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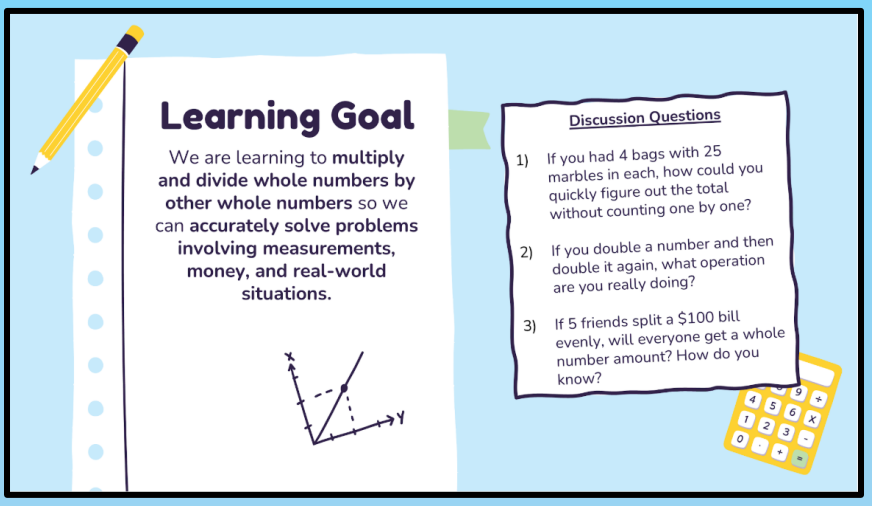
Google Slides Lessons Preview

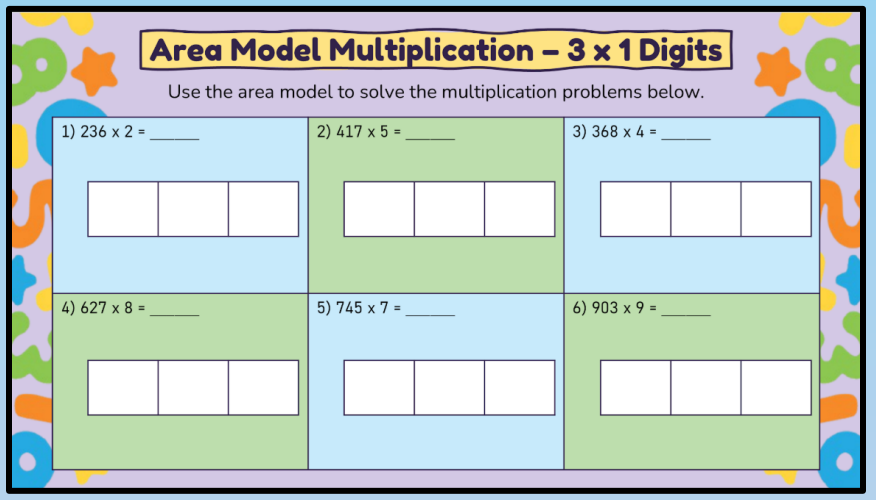
Manitoba Math Curriculum Number Unit – Grade 8

3-Part Lesson Format

Part 1 – Minds On!

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



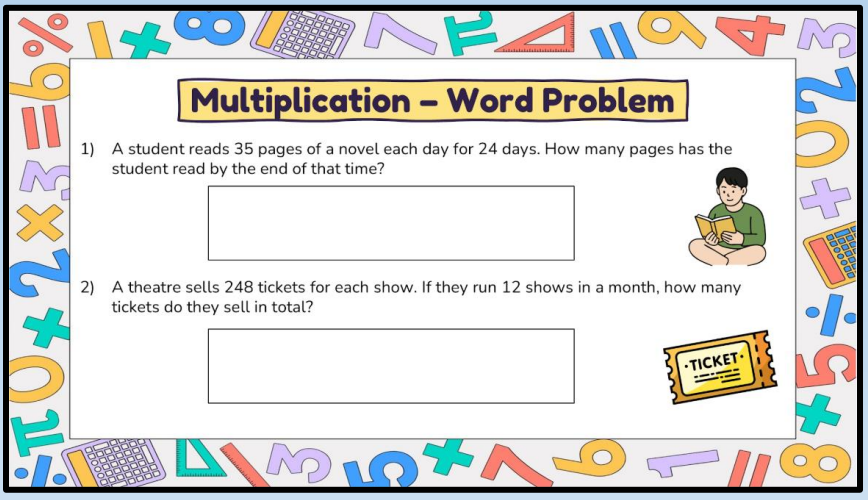


Part 2 – Action!

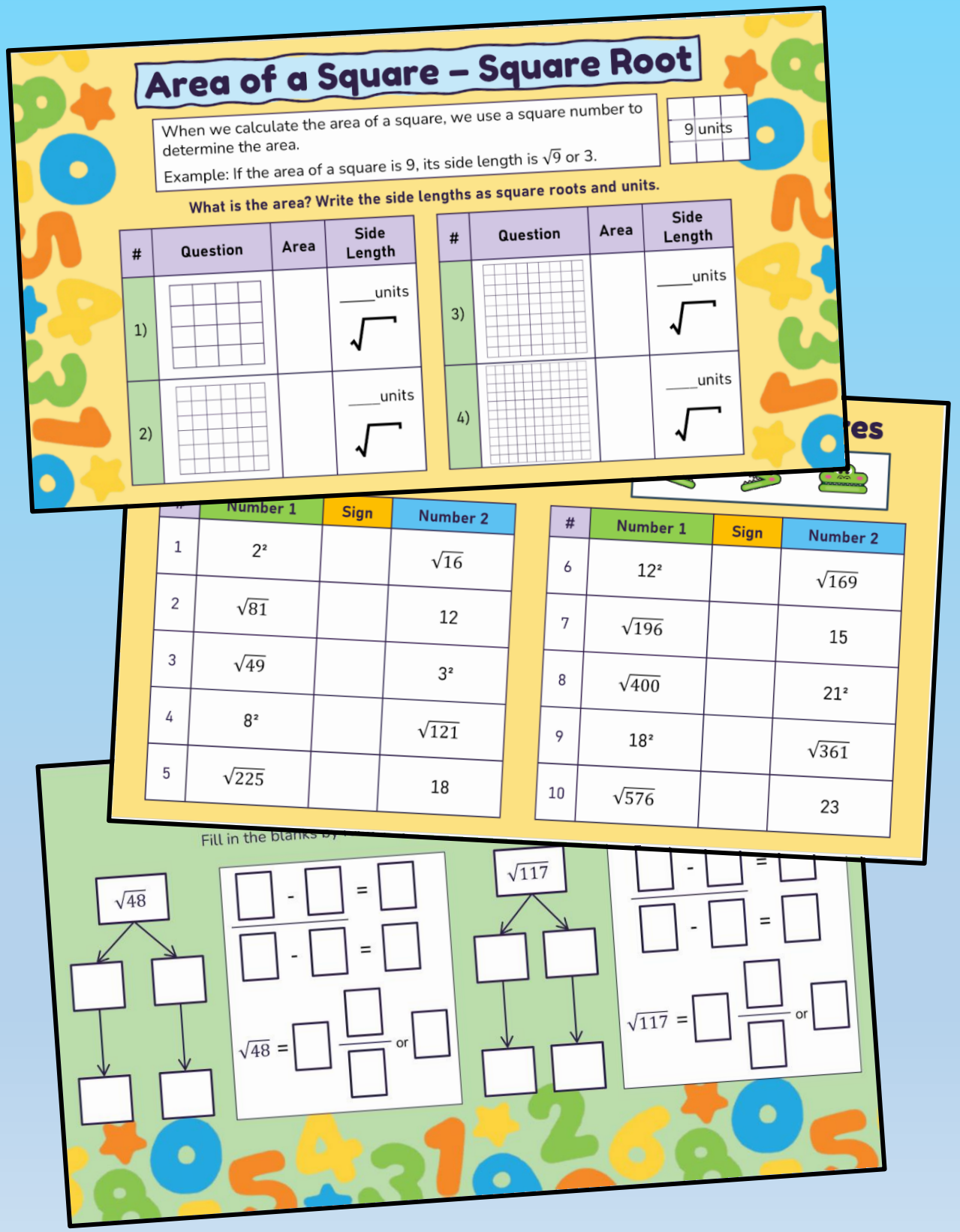
- Writing
- Matching
- Drag and Drop
- Drawing
- And More!

Part 3 – Consolidation!

- Exit Cards
- Quizzes
- Reflection
- And More!



Manitoba Math Curriculum Number Unit – Grade 8



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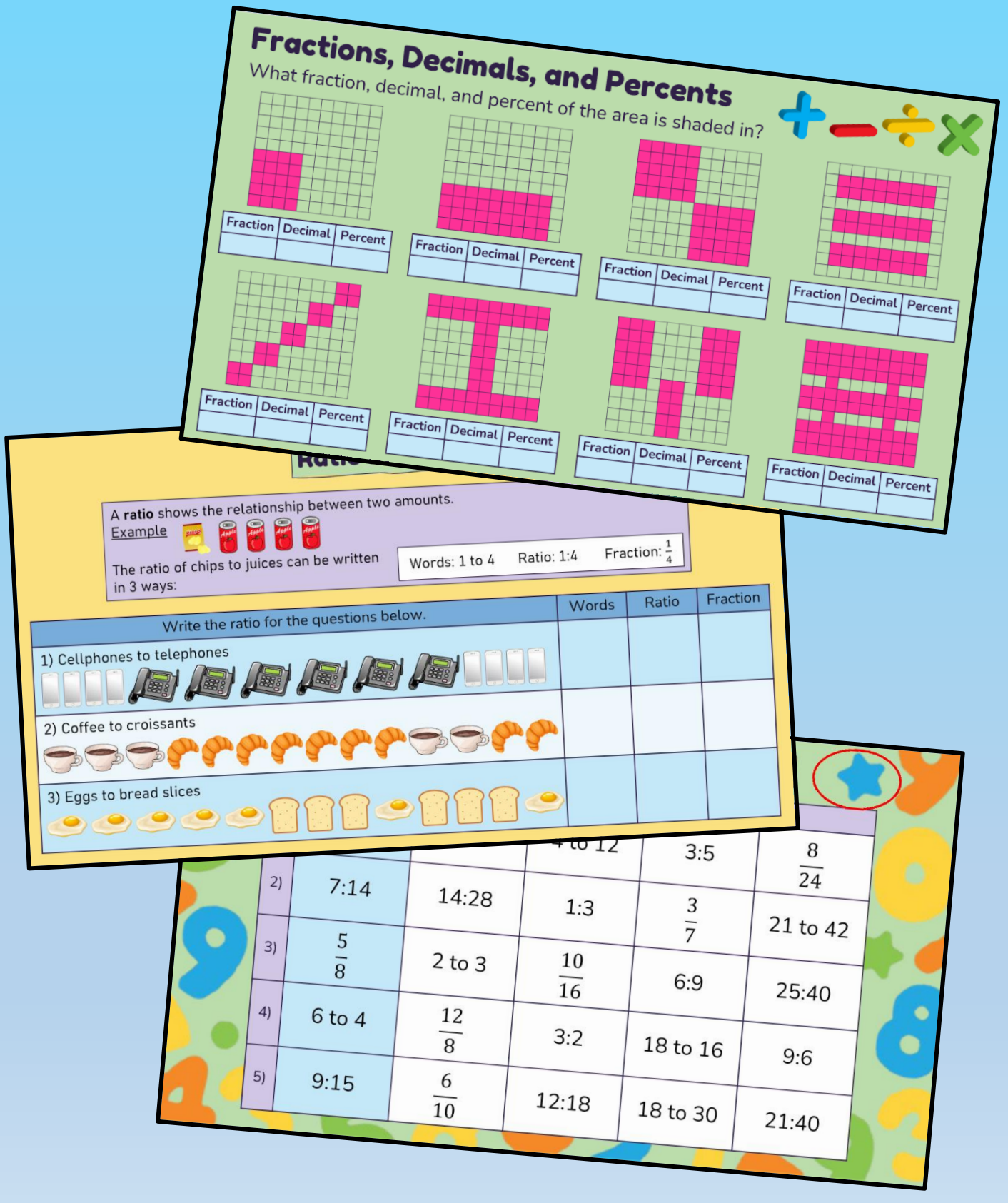


Workbook Preview

Grade 8

Number

	Curriculum Expectations	Pages That Cover the Expectations
N.1	Demonstrate an understanding of perfect squares and square roots, concretely, pictorially and symbolically (limited to whole numbers)	1 - 25
N.2	Determine the approximate square root of numbers that are not perfect squares (limited to whole	26 - 38
N.		
N.		
N.5	Solve problems that involve rates, ratios and proportional reasoning.	66 – 81
N.6	Demonstrate an understanding of multiplying and dividing positive fractions and mixed numbers, concretely, pictorially and symbolically.	82 – 129
N.7	Demonstrate an understanding of multiplication and division of integers, concretely, pictorially, and symbolically.	130 - 156
N.8	Solve problems involving positive rational numbers.	157 - 169

Name: _____ 19

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)	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 =	
11)	1 =	
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?

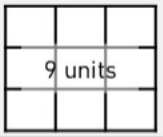
2) The area of a square tile is 121cm^2. What are the side lengths?

Name: _____ 20

Curriculum Connection
N.1

Area of a Square - Square Root

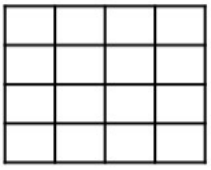
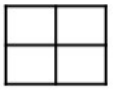
When we calculate the area of a square, we use a square number to determine the area.

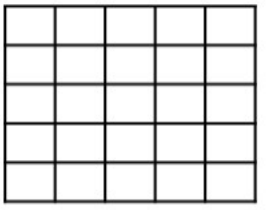
Example: 

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: _____ 21

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. When we represent a perfect square, we can use an exponent to the power of 2, meaning the number multiplied by itself. A power of 1 is the number itself.

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

Part 1 Solve 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: _____ 22

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 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: _____ 24

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)	64	☐	5^2
4)	2^2	☐	9
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 greate

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

Part 3

Challenge: find the square root for each number

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

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

Name: _____ 25

Curriculum Connection
N.1

Perfect Squares - Word Problems

Word Problems Answer the word problems below

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

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

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

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

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

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

b) What is the side length of the garden?

c) How many metres of fencing will be needed?

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

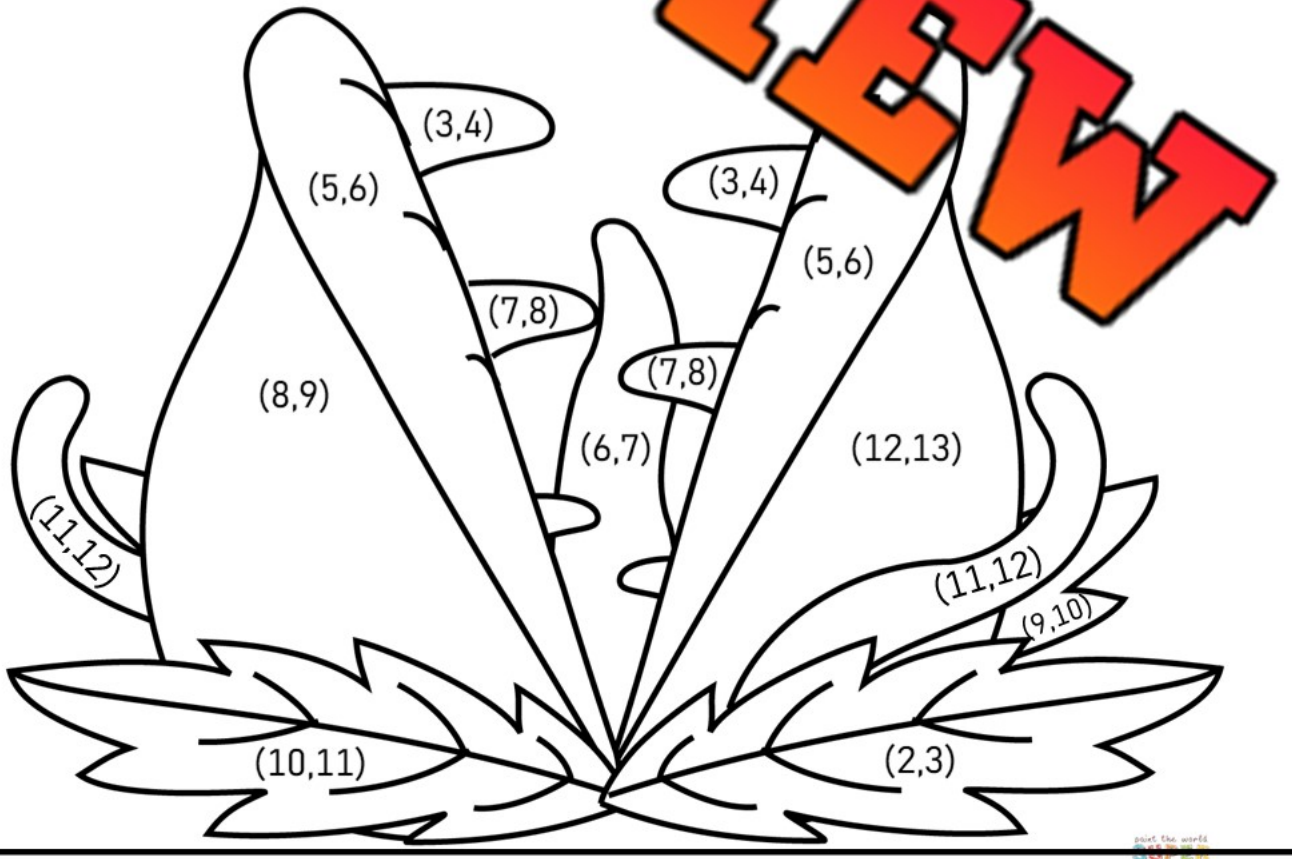
Name: _____ 28

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)	$\sqrt{1}$	√	√	Light Green
6)	$\sqrt{4}$	√	√	Dark Green
7)	$\sqrt{5}$	√	√	Yellow
8)	$\sqrt{8}$	√	√	Dark Green
9)	$\sqrt{152}$	√	√	Green
10)	$\sqrt{89}$	√	√	Dark Green



Name: _____ 29

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	$\sqrt{7}$		
S	$\sqrt{91}$		
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: _____ 30

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 ... below. You will need to estimate one square

1)	A = 49 side length =	A = 54 side length =	A = 6 side length =
2)	A = 9 side length =	A = 15 side length =	A = 16 side length =
3)	A = 64 side length =	A = 66 side length =	A = 81 side length =

	36 len...	A = 45 side len...	A = 49 side length =
5)	A = 81 side length =	A = 85 side length =	A = 100 side length =
6)	A = 16 side length =	A = 20 side length =	A = 25 side length =

Estimating Square Roots

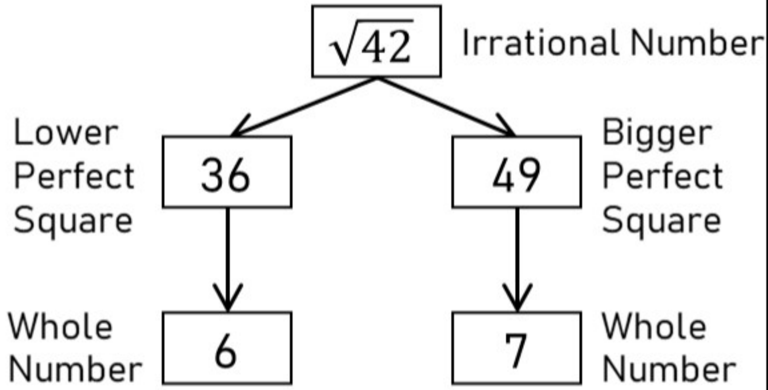
Step 1: Find the two perfect squares above and below the irrational number.

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

Irrational # [illegible] Lower Perfect Square
Bigger [illegible] Lower P.S.

Step 3: [illegible] number using the lower [illegible] number [illegible] simplified fraction [illegible] above.

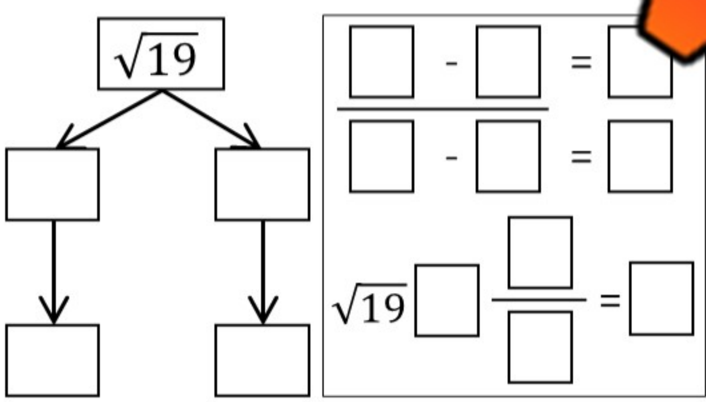
Step 4: Change [illegible] to [illegible] (rounded to the near[illegible])

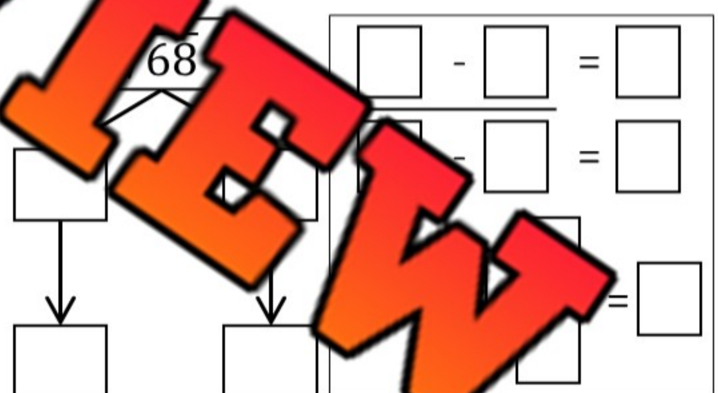


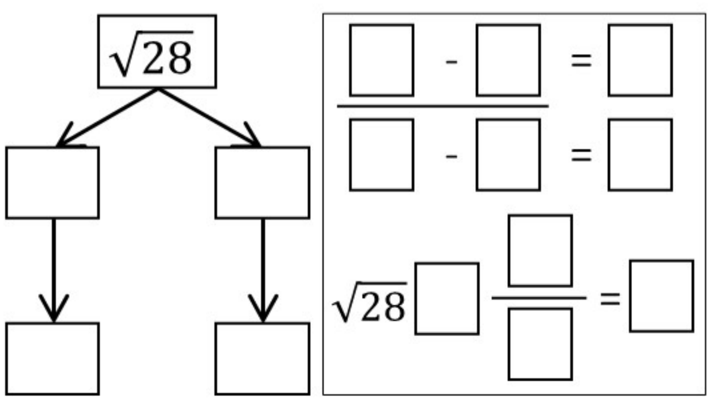
$$\frac{42 - 36 = 6}{49 - 36 = 13}$$

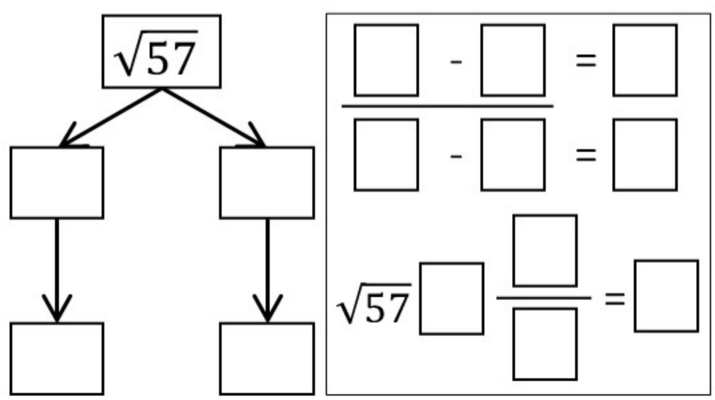
$$= 6\frac{6}{13} \text{ or } 6.46$$

Practice Fill in the bl[illegible] by f[illegible] [illegible]eps above









Name: _____ 33

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)	$\sqrt{}5$	☐	8
4)	7	☐	$\sqrt{}$
5)	$\sqrt{29}$	☐	2^2

6)	$\sqrt{45}$	☐	7
7)	$\sqrt{7}$	☐	3
8)	$\sqrt{14}$	☐	3
9)	12	☐	$\sqrt{138}$
10)	11	☐	$\sqrt{127}$

Part 2 — Order from least to g st

1) $\sqrt{8}$, 2, $\sqrt{10}$, 3, $\sqrt{5}$	3) $\sqrt{82}$, 9, 8,
2) $\sqrt{32}$, $\sqrt{41}$, -11, 6, $\sqrt{35}$	4) $\sqrt{140}$, 12, $\sqrt{147}$, 1 $\sqrt{123}$

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

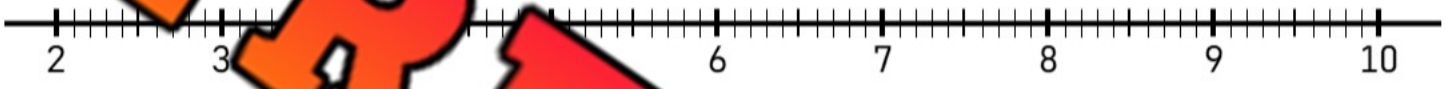
Name: _____ 34

Curriculum Connection
N.2

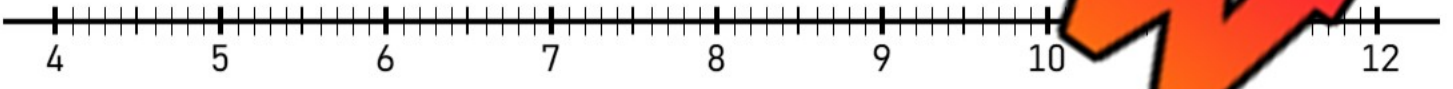
Square Roots - Number Line

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) $\sqrt{9}$	12) $\sqrt{22}$



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

1)	5	☐	$\sqrt{21}$
2)	3	☐	$\sqrt{14}$
3)	6	☐	$\sqrt{31}$

4)	8.5	☐	$\sqrt{66}$
5)	9.5	☐	$\sqrt{95}$
6)	7.5	☐	$\sqrt{60}$

7)	7.5	☐	$\sqrt{52}$
8)	12.5	☐	$\sqrt{145}$
9)	11.5	☐	$\sqrt{142}$

Name: _____ 35

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 crea[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]w ma[illegible]tres should he buy?

3) Livia made a rectangular painting for her friend. It[illegible]s ar[illegible]of 126cm². Livia's friend loves it but needs a square painting to fit th[illegible]ace[illegible]it. 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: _____ 52

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?

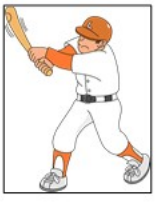
2) Gavin [illegible] an hour. He received a raise from his boss and is now earning $60 [illegible] ntage does Gavin earn now in relation to what he ea[illegible] before[illegible]?

3) Maeve did well on [illegible]est. S[illegible] all of the 20 questions correct and answered 3 bonus questi[illegible]ct a[illegible] at was her mark as a fraction and percentage?

Frac[illegible]	[illegible]age

4) Elliott ran a 10km race last week. The win[illegible] th[illegible] 35 minutes. It took Elliot 45 minutes. What percentag[illegible] did El[illegible]n 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: _____ 55

Test - Squares, Multiplication/Division, and Percent

Part 1 — Provide the positive and negative square root

	Question	Square Root (+)	Square Root (-)
1)	$\sqrt{36}$		
2)	$\sqrt{1}$		
3)			

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

Part 2 — Wh[illegible]mber [illegible] Use < > or = to compare the number

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

4)	$\sqrt{121}$	☐	11^2
	[illegible]	☐	-6
6)	-56	[illegible]	

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, $\sqrt{4}$

Name: _____ 63

Curriculum Connection
N.4

Ratio In 3 Ways

A **ratio** shows the relationship between two amounts.

Example 

The ratio of apples to bananas can be written in 3 ways:

Words: 1 to 7	Ratio: 1:7	Fraction: $\frac{1}{7}$

Question Write the ratios for the questions below

1) Co to cupc

Words: _____

Ratio: _____

Fraction: _____

2) Tomatoes to onions

Words: _____

Ratio: _____

Fraction: _____

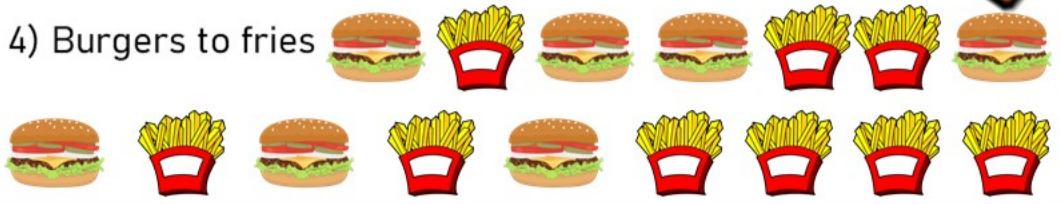
3) Pizzas to drinks

ords: _____

R _____

_____

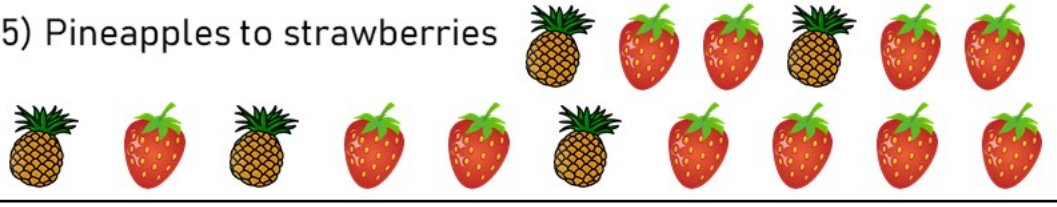
4) Burgers to fries



Rati _____

Fraction: _____

5) Pineapples to strawberries

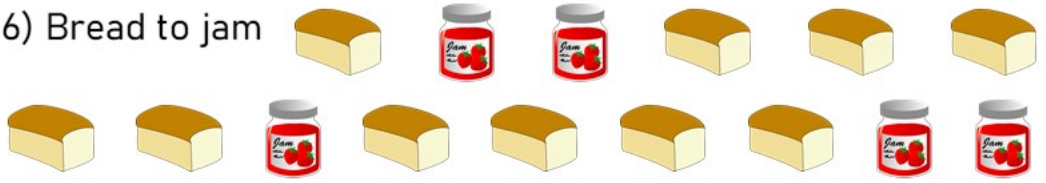


Words: _____

Ratio: _____

Fraction: _____

6) Bread to jam



Words: _____

Ratio: _____

Fraction: _____

Name: _____ 67

Curriculum Connection
N.5

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 [illegible]oys are in the class?

c) H[illegible]many [illegible]the class?

2) A car dealership has [illegible]les. T[illegible]f cars to vans to trucks is – 10:4:6.

a) How many cars do they ha[illegible]e?

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: _____ 68

Curriculum Connection
N.5

Proportional vs Non-Proportional Relationships

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

Question e the relationships proportional or non-proportional?

1) $\frac{9}{2}$ and $\frac{18}{6}$ Proportional Non-P	2) $\frac{2}{6}$ and $\frac{5}{15}$ Proportional Non-Proportional
3) $\frac{14}{5}$ and $\frac{98}{35}$ Proportional Non-Proportiona	$\frac{3}{}$ and $\frac{75}{125}$ P tion Non-Proportional
5) $\frac{5}{8}$ and $\frac{45}{64}$ Proportional Non-Proportional	a Proportion nal
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

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Proportional vs Non-Proportional Relationships

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
Earnings (y)	250	500	750	1000	1250	1500

Question: Are the relationships proportional or non-proportional?

1)

(x)				4
(y)	75			

Proportional Non-Proportional

2)

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

Proportional Non-Proportional

3)

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

Proportional Non-Proportional

	8	12	16	20
		72	114	136

Proportional Non-Proportional

5)

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

Proportional Non-Proportional

6)

(x)				100
(y)	200			1200

Proportional Non-Proportional

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

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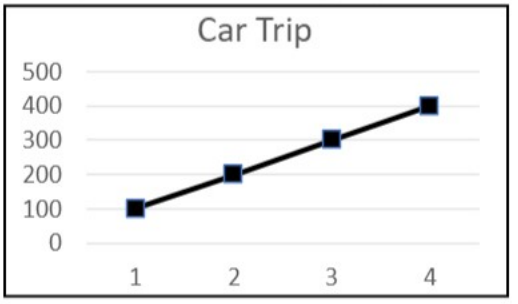
Proportional Relationship - Graph

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 distance every hour.

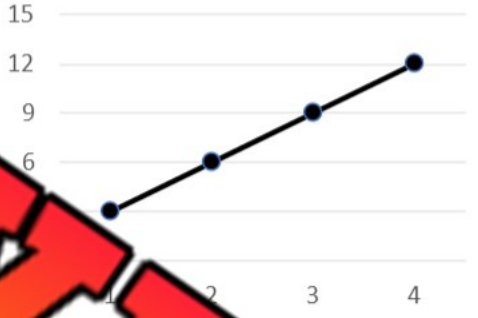


Hours	Distance (km)
1	100
2	200
3	300
4	400

Question: Graph the table of values based on the graph. Is the relationship proportional?

1)

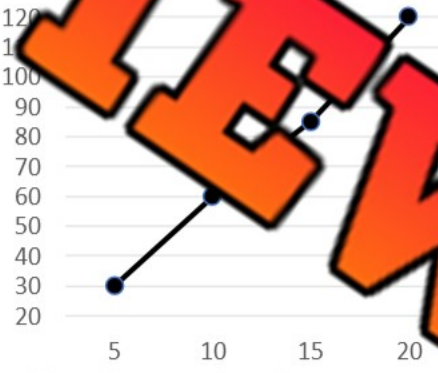
(x)	
1	
2	
3	
4	



Proportional Non-Proportional

2)

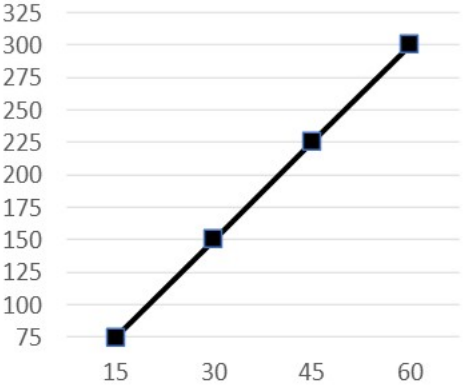
(x)	(y)
5	
10	
15	
20	



Proportional Non-Proportional

3)

(x)	(y)
15	
30	
45	
60	



Proportional Non-Proportional

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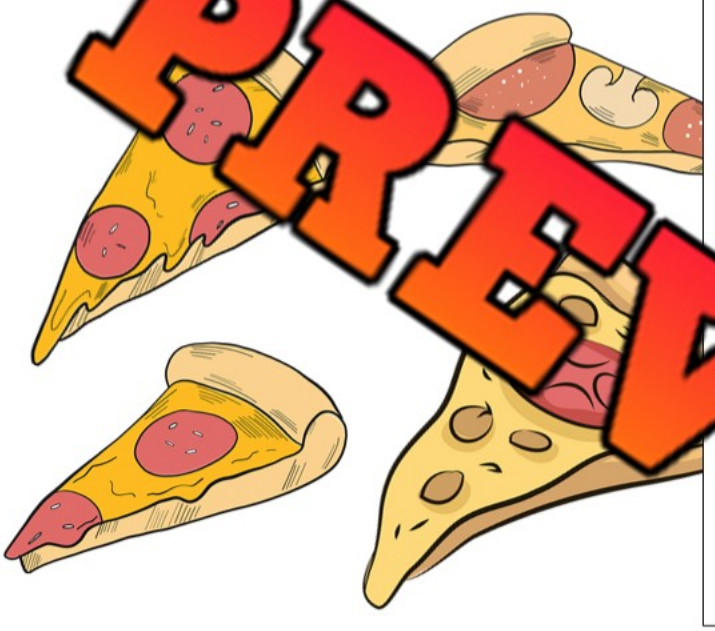
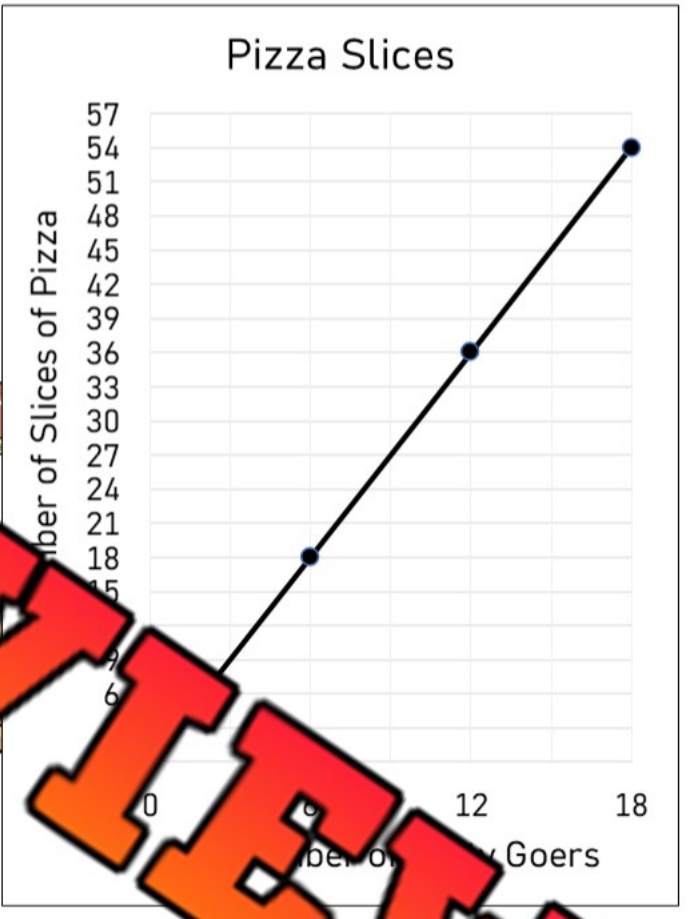
Proportional Relationship - Pizza Party

Questions | Solve the problem below

Reagan is buying pizza for a pizza party. She wants to have 3 slices of pizza for each person coming to the party. The graph below represents the relationship between the number of slices of pizza and the number of party goers.





1) Is the graph proportional or non-proportional?	
2) What is the unit rate? (number of slices per person)	
3) How many pizza slices would she need for 9 people?	
4) Reagan bought 63 slices of pizza. How many people is she expecting?	
5) Use the graph to determine how many pizza slices she would need for 13 people?	
6) Use the graph to determine how many slices she would need for 17 people?	
7) If Reagan bought 147 slices of pizza, how many people was she expecting?	

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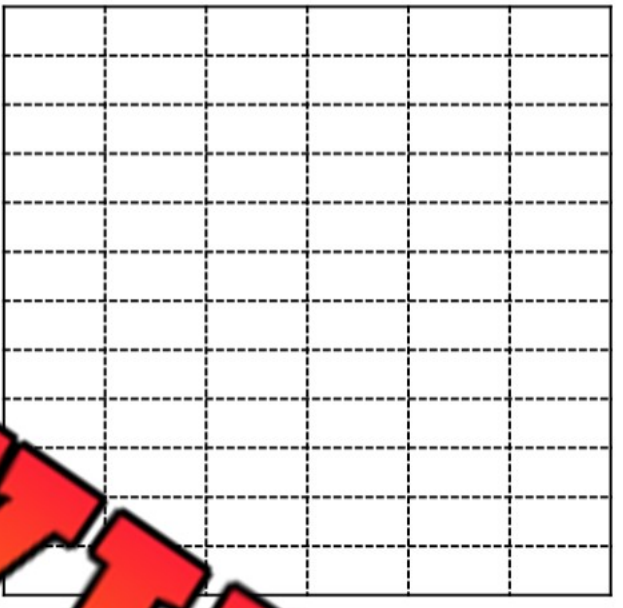
Proportional Relationship - Bank Account

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.

Week	Saving



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?	

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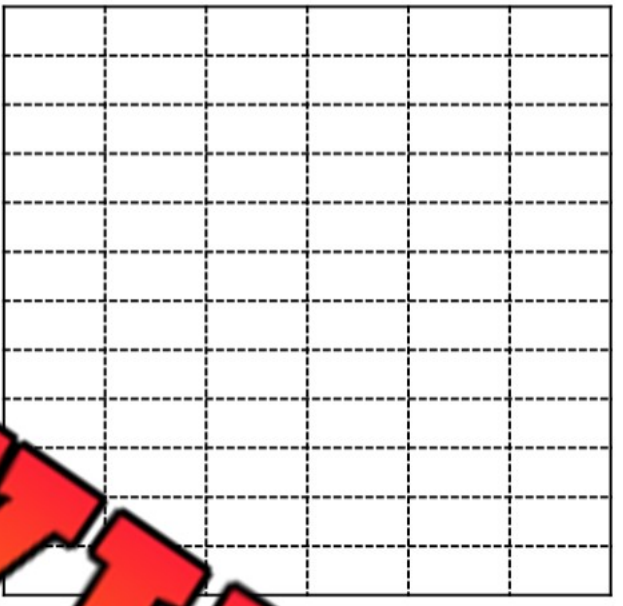
Proportional Relationship - Earnings

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

Daniel earns $350 a week from his job. Fill in his earnings over a 10-week period and graph his earnings.

	Total Savings
2	
6	
8	
10	



1) Is the relationship between weeks and savings proportional or non-proportional?	
2) How much did Daniel earn after 5 weeks?	
3) What is the unit rate? (earnings per week)	
4) How much does he earn after 3.5 weeks?	
5) After 20 weeks, how much would Daniel have earned?	
6) After 25 weeks, Daniel saved all his money and then spent $2100. How much does he have now?	

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Proportional Reasoning - Quiz

Part 1 — Write the ratios for the questions below

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

Part 2 — Ci[illegible]wo e[illegible]l[illegible]ios for each of the questions below

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

Part 3 — Answer the word problems below

1) 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?

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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) $\frac{1}{9} + \frac{1}{9}$ [illegible] $\frac{1}{9} + \frac{1}{9} + \frac{1}{9} + \frac{1}{9} =$	
3) $\frac{2}{5}$ [illegible]	
4) $\frac{3}{6} + \frac{3}{6} + \frac{3}{6}$ [illegible] $+ \frac{3}{6} +$ [illegible]	
5) $\frac{4}{9} + \frac{4}{9} + \frac{4}{9} + \frac{4}{9} + \frac{4}{9} +$ [illegible]	
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 additi[illegible]d m[illegible]ntence

1) Jerry made 5 pizzas. Each of the pizzas have 2/7 cups of cheese. H[illegible]uch cheese do all 5 pizzas have in total?

Addition Sentence	Multiplication Sentence

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

Addition Sentence	Multiplication Sentence

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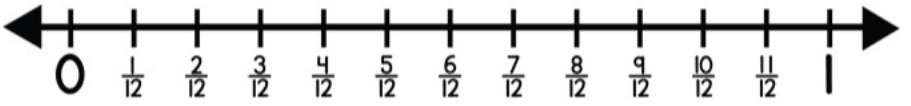
Multiply Whole Numbers by Fractions - Number Line

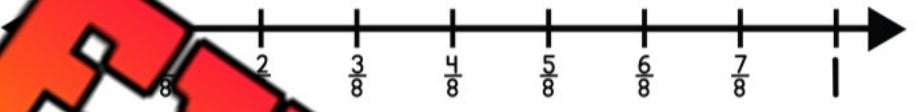
Questions Use the number line by skip counting to find the answer

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

2) $10 \times$



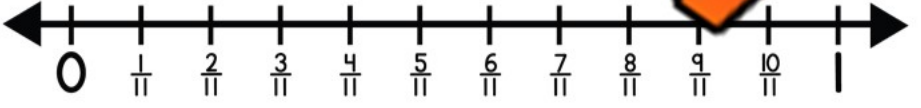
3) $7 \times \frac{1}{8} =$



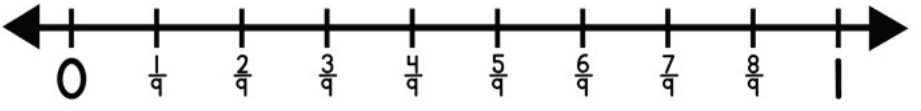
4) $5 \times \frac{1}{6} =$

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

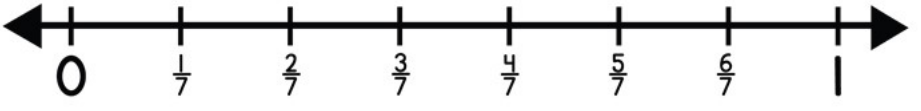
6) $7 \times \frac{1}{11} =$



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



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



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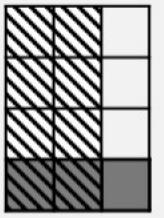
Multiplying Fractions - Area Models

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

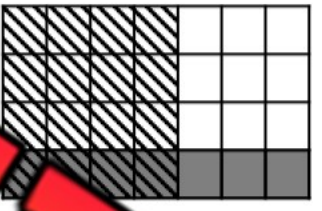
Step 1: Divide the area model into thirds horizontally to represent 2/3
Step 2: Draw diagonal lines that fill in two-thirds of the area model
Step 3: Di[illegible]e area model into fourths vertically to represent 1/4
Step 4: Sh[illegible]ne-fourth of the area model
Step 5: [illegible]ow many squares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

Questions [illegible]oduct [illegible]he area model. Steps 1-4 have been done for you

1)

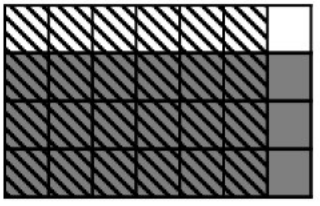
$\frac{3}{5} \times \frac{2}{4} = \_\_\_$

2)



[illegible] = ____

3)

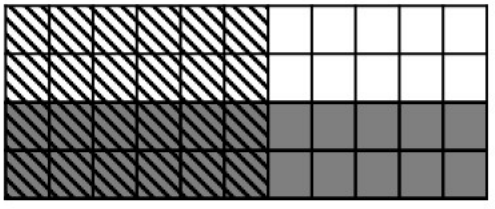


$\frac{6}{7} \times \frac{3}{4} = \_\_\_$

4)

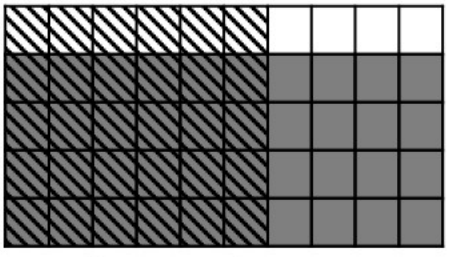
$\frac{5}{9} \times \frac{3}{5} = \_\_\_$

5)



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

6)



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

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Multiplying Fractions - Area Models

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

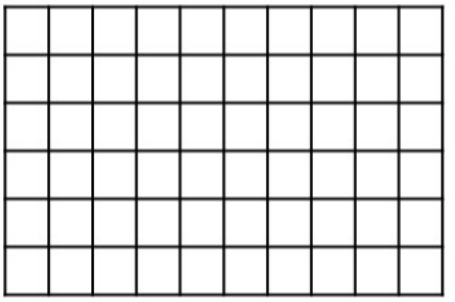
Directions:

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

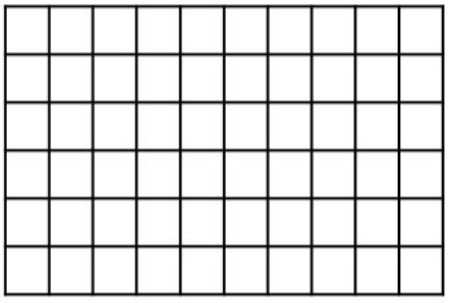
Question Find the product using the area models below

1) 

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

2) 

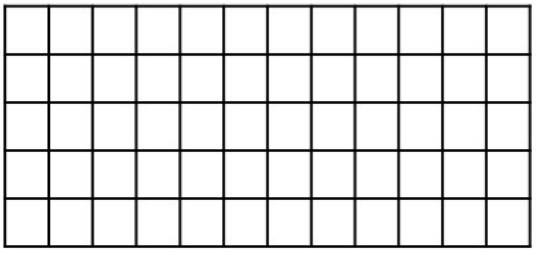
$\frac{3}{10} \times \frac{4}{6} = \_\_\_$

3) 

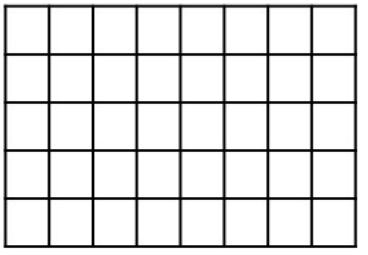
$\frac{4}{10} \times \frac{4}{6} = \_\_\_$

4) 

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

5) 

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

6) 

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

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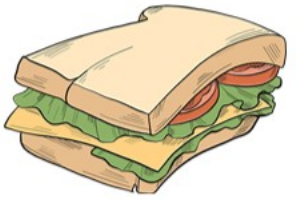
Multiplying Fractions - Word Problems

Questions Find the products of the fractions below

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

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



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

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

a) What fraction of the workday did Evie volunteer?

b) How much time did Atlas volunteer?

c) How much time did Evie volunteer?

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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

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

Part 2

Answer the word problems

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

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

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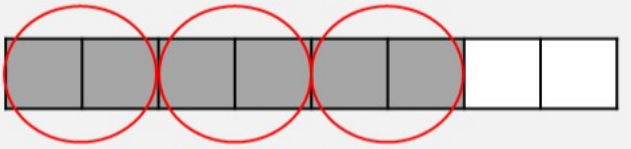
Dividing Fractions Using Models

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?)

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

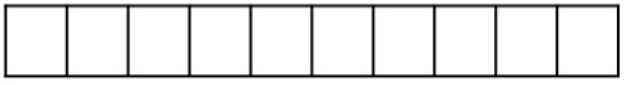


Solution – We can see that there are 3 two eights in six eights.

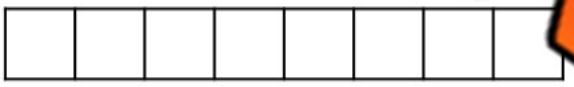
Questions: ...in the fraction bar. How many times does the divisor fit into the dividend

1) 

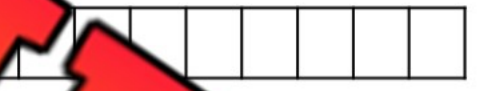
$\frac{4}{8} \div \frac{2}{8} =$ ____

2) 

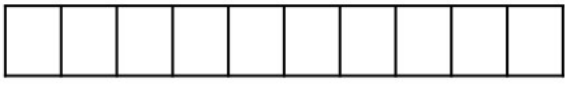
$\frac{9}{10} \div \frac{3}{10} =$ ____

3) 

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



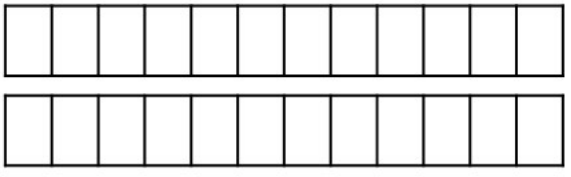
$\frac{2}{} \div \frac{2}{} =$ ____

5) 

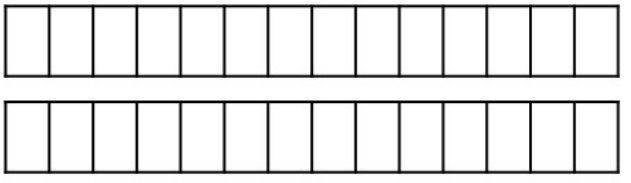
$\frac{8}{10} \div \frac{2}{10} =$ ____

6) 

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

7) 

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

8) 

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

Name: _____ 122

Curriculum Connection
N.6

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

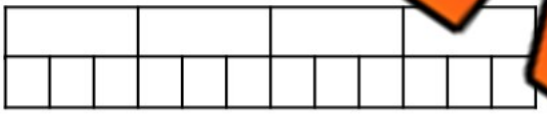
1)

$\frac{3}{5} \div \frac{1}{10} = \_\_\_$

2)

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

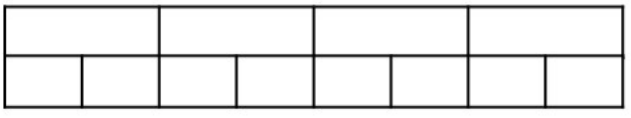
3)



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

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

5)

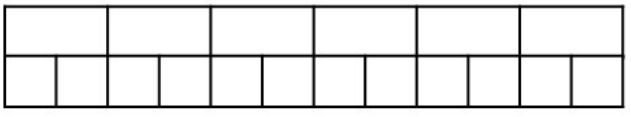


$\frac{3}{4} \div \frac{1}{8} = \_\_\_$

6)

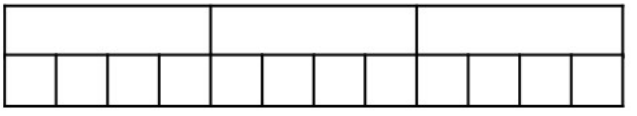
$\frac{1}{3} \div \frac{1}{9} = \_\_\_$

7)



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

8)



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

Name: _____ 124

Curriculum Connection
N.6

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]ine sandwich that is 9/10 of a metre long. He wants to cut it [illegible]ller s[illegible]s that are 3/30 of a metre long. How many sandwiches will he [illegible]e?

3) Hugh has a goal of exercising 12/4 hours a [illegible] He [illegible] several runs today. His runs take him 4/6 of an hour. How many [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: _____ 125

Curriculum Connection
N.6

Dividing Mixed Fractions

How to divide mixed fractions

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

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

Part 1

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

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

Part 2

Answer the word problem

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

Name: _____ 126

Unit Test - Fractions

Part 1 Convert the mixed numbers to improper fractions

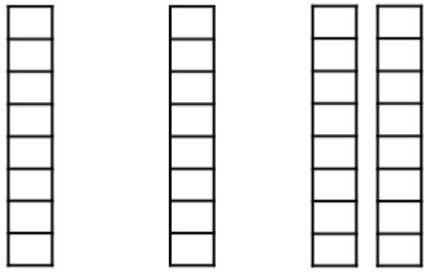
1) $7\frac{2}{4}$ =	2) $4\frac{1}{5}$ =	3) $5\frac{3}{5}$ =

Part 2 nvert the improper fractions to mixed numbers

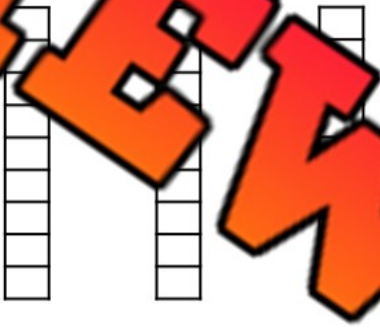
1) $\frac{2}{4}$ =	2) $\frac{26}{7}$ =	3) $\frac{34}{6}$ =

Part 3 Add and the below using the models

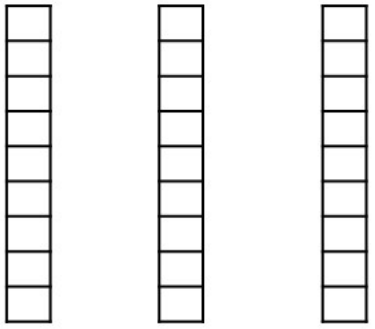
1) $\frac{6}{8} + \frac{4}{8} = \frac{\quad}{\quad}$



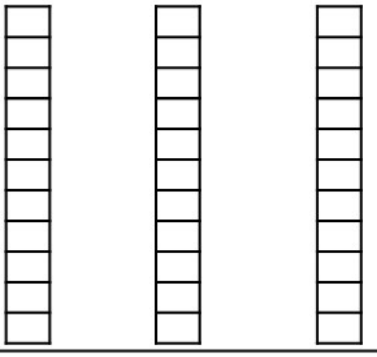
2) $\frac{3}{\quad} + \frac{\quad}{\quad} = \frac{\quad}{\quad}$



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



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

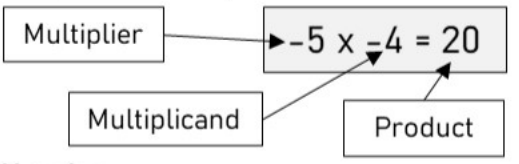


Name: _____ 141

Curriculum Connection
N.7

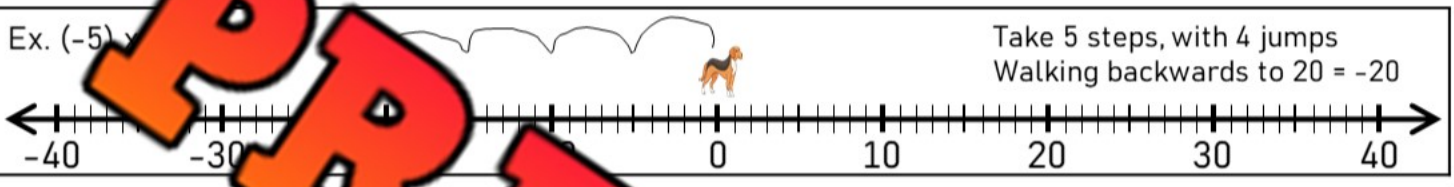
Multiplying Integers - Number Line

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



1) The dog always starts at 0
2) The multiplier tells us how many steps the dog will take.
3) The multiplicand tells us to walk <u>forwards</u> or <u>backwards</u>. For a positive number, walk forwards. For a negative number, walk backwards.
4) The multiplicand also tells us how many jumps to take.

Ex. (-5) x



Take 5 steps, with 4 jumps
Walking backwards to 20 = -20

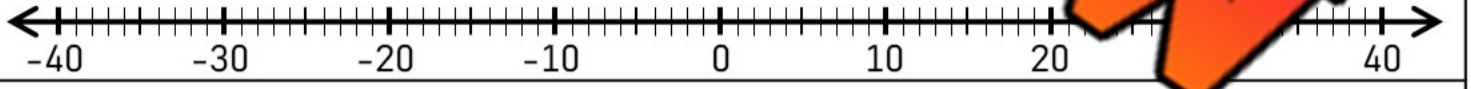
Questions

Use the number lines to solve the questions

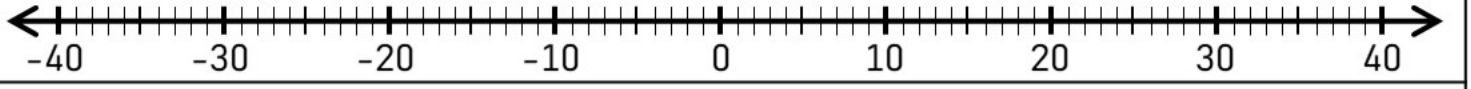
1) (-5) x (-7) =

2) 8 x (-4) =

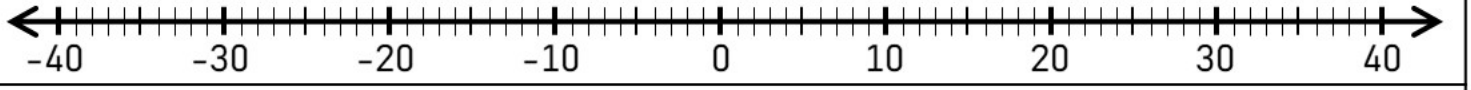
3) (-7) x 3 =



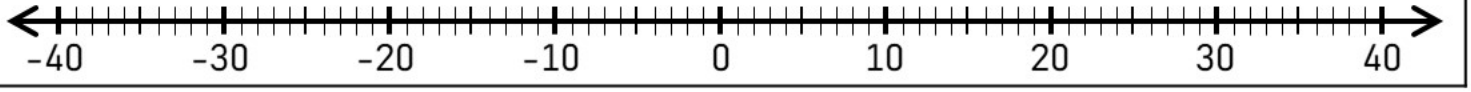
4) (-9) x (-4) =



5) 5 x (-8) =



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



Name: _____ 143

Curriculum Connection
N.7

Multiplying Integers

Adding Integers Rules

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

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

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

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

Part Us above to answer the 1-step equations below

1)	5 x (-2) =	6)	(-5) =	11)	(-8) x (-12) =
2)	(-7) x 7 =		5 x (	12)	13 x (-9) =
3)	(-8) x (-3) =	8)	(-12	13)	(-16) x 8 =
4)	12 x 8 =	9)	(-13) x (-11)		(-13) x (-13) =
5)	(-11) x 12 =	10)	20 x 7 =		00 =

Part 2 Simplify the multi-step expressions and u the

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

Name: _____ 144

Curriculum Connection
N.7

Multiplication Squares

Part 1

Fill in the squares by multiplying the integers

1)

x	5	-8
-3		
-7		

2)

x	2	-9
-8		
-6		

3)

x	7	-1
-9		
-3		

4)

x	-3	
-8		
6		

5)

	-7	-10
-1		

6)

x	12	-6
-4		
9		

7)

x	-15	-13
-3		
-5		

8)

x	-6	1
-4		
7		

	23	-56

Part 2

Fill in the squares by multiplying the integers

1)

x	6	-5	2
-4			
-7			
3			

2)

x	10	-11	12
-3			
-7			
-9			

3)

x	-5	15	-25
-2			
-4			
6			

Name: _____ 145

Curriculum Connection
N.7

Integer Multiplication Chart

Directions Fill in the chart by multiplying the integers

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

Name: _____ 146

Curriculum Connection
N.7

Dividing Integers - Number Line

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

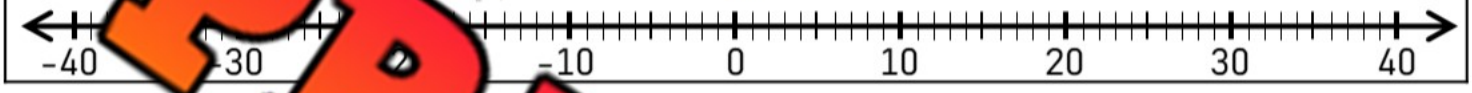
Dividend → (-15) ÷ 5 = 3 ← Quotient

Divisor

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

Ex. (-15) ÷

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



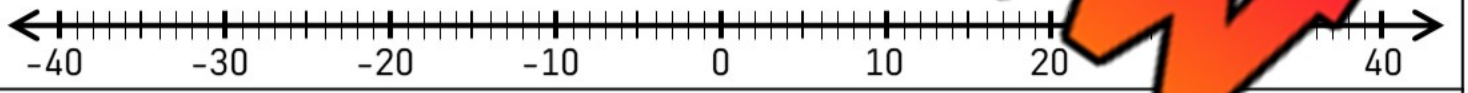
Questions

e the r lines to solve the questions

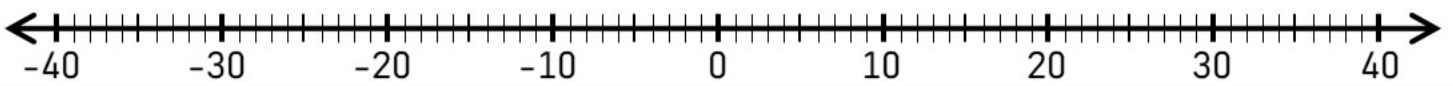
1) (-25) ÷ (-5) =

2) 12 ÷ (-4) =

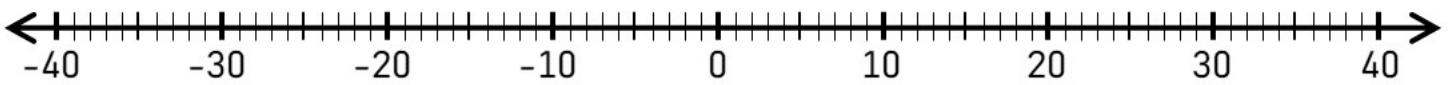
3) (-32) ÷ 4 =



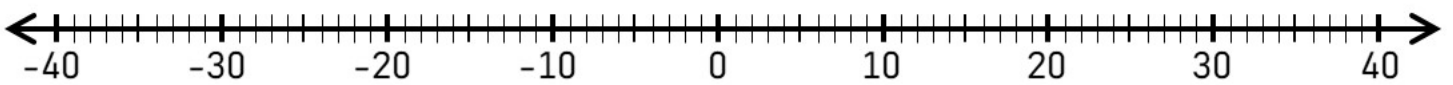
4) (-18) ÷ (-6) =



5) 24 ÷ (-8) =



6) (-36) ÷ (-3) =



Name: _____ 148

Curriculum Connection
N.7

Dividing Integers

Dividing Integers Rules – Same as Multiplication!

(+) ÷ (+) = (+) Dividing 2 positive integers will give a positive answer

(-) ÷ (-) = (-) Dividing 2 negative integers will give a positive answer

(+) ÷ (-) = (+) Dividing integers with different signs will give a negative answer

(-) ÷ (+) Dividing integers with different signs will give a negative answer

Part les above to answer the 1-step equations below

1)	15 ÷ (-3) =	6)	(-60) ÷ (-12) =
2)	(-49) ÷ 7 =		72 ÷ (-8) =
3)	(-66) ÷ (-6) =		÷ 11 =
4)	32 ÷ 4 =	9)	120) 15) =
5)	(-81) ÷ 9 =	10)	

Part 2 Simplify the multi-step expressions and use the r e

Ex) 28 ÷ (-7) ÷ (-2) = (-4) ÷ (-2) = 2	3) 50 ÷ 5 ÷ (-2)
1) (36) ÷ (-3) ÷ 6	4) 48 ÷ (-4) ÷ (-3) ÷ 2
2) (-72) ÷ (-8) ÷ (-3)	5) (-112) ÷ 2 ÷ (-2) ÷ 4

Name: _____ 149

Curriculum Connection
N.7

Division Squares

Part 1

Fill in the squares by multiplying the integers

1)

÷	5	-3
-15		
-30		

2)

÷	-6	3
18		
-12		

3)

÷	7	-2
28		
-56		

4)

÷	12	
-48		
36		

5)

	-4	-8
56		
-3		

6)

÷	-2	-12
-60		
96		

7)

÷	5	15
-75		
-105		

8)

÷	-22	1
-88		
66		

	3	-9

Part 2

Fill in the squares by multiplying the integers

1)

÷	2	-6	-10
-60			
90			
-180			

2)

÷	-3	-6	9
18			
-54			
90			

3)

÷	-5	15	-25
-75			
-150			
225			

Name: _____ 150

Curriculum Connection
N.7

Input/Output Tables - Integers

Directions Fill in the input/output tables by following the rules

1)

Input	Output
-11	
-7	
3	
12	
Multiply by	

2)

Input	Output
-48	
-26	
-12	
22	
56	
Divide by 2	

3)

Input	Output
-12	
-9	
-6	
0	
11	
Multiply by -8	

4)

Input	Output
-84	
-66	
36	
96	
114	
Divide by -6	

5)

Input	Output
-	
-1	
-9	
13	
15	
Multiply by -4	

6)

Input	Output
-90	
-75	
60	
Divide by -5	

7)

Input	Output
-13	
-11	
8	
12	
14	
Multiply by -12	

8)

Input	Output
-250	
-140	
90	
170	
330	
Divide by -10	

9)

Input	Output
-7000	
-6200	
-800	
4200	
10000	
Multiply by -100	

Name: _____ 153

Integers Quiz

Part 1 Solve the questions below

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

Part 2

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

Part 3 Answer the word problems below. Write the

1) You take 17 steps forwards, 15 steps backwards, another 25 step wards, and another 19 steps forwards. How many steps have you taken?

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

Name: _____ 157

Curriculum Connection
N.8

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 (Pi) ...	$\sqrt{2}$ - 1.414213562373095...	$\sqrt{10}$ - 3.162277660168379...

Part 1

Is ... r a ...tional or irrational number?

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

	Question	Rational/Irrational
)	$\sqrt{49}$	
8)	...25	
	$\sqrt{...}$	
10)	...1	
11)	$\frac{2}{6}$	
12)	$\sqrt{72}$	

Part 2

Write at least 10 rational and irrational numbers below

Rational Numbers	Irrational Numbers

Name: _____ 159

Curriculum Connection
N.8

Representing Integers as Fractions

Integers are rational numbers that can be represented as fractions. We can represent positive and negative whole numbers as fractions by putting the integer on top of the number 1.

For example: $-5 = \frac{-5}{1}$ and $+9 = \frac{9}{1}$

Part 1 Fill in the tables below

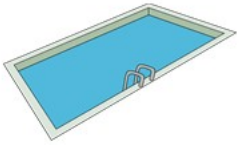
		Fraction
1)		
2)	-4	
3)		
4)	9	
5)		$\frac{2}{1}$

	Integer	Fraction
6)	-7	
7)		$\frac{-6}{1}$
8)	5	
		$\frac{3}{1}$
10)	-10	

Part 2 Word problems

1) Sienna pays $60 each month for her phone bill. Represent how much she spends a year as an integer and as a fraction.

2) Reagan is filling up her pool with water. Each hour, 100 litres is poured into the pool. Represent how many litres of water poured into the pool after 24 hours as an integer and a fraction.



3) A submarine plunged 64m below sea level. It plunged another 49m before coming back up. Represent how many metres below sea level the submarine was as an integer and a fraction.

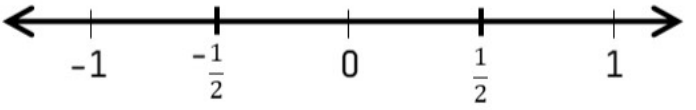
Name: _____ 160

Curriculum Connection
N.8

Proper Fractions - Number Line

A **proper fraction** has a numerator (top number) smaller than the denominator (bottom number). When we place a proper fraction on a number line, it will always fall between 0 and 1.

Example – Plotting $\frac{1}{2}$ and $\frac{-1}{2}$ on a number line

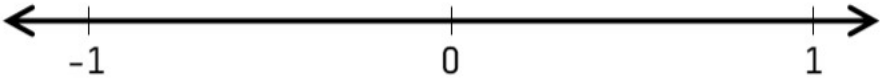


1) The denominator tells us how many equal parts are between 0 and 1
2) The numerator tells us how many parts starting from zero we move to plot our fraction
3) $\frac{1}{2}$ corresponds with $\frac{-1}{2}$, which means the same steps will work for both

Practice

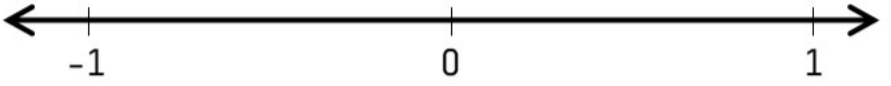
Plot the rational numbers on the number lines below

1) $\frac{1}{3}, \frac{-1}{3}, \frac{2}{3}, \frac{-2}{3}$



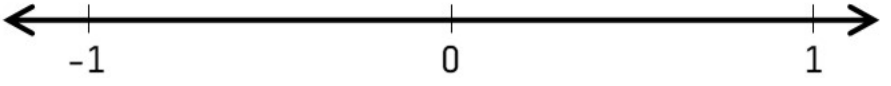
Put in order from least to greatest: _____

2) $\frac{1}{4}, \frac{-1}{4}, \frac{3}{4}, \frac{-3}{4}$



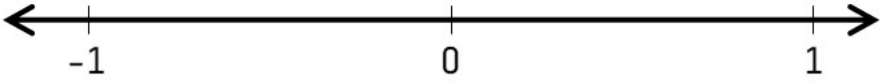
Put in order from least to greatest: _____

3) $\frac{1}{5}, \frac{-1}{5}, \frac{4}{5}, \frac{-4}{5}$



Put in order from least to greatest: _____

4) $\frac{4}{6}, \frac{-1}{6}, \frac{2}{6}, \frac{-5}{6}$



Put in order from least to greatest: _____

Name: _____ 165

Curriculum Connection
N.8

Comparing Rational Numbers - Fractions/Integers

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

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

Part 2 Arrange the fractions and integers from least to greatest

1) $\frac{6}{2}$, -5, $\frac{-12}{2}$, $\frac{16}{4}$, 2, $\frac{-4}{2}$, -7

2) $\frac{9}{2}$, -4, $\frac{-11}{2}$, $\frac{15}{5}$, 4, $\frac{-5}{1}$, -6

4) $\frac{14}{3}$, 4, $\frac{-15}{4}$, $\frac{20}{4}$, -3, $\frac{-20}{10}$, 8

5) $\frac{11}{3}$, 2, $\frac{18}{2}$, $\frac{-21}{7}$, 8, $\frac{-49}{7}$, -8

Name: _____ 168

Unit Test - Rational Numbers

Part 1 Is the number a rational or irrational number?

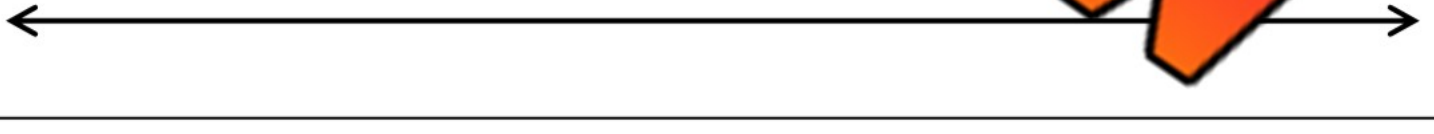
	Question	Rational/Irrational
1)	$\sqrt{24}$	
2)		
3)		

	Question	Rational/Irrational
4)	$\sqrt{49}$	
5)	$0.\overline{3}$	
6)	$\sqrt{10}$	

Part 2 n elimat ers, fractions and integers on the number line

1) $\frac{12}{4}$, 2.25, $\frac{6}{3}$, $\frac{8}{2}$, , -1.5

2) $\frac{1}{2}$, 0.75, $\frac{6}{2}$, $\frac{1}{10}$, -1.5, $\frac{8}{4}$, 0.25



Part 3 Use the <, >, = to compare the rational numbers below

1) $\frac{6}{8}$ ☐ $\frac{5}{4}$	2) $\frac{5}{9}$ ☐ $\frac{10}{18}$	3) $\frac{6}{2}$ ☐ $\frac{9}{4}$
4) $\frac{3}{4}$ ☐ $\frac{2}{1}$	5) $\frac{9}{1}$ ☐ $\frac{8}{1}$	6) $\frac{15}{3}$ ☐ $\frac{10}{5}$