Grade 8
Strand: B1. Number Sense

	Curriculum Expectations	Pages That Cover the Expectations
B1.1	represent and compare very large and very small numbers, including through the use of scientific	5 - 19
B1.2		
B1.3	estimate and calculate square roots, in various contexts	20 - 44
B1.4	use fractions, decimal numbers, and percents, including percents of more than 100% or less than 1%, interchangeably and flexibly to solve a variety of problems	58 - 83

Preview of 120 pages from this product that contains 442 pages total.

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Curriculum Connection
B1.1

Place Value – How Many...

Number	Trillions	Billions	Millions	Thousands	Ones
136 489 121 879 845	136	489	121	879	845

Part 1 How many of each are the numbers made up of? Fill in the table below

	Number	Trillions	Billions	Millions	Thousands	Ones
1)	[illegible] 851					
2)	163 24[illegible]					
3)	649 07[illegible] 845					
4)	846 843 013 21[illegible]					
5)	515 036 468 043 946					
6)	456 876 803 451 035					
7)	610 098 690 649 049					
8)	46 584 867 704 674					
9)	311 049 007 876 004					
10)	400 004 085 749 886					

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Part 2 Answer the questions below

1)	How many hundreds are in one-thousand?	
2)	How many thousands are in one-million?	
3)	How many millions are in one-billion?	
4)	How many billions are in one-trillion?	
5)	**Challenge**: How many millions are in one-trillion?	

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B1.1

Scientific Notation – Power of 10

Powers of 10 are used to make it easier to write larger numbers. Using powers of 10 allows us to write less zeros than we normally would.

$563000 = 5.63 \times 10^{5}$

For example:

5,000 = 5 x 1,000 or using powers of 10, you can say 5,000 = 5 x 10^3

The 3 is called an exponent. The exponent shows how many places the decimal has moved.

Part 1 Fill in the value for the exponents below

	Standard Notation	Using the Power of 10
1)	00	1 x 10 ☐
2)	00	1 x 10 ☐
3)	1 0	1 x 10 ☐
4)	10 000 000	1 x 10 ☐
5)	1 250 000 000	25 x 10 ☐
6)	5 458 000 000	5.4 x 10 ☐
7)	7 030 800 000 000	7.030 x 10 ☐
8)	30 8900 000 000 000	3.0 x 10 ☐
9)	527 200 000 000 000	5.272 x 10 ☐
10)	651 454 460 000 000	6.5145446 x 10 ☐

PREVIEW

Part 2 Kaylee made mistakes in her homework. Write the correct answer for her

	Standard Notation	Kaylee's Answer	Correct Answer
1)	652 000 000	652 x 10 [6]	
2)	13 300 000 000	133 x 10 [8]	
3)	853 120 000 000	85312 x 10 [7]	

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B1.1

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 value for the exponents below.

	Standard Notation	Scientific Notation
1)	60 000	$6 \times 10^{\square}$
2)	700 000	$7 \times 10^{\square}$
3)	8 000 000	$8 \times 10^{\square}$

2) Write the scientific notation of the numbers below.

	Standard Notation	Scientific Notation
1)	1 000 000	
2)	3 200 000 000	
3)	713 308 000 000	

Name: _____

1) Fill in the value for the exponents below.

	Standard Notation	Scientific Notation
1)	60 000	$6 \times 10^{\square}$
2)	700 000	$7 \times 10^{\square}$
3)	8 000 000	$8 \times 10^{\square}$

2) Write the scientific notation of the numbers below.

	Standard Notation	Scientific Notation
1)	1 000 000	
2)	3 200 000 000	
3)	713 308 000 000	

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Curriculum Connection
B1.1

Scientific and Standard Notation

Questions What is the scientific expanded notation of the numbers below?

1) 6 753 501 003

$(6 \times 10^9) + (7 \times 10^8) + (5 \times 10^7) + (3 \times 10^6) + (5 \times 10^5) + (1 \times 10^3) + (3 \times 10^0)$

2) 3 432 730

3) 17 128 000

038 018

5) 7 20

6) 5 308 020

7) 26 040 012 600

8) 105 030 007 805

9) 340 062 700 080

10) 9 040 502 020 500

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Curriculum Connection
B1.1

Comparing Numbers – Scientific Notation

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

1)	3×10^{6}	☐	4×10^{6}
2)	2	☐	6×10^{7}
3)	7.2×10^{8}	☐	7×10^{9}
4)	3.6×10^{3}	☐	6×10^{3}
5)	9.14×10^{2}	☐	9.22×10

6)	5×10^{-4}	☐	6×10^{-5}
7)	1.8×10^{-3}	☐	4.21×10^{-4}
8)	8×10^{-5}	☐	7.5×10^{-5}
9)	2.2×10^{-6}	☐	2.1×10^{-7}
10)	$\times$	☐	3.66×10^{-8}

PREVIEW

Part 2 Answer the word problems below

1) The population in China is 1.398×10^{6}. The population of the [illegible] is 3.282×10^{3}. Which country has the larger population?



2) The distance from Earth to Mercury is 9.16×10^{5} km. The distance from Earth to Venus is 4.14×10^{5} km. Which planet is further from Earth?



3) The approximate wavelength of red light is 7×10^{-7} metres. The approximate wavelength of ultraviolet light is 4×10^{-7}. Which wavelength is longer?



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B1.1

Place Value – Number Breakdown

Questions | Fill in the blanks below

Number Breakdown

400 005 020 200 302

Tr[illegible]	Billions	Millions	Thousands	Ones

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Fill in the blank[illegible] writin[illegible] entific notation below

(____ x 10□) + (____ x 10□) + (____ x 10□) + (____ x 10□) + (____ x 10□) + (____ x 10□)

Fill in the pattern below

400 005 020 200 302, 400 025 020 200 302, 400 0[illegible]0 20[illegible], _____

Fill in the pattern below

400 005 020 200 302, 400 005 024 200 302, _____, [illegible]00 302

Fill in the pattern below

400 005 020 200 302, _____, 410 005 020 200 302, 415 [illegible] 020 200 302

400 005 020 200 302	+ 1 000 000	
400 005 020 200 302	+ 1 000 010 000	
400 005 020 200 302	+ 100 001 000 010 000	
400 005 020 200 302	- 1 010 000 000	
400 005 020 200 302	- 100 000 001 000 100	

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B1.1

Place Value Quiz

Part 1 Which place value is the underlined number?

1) **8**75 315 465 862	2) 764 8**4**6 413 211 984	3) 5 651 21**5** 183 165
4) **7**94 83[illegible]3 188 893	5) **3**2 161 984 634 516	6) 2 48**7** 256 881 254

Part 2 Fi[illegible]e b[illegible]w – how many are in the number?

	Numbe[illegible]	[illegible]	Billions	Millions	Thousands	Ones
1)	92 504 812 158 184					
2)	258 184 586 021 648					
3)	807 515 033 665 485					

Part 3 Write the scientific notation of the nu[illegible]low

	Standard Notation	Scientific N[illegible]
1)	100 000	
2)	1 200 000	
3)	345 300 000	
4)	875 300 000 000	
5)	0.5480000	
6)	0.05700000	
7)	0.0068700000	

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Part 4 What is the standard form of the numbers below?

1) $(4 \times 10^6) + (2 \times 10^5) + (3 \times 10^4) + (5 \times 10^2) + (7 \times 10^1) + (8 \times 10^0)$

2) $(5 \times 10^9) + (9 \times 10^8) + (4 \times 10^7) + (4 \times 10^6) + (7 \times 10^5) + (2 \times 10^3) + (3 \times 10^0)$

3) $(2 \times 10^{8}$ $(5 \times 10^7) + (4 \times 10^6) + (7 \times 10^5) + (9 \times 10^3) + (3 \times 10^1)$

Part 5 Wr… and… form of the numbers below using powers of 10

1) 2 851 460 000

2) 5 005 430 301

Part 6 Write the standard notation of the wri… …s belo…

1) Eight trillion, two hundred forty-billion, one-million, twenty-seven thousand, three.

2) Seventy-thre… trilli… …o hundred thirty-three… …ty-one.

Part 7 Write the written form of the standard notation below

1) 40 500 802 200

2) 104 001 301 000 800

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Curriculum Connection
B1.3

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 =	

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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?

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B1.3

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?

_____

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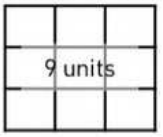
B1.3

Area of a Squares – Square Root

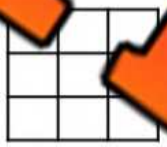
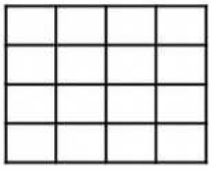
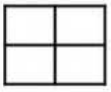
When we calculate the area of a square, we use a square number to determine the area.

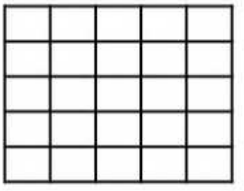
Example: 

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 $\sqrt{}$

PREVIEW

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	

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B1.3

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)		

PREVIEW

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 ☐	

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B1.3

Square Roots

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

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

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

PREVIEW

Part 1 ...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)	$\pm\sqrt{64}$	

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B1.3

Perfect Squares - Word Problems

Word Problems	Answer the word problems below

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



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

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

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

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



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

b) What is the side length of the garden?

c) How many metres of fencing will be needed?

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

PREVIEW

Curriculum Connection
B1.3

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	Area
[ ] 5cm	
[ ] 12m	

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

_____

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B1.3

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...

PREVIEW

Part 1

...ber ... nal or irrational number?

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

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

Part 2

Write at least 10 rational and irrational numbers below

Rational Numbers	Irrational Numbers

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B1.3

Terminating and Repeating Decimal

Terminating Decimal
- Decimals that come to an end

Example - 2/4 = 0.5

Repeating Decimal
- Decimals that never end

Example - 2/3= 0.66666... or $0.\overline{6}$

We can use a line over the repeating number or number pattern to show it repeats forever.

PREVIEW

Part 1 decimal a repeating or terminating decimal?

1) 0.6		6) 0.9	
2) 0.3		7) $0.\overline{72}$	
3) $0.\overline{7}$		) $0.41\overline{6}$	
4) 0.25		)	
5) $0.\overline{6}$		1 .8	

Part 2 Write the decimals below – use a line to eating mals.

1) $\frac{1}{3} = 0.\overline{3}$	2) $\frac{6}{10} =$	3)
4) $\frac{2}{3} =$	5) $\frac{8}{11} =$	6) $\frac{3}{9} =$
7) $\frac{1}{4} =$	8) $\frac{11}{12} =$	9) $\frac{4}{12} =$
10) $\frac{3}{5} =$	11) $\frac{4}{6} =$	12) $\frac{1}{12} =$
13) $\frac{5}{8} =$	14) $\frac{1}{8} =$	15) $\frac{7}{8} =$

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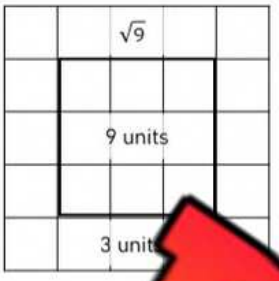
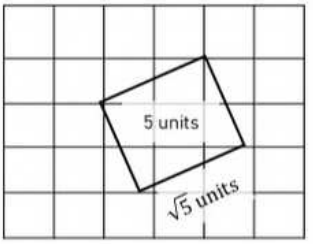
B1.3

Estimating Square Roots

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





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

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

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

PREVIEW

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

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

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Curriculum Connection
B1.3

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

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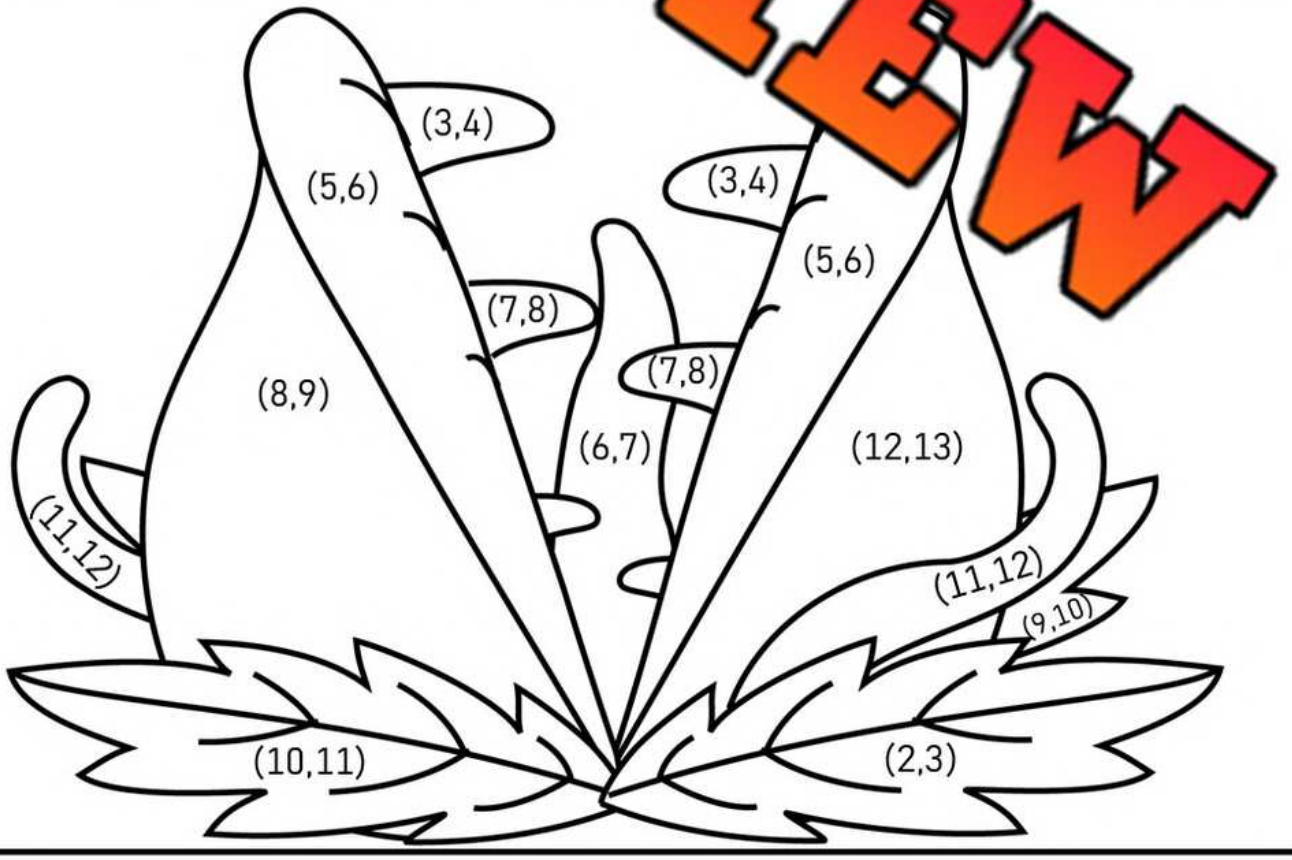

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B1.3

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	$\sqrt{18}$		

PREVIEW

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)

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B1.3

Estimating Square Roots

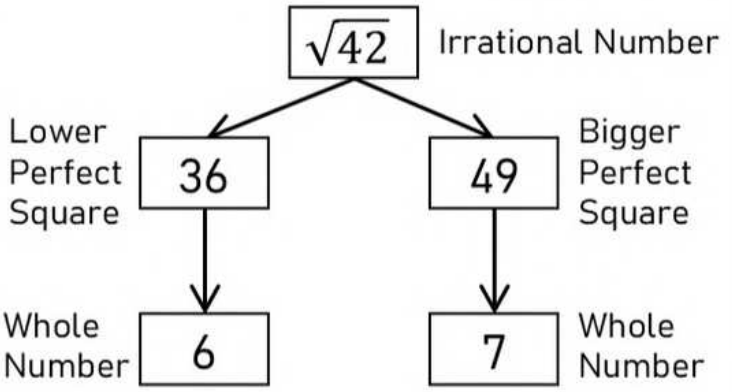
Step 1: Find the two perfect squares above and below the irrational number.

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: Convert the number using the lower perfect square number and simplified fraction from above.

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

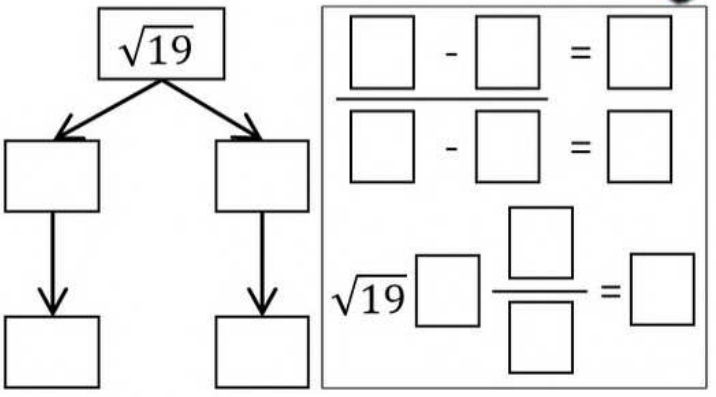


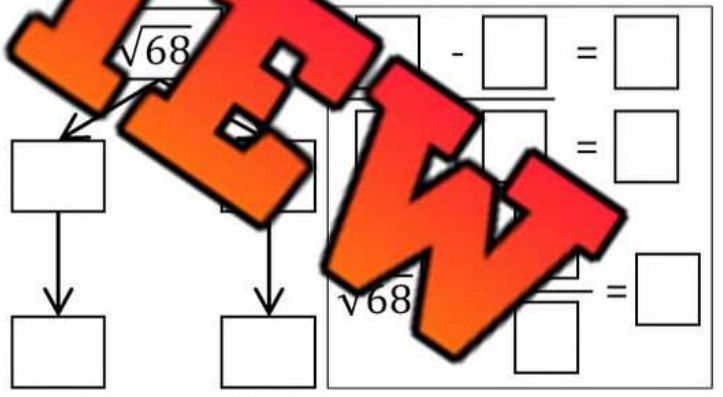
$$\frac{42 - 36 = 6}{49 - 36 = 13}$$

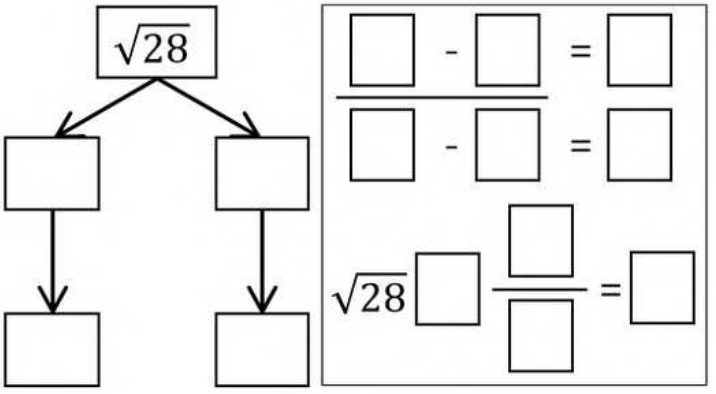
$$= 6\frac{6}{13} \text{ or } 6.46$$

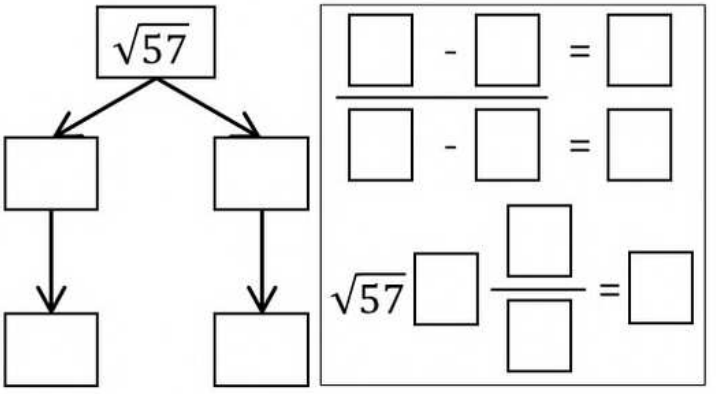
PREVIEW

Practice Fill in the blanks by following the steps above









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Name: _____ 41

Curriculum Connection
B1.3

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)	$\sqrt{75}$	☐	8
4)	7	☐	$\sqrt{}$
5)	$\sqrt{29}$	☐	$\sqrt{}$

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

PREVIEW

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, $\sqrt{23}$

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

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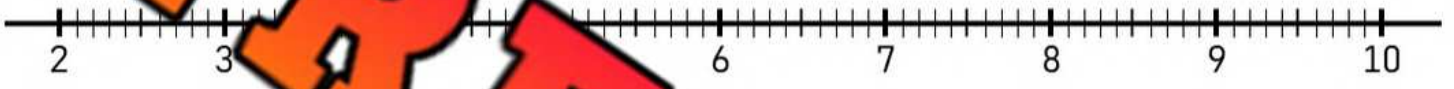
Curriculum Connection
B1.3

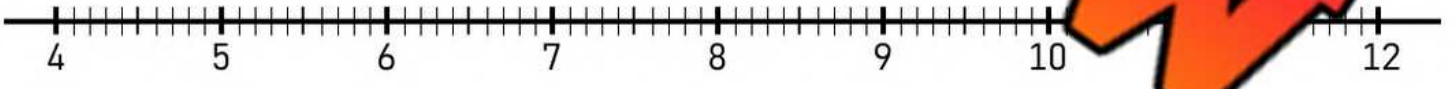
Square Roots – Number Line

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) $\sqrt{22}$



PREVIEW

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	☐	$\sqrt{142}$

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Curriculum Connection
B1.3

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) $\square$ $\sqrt{20}$

b) $\square$

2) Order from least to greatest

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

Name: _____

1) Which value is larger?

a) 4 $\square$ $\sqrt{20}$

b) 9 $\square$ $\sqrt{85}$

2) Order from least to greatest

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

Name: _____

1) Which value is larger?

a) 4 $\square$ $\sqrt{20}$

b) 9 $\square$ $\sqrt{85}$

2) Order from least to greatest

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

Name: _____

1) Which value i

a) 4 $\square$ $\sqrt{}$

b) 9 $\square$ $\sqrt{85}$

2) Order from least to greatest

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

PREVIEW

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Name: _____ 44

Curriculum Connection
B1.3

Square Roots - Word Problems

Word Problems	Answer the word problems below

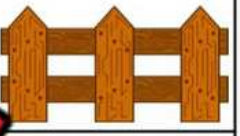
1) Jade painted a beautiful square painting. She would like to frame it, so she needs the dimensions of the sides. The area of the painting is 5m². What are the side lengths? Round to the nearest two decimal places.



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 m[illegible]tr[illegible] should he buy?



3) Livia made a rectangular painting for her friend. I[illegible]s a[illegible]e of [illegible]26cm². 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.



PREVIEW

Name: _____ 45

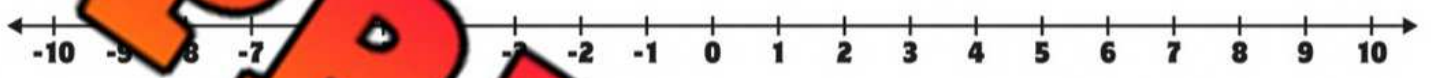
Curriculum Connection
B1.2

Introduction to Integers

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

Questions | Use the number lines to solve the questions

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



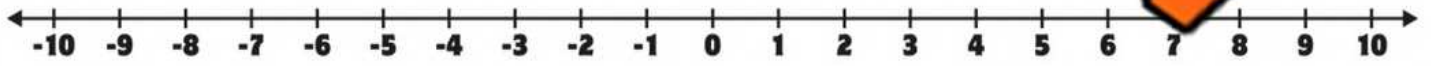
Rise in temperature

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



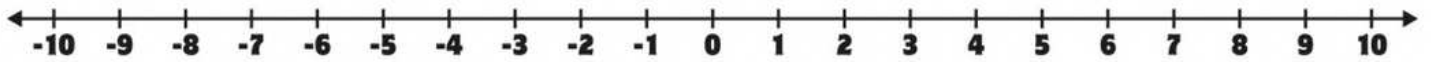
Earnings from cutting grass = $_____

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



Yards in the second half = _____

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



Extra shots in the fourth round = _____

PREVIEW

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Curriculum Connection
B1.2

Writing Integers

We can represent a situation using integers. In cases where we have less than zero, we can use a negative integer. When we have more than zero, we use a positive integer.

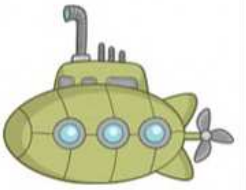
Example – Kaitlyn owes her father $20. Therefore, Kaitlyn has -$20.

Questions	Write the integer for the situation below

PREVIEW

1) Hank wit[illegible] $50 from his bank account. W[illegible]tatus of his bank accoun[illegible]e

2) A submarine plunged 132m below sea level. Write this as an integer.



3) The average tempe[illegible]re i[illegible]ber is -11. Write an integer that sh[illegible] temperature drop from July to D[illegible]mbe

4) The world's coldest temperature ever [illegible]orded was 89°C below zero. Write this [illegible]r as an integer.

5) Mount Logan is the highest mountain in Canada with a peak of 5,959m above sea level.



6) [illegible]ootb[illegible]ar[illegible]12 yards on th[illegible]of the[illegible] Write this numb[illegible]integ[illegible]



7) Savana played a great round of golf, shooting 7 strokes below par. What is her golf score as an integer?



8) Ryker lost $850 with a bad investment. Write his loss as an integer.



9) Bailey took 15 steps forwards and 27 steps backwards. Write how many steps she moved as an integer.

10) Nathan paid $15 the last 3 months for his Netflix account. Write how much he paid as an integer.

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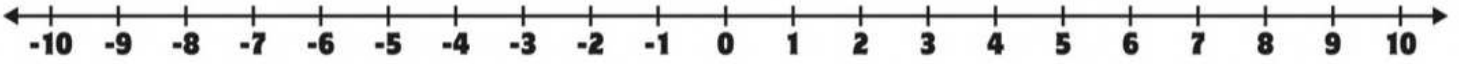
Curriculum Connection
B1.2

Comparing Integers



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

1) 9 ☐ -3 2) -7 ☐ 3 3) -10 ☐ 0

4) -2 ☐ 1 5) 1 ☐ -1 6) -10 ☐ 10

7) -3 ☐ 3 8) -5 ☐ 6 9) 8 ☐ -6

10) -6 ☐ -7 11) -7 ☐ -1 12) -1 ☐ 0

PREVIEW

Part 2 Arrange the integers from least to great

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

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Curriculum Connection
B1.2

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)	8	
2)	-4	
3)		
4)	9	
5)		$\frac{2}{1}$

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

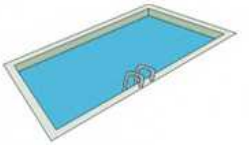
PREVIEW

Part 2 Word problems

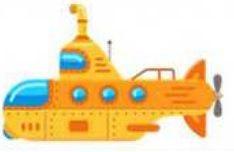
1) Sienna pays $60 each month for her phone bill. Represent how much she spends a year as an integer and as a fraction.



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.



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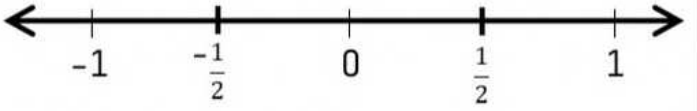
Name: _____ 49

Curriculum Connection
B1.2

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.



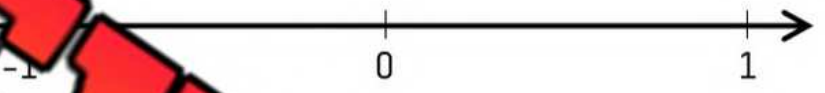
Example – Plotting $\frac{1}{2}$ and $\frac{-1}{2}$ on a number line

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

PREVIEW

Practice – Plot the rational numbers on the number lines below

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



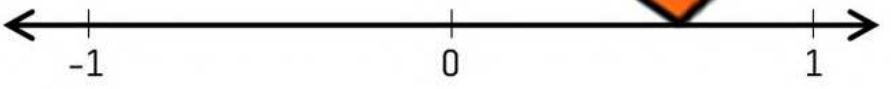
Put in order from least to greatest: _____

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



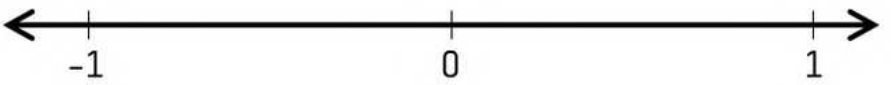
Put in order from least to greatest: _____

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: _____

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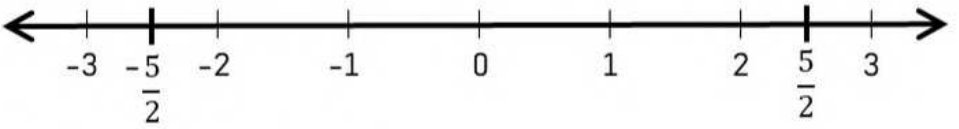
Name: _____ 51

Curriculum Connection
B1.2

Improper Fractions – Number Line

An **improper fraction** has a numerator greater than the denominator. This means there are more parts than the whole, which means we have a mixed number.



Example - plotting $\frac{5}{2}$ and $\frac{-5}{2}$ on a number line

1) Convert the improper fraction to a mixed number: $\frac{5}{2} = 2\frac{1}{2}$

2) Use the whole number you get from your conversion and the next whole number as the numbers we work with on your number line (2 and 3)

3) The denominator of our mixed number tells us how many equal parts we need between 2 and 3

4) The numerator tells us how many parts starting from zero we move to plot our fraction

5) $\frac{5}{2}$ corresponds with , which means the same steps will work for both

PREVIEW

Practice Plot the fractions on the number lines below

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



Put in order from least to greatest: _____

2) $\frac{9}{4}, \frac{-9}{4}, \frac{11}{4}, \frac{-11}{4}$



Put in order from least to greatest: _____

3) $\frac{14}{6}, \frac{-14}{6}, \frac{17}{6}, \frac{-17}{6}$



Put in order from least to greatest: _____

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Name: _____ 54

Curriculum Connection
B1.2

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 [illegible] 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

PREVIEW

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Curriculum Connection
B1.2

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) $\frac{-8}{7}$ ☐ $\frac{-9}{5}$

b) $\frac{6}{6}$ ☐ $\frac{8}{6}$

2) Order from least to greatest

$\frac{-3}{4}$, -2, $\frac{-1}{2}$, 7, $\frac{7}{2}$, 3

Name: _____

1) Which value is larger?

a) $\frac{-8}{7}$ ☐ $\frac{-9}{5}$

b) $\frac{6}{6}$ ☐ $\frac{8}{6}$

2) Order from least to greatest

$\frac{-3}{4}$, -2, $\frac{-1}{2}$, 7, $\frac{7}{2}$, 3

Name: _____

1) Which value is larger?

a) $\frac{-8}{7}$ ☐ $\frac{-9}{5}$

b) $\frac{6}{6}$ ☐ $\frac{8}{6}$

2) Order from least to greatest

$\frac{-3}{4}$, -2, $\frac{-1}{2}$, 7, $\frac{7}{2}$, 3

PREVIEW

Name: _____ 56

Curriculum Connection
B1.2

Comparing Rational Numbers – Decimals/Integers

Part 1 Plot the decimal numbers and integers on the number line

1) 0, -2, 1.5, -1.5, 2, 2.5, -2.5

2) 1, -1.5, -1.25, 2, -2, 2.75, -2.75



3) 3, -2.25, 2.5, 1.25, -2.75



4) 2.5, -3.75, 2.25, 3.5, -3.25, -2



Part 2 Put the integers and decimal numbers in order from least to greatest

1) -7, -7.412, 7, 7.39, 2^2

_____

2) -3, 2.984, -3.031, 3.012, 3^2

_____

3) 11.72, 11.26, -11.21, -11.37

_____

4) 9.63, -9.63, 9.3

_____

5) 21.35, 21.53, -5^2, -3^2, 3.747

_____

6) 2^3, -2^3, -8.107, 8.01, 0

_____

PREVIEW

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Curriculum Connection
B1.4

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



PREVIEW

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			

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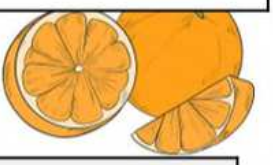
Name: _____ 64

Curriculum Connection
B1.4

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		

PREVIEW

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Curriculum Connection
B1.4

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)	

PREVIEW

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	

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Curriculum Connection
B1.4

Sport Statistics – Fractions, Decimals, and Percents

Questions | Basketball Statistics – Shooting Percentages



1) Pascal Siakum played power forward for the Toronto Raptors in 2021.
His shooting percentages for the 2021 season are listed in the table below.

	2 pointers	3 pointers	Free Throws
Fr	437/961	73/246	249/301
D			

a) If Siakum t[illegible] 00 thr[illegible]ters, how many would he have made?	
b) If Siakum had take[illegible] many would he have made?	
c) If Siakum had taken 550 fr[illegible]ows[illegible]ld he have made?	
d) If Siakum took 500 three pointers, h[illegible]any wo[illegible]ma[illegible] made?	

PREVIEW

2) OG Anunoby played small forward for the Tor[illegible]s in 2[illegible]
His shooting percentages for the 2021 season are lis[illegible]w.

	2 pointers	3 pointers	
Fraction	249/519	104/261	
Decimal			
Percent			

a) If OG had only taken 100 free throws, how many would he have made?	
b) If OG had taken 850 free throws, how many would he have made?	
c) If OG had taken 650 three pointers, how many would he have made?	
d) If OG had taken 1000 three pointers, how many would he have made?	

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Name: _____ 73

Curriculum Connection
B1.4

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] d Blakely all ran for student president. Gracie received 35% of the 200 vot[illegible] d 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. Hi[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?



PREVIEW

Curriculum Connection
B1.4

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?

_____

PREVIEW

Name: _____ 75

Curriculum Connection
B1.4

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		

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Name: _____ 76

Curriculum Connection
B1.4

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?

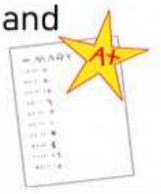


2) Gavin [illegible]ur. He received a raise from his boss and is now earning $60 an h[illegible]oes Gavin earn now in relation to what he earned before t[illegible]raise?



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



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Name: _____ 80

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, $\sqrt{4}$

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Part 4 Is the number a rational or irrational number?

	Question	Rational/Irrational
1)	$\sqrt{24}$	
2)	9	
3)		

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

Part 5 ...square roots of the numbers below by filling in the table

	Non-P... Square	Two ... Square Roots	Estimate	Calculate round to tenth
1)	$\sqrt{20}$			
2)	$\sqrt{90}$			
3)	$\sqrt{6}$			
4)	$\sqrt{30}$			

PREVIEW

Part 6 Plot the rational numbers on the number ... be...

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



Put in order from least to greatest: _____

2) $\frac{7}{3}, \frac{-7}{3}, \frac{8}{3}, \frac{-8}{3}$

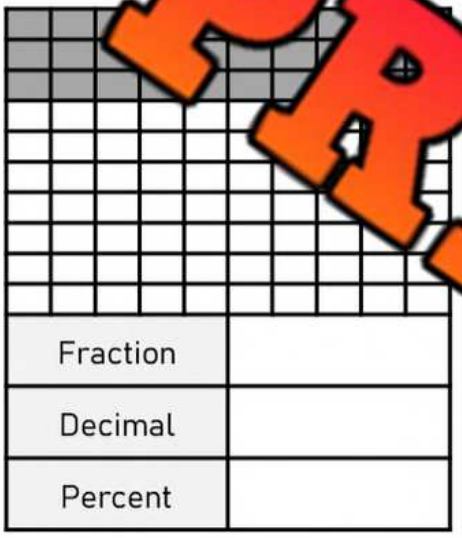


Put in order from least to greatest: _____

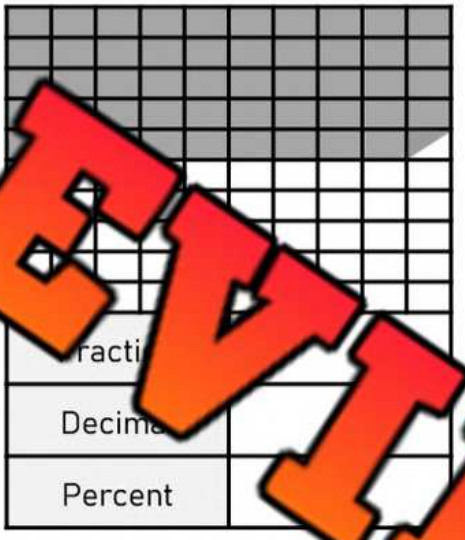
Part 7 Use the <, >, = to compare the integers below

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) $\frac{-15}{3}$ ☐ $\frac{-10}{5}$

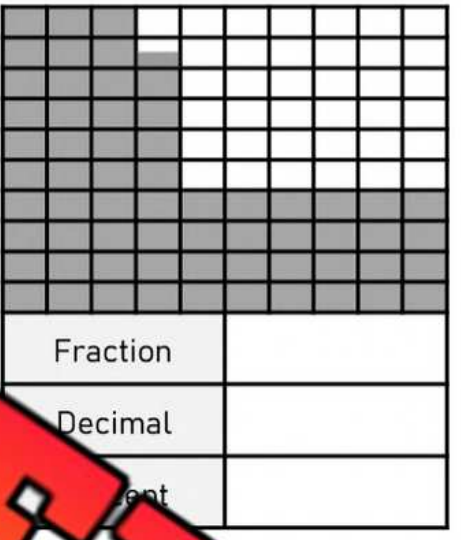
Part 8 t fraction, decimal and percent of the array is shaded in?



Fraction	
Decimal	
Percent	



Fracti	
Decima	
Percent	



Fraction	
Decimal	
ent	

PREVIEW

Part 9 Convert the fractions to a decimal an ent

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

Part 10 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?



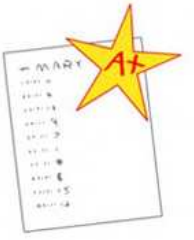
2) Fa[illegible] sells them. It costs her $1 to make a cookie. She sells each co[illegible]e for $[illegible] percentage is the selling price in comparison to the cost price?



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?



PREVIEW

Grade 8
Strand: B2. Operations

	Curriculum Expectations	Pages That Cover the Expectations
B2.1	use the properties and order of operations, and the relationships between operations, to solve problems involving rational numbers, ratios, rates, and percents, including those requiring multiple steps or multiple operations	85 – 89, 99, 132 – 138
B2.2	understand and recall commonly used square numbers and their square roots	90 - 98
B2.3	use mental math strategies to multiply and divide whole numbers and decimal numbers up to thousandths by powers of ten, and explain the strategies used	100 - 105
B2.4	add and subtract integers, using appropriate strategies, in various contexts	106 - 116
B2.5	add and subtract fractions, using appropriate strategies, in various contexts	139 - 167
B2.6	multiply and divide fractions by fractions, as well as by whole numbers and mixed numbers, in various contexts	168 - 205
B2.7	multiply and divide integers, using appropriate strategies, in various contexts	117 - 131
B2.8	compare proportional situations and determine unknown values in proportional situations, and apply proportional reasoning to solve problems in various contexts	206 - 222

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Curriculum Connection
B2.1

Mixed Operations - BEDMAS

When solving an equation, you need to follow the order of operations. This means you have to solve the equation in the correct order, not just from left to right. Using BEDMAS helps us remember the order to solve.

1. Brackets 2. Exponents 3. Division or Multiplication (whichever is first)
4. Addition or Subtraction (whichever is first)

Example 1
[illegible] + 18

Example 2
12 – 3 ÷ (3 x 1)
12 – 3 ÷ 3
12 – 1 = 11

PREVIEW

Questions [illegible] the equations using BEDMAS

1) 7 + (5 x 7)	[illegible]	3) (8 x 6) + (4 ÷ 2)
4) 36 ÷ 6 x 4	5) 11 + 3 x 10	[illegible] (2 + 3)
7) 48 ÷ 6 x (4 + 10) – 7	8) 52 – 12 x 3	9) 50 + (3 x 11) – 12
10) 35 – 15 ÷ 5 + 25	11) 42 – 5 x 3 + 32	12) (8 – 3)(3 x 2)

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Curriculum Connection
B2.1

Order of Operations – Who's Right?

Questions Quinn and Alex both answered the questions below. Circle who's right

	Question	Quinn's Answer	Alex's Answer
1	8 + 4 x 4 + 16	40	64
2	[illegible] x 3 + 13	39	103
3	[illegible] x 16	48	3
4	15 x 2 + [illegible]	21	36
5	48 ÷ 8 x (7 + 4)	66	46
6	81 ÷ 9 + (8 – 3 x 2)	1[illegible]	[illegible]
7	10(15 – 2 x 5 – 2)	30	630
8	(25 - 20)6(1 + 2)	33	90
9	(66 ÷ 6) – (2 + 3 x 2)	3	1
10	5 + 4 x 8 + 12 – 8 ÷ 2	38	45

PREVIEW

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Curriculum Connection
B2.1

Comparing Two Quantities

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

1)	$8 + 7 \times 2$	☐	$9 + 2 \times 5$	6)	$25 - 7 \times 3$	☐	$\frac{9^2}{9} + 2$
2)	$11 -$	☐	$7 \times 7 - 20$	7)	$3^3 \div 9 \times 4$	☐	$48 - 22 \times 2$
3)	15	☐	$\times 2$	8)	$62 - 5^2 \times 2$	☐	$(6 + 4) \times 2$
4)	$\frac{25}{5} + (10 + 5)$	☐		9)	$\frac{48}{12} + (4)(8)$	☐	$4^2 + 5 \times 2$
5)	$\frac{100}{5^2} \times 8$	☐	$8 + 8 \times 2$	10)		☐	$15 + 7 \times (2 + 6)$

PREVIEW

Part 2 Answer the word problems be

1) Parker had $500 in his bank account. He made 5 wi wal What is the balance of his account now? Write an expression tha problem.

2) Use the following numbers/operations to write 5 different expressions. Use all 3 numbers in each expression. Consider using brackets and exponents.

2 10 3 x - + ÷

1)	
2)	
3)	
4)	
5)	

Name: _____ 88

Curriculum Connection
B2.1

Expressions Written As Fractions

When we solve an expression that is written as a fraction, we follow these steps:

1) Evaluate the numerator
2) Evaluate the denominator
3) Divide the denominator by the numerator.

Example

$$\frac{2+8(2)}{15-6}$$
$$= \frac{2+(16)}{15-6}$$
$$= \frac{18}{9}$$
$$= 2$$

Questions Solve the expressions using BEDMAS

PREVIEW

1) $\frac{(4)}{11(2)}$	2) $\frac{24-6(2)}{2^2}$	3) $\frac{30+8^2}{5^2-11(2)-1}$
4) $\frac{24-8(2)}{2^2}$	5) $\frac{7+8+}{35-3}$	$\frac{12(2)+24}{3(2)}$
7) $\frac{3+9+6(5)}{21\div 3}$	8) $\frac{28+8\div 2}{3(4)-4}$	9) $\frac{16+8(5)}{(5)(5)-18}$

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Curriculum Connection
B2.1

Expressions as Fractions – The Canteen

Questions | Write expressions written as a fraction

A canteen sells drinks, chips, and gummies. The prices are displayed in the table below.



Candy	Price
Drinks	$3
Gummies	$2
Chips	$4



PREVIEW

1) Sarah, Juli[illegible] ran [illegible]nteen last Monday. They sold 6 bags of chips and 6 drinks.

Write an expression t[illegible]ts[illegible]ch money they earned and how much each person will get if th[illegible] the [illegible]qually.

2) Mark, Dan, Chris, Hugh and Lucas ran the ca[illegible]en [illegible]sold 9 drinks, 5 gummies, and 2 bags of chips.

Write an expression that represents how much money t[illegible]earn[illegible]uch each person will get if they divide the earnings equally.

3) On a busy day for the canteen, 8 friends ran the canteen. They sold 12 drinks, 10 gummies, and 12 bags of chips.

Write an expression that represents how much money they earned and how much each person will get if they divide the earnings equally.

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Curriculum Connection
B2.2

Adding Square Roots

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

Example 1

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

Example 3

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

Example 3

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

Example 4

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

Ques… S… …xpressions below

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

PREVIEW

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Name: _____ 91

Curriculum Connection
B2.2

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

PREVIEW

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) $\sqrt{168 - 24}$

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Curriculum Connection
B2.2

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 r[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.

PREVIEW

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Curriculum Connection
B2.2

Task Cards | Cut out the task cards below

Task Card 21:

Calculate:

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

Task Card 22:

$\sqrt{3} \quad 6 =$ _

Task Card 23:

Calculate:

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

Task Card 24:

Calculate:

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

Task Card 25:

Calculate:

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

Task Card 26:

Calculate:

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

Task Card 27:

Calculate:

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

Task Card 28:

ulate:

$\sqrt{\quad} =$ ___

Task C

Calculate:

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

Task Card 30:

Calculate:

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

PREVIEW

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Name: _____ 98

Curriculum Connection
B2.2

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	

PREVIEW

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Name: _____ 99

Curriculum Connection
B2.1

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

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

PREVIEW

Instruction ate answers to the expressions using BEDMAS

1) $\sqrt{100} - 5^2 + 15$	$\sqrt{4}$	3) $8^2 \div \sqrt{64} - 3$
4) $\sqrt{121} - 2^2 + 22$	5) $6^2 \div \sqrt{144} - 2$	$\sqrt{81}$ + 1
7) $10^2 \div \sqrt{25} - 12$	8) $(\sqrt{121} - 8) \times 2^3$	9) $8^2 \div \sqrt{4} \times 3$

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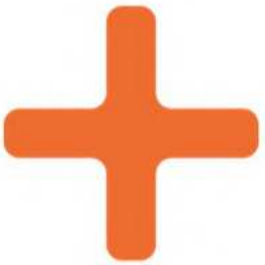
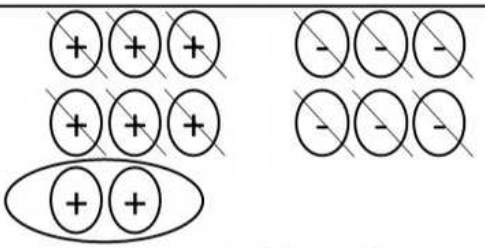
Curriculum Connection
B2.4

Adding Integers – Zero Pairs





8 + (-6) = 2



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

PREVIEW

1) _____ + _____ = _____

2) _____ + _____ = _____

3) _____ + _____ = _____

4) _____ + _____ = _____

5) _____ + _____ = _____

6) _____ + _____ = _____

7) _____ + _____ = _____

8) _____ + _____ = _____

9) _____ + _____ = _____

10) _____ + _____ = _____

11) _____ + _____ = _____

12) _____ + _____ = _____

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Name: _____ 108

Curriculum Connection
B2.4

Golf - Adding Integers – Zero Pairs



Word Problems Solve the word problems below using counter chips

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



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

Equa[illegible] _____ + [illegible] + _____ = _____

2) Ryker playe[illegible] unds o[illegible] is final scores for all three rounds are on the scorecard. What is [illegible] tal s[illegible]



Round	Score
1	-13
2	-8
3	+11
[illegible] Score	

Equation: _____ + _____ + _____ = _____

3) Sara played 4 rounds of golf. Her final scores are [illegible] the s[illegible]rd, but she can't remember what she scored on her first round. Help [illegible] co[illegible] score card.



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



Equation: _____ + _____ + _____ + _____ = _____

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



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

Equation: _____ + _____ + _____ + _____ = _____

PREVIEW

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Curriculum Connection
B2.4

Adding Integers – Using Number Lines

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

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

Part 1 Solve the questions below

1) 9 + (-4	6) -35 + 21 + (-17)
2) 15 3) + 5	7) 17 + (-25) + (-11)
3) -17 + 30 + (-13)	8) -10 + (-10) + 35 + (-12)
4) 20 + (-32) + (-7)	9) 19 +) + (-7) + (22)
5) -18 + 20 + (-21)	10) + (23

PREVIEW

Part 2 Answer the word problems below. Write the equations

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



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



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Curriculum Connection
B2.4

Adding Integers – Using Number Lines

Adding Integers Rules

(+) + (+) = (+) Adding 2 positive integers will always give a positive answer

(-) + (-) = (-) Adding 2 negative integers will always give a negative answer

(+) + ( ) = (-) Adding integers with different signs → use the larger number

(+) + ( ) = (+) Adding integers with different signs → use the larger number

*** If [illegible] sign, add them and keep the sign

*** If the [illegible] signs, subtract them and use the sign of the larger number

PREVIEW

Part 1 Use the [illegible] the 1-step questions below

1) 68 + (-32)	[illegible] + (-121)
2) 57 + (-76)	6) (-1[illegible]-121)
3) -115 + (-122)	[illegible] + (-2
4) (+133) + (+77)	8) -353[illegible]

Part 2 Simplify the multi-step questions and use the rul[illegible]

1) 31 + (-26) + (-23)	4) 52 + 35 + (-53) + (-37)
2) 54 + (-58) + 33	5) 78 + (-75) + (-33) + 45
3) -82 + (-42) + (-35)	6) -128 + 96 + (-90) + 132

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Name: _____ 111

Curriculum Connection
B2.4

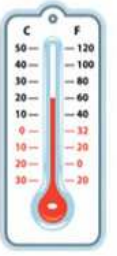
Adding Integers - Word Problems

Solve Answer the questions below. Include the equation and negative integers involved

1) While playing a video game, Alex scored 20 points in the first round and lost 12 points in the second round. What is his net score after the two rounds?

PREVIEW

2) On Monday, the temperature was -3°C. On Tuesday, it increased by 7°C. What was the temperature on Tuesday?



3) In a game, Sarah scored -15 points, and Tom scored [illegible] is the combined score of Sarah and Tom?



4) A submarine is at a depth of 180 meters below sea level. It descends another 60 meters. What is its new depth below sea level?

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Curriculum Connection
B2.4

Subtracting Integers – Keep, Flip, Change

Subtraction Integers Rules

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

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

- **K**eep the first integer
- **Flip** the operation
- **Change** the sign of the next integer

PREVIEW

Part 1

Apply the rule above to solve the problems

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

Part 2

Answer the word problem below. Write the equation

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

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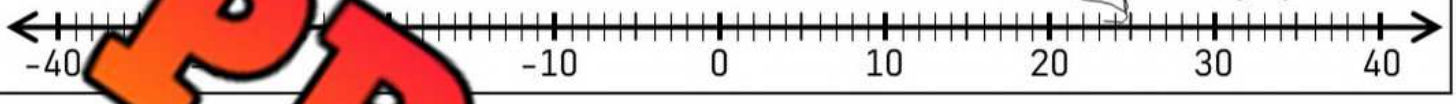
Curriculum Connection
B2.4

Subtracting Integers – Number Line

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

1) Determine how far the numbers are on a number line (25 and -35 has a distance of 60 in total – magnitude of 60)
2) The direction you move **<u>from</u>** the **second** number to the **first** number will tell you which sign to use. When we move left, we are moving in a negative direction (-) and when we move right, we are moving in a positive direction (+)

Ex. 25 – (-35) = 60



Questions Use the number lines to solve the questions

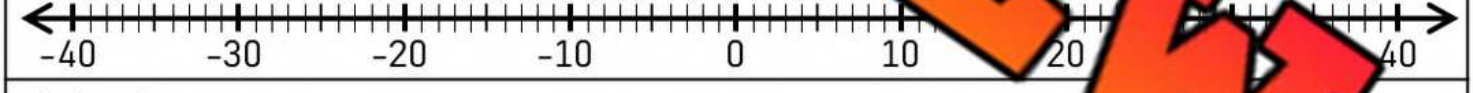
1) (-30) – (-16) =



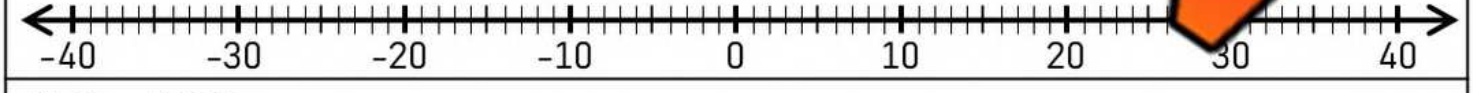
2) 25 – (-25) =



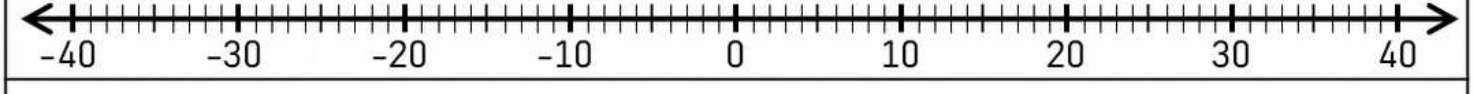
3) (-20) – 10 =



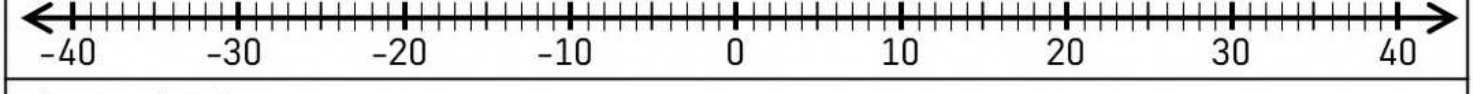
4) (-35) – 19 =



5) 31 – (-37) =



6) (-38) – (-22) =



7) 40 – (-36) =



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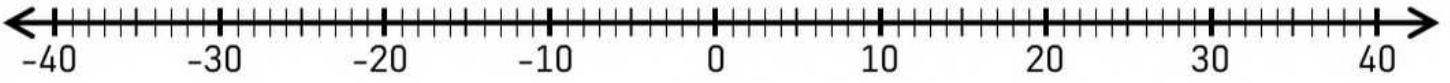
Curriculum Connection
B2.4

Subtracting Integers – Number Line



Part 1 Solve the questions below

1) 27 - (=	6) (-35) - 22 =
2) ((-26) =	7) 27 - (-16) =
3) (-23) - 31 =	8) (-38) - (-15) =
4) 36 - (-17) =	(+13) =
5) (-39) - 18 =	12) =

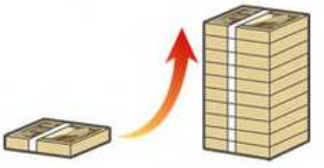
PREVIEW

Part 2 Answer the word problem below. Write the equ n fo

1) The winner of a golf tournament scored a -21 after four rounds. Th place golfer scored a +47. What is the difference between these two score



2) Dan and Brianna both invested some of their money in the stock market. Dan lost -$386 and Brianna earned +$521. What is the difference between their earnings and losses?



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B2.4

Subtracting Integers – Word Problems

Questions | Answer the questions below

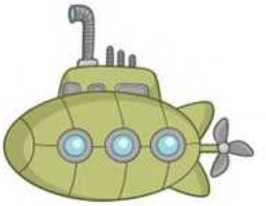
1) The temperature in the morning was 5°C and dropped to -3°C in the evening. What was the change in temperature?

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



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

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



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Curriculum Connection
B2.7

Multiplying Integers – Number Line

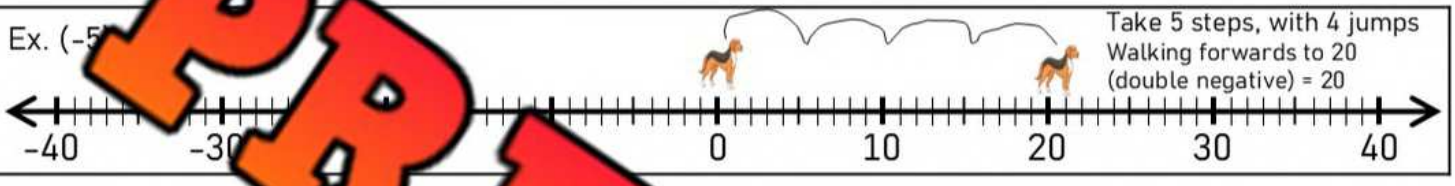
Follow these steps to use a number line for solving multiplication questions involving integers.

Multiplier → -5 x -4 = 20 ← Product

Multiplicand → -5 x -4 = 20

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.
5) If both numbers are negative, the answer will be positive (the dog will jump in the opposite direction)

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

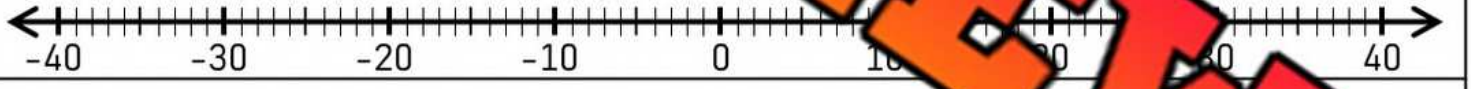


Questions Use the number line to solve the questions

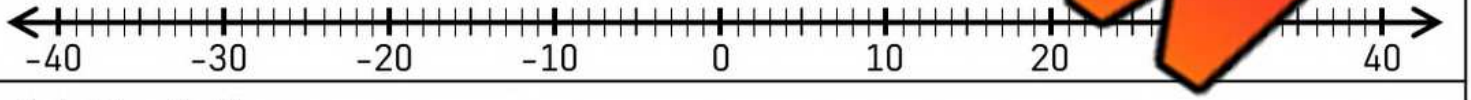
1) (-5) x (-7) =



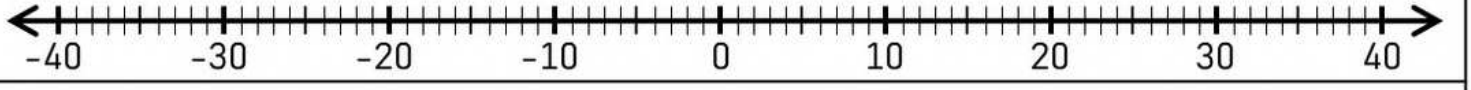
2) 8 x (-4) =



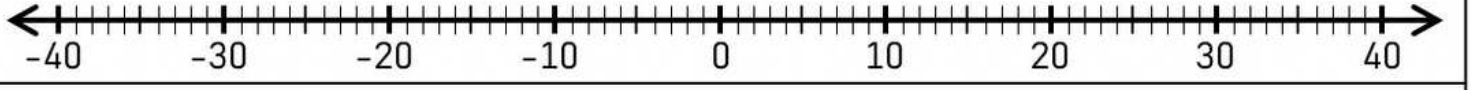
3) (-7) x 3 =



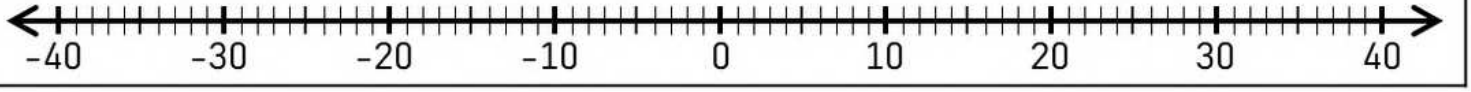
4) (-9) x (-4) =



5) 5 x (-8) =



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



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B2.7

Multiplying Integers

Multiplying Integers Rules

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

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

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

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

PREVIEW

Part 1

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

1)	5 x (-2) =	6)	1 x (-5) =	11)	(-8) x (-12) =
2)	(-7) x 7 =		(-	12)	13 x (-9) =
3)	(-8) x (-3) =	8)	(-12)	13)	(-16) x 8 =
4)	12 x 8 =	9)	(-13) x (-11)		) x (-13) =
5)	(-11) x 12 =	10)	20 x 7 =	15)	25 x

Part 2

Simplify the multi-step expressions and use the

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

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B2.7

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		

	-7	-10
	3	
	-1	

6)

x	12	-6
-4		
9		

7)

x	-15	-13
-3		
-5		

8)

x	-6	
-4		
7		

	23	-56

PREVIEW

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			

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B2.7

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											

PREVIEW

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B2.7

Multiplying Integers – Word Problems

Solve Answer the questions below. Include the equation and negative integers involved

1) An airplane is descending at a rate of 450 m per minute. After 20 minutes, what is the position of the airplane relative to its position before the 20 minutes?



2) A business [illegible] per month for an entire year. How much did the business make in [illegible]?

3) An elevator goes down 3 floors every 2 minutes. [illegible] it descend in 10 minutes?



4) A student correctly answered 5 questions on a quiz, gaining 3 points each, but lost 2 points for each of the 4 incorrect answers. What was the student's total score?

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B2.7

Exit Cards

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

Name: _____

1) Solve the questions below.

a) 15 × (−6) = _____

b) (−7) × 5 × (−3) × 2 = _____

c) A store has a monthly loss of $280 for 8 months. How much did the store lose over those 8 months?

Name: _____

1) Solve the questions below.

a) 15 × (−6) = _____

b) (−7) × 5 × (−3) × 2 = _____

c) A store has a monthly loss of $280 for 8 months. How much did the store lose over those 8 months?

Name: _____

1) Solve the questions below.

a) 15 × (−6) = _____

b) (−7) × 5 × (−3) × 2 = _____

c) A store has a monthly loss of $280 for 8 months. How much did the store lose over those 8 months?

PREVIEW

Name: _____ 124

Curriculum Connection
B2.7

Dividing Integers – Number Line

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

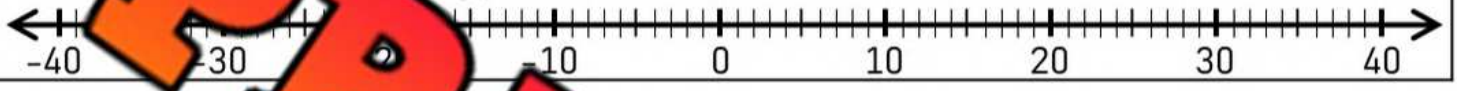
Dividend → (-15) ÷ 5 = -3
Divisor
Quotient

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

Ex. (-15) ÷ 5 =



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



Questions

Use the number lines to solve the questions

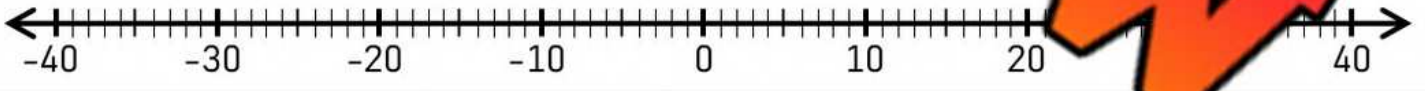
1) (-25) ÷ (-5) =



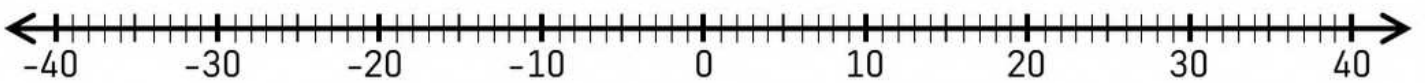
2) 12 ÷ (-4) =



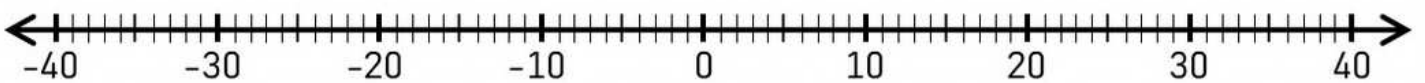
3) (-32) ÷ 4 =



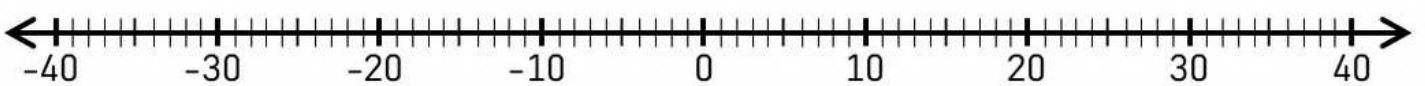
4) (-18) ÷ (-6) =



5) 24 ÷ (-8) =



6) (-36) ÷ (-3) =



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Curriculum Connection
B2.7

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

PREVIEW

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

1)	15 ÷ (-3) = ☐	6)	(-60) ÷ (-12) = ☐
2)	(-49) ÷ 7 = ☐	7)	(-8) = ☐
3)	(-66) ÷ (-6) = ☐	8)	(-99 = ☐
4)	32 ÷ 4 = ☐	9)	) ÷ (- ☐
5)	(-81) ÷ 9 = ☐	10)	32 ☐

Part 2 Simplify the multi-step expressions and use the rul

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 ☐

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Curriculum Connection
B2.7

Division Squares

Part 1 Fill in the squares by dividing the integers

1)

÷	5	-3
-15		
-30		

2)

÷	-6	3
18		
-12		

3)

÷	7	-2
28		
-56		

4)

÷	12	
-48		
36		

	-4	-8
56		
-3		

6)

÷	-2	-12
-60		
96		

7)

÷	5	15
-75		
-105		

8)

÷	-22	1
-88		
66		

	3	-9

PREVIEW

Part 2 Fill in the squares by dividing the integers

1)

÷	2	-6	-10
-60			
90			
-180			

2)

÷	-3	-6	9
18			
-54			
90			

3)

÷	-5	15	-25
-75			
-150			
225			

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Curriculum Connection
B2.7

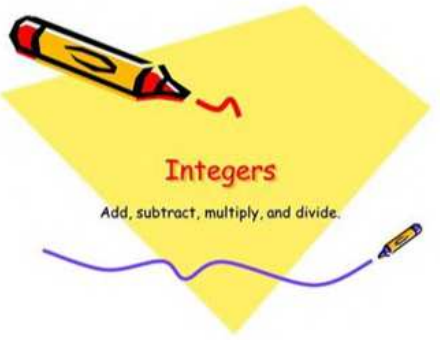
Math Jeopardy – Integer Operations

Objective What are we learning about?

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

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

- Jeopardy [illegible]
- Buzzer or bell



Instructions How you will comp[illegible]

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

PREVIEW

Name: _____ 130

Curriculum Connection
B2.7

Jeopardy Questions | Ask students the questions below:

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

PREVIEW

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Curriculum Connection
TQ

Integers Quiz

Part 1 Solve the questions below

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

Part 2 Solve [illegible]ues[illegible]

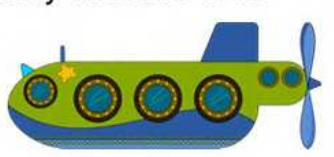
1) 11 + (-4) + 4		1[illegible]3 + (-17)	
3) 25 + (-18) + 13		4) [illegible] (-1[illegible]	

Part 3 Answer the word problems below. Write the [illegible]ion [illegible]tion

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



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



PREVIEW

Curriculum Connection
TQ

Part 4 Solve the subtraction equations below

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

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

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



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



PREVIEW

Part 6 Solve the multiplication equations below

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

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TQ

Part 7 Fill in the tables below

1)

x	5	-4
-20		
-40		

2)

x	-6	3
30		
-12		

3)

÷	7	-2
42		
-56		

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

1)

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

2)

Input	Output
-52	
[illegible]	
[illegible]	
[illegible]	
Divide by [illegible]	

3)

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

PREVIEW

Part 9 Calculate the answers to the equations [illegible] EDMAS

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

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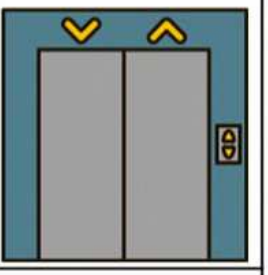
TQ

Part 10 Write an expression that represents the situation and solve

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



2) Nate golfed o ast w ored a -2 for 3 of the rounds. For each of his other 3 rounds, he s a scored for all 6 rounds?



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



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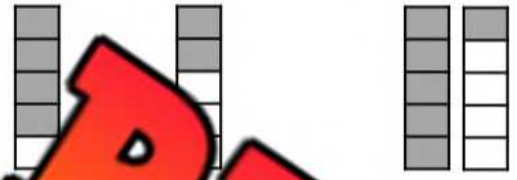
Curriculum Connection
B2.5

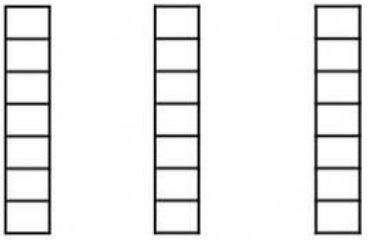
Adding Fractions With Common Denominators

Questions | Add the fractions below using the models

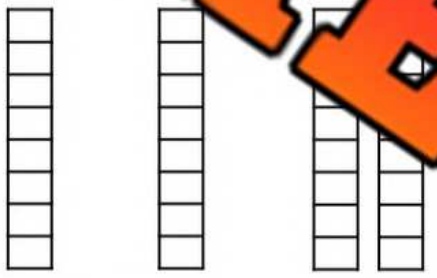
1) $\frac{4}{5} + \frac{2}{5} = \frac{6}{5}$ or $1\frac{1}{5}$



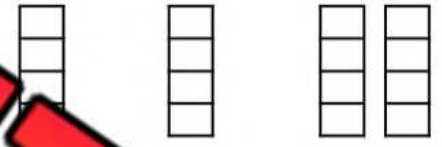
2) $\frac{3}{7} + \frac{2}{7} = \_\_$



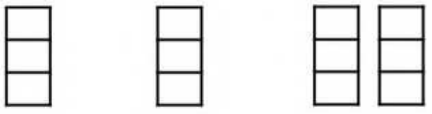
3) $\frac{5}{8} + \_\_ = \_\_$



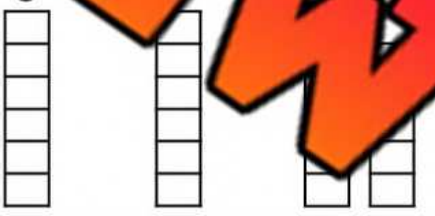
4) $\frac{3}{4} + \frac{2}{4} = \_\_$



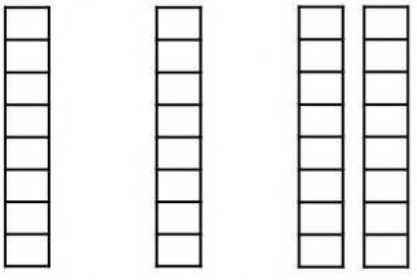
5) $\frac{2}{3} + \frac{3}{3} = \_\_$



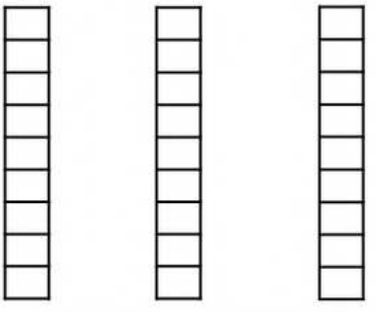
6) $\_\_ + \frac{3}{6} = \_\_$



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



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



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Curriculum Connection
B2.5

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 are left if there were 8 slices in each box?

2) Thomas is starting a program. 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?



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Curriculum Connection
B2.5

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

Part 2 Add the mixed fractions together usi 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) $12\frac{6}{14} + 6\frac{10}{14} =$

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Curriculum Connection
B2.5

Adding Mixed Fractions

Questions | Solve the word problems

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



2) The Miller family went on vacation to [illegible]. The drive to the airport took them $3\frac{2}{6}$ hours. The flight took $5\frac{4}{6}$ hours and the drive from the airport to the hotel took $2\frac{5}{6}$ hours. How many hours did it take them to get to the hotel?



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



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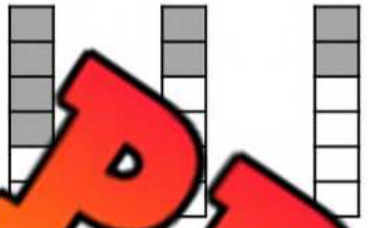
B2.5

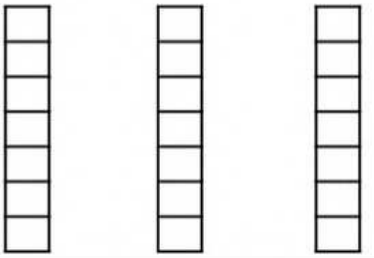
Subtraction Fractions - Common Denominators

Questions | Subtract the fractions below using the models

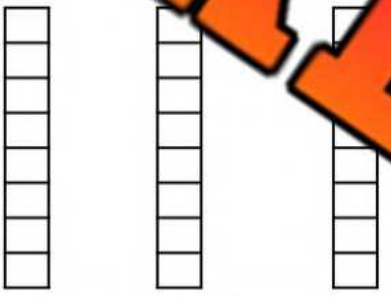
1) $\frac{4}{6} - \frac{2}{6} = \frac{2}{6}$



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



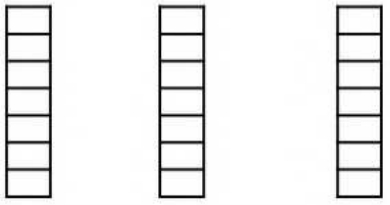
3) $\frac{7}{8} - \_\_\_ = \_\_\_$



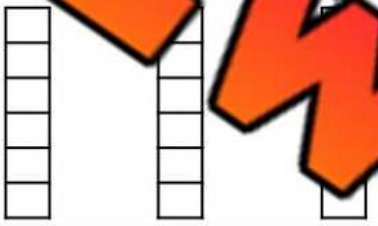
4) $\frac{3}{5} - \frac{1}{5} = \_\_\_$



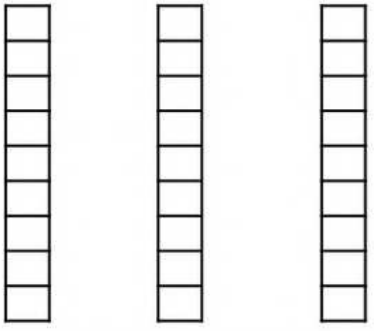
5) $\frac{6}{7} - \frac{3}{7} = \_\_\_$



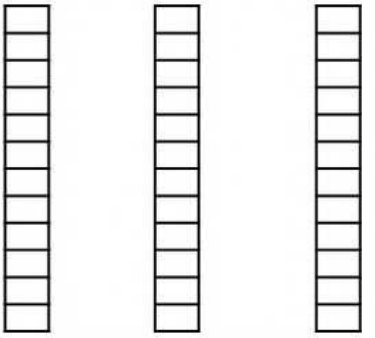
6) $\frac{5}{6} - \frac{2}{6} = \_\_\_$



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



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



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B2.5

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 and the black snake was $\frac{45}{3}$ cm long.



a) Which snake is longer?

b) How much longer is the snake?

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



a) Who picked more strawberries?

b) How much more did they pick?

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



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

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

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B2.5

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) $\frac{3}{\quad} - \frac{\quad}{\quad} = \frac{\quad}{12} = \frac{\quad}{12}$

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) $\frac{\quad}{\quad} - \frac{\quad}{\quad} = \frac{\quad}{30} - \frac{\quad}{30} = \frac{\quad}{30}$

PREVIEW

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) $\frac{11}{16} - \frac{3}{8} =$

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Curriculum Connection
B2.5

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?



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Curriculum Connection
B2.5

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

PREVIEW

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

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B2.5

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)

PREVIEW

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?



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B2.5

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: _____

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?

_____

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B2.6

Repeated Addition & Multiplying Fractions

Part 1 Add and multiply the fractions below

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

PREVIEW

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

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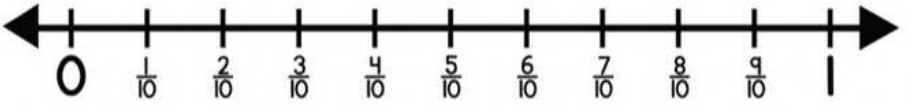
B2.6

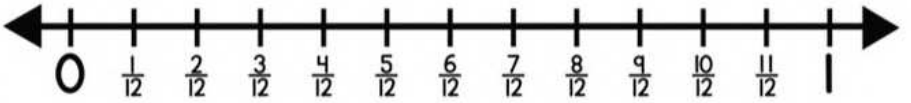
Multiply Whole Numbers by Fractions – Number Line

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

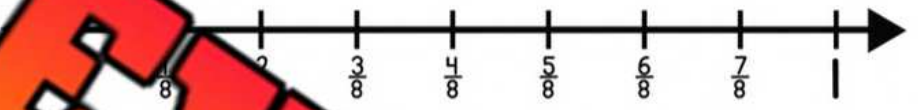
1) $8 \times \frac{1}{10} =$



2) 10



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



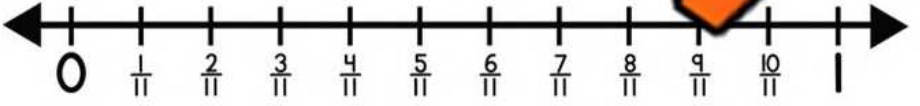
4) $5 \times \frac{1}{6} =$



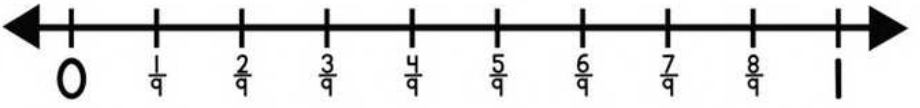
5) $4 \times \frac{1}{5} =$



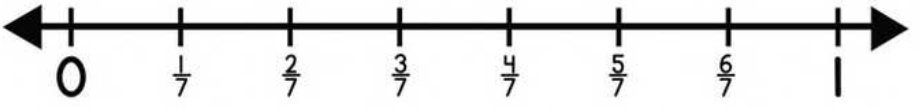
6) $7 \times \frac{1}{11} =$



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



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



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Curriculum Connection
B2.6

Multiply Whole Numbers by Fractions

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

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

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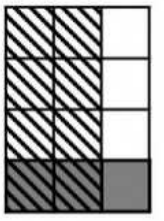
Curriculum Connection
B2.6

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.

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



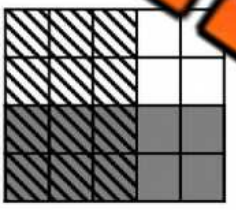
Example

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]

PREVIEW

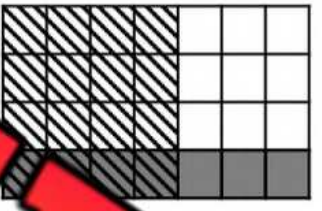
Questions Fin[illegible]uct u[illegible]area model. Steps 1-4 have been done for you

1)



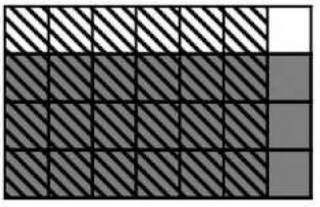
$\frac{3}{5} \times \frac{2}{4} =$ ____

[illegible]



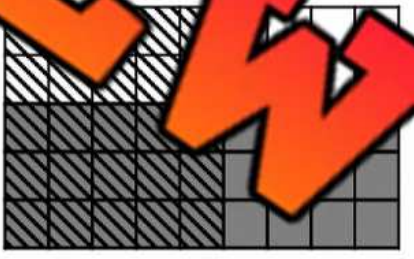
[illegible] = ____

3)



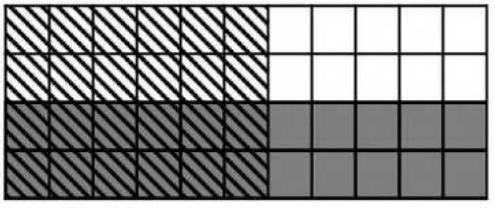
$\frac{6}{7} \times \frac{3}{4} =$ ____

4)



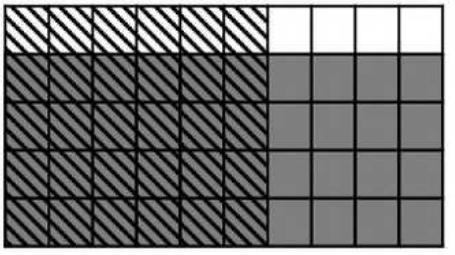
$\frac{5}{9} \times \frac{3}{5} =$ ____

5)



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

6)



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

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Curriculum Connection
B2.6

Multiplying Fractions – Area Models

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

Directions:

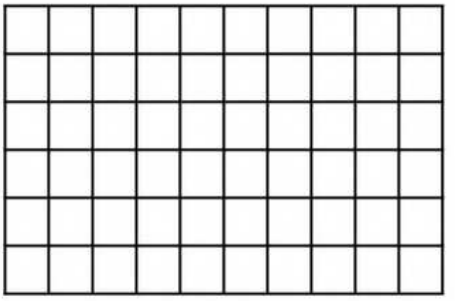
1) Use diagonal lines to represent the first fraction
2) Shade in the area model to represent the second fraction
3) Write the answer

Questions Find the product using the area models below

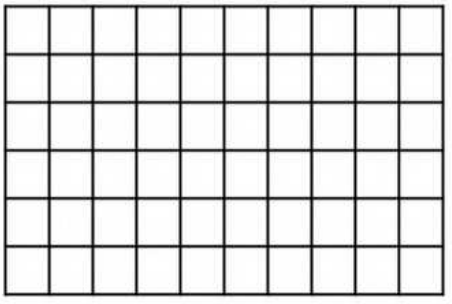
PREVIEW

1) 

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

2) 

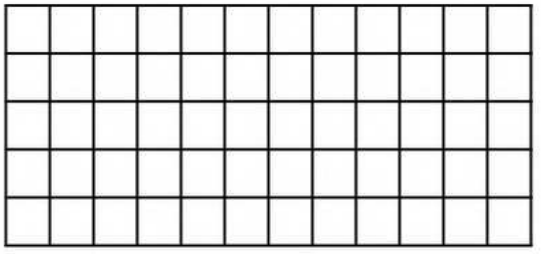
$\frac{3}{10} \times \frac{4}{6} = \_\_\_$

3) 

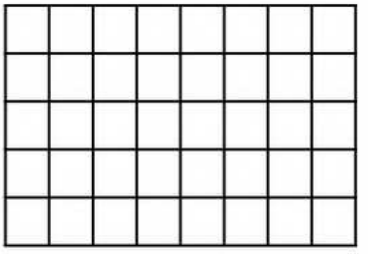
$\frac{4}{10} \times \frac{4}{6} = \_\_\_$

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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B2.6

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



3) Laura completed $\frac{8}{11}$ of a marathon in the first time trial. 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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B2.6

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) $8\frac{}{9}$ =

PREVIEW

Part 2 Answer the word problems below

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



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



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B2.6

Dividing Whole Numbers by Fractions - Visuals

How many times does 2/4 fit into 6? How many times can you shade 2 parts?

$6 \div \frac{2}{4} = 12$



Questions How many times does the fraction fit into the whole number?

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

2) $6 \div \frac{3}{5} =$

3) $6 \div \frac{6}{7} =$

4) $5 \div \frac{2}{4} =$

5) $8 \div \frac{4}{5} =$

6) $8 \div \frac{4}{7} =$

7) $6 \div \frac{3}{8} =$

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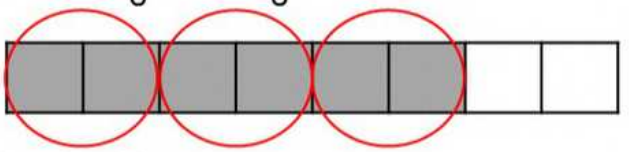
B2.6

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.

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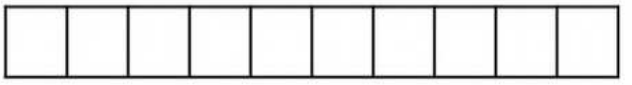
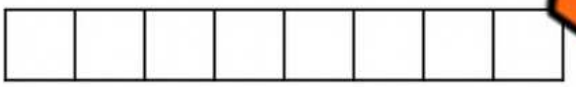
Questions: [illegible] fraction bar. How many times does the divisor fit into the dividend

1) 

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

2) 

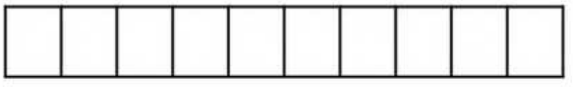
$\frac{9}{10} \div \frac{3}{10} =$ ____

3) 

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

4) 

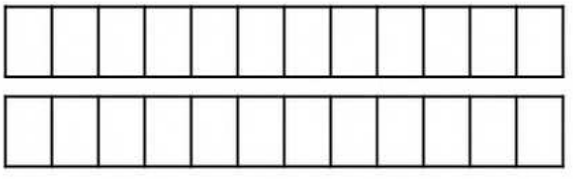
$\frac{6}{8} \div$ ____

5) 

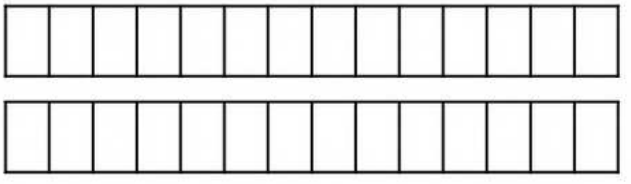
$\frac{8}{10} \div \frac{2}{10} =$ ____

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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B2.6

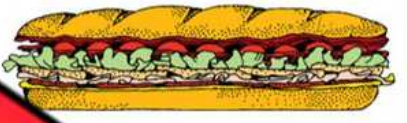
Dividing Fractions – Word Problems

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



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B2.6

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) $8\frac{3}{9} \div 2\frac{5}{7}$				

PREVIEW

Part 2 Answer the word problem

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



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Unit Test - Fractions

Part 1 Convert the mixed numbers to improper fractions

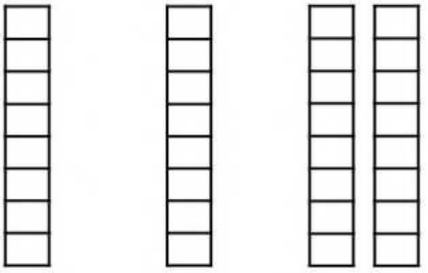
1) $7\frac{2}{4}$ =	2) $4\frac{1}{5}$ =	3) $5\frac{3}{5}$ =

Part 2 ert the improper fractions to mixed numbers

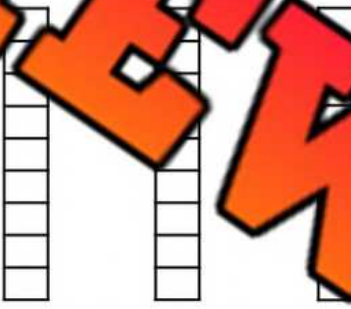
1) $\frac{27}{4}$ =	$\frac{26}{}$ =	3) $\frac{34}{6}$ =

Part 3 Add and sub fra w using the models

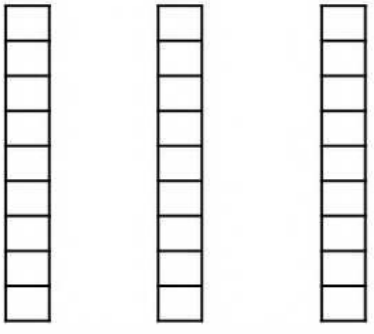
1) $\frac{6}{8} + \frac{4}{8} = \frac{\quad}{\quad}$



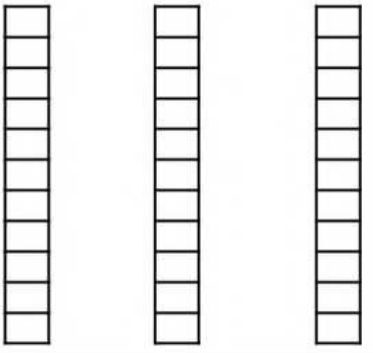
2) + = ___



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



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



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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) $8\frac{4}{6} - 4\frac{4}{10} =$

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Part 9 Solve the division questions below

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

PREVIEW

Part 10 Answer the word proble ow

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

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Curriculum Connection
B2.8

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	…s: _____ …: _____ …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) …io … treat t… healthy sn…	…ds: _____ R… _____ … _____

PREVIEW

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?



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Curriculum Connection
B2.8

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	$\frac{2}{4}$	5:10	2:8	5 to 15
5) 9:12	$\frac{2}{3}$	3:4	18:36	$\frac{27}{\quad}$	18:48
6) 6:8	2:4	$\frac{1}{3}$	3:4	36:4	$\frac{60}{\quad}$
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

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Curriculum Connection
B2.8

Simplifying Proportions

Questions Write a ratio in its simplest form for each of the situations below

1) A farm sells 15 apples for every 10 bananas.

2) A restaurant sells 25 sandwiches for every 5 steaks.



3) Bev counts 30 vehicles driving on his road. 21 of the vehicles were cars and 9 were trucks.

4) Owen owns 4 racquetball videos and 12 adventure games.



5) Hugh counted his socks and discovered that he had 15 black socks and 25 white socks.

6) A hockey team practices 36 times a year and plays 82 games.



7) A café sells 18 coffees for ever 6 teas.

8) Silas can perform 21 push-ups and 7 pull-ups.



9) Allison noticed that 36 songs played on a jukebox were rock songs and 48 songs were pop songs.

10) At Wellington Intermediate School, a survey determined that 96 students took a bus to school and 128 students walked.



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B2.8

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

Question: Are the relationships proportional or non-proportional?

PREVIEW

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

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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?

PREVIEW

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

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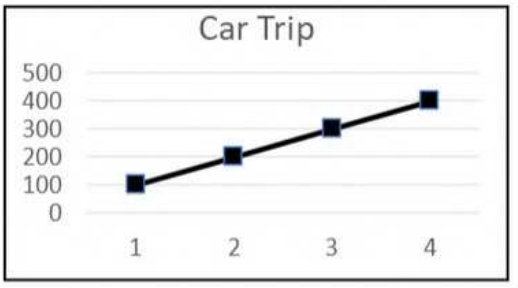
Proportional Relationship - Graph

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 distanc[illegible]ry hour.



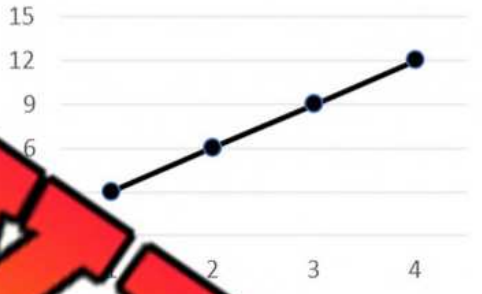
Hours	Distance (km)
1	100
2	200
3	300
4	400

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

PREVIEW

1)

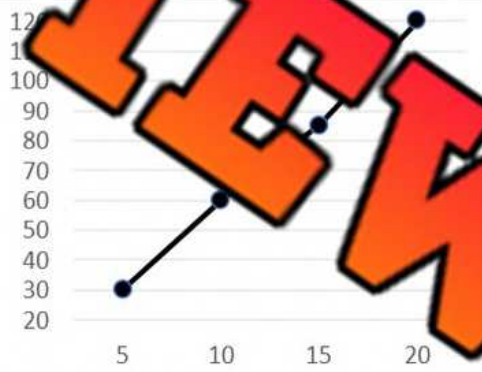
(x)	
1	
2	
3	
4	



Proportional Non-[illegible]

2)

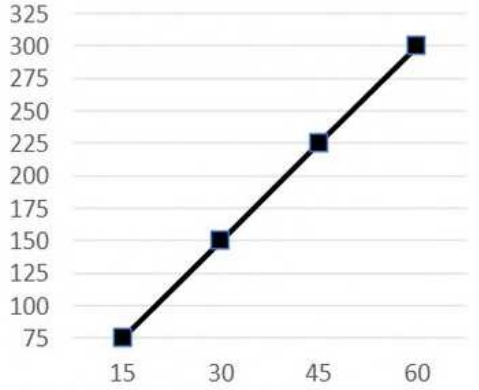
(x)	(y)
5	
10	
15	
20	



Proportional Non-Proportional

3)

(x)	(y)
15	
30	
45	
60	



Proportional Non-Proportional

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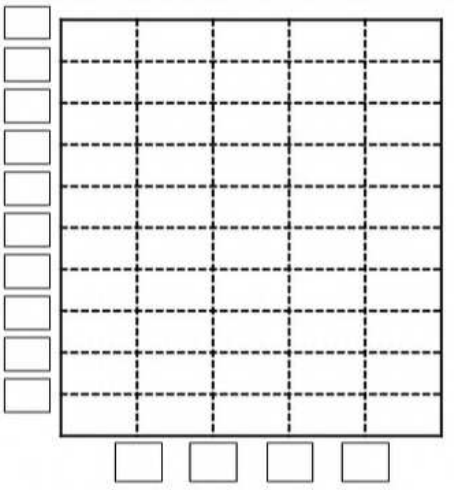
Proportional Relationship - Graph

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

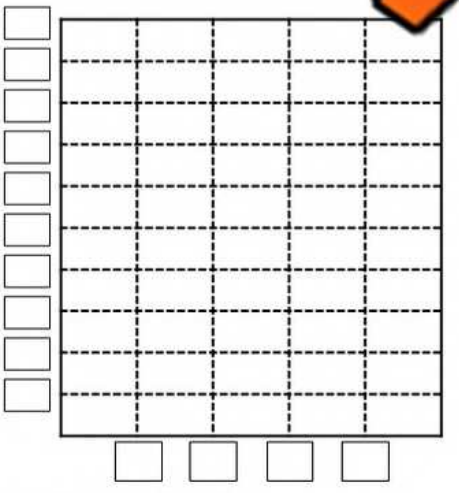


Proportional

Non-Proportional

3)

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



Proportional

Non-Proportional

PREVIEW

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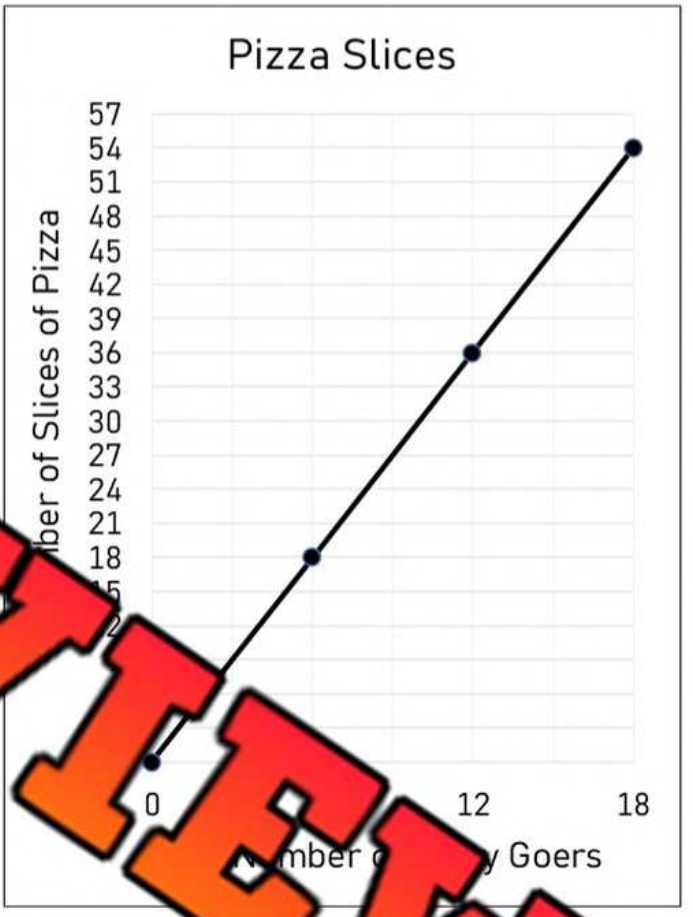
Proportional Relationship – Pizza Party

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 t[illegible]umber of slices of pizza and the n[illegible]f party goers.





PREVIEW

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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B2.8

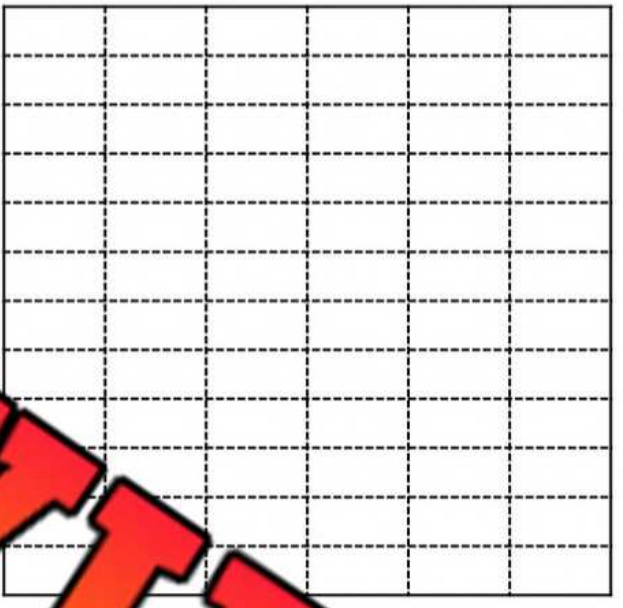
Proportional Relationship – Earnings

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.



k	l Savings
2	
6	
8	
10	



PREVIEW

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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TQ

Proportional Reasoning - Quiz

Part 1 Write the ratios for the questions below

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

PREVIEW

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

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

Part 3 Answer the word problems below

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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Curriculum Connection
TQ

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 = _____

PREVIEW

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

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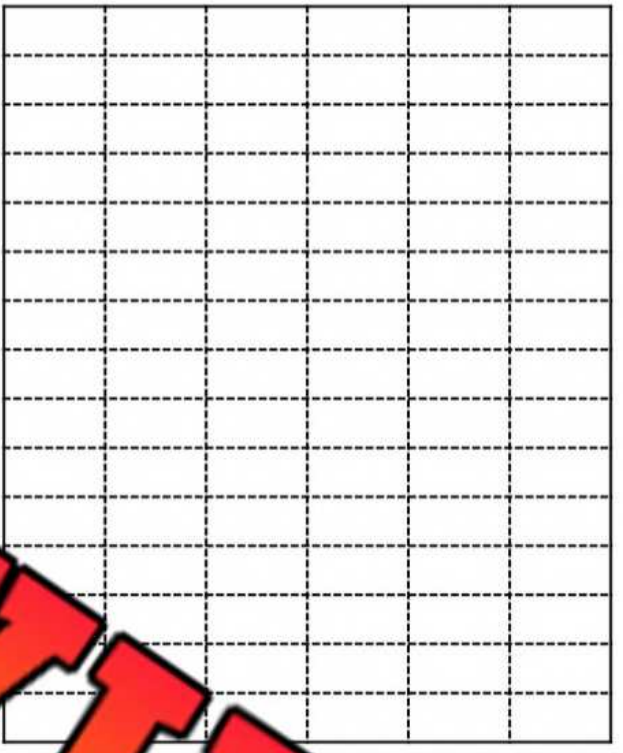
TQ

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

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



k	Total Saving
4	
8	
10	



PREVIEW

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?	

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