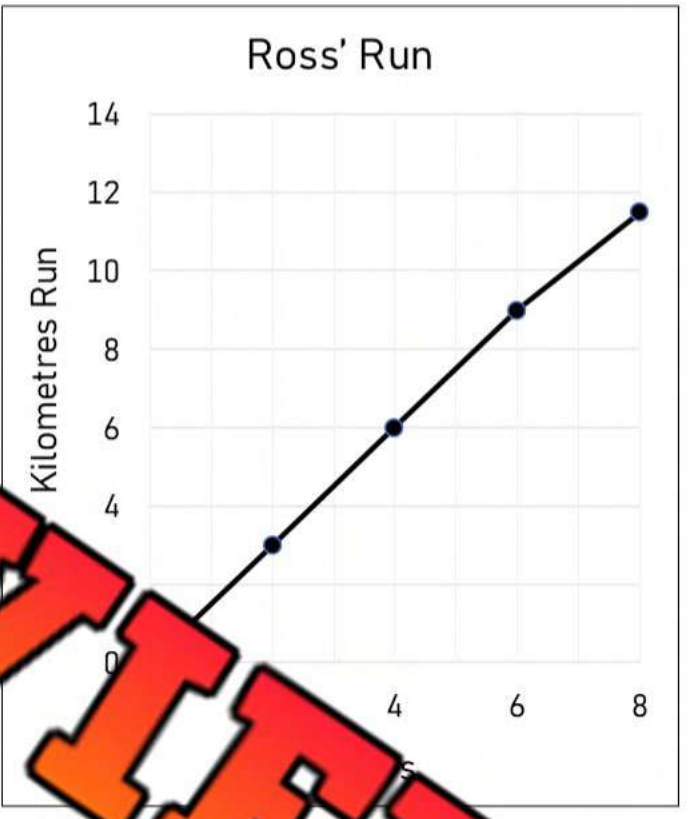
Proportional Relationship – Run

Questions | Solve the problem below

Ross goes for an 8-hour run. He tries to maintain a pace where he runs the same speed.

	Distance (km)
2	
6	
8	





1) Is the relationship between hours and distance proportional or non-proportional?	
2) What was the unit rate for the first 6 hours of Ross' run?	
3) How far did Ross travel after 3 hours?	
4) How long did it take Ross to run 7 kilometres?	
5) What was Ross' unit rate during his 6–8 hour interval?	
6) Ross paced most of the race perfectly. What might have happened at the end of his race?	

Name: _____ 97

Curriculum Connection
N.4

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 11km course. The relationship between his time and distance is listed in the table below.

utes	(km)
30	2
60	4
90	
120	8
150	11

1) Is the relationship between minutes and dista 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 7 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?	

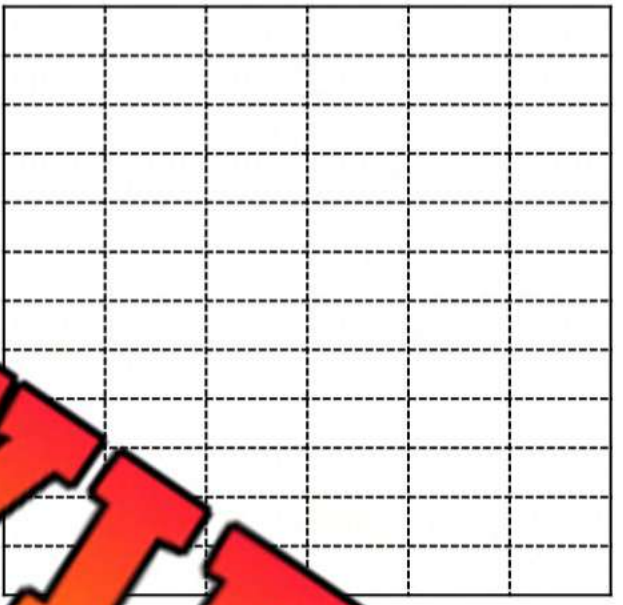
Name: _____ 98

Curriculum Connection
N.4

Proportional Relationship – Bank Account

Questions | Draw a line graph and fill in the table to represent the situation

Ruby's parents deposit $10 into her bank account each week. Fill in the table and draw a line graph to show the relationship between her total savings and what week it is.



1) Is the relationship between week and savings proportional or non-proportional?	
2) How much did Ruby save after 5 weeks?	
3) What is the unit rate? (savings per week)	
4) How much does she have saved after 3.5 weeks?	
5) After 10 weeks, how much would Ruby have saved?	
6) After 22 weeks, Ruby saved all her money and then spent $63. How much does she have now?	

Name: _____ 100

Curriculum Connection
N.4

Proportional Sharing of Harvests

Proportional sharing by family size means a harvest is divided so **each person receives the same amount**. Many First Peoples communities in BC emphasize **collective responsibility, fairness, and caring for all members**—including Elders and large families. While practices vary by Nation, proportional sharing helps ensure **no one is left out** and resources are **used respectfully**.

How it works (example):

- Total fi… = **24 kg**; family sizes = **3, 4, 5** → total people = **12**.
- Per-p… hare = **24 ÷ 12 = 2 kg**.
- Famil… **6 kg**, **8 kg**, **10 kg**.
- This… veryone gets **2 kg per person**.

Instructions …r t… questions below

#	…rd P…	Answer
1	**32 kg** of salmon shar… nili… **5** people. How many kg fo… each…	
2	**60 kg** of dried fish shared by families of **3, 4, 2, 3, 6**. How many kg per family?	
3	**50 jars** of jam shared by families of **1, 2, 3, 4**. How many jars per family?	
4	**72 kg** of root vegetables shared by families of **5, 4, 4, 3, 2**. How many kg per family?	
5	**28 kg** of smoked salmon shared by families of **2, 5, 7**. How many kg per family?	
6	**45 L** of oolichan oil shared by families of **5** and **10**. How many litres per family?	

Name: _____ 101

Curriculum Connection
N.4

Challenge: Sharing the Salmon Harvest

After the annual salmon run on the **Skeena River**, several **Gitxsan** families gathered at the smokehouse in **Hazelton** to prepare and share their catch. Guided by the teachings of **wilp (house groups)**, the Elders reminded everyone that food must be shared fairly so all families are cared for.

Together, they cleaned and dried **84 kilograms of sockeye salmon**. Four families participated in the harvest, with 4, 5, 6, and 9 members in each. The fish would be divided **proportionally by family size**, ensuring that each person received the same amount of salmon.

Instru **wer the questions below**

	Answer
a) How many peop there	
b) How many kilograms per	
c) How many kilograms per family?	
d) If the salmon run had been twice as large, and the families caught 168 kg instead of 84 kg, how much would each family receive using the same proportions?	
e) In a poor season, the total catch is only 42 kg. How much salmon would each family receive then?	
f) If another 4-person family joined next year and the total catch stayed at 84 kg, how would that change the per-person amount?	
g) The Elders set aside 12 kg from the 84 kg for community feasts. The remaining fish is shared proportionally. Then each family smokes one-third of its share for winter. How many kilograms does each family store and how many do they eat fresh (not smoked)?	

Name: _____ 102

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 … green … 15 red … es.	Words: _____ … _____ …: _____
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 … for each of the questions below

1) 3 to 9	$\frac{1}{3}$	2:5	1 …	9:27	$\frac{10}{33}$
2) 4:16	1:3	1 to 4	…6	1	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?

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 ...tional 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

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)

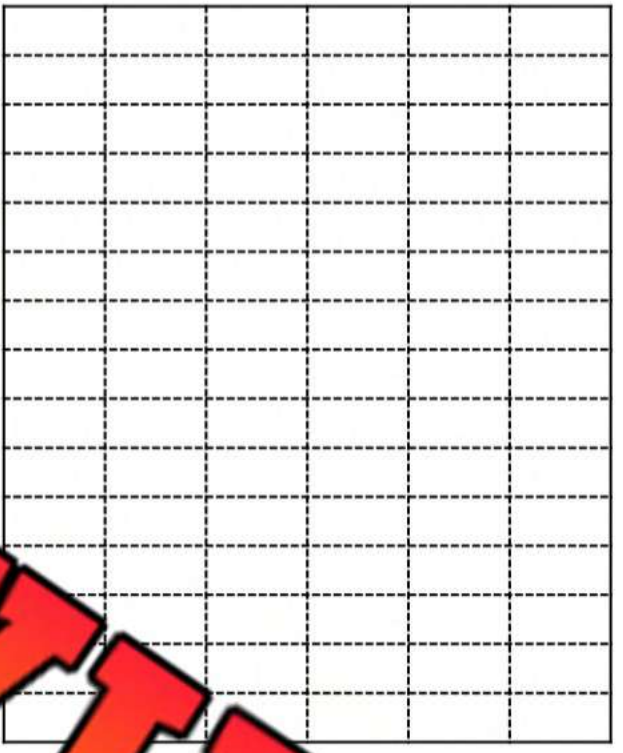
(x)	8	12	16	20
(y)	125	250	375	500

Proportional Non-Proportional

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.

k	Total Savings
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: _____ 109

Curriculum Connection
N.5

Converting Mixed Numbers to Improper Fractions

Questions | Convert the mixed numbers to improper fractions

1) $8\frac{2}{4}$ =	2) $5\frac{1}{5}$ =	3) $7\frac{3}{5}$ =
4) $3\frac{}{}$	5) $4\frac{3}{7}$ =	6) $8\frac{3}{4}$ =
7) $3\frac{1}{4}$ =	$\frac{}{5}$	9) $7\frac{5}{7}$ =
10) $6\frac{2}{3}$ =	11) $4\frac{2}{8}$	$\frac{1}{}$ =
13) $6\frac{3}{5}$ =	14) $5\frac{3}{7}$ =	15) $\frac{}{8}$
16) $9\frac{1}{2}$ =	17) $3\frac{1}{4}$ =	18) $4\frac{3}{4}$ =
19) $2\frac{1}{2}$ =	20) $5\frac{3}{5}$ =	21) $6\frac{3}{5}$ =

Curriculum Connection
N.5

Exit Cards

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

Name: _____

Convert between improper fractions and mixed numbers.

1) $\frac{47}{8}$ =

2) $6\frac{2}{9}$ =

3) $\frac{27}{6}$ =

Name: _____

Convert between improper fractions and mixed numbers.

1) $\frac{47}{8}$ =

2) $6\frac{2}{9}$ =

3) $\frac{27}{6}$ =

Name: _____

Convert between improper fractions and mixed numbers.

1) $\frac{47}{8}$ =

2) $6\frac{2}{9}$ =

3) $\frac{27}{6}$ =

Name: _____ 112

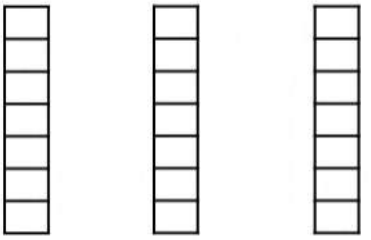
Curriculum Connection
N.5

Adding Fractions With Common Denominators

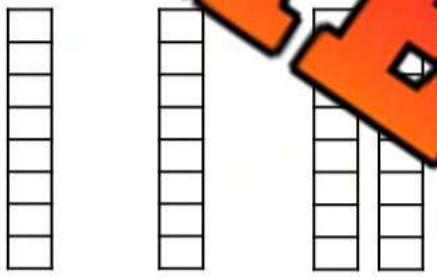
Questions | Add the fractions below using the models

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

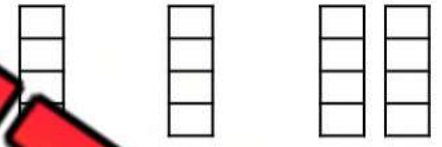
2) $\frac{3}{7} + \frac{2}{7} = \_\_$



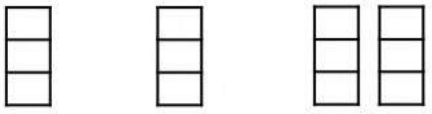
3) $\frac{5}{8} + \_\_ = \_\_$



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

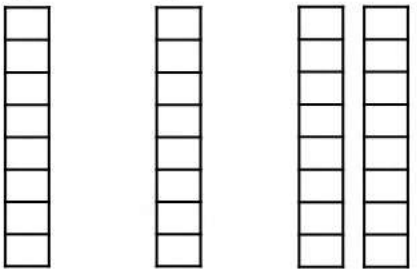


5) $\frac{2}{3} + \frac{3}{3} = \_\_$

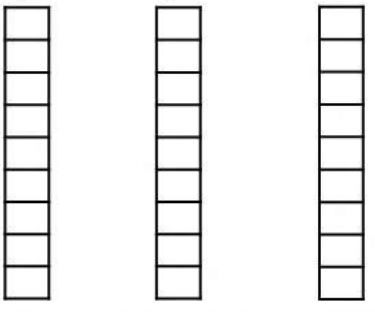


6) $\_\_ + \frac{3}{6} = \_\_$

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



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



Name: _____ 113

Curriculum Connection
N.5

Adding Fractions With Common Denominators

Questions Add the fractions below and write the answer as an improper fraction and mixed number

1) $\frac{3}{5} + \frac{5}{5} = \frac{8}{5}$ or $1\frac{3}{5}$	2) $\frac{5}{7} + \frac{4}{7} =$ ___ ___
3) $\frac{5}{8} +$ ___ ___	4) $\frac{9}{10} + \frac{8}{10} =$ ___ ___
5) $\frac{2}{3} + \frac{5}{3} =$ ___ ___	6) $\frac{8}{\_} + \frac{6}{6} =$ ___ ___
7) $\frac{9}{7} + \frac{8}{7} =$ ___ ___	8) $\frac{8}{\_} =$ ___ ___
9) $\frac{9}{14} + \frac{10}{14} =$ ___ ___	10) $\frac{8}{11} + \frac{7}{11} =$ ___ ___
11) $\frac{7}{18} + \frac{8}{18} =$ ___ ___	12) $\frac{9}{15} + \frac{8}{15} =$ ___ ___
13) $\frac{6}{12} + \frac{12}{12} =$ ___ ___	14) $\frac{8}{9} + \frac{5}{9} =$ ___ ___

Name: _____ 114

Curriculum Connection
N.5

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 remain if there were 8 slices in each box?

2) Thomas is starting up running. 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: _____ 115

Curriculum Connection
N.5

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] $=$	$15\frac{8}{10} + 3\frac{4}{10} =$

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: _____ 117

Curriculum Connection
N.5

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) $\frac{1}{\quad} + \frac{\quad}{8} = \frac{\quad}{8}$	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) $\frac{\quad}{30} + \frac{\quad}{\quad} =$
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: _____ 119

Curriculum Connection
N.5

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] [illegible]stomers 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: _____ 121

Curriculum Connection
N.5

Activity – Math Hot Seat: Addition Challenge

Objective

What are we learning about?

Students will practice solving a variety of fraction addition problems, including fractions with common denominators, mixed fractions, and fractions with unlike denominators, by participating in an engaging, interactive game.

$$\frac{3}{8} + \frac{6}{4}$$

Material

you will need for the activity.

- Inde cards problems
- Chairs ar rcle
- Stopwatch
- Whiteboard and ker

Instructions

How you wi mple

1. Prepare a stack of index cards wit various on a problems. Include problems with common denominators, m actio like denominators.
2. Arrange chairs in a circle with one "hot seat" in r.
3. Explain the rules of the game to the students. One stu t wi at while the rest sit in the surrounding chairs.
4. The teacher will read an addition problem from the stack. The stu in the hot seat has a limited time (e.g., 30 seconds) to solve the problem.
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: _____ 123

Curriculum Connection
N.5

Index Cards | Use the math problems below

A construction worker used $2\frac{1}{4}$ meters of wood in one project and $\frac{5}{4}$ meters in another. How much wood did they use in total?

$\frac{4}{12} + \frac{3}{8}$

$8\frac{4}{9} + 6\frac{1}{9}$

A baker made $3\frac{1}{2}$ cakes in the morning and $2\frac{3}{4}$ in the afternoon. How many cakes did the baker make in total?

A recipe calls for $\frac{1}{3}$ cups of sugar and $\frac{3}{9}$ cups of flour. What is the total amount of ingredients?

$\frac{9}{10} + \frac{7}{15}$

$7\frac{3}{5} + 5\frac{2}{5}$

$\frac{13}{18} + \frac{11}{18}$

Name: _____ 124

Curriculum Connection
N.5

Index Cards | Use the math problems below

$\frac{7}{5} + \frac{7}{10}$

$\frac{7}{12} + \frac{11}{18}$

$\frac{1}{3} + \frac{4}{9}$

$\frac{4}{7} + \frac{9}{14}$

...alked $7\frac{1}{3}$ kilometers on ...day ... $5\frac{2}{3}$ kilometers on ...ay. W... ...e total distance ... ...weekend?

A farmer harvested $3\frac{2}{8}$ tons of apples and $4\frac{1}{4}$ tons of oranges. How many tons of fruit did the farmer harvest in total?

$\frac{6}{13} + \frac{5}{13}$

$\frac{0}{2} + \frac{5}{10}$

$3\frac{7}{8} + 1\frac{5}{8}$

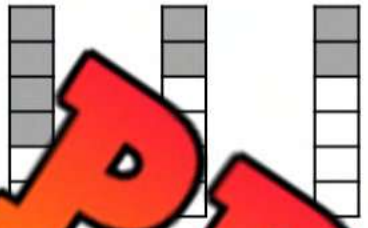
Name: _____ 125

Curriculum Connection
N.5

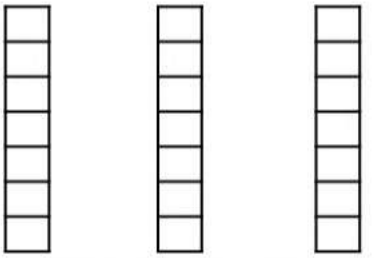
Subtraction Fractions - Common Denominators

Questions | Subtract the fractions below using the models

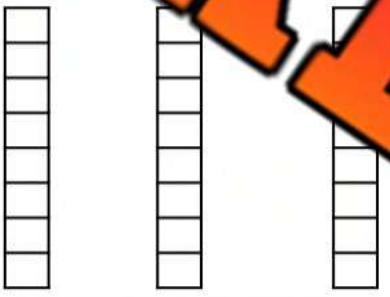
1) $\frac{4}{6} - \frac{2}{6} = \frac{2}{6}$



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

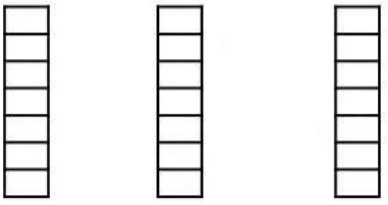


3) $\frac{7}{8} - \_\_\_ = \_\_\_$

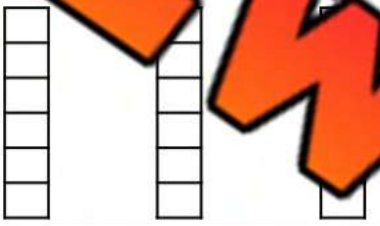


4) $\frac{3}{5} - \frac{1}{5} = \_\_\_$

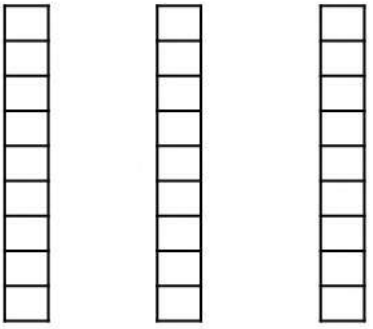
5) $\frac{6}{7} - \frac{3}{7} = \_\_\_$



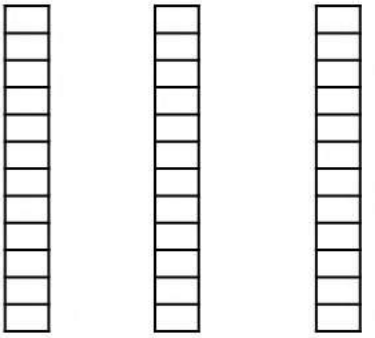
6) $\frac{5}{6} - \frac{2}{6} = \_\_\_$



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



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



Name: _____ 126

Curriculum Connection
N.5

Subtraction Fractions with Common Denominators

Questions Subtract the improper fractions and convert to a mixed number

1) $\frac{9}{5} - \frac{3}{5} = \frac{6}{5}$ or $1\frac{1}{5}$

2) $\frac{16}{5} - \frac{6}{5} =$ ___ ___

3) $\frac{1}{4} =$ ___ ___

4) $\frac{26}{9} - \frac{11}{9} =$ ___ ___

5) $\frac{17}{7} - \frac{8}{7} =$ ___ ___

6) $\frac{18}{6} - \frac{9}{6} =$ ___ ___

7) $\frac{31}{9} - \frac{11}{9} =$ ___ ___

8) $\frac{15}{8}$ ___ ___

9) $\frac{14}{6} - \frac{7}{6} =$ ___ ___

10) $\frac{16}{6} - \frac{8}{6} =$ ___ ___

11) $\frac{11}{4} - \frac{5}{4} =$ ___ ___

12) $\frac{22}{10} - \frac{11}{10} =$ ___ ___

13) $\frac{22}{8} - \frac{9}{8} =$ ___ ___

14) $\frac{19}{7} - \frac{11}{7} =$ ___ ___

Name: _____ 127

Curriculum Connection
N.5

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 [illegible] 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 [illegible] 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] 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: _____ 128

Curriculum Connection
N.5

Subtracting Fractions With unlike Denominators

Part 1 Use the common denominators to subtract the fractions below

1) $\frac{6}{7} - \frac{4}{14} = \frac{12}{14} - \frac{4}{14} = \frac{8}{14}$	2) $\frac{3}{8} - \frac{2}{24} = \frac{\quad}{24} - \frac{\quad}{24} = \frac{\quad}{24}$
3) $\frac{3}{\quad} = \frac{\quad}{12} = \frac{\quad}{12}$	4) $\frac{5}{6} - \frac{1}{3} = \frac{\quad}{6} - \frac{\quad}{6} = \frac{\quad}{6}$
5) $\frac{9}{12} - \frac{2}{4} = \frac{\quad}{12} - \frac{\quad}{12}$	6) $\frac{4}{5} - \frac{4}{15} = \frac{\quad}{15} - \frac{\quad}{15} = \frac{\quad}{15}$
7) $\frac{2}{3} - \frac{3}{9} = \frac{\quad}{9} - \frac{\quad}{9} = \frac{\quad}{9}$	8) $\frac{\quad}{\quad} - \frac{\quad}{\quad} = \frac{\quad}{30} - \frac{\quad}{30} = \frac{\quad}{30}$

Part 2 Create common denominators and then sub[illegible] f[illegible]ow

1) $\frac{10}{15} - \frac{2}{5} =$	2) $\frac{10}{14} - \frac{3}{7} =$
3) $\frac{10}{18} - \frac{5}{9} =$	4) $\frac{5}{6} - \frac{6}{12} =$
5) $\frac{12}{20} - \frac{8}{40} =$	6) $\frac{11}{16} - \frac{3}{8} =$

Name: _____ 130

Curriculum Connection
N.5

Subtracting Fractions – Word Problems

Questions | Solve the word problems

1) Brianna baked a cake. She used $\frac{4}{6}$ of a cup of white sugar and $\frac{2}{8}$ of a cup of brown sugar. How much more white sugar was used than brown sugar?

2) Mike has t[illegible] kilo[illegible] to school. He has walked $\frac{1}{2}$ a kilometre already. How much furthe[illegible] he [illegible]?

3) Clara has put $\frac{2}{7}$ of a cup of chocolate chips in[illegible]s. [illegible]ds to put in $\frac{3}{4}$ of a cup. How much more does she need to put in?

4) Lawrence ran 5km in $\frac{5}{8}$ of an hour. Skyler ran 5km in $\frac{4}{10}$.

a) Who ran the 5km faster?

b) How much faster did they run it in?

Name: _____ 131

Curriculum Connection
N.5

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) $3\frac{}{8} = 2\frac{}{}$	1) $8\frac{4}{6} - 5\frac{1}{6} =$	2) $3\frac{7}{9} - 1\frac{5}{9} =$
3) $7\frac{5}{7} - 3\frac{3}{7} =$	$\frac{}{6} = \frac{}{}$	5) $4\frac{6}{8} - 1\frac{3}{8} =$
6) $12\frac{9}{11} - 10\frac{8}{11} =$	7) $13\frac{12}{15} - 5\frac{6}{1} =$	$\frac{9}{0} - 8\frac{4}{10} =$

Part 2 Subtract the mixed fractions using option

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) $15\frac{12}{14} - 9\frac{9}{14} =$

Name: _____ 132

Curriculum Connection
N.5

Subtracting Fractions With Unlike Denominators

Part 1 Create common denominators and subtract the improper fractions

1) $\frac{22}{6} - \frac{5}{4} = \frac{44}{12} - \frac{15}{12} = \frac{29}{12}$ or $2\frac{5}{12}$	2) $\frac{9}{4} - \frac{8}{6} =$
3) $\frac{18}{} - \frac{}{2} =$	4) $\frac{8}{4} - \frac{10}{9} =$
5) $\frac{12}{5} - \frac{7}{6} =$	$\frac{21}{8} - \frac{5}{3} =$
7) $\frac{19}{9} - \frac{3}{2} =$	8) -

Part 2 Answer the word problems below

1) Steve wants to buy a larger aquarium for his fish. Option 1 holds $\frac{6}{2}$ s of water. Option 2 holds $\frac{108}{5}$ litres of water.

a) Which option holds more water?

b) How much more water does it hold?

2) Darren has a plank of wood that is $\frac{275}{100}$ cm long. He needs it to be $\frac{35}{25}$ cm long. How much should he cut off?

Exit Cards

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

Name: _____

1) Subtract the mixed fractions

a) $8\frac{4}{6} - 5\frac{2}{6}$ =

b) $12\frac{6}{14} - 6\frac{8}{14}$ =

2) Solve the word problem

Emily used $\frac{5}{8}$ of a cup of flour and $\frac{3}{10}$ of a cup of sugar for her cookies. How much more flour was used than sugar?

_____

Name: _____

1) Subtract the mixed fractions

a) $8\frac{4}{6} - 5\frac{2}{6}$ =

b) $12\frac{6}{14} - 6\frac{8}{14}$ =

2) Solve the word problem

Emily used $\frac{5}{8}$ of a cup of flour and $\frac{3}{10}$ of a cup of sugar for her cookies. How much more flour was used than sugar?

_____

Name: _____

1) Subtract the mixed fractions

a) $8\frac{4}{6} - 5\frac{2}{6}$ =

b) $12\frac{6}{14} - 6\frac{8}{14}$ =

2) Solve the word problem

Emily used $\frac{5}{8}$ of a cup of flour and $\frac{3}{10}$ of a cup of sugar for her cookies. How much more flour was used than sugar?

_____

Name: _____ 134

Curriculum Connection
N.5

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) $\frac{2}{5} + \frac{2}{5} + \frac{2}{5} + \frac{2}{5} + \frac{2}{5} + \frac{2}{5} =$	
4) $\frac{3}{6} + \frac{3}{6} + \frac{3}{6} + \frac{3}{6} + \frac{3}{6} + \frac{3}{6} =$	
5) $\frac{4}{9} + \frac{4}{9} + \frac{4}{9} + \frac{4}{9} + \frac{4}{9} + \frac{4}{9} =$	
6) $\frac{5}{10} + \frac{5}{10} + \frac{5}{10} + \frac{5}{10} + \frac{5}{10} + \frac{5}{10} + \frac{5}{10} =$	
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 multiplication sentence

1) Jerry made 5 pizzas. Each of the pizzas have 2/7 cups of cheese. How much 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

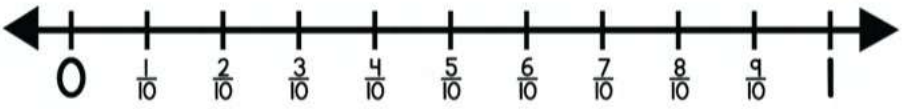
Name: _____ 138

Curriculum Connection
N.5

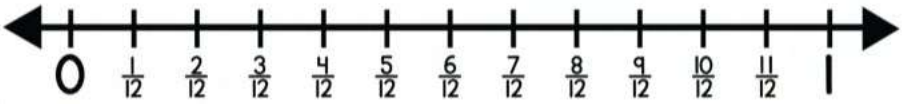
Multiply Whole Numbers by Fractions – Number Line

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

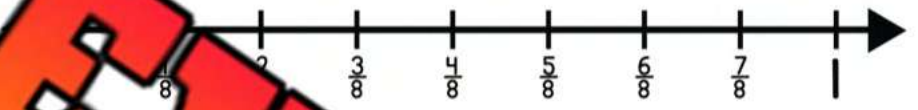
1) $8 \times \frac{1}{10} =$



2) 10



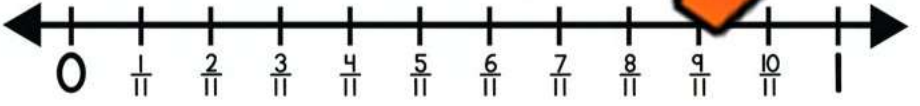
3) $7 \times \frac{1}{8} =$



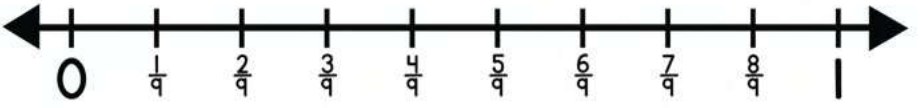
4) $5 \times \frac{1}{6} =$

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

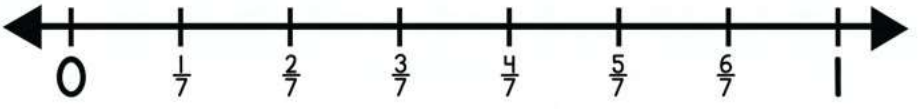
6) $7 \times \frac{1}{11} =$



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



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



Name: _____ 139

Curriculum Connection
N.5

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) $11 \times \frac{2}{9} =$

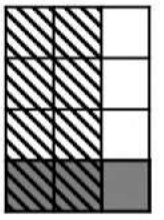
Name: _____ 141

Curriculum Connection
N.5

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.

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

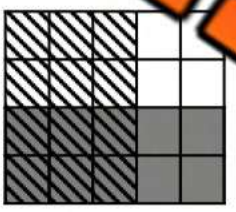


Example

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: Div[illegible] area model into fourths vertically to represent 1/4
Step 4: Sh[illegible]e-fourth of the area model
Step 5: [illegible]w many squares overlap compared to the total number of squa[illegible]

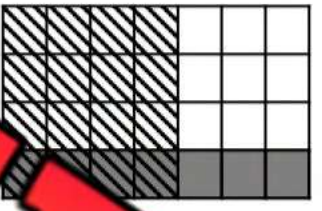
Questions Fin[illegible]duct u[illegible]area model. Steps 1-4 have been done for you

1)



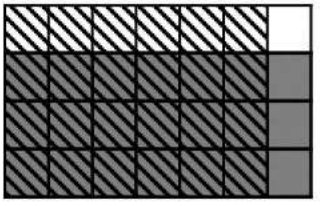
$\frac{3}{5} \times \frac{2}{4} = \_\_\_$

2)



$= \_\_\_$

3)

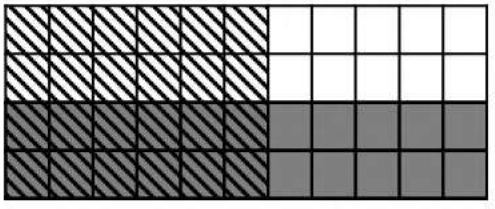


$\frac{6}{7} \times \frac{3}{4} = \_\_\_$

4)

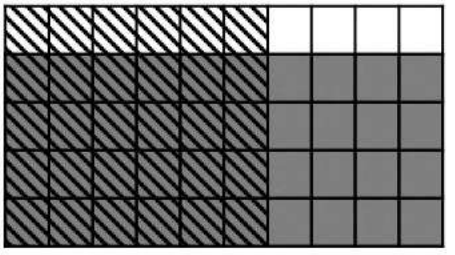
$\frac{5}{9} \times \frac{3}{5} = \_\_\_$

5)



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

6)



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

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Curriculum Connection
N.5

Multiplying Fractions – Area Models

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

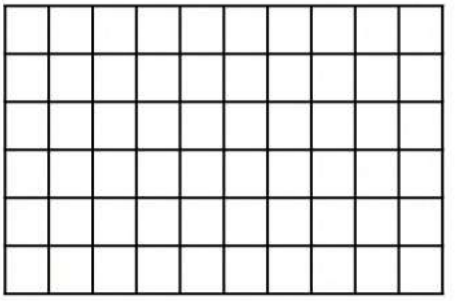
Directions:

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

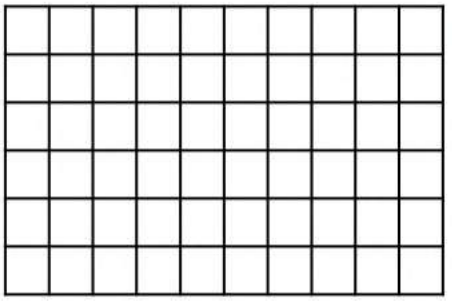
Questions Find the product using the area models below

1) 

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

2) 

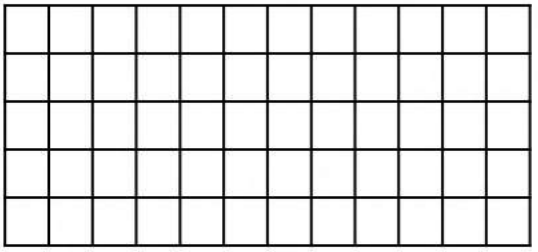
$\frac{3}{10} \times \frac{4}{6} = \_\_\_$

3) 

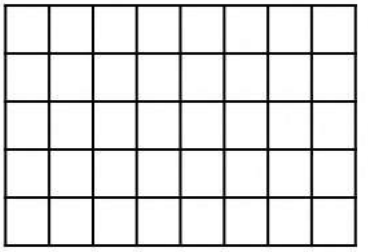
$\frac{4}{10} \times \frac{4}{6} = \_\_\_$

4) 

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

5) 

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

6) 

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

Name: _____ 144

Curriculum Connection
N.5

Multiplying Fractions – Area Models

Directions:
1) Divide the area model horizontally and vertically to represent the fractions
2) Use diagonal lines to represent the first fraction
3) Shade in the area model to represent the second fraction
4) Write the answer

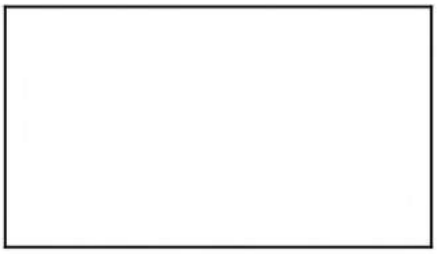
Questions Find the product using the area models below

1) 

$\frac{1}{4} \times \frac{1}{3} = \_\_\_$

2) 

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

3) 

$\frac{2}{3} \times \frac{5}{6} = \_\_\_$

4) 

$\frac{1}{2} \times \frac{7}{8} = \_\_\_$

5) 

$\frac{3}{4} \times \frac{5}{8} = \_\_\_$

6) 

$\frac{2}{2} \times \frac{4}{5} = \_\_\_$

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Curriculum Connection
N.5

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 × 3
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?

Name: _____ 149

Curriculum Connection
N.5

Activity: Multiplication Race

Objective What are we learning about?

Students will practise their multiplication of fractions by racing to answer questions quickly and accurately.

Materials What you will need for the activity.

- Index cards
- Markers or pens
- Timer (optional)

Instructions How you will complete the activity

1. Have students line up in a single file (or you can have students sit at their desks).
2. Call the first two students in line to the front. Explain that they will answer the multiplication question that the teacher pulls from the stack.
3. Pull a card from the stack and read the fraction multiplication problem aloud. The first student to answer correctly wins the round.
4. The student who answers correctly stays at the front to compete against the next student in line. The student who loses goes to the end of the line.
5. 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.
6. Continue the game until all students have had a chance to compete multiple times or until the designated game time is up.

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Curriculum Connection
N.5

Math Cards | Cut out the math cards below

$10 \times \frac{4}{11}$

$5\frac{2}{3} \times 1\frac{5}{6}$

$\frac{4}{5} \times \frac{7}{8}$

$6\frac{2}{5} \times 3\frac{1}{2}$

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

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

$9 \times \frac{3}{8}$

$\frac{2}{3} \times \frac{7}{9}$

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Curriculum Connection
N.5

Math Cards | Cut out the math cards below

$15 \times \frac{2}{5}$

$\frac{3}{4} \times \frac{5}{7}$

$6\frac{1}{3} \times 2$

$8\frac{3}{5} \times 5\frac{1}{2}$

$8 \times \frac{7}{12}$

$11 \times$

$\frac{7}{10} \times \frac{4}{9}$

$5 \times \frac{3}{4}$

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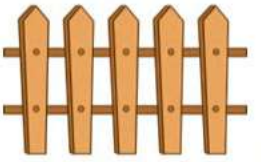
Curriculum Connection
N.5

Dividing Whole Numbers by Fractions

Questions | Answer the questions below

1) A bakery has 24 kilograms of flour available to make bread. If each loaf of bread requires 2/3 kilogram of flour, how many loaves of bread can the bakery make with the available flour?

2) A bu[illegible] of wood to create fence panels. Each panel requires 3 1/2 mete[illegible]ood. Ho[illegible]ence panels can he build?



3) A farmer wants to evenly di[illegible]e 36 [illegible] grain among his 2 1/4 storage bins. How many storage bins can he fill?

4) A family wants to divide their 54-meter long garden int[illegible] net[illegible]ow many sections can they create?

5) A hiker has 45 liters of water to split between her 1 2/3-liter water bottles. How many water bottles can she fill?

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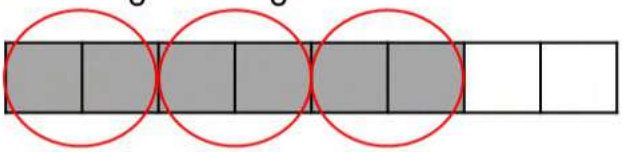
Curriculum Connection
N.5

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?)

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

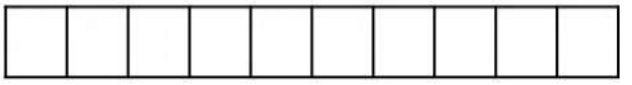


Solution – We can see that there are 3 two eights in six eights.

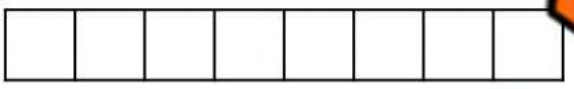
Questions – Use the fraction bar. How many times does the divisor fit into the dividend

1) 

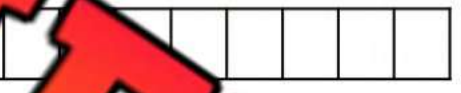
$\frac{4}{8} \div \frac{2}{8} =$ ____

2) 

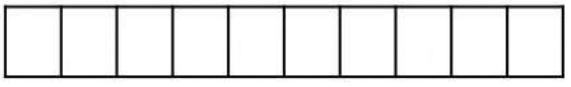
$\frac{9}{10} \div \frac{3}{10} =$ ____

3) 

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

4) 

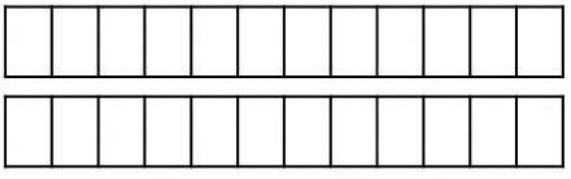
$\frac{6}{8} \div$ ____

5) 

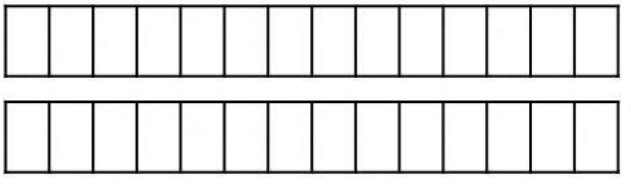
$\frac{8}{10} \div \frac{2}{10} =$ ____

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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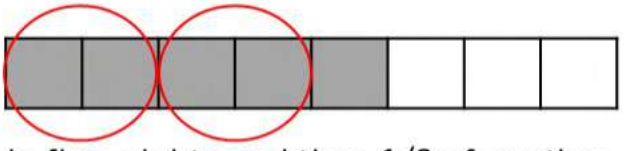
Curriculum Connection
N.5

Dividing Fractions Using Models

Dividing Fractions
Sometimes the division of a fraction by a fraction with the same denominator has a fractional result.

$$\frac{5}{8} \div \frac{2}{8} = 2\frac{1}{2}$$

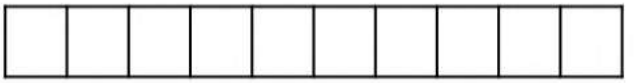


Solution – We can see that there are 2 two-eights in five-eights and then 1/2 of another two eights.

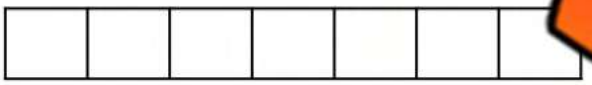
Question: Shade in the fraction bar. How many times does the divisor fit into the dividend

1) 

$$\frac{8}{9} \div \frac{3}{9} = \_\_\_$$

2) 

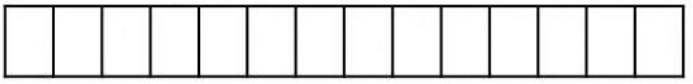
$$\frac{9}{10} \div \frac{2}{10} = \_\_\_$$

3) 

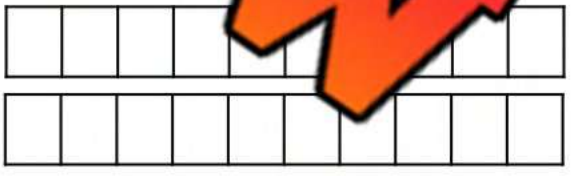
$$\frac{7}{7} \div \frac{2}{7} = \_\_\_$$

4) 

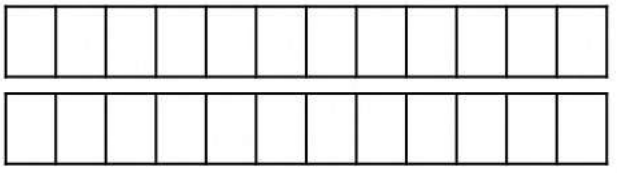
$$\frac{6}{} \div \frac{}{} = \_\_\_$$

5) 

$$\frac{13}{14} \div \frac{3}{14} = \_\_\_$$

6) 

$$\frac{18}{20} \div \frac{5}{20} = \_\_\_$$

7) 

$$\frac{23}{24} \div \frac{4}{24} = \_\_\_$$

8) 

$$\frac{25}{26} \div \frac{3}{26} = \_\_\_$$

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Curriculum Connection
N.5

Dividing Fractions Using Models

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

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

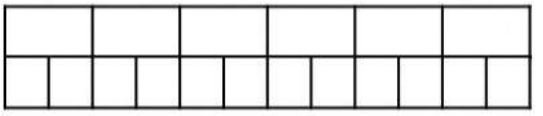
Solution – We can see that 1/8 fits into 3/4 six times.

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

1)

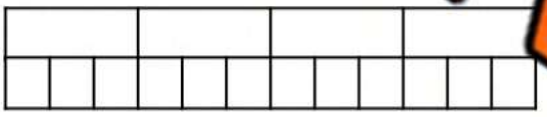
$\frac{3}{5} \div \frac{\quad}{10}$

2)



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

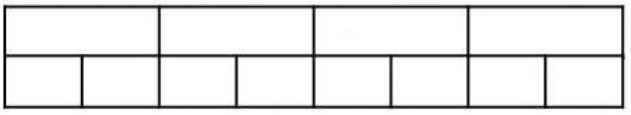
3)



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

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

5)

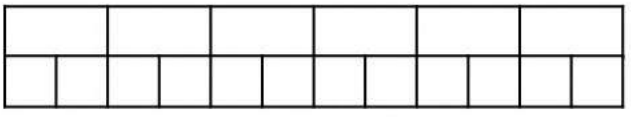


$\frac{3}{4} \div \frac{1}{8} = \_\_\_\_$

6)

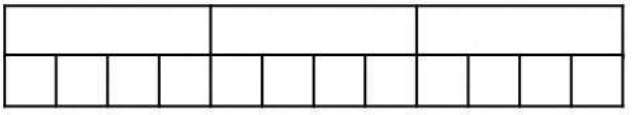
$\frac{1}{3} \div \frac{1}{9} = \_\_\_\_$

7)



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

8)



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

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Curriculum Connection
N.5

Dividing Fractions

Part 1 Flip the divisor and change the division operator to multiplication

1) $\frac{2}{7} \div \frac{1}{8} = \frac{2}{7} \times \frac{8}{1} = \frac{16}{7}$	2) $\frac{3}{7} \div \frac{3}{9} = \_\_ \times \_\_ = \_\_$
3) $\frac{3}{\_} \div \frac{\_}{\_} = \_\_$	4) $\frac{7}{9} \div \frac{4}{7} = \_\_ \times \_\_ = \_\_$
5) $\frac{5}{8} \div \frac{2}{9} = \_\_$	6) $\frac{7}{10} \div \frac{4}{12} = \_\_ \times \_\_ = \_\_$

Part 2 Flip the divisor and chan[illegible] divisi[illegible] to multiplication

1) $\frac{7}{8} \div \frac{3}{11} =$	2) $\frac{8}{11}$ [illegible]
3) $\frac{4}{5} \div \frac{4}{6} =$	4) $\frac{7}{9} \div \frac{3}{5} =$
5) $\frac{6}{8} \div \frac{6}{10} =$	6) $\frac{8}{10} \div \frac{2}{6} =$
7) $\frac{6}{7} \div \frac{6}{11} =$	8) $\frac{8}{14} \div \frac{5}{6} =$

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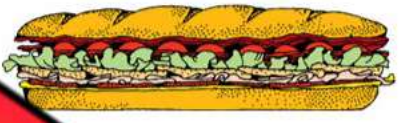
Curriculum Connection
N.5

Dividing Fractions – Word Problems

Questions | Find the answers of the fractions below

1) Howard can run a kilometre in 2/8 of an hour. How many kilometres can he run in 3/4 of an hour?

2) Jayce boug[illegible] sub[illegible] sandwich that is 9/10 of a metre long. He wants to cut it in[illegible]ller s[illegible] that are 3/30 of a metre long. How many sandwiches will he m[illegible]?



3) Hugh has a goal of exercising 12/4 hours a d[illegible] H[illegible] to g[illegible] veral runs today. His runs take him 4/6 of an hour. How many r[illegible] Hugh[illegible] to go on?

4) Zara loves to read. She can read a book in 2/7 of an hour. If she only had 10/12 of an hour to read, how many books could she read?

Name: _____ 168

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 ert the improper fractions to mixed numbers

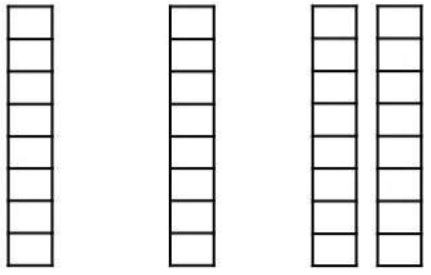
1) $\frac{27}{4}$ =

$\frac{26}{}$ =

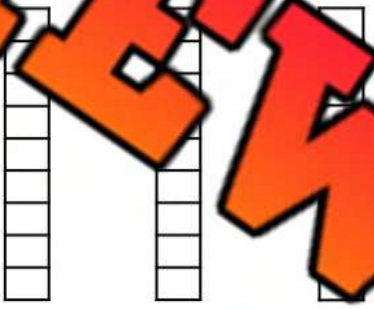
3) $\frac{34}{6}$ =

Part 3 Add and sub fra w using the models

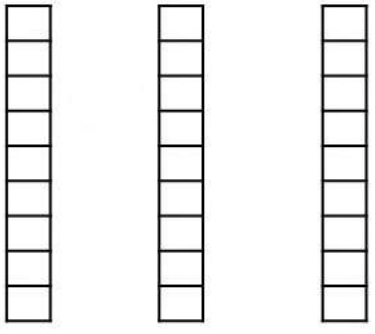
1) $\frac{6}{8} + \frac{4}{8} =$ ___



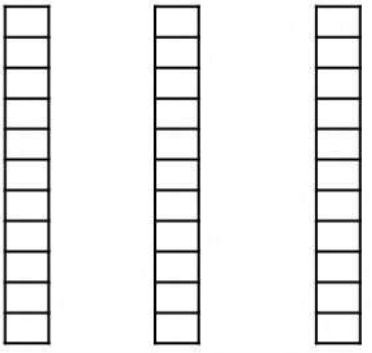
2) + = ___



3) $\frac{8}{9} - \frac{5}{9} =$ ___



4) $\frac{10}{11} - \frac{7}{11} =$ ___



Part 4 Create common denominators and then add/subtract the fractions below

1) $\frac{5}{7} + \frac{3}{8} =$	2) $\frac{5}{14} + \frac{2}{4} =$
3) $\frac{6}{8} +$ [illegible]	4) $\frac{6}{7} + \frac{2}{4} =$
5) $\frac{11}{15} - \frac{2}{5}$ [illegible]	6) $\frac{3}{5} - \frac{3}{8} =$
7) $\frac{10}{18} - \frac{5}{9} =$	[illegible] $\frac{1}{4} =$

Part 5 Add and subtract the mixed fra[illegible]

1) $5\frac{5}{8} + 2\frac{4}{8} =$	2) $4\frac{3}{5} + 4\frac{5}{5} =$
3) $11\frac{5}{8} + 10\frac{2}{6} =$	4) $7\frac{6}{8} + 4\frac{6}{10} =$
5) $3\frac{4}{7} - 2\frac{3}{7} =$	6) $13\frac{8}{15} - 8\frac{3}{15} =$
7) $12\frac{3}{8} - 5\frac{4}{7} =$	8) $8\frac{4}{6} - 4\frac{4}{10} =$

Part 6 — Solve the word problems

1) Lindsay baked a caked. She used $\frac{5}{6}$ of a cup of white sugar and $\frac{3}{8}$ of a cup of brown sugar. How much more white sugar was used than brown sugar?

2) Dane r… yesterday and $2\frac{5}{7}$ km today. How many kilometres did he run in the t…

Part 7 — Multiply the mixed fract… te t… wers as a mixed fraction

1) $4 \times \frac{4}{7} = \square = \square$

2) … $\square$ $\square$

3) $6 \times \frac{5}{8} = \square = \square$

4) $5 \times \frac{3}{12} = \square = \square$

Part 8 — Find the products of the fractions below. Simplify the fractions.

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

2) $\frac{2}{8} \times \frac{6}{8} = \_\_$

Part 9 Solve the division questions below

1) $\frac{7}{8} \div \frac{3}{12} =$	2) $\frac{9}{11} \div \frac{3}{7} =$
3) $\frac{5}{6} \div \frac{2}{}$ =	4) $\frac{8}{9} \div \frac{4}{6} =$
5) 8 ÷ 6 =	6) $5 \div \frac{7}{8}$ = — x — =
7) $\frac{3}{4} \div 2 =$	5 ÷ 3 =

Part 10 Answer the word problems belo

1) Scotty can run a kilometre in 4/8 of an hour. Ho kilome n he 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?