

Name \_\_\_\_\_

Date \_\_\_\_\_

## Lesson 1: Ratios

### Exit Ticket

1. Write a ratio for the following description: Kaleel made three times as many baskets as John during basketball practice.
2. Describe a situation that could be modeled with the ratio 4: 1.
3. Write a ratio for the following description: For every 6 cups of flour in a bread recipe, there are 2 cups of milk.

Name \_\_\_\_\_

Date \_\_\_\_\_

## Lesson 2: Ratios

### Exit Ticket

Give two different ratios with a description of the ratio relationship using the following information:

There are 15 male teachers in the school. There are 35 female teachers in the school.

Name \_\_\_\_\_

Date \_\_\_\_\_

## Lesson 3: Equivalent Ratios

### Exit Ticket

Pam and her brother both open savings accounts. Each begin with a balance of zero dollars. For every two dollars that Pam saves in her account, her brother saves five dollars in his account.

1. Determine a ratio to describe the money in Pam's account to the money in her brother's account.
2. If Pam has 40 dollars in her account, how much money does her brother have in his account? Use a tape diagram to support your answer.
3. Record the equivalent ratio using the information from part (b) above.
4. Create another possible ratio that describes the relationship between the amount of money in Pam's account and the amount of money in her brother's account.

Name \_\_\_\_\_

Date \_\_\_\_\_

## Lesson 4: Equivalent Ratios

### Exit Ticket

There are 35 boys in the sixth grade. The number of girls in the sixth grade is 42. Lonnie says that means the ratio of the number of boys in the sixth grade to the number of girls in the sixth grade is 5:7. Is Lonnie correct? Show why or why not.

Name \_\_\_\_\_

Date \_\_\_\_\_

## Lesson 5: Solving Problems by Finding Equivalent Ratios

### Exit Ticket

When Carla looked out at the school parking lot, she noticed that for every 2 minivans, there were 5 other types of vehicles. If there are 161 vehicles in the parking lot, how many of them are not minivans?

Name \_\_\_\_\_

Date \_\_\_\_\_

## Lesson 6: Solving Problems by Finding Equivalent Ratios

### Exit Ticket

Students surveyed boys and girls separately to determine which sport was enjoyed the most. After completing the boy survey, it was determined that for every 3 boys who enjoyed soccer, 5 boys enjoyed basketball. The girl survey had a ratio of the number of girls who enjoyed soccer to the number of girls who enjoyed basketball of 7: 1. If the same number of boys and girls were surveyed, and 90 boys enjoy soccer, how many girls enjoy each sport?

Name \_\_\_\_\_

Date \_\_\_\_\_

## Lesson 7: Associated Ratios and the Value of a Ratio

### Exit Ticket

Alyssa's extended family is staying at the lake house this weekend for a family reunion. She is in charge of making homemade pancakes for the entire group. The pancake mix requires 2 cups of flour for every 10 pancakes.

1. Write a ratio to show the relationship between the number of cups of flour and the number of pancakes made.
  
  
  
  
  
  
  
  
  
  
2. Determine the value of the ratio.
  
  
  
  
  
  
  
  
  
  
3. Use the value of the ratio to fill in the following two multiplicative comparison statements.
  - a. The number of pancakes made is \_\_\_\_\_ times the amount of cups of flour needed.
  
  
  
  
  
  
  - b. The amount of cups of flour needed is \_\_\_\_\_ of the number of pancakes made.
  
  
  
  
  
  
4. If Alyssa has to make 70 pancakes, how many cups of flour will she have to use?

Name \_\_\_\_\_

Date \_\_\_\_\_

## Lesson 8: Equivalent Ratios Defined Through the Value of a Ratio

### Exit Ticket

You created a new playlist, and 100 of your friends listened to it and shared if they liked the new playlist or not. Nadhii said the ratio of the number of people who liked the playlist to the number of people who did not like the playlist is 75:25. Dylan said that for every three people who liked the playlist, one person did not.

Do Nadhii and Dylan agree? Prove your answer using the values of the ratios.



Name \_\_\_\_\_

Date \_\_\_\_\_

## Lesson 9: Tables of Equivalent Ratios

### Exit Ticket

A father and his young toddler are walking along the sidewalk. For every 3 steps the father takes, the son takes 5 steps just to keep up. What is the ratio of the number of steps the father takes to the number of steps the son takes? Add labels to the columns of the table and place the ratio into the first row of data. Add equivalent ratios to build a ratio table.



What can you say about the values of the ratios in the table?

Name \_\_\_\_\_

Date \_\_\_\_\_

## Lesson 10: The Structure of Ratio Tables—Additive and Multiplicative

### Exit Ticket

Show more than one way you could use the structure of the table to find the unknown value. Fill in the unknown values.

Number of Weeks	Amount of Money in Account
2	\$350
4	\$700
6	\$1,050
8	
10	

Name \_\_\_\_\_

Date \_\_\_\_\_

## Lesson 11: Comparing Ratios Using Ratio Tables

### Exit Ticket

Beekeepers sometimes supplement the diet of honey bees with sugar water to help promote colony growth in the spring and help the bees survive through fall and winter months. The tables below show the amount of water and the amount of sugar used in the Spring and in the Fall.

Spring Sugar Water Mixture	
Sugar (cups)	Water (cups)
6	4
15	10
18	12
27	18

Fall Sugar Water Mixture	
Sugar (cups)	Water (cups)
4	2
10	5
14	7
30	15

Write a sentence that compares the ratios of the number of cups of sugar to the number of cups of water in each table.

Explain how you determined your answer.

Name \_\_\_\_\_

Date \_\_\_\_\_

## Lesson 12: From Ratio Tables to Double Number Line Diagrams

### Exit Ticket

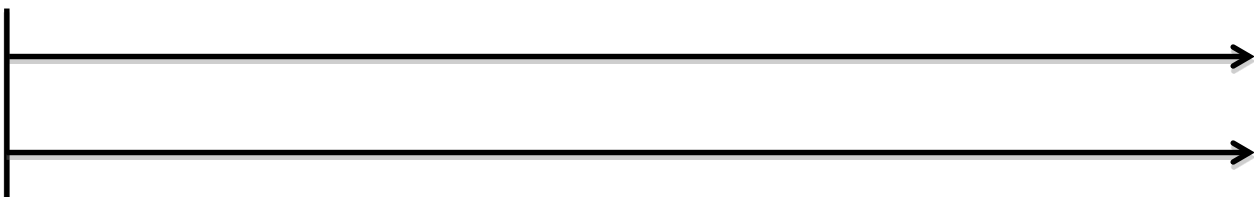
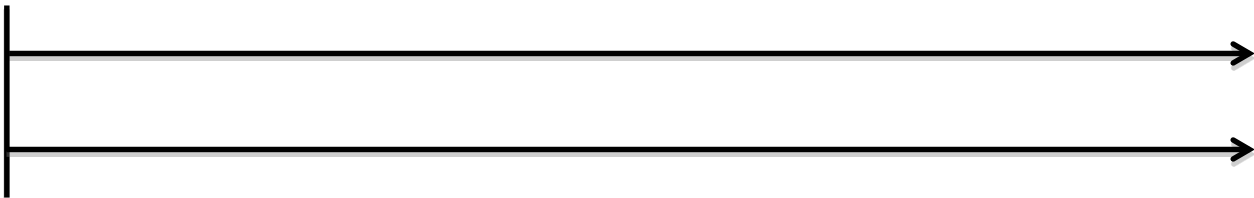
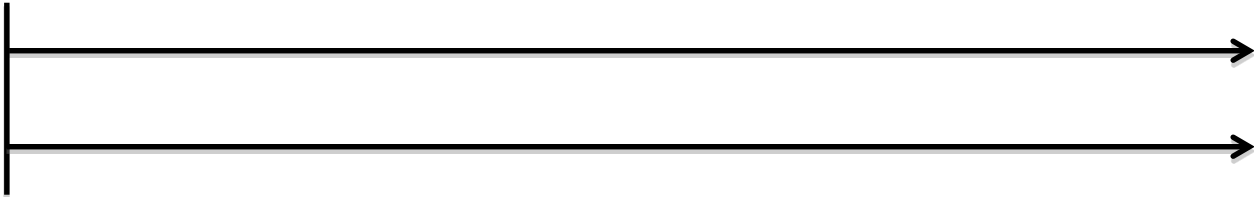
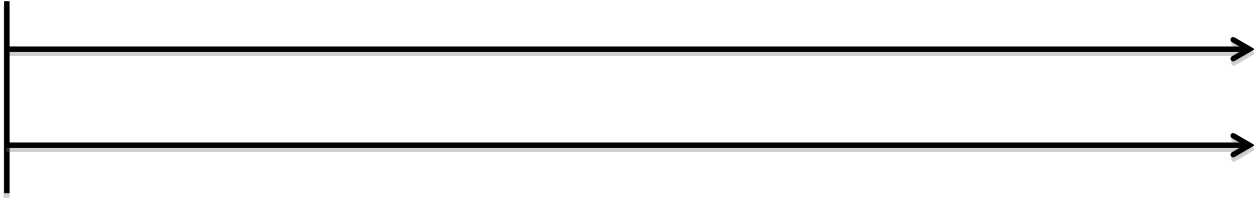
Kyra is participating in a fundraiser walk-a-thon. She walks 2 miles in 30 minutes. If she continues to walk at the same rate, determine how many minutes it will take her to walk 7 miles. Use a double number line diagram to support your answer.

7 to 4	28:16	$3\frac{1}{2}$ to 2	35:20
3 to 8	30:80	6 to 16	12:32
5 to 1	45:9	15 to 3	$2\frac{1}{2}$ to $\frac{1}{2}$

3 to 4	9:16	$1\frac{1}{2}$ to 2	15:20
3 to 6	30:60	1 to 2	4:8
2 to 1	44:22	18:9	1 to $\frac{1}{2}$

1 to 6	8:48	6 to 36	5:30
9 to 4	36:16	3 to $\frac{4}{3}$	18:8
7 to 6	42:36	21 to 8	$3\frac{1}{2}$ to 3

## Double Number Line Reproducible





Name \_\_\_\_\_

Date \_\_\_\_\_

## Lesson 13: From Ratio Tables to Equations Using the Value of a Ratio

### Exit Ticket

A carpenter uses four nails to install each shelf. Complete the table to represent the relationship between the number of nails ( $N$ ) and the number of shelves ( $S$ ). Write the ratio that describes the number of nails per number of shelves. Write as many different equations as you can that describe the relationship between the two quantities.

Shelves ( $S$ )	Nails ( $N$ )
1	4
2	
	12
	16
5	

Name \_\_\_\_\_

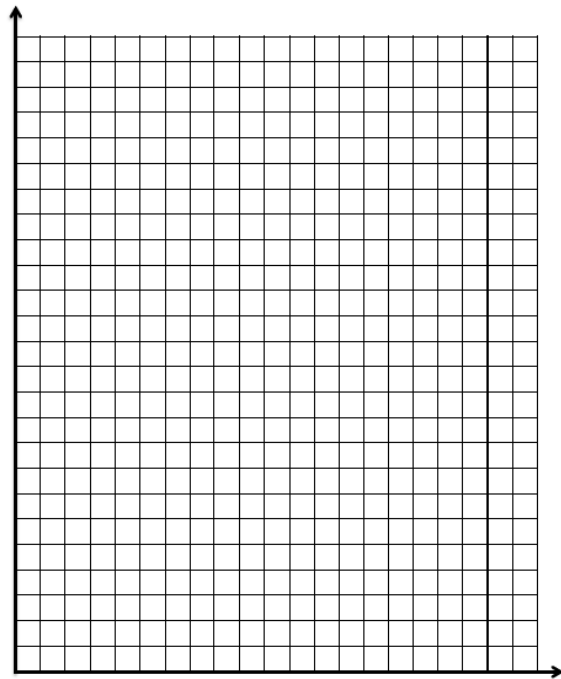
Date \_\_\_\_\_

## Lesson 14: From Ratio Tables, Equations, and Double Number Line Diagrams to Plots on the Coordinate Plane

### Exit Ticket

Dominic works on the weekends and on vacations from school mowing lawns in his neighborhood. For every lawn he mows, he charges \$12. Complete the table. Then determine ordered pairs, and create a labeled graph.

Lawns	Charge (in dollars)	Ordered Pairs
2		
4		
6		
8		
10		



- How many lawns will Dominic need to mow in order to make \$240?
- How much money will Dominic make if he mows 9 lawns?

Name \_\_\_\_\_

Date \_\_\_\_\_

## Lesson 15: A Synthesis of Representations of Equivalent Ratio Collections

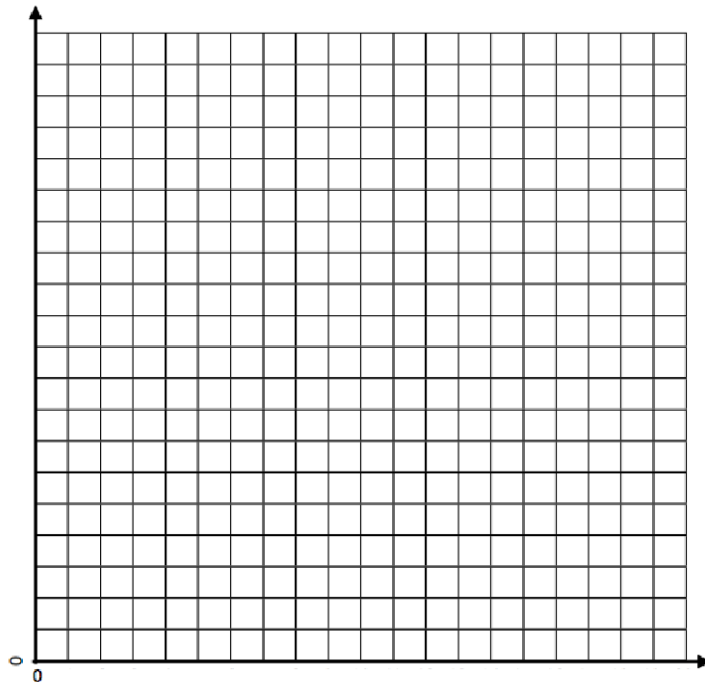
### Exit Ticket

Jen and Nikki are making bracelets to sell at the local market. They determined that each bracelet would have eight beads and two charms.

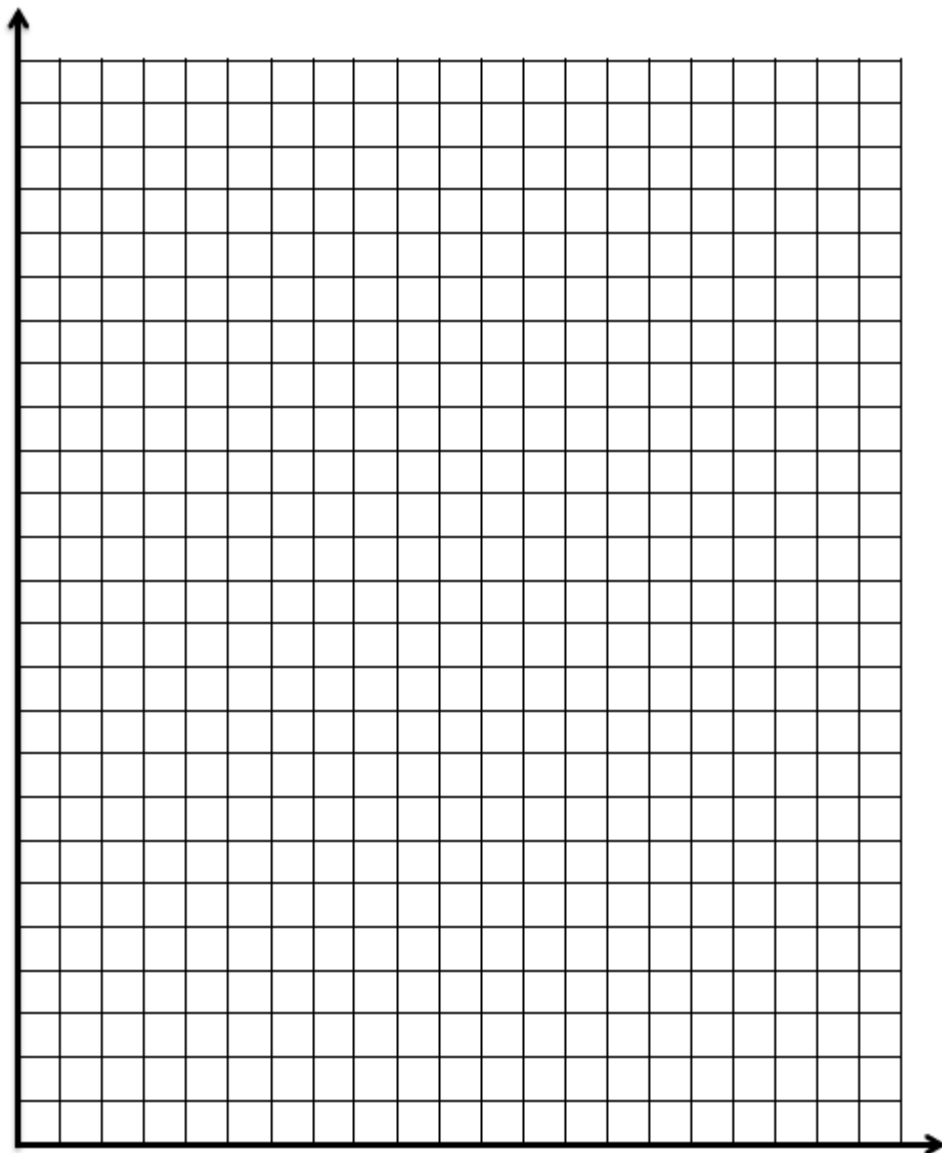
Complete the table below to show the ratio of the number of charms to the number of beads.

Charms	2	4	6	8	10
Beads	8				

Create ordered pairs from the table and plot the pairs on the graph below. Label the axes of the graph and provide a title.



## Graph Reproducible



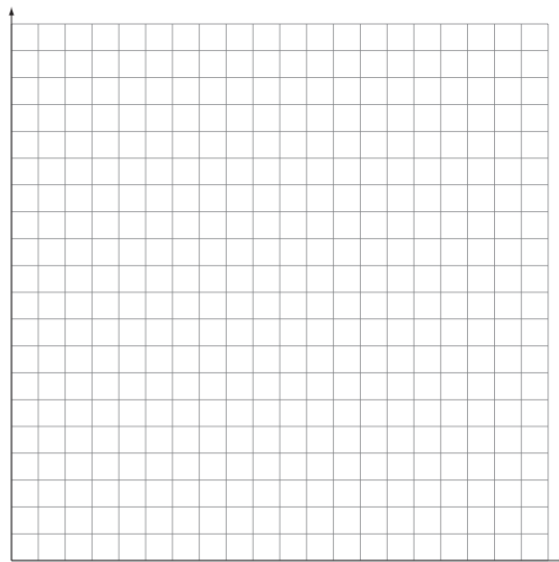
Name \_\_\_\_\_

Date \_\_\_\_\_

1. The most common women's shoe size in the U.S. is reported to be an  $8\frac{1}{2}$ . A shoe store uses a table like the one below to decide how many pairs of size  $8\frac{1}{2}$  shoes to buy when it places a shoe order from the shoe manufacturers.

Total Number of Pairs of Shoes Being Ordered	Number of Pairs of Size $8\frac{1}{2}$ to Order
50	8
100	16
150	24
200	32

- a. What is the ratio of the number of pairs of size  $8\frac{1}{2}$  shoes the store orders to the total number of pairs of shoes being ordered?
- b. Plot the values from the table on a coordinate plane. Label the axes. Then use the graph to find the number of pairs of size  $8\frac{1}{2}$  shoes the store orders for a total order of 125 pairs of shoes.



2. Wells College in Aurora, New York was previously an all-girls college. In 2005, the college began to allow boys to enroll. By 2012, the ratio of boys to girls was 3 to 7. If there were 200 *more girls than boys* in 2012, how many boys were enrolled that year? Use a table, graph, or tape diagram to justify your answer.
3. Most television shows use 13 *minutes of every hour* for commercials, leaving the remaining 47 minutes for the actual show. One popular television show wants to change the ratio of commercial time to show time to be 3:7. Create two ratio tables, one for the normal ratio of commercials to programming and another for the proposed ratio of commercials to programming. Use the ratio tables to make a statement about which ratio would mean fewer commercials for viewers watching 2 hours of television.

Name \_\_\_\_\_

Date \_\_\_\_\_

## Lesson 16: From Ratios to Rates

### Exit Ticket

Angela enjoys swimming and often swims at a steady pace to burn calories. At this pace, Angela can swim 1,700 meters in 40 minutes.

a. What is Angela's unit rate?

b. What is the rate unit?

Name \_\_\_\_\_

Date \_\_\_\_\_

## Lesson 17: From Rates to Ratios

### Exit Ticket

Tiffany is filling her daughter's pool with water from a hose. She can fill the pool at a rate of  $\frac{1}{10}$  gallons/second.

Create at least three equivalent ratios that are associated with the rate. Use a double number line to show your work.



Name \_\_\_\_\_

Date \_\_\_\_\_

## Lesson 18: Finding a Rate by Dividing Two Quantities

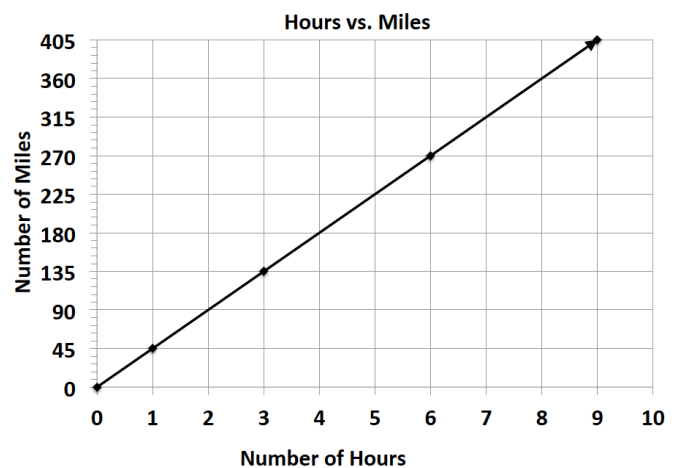
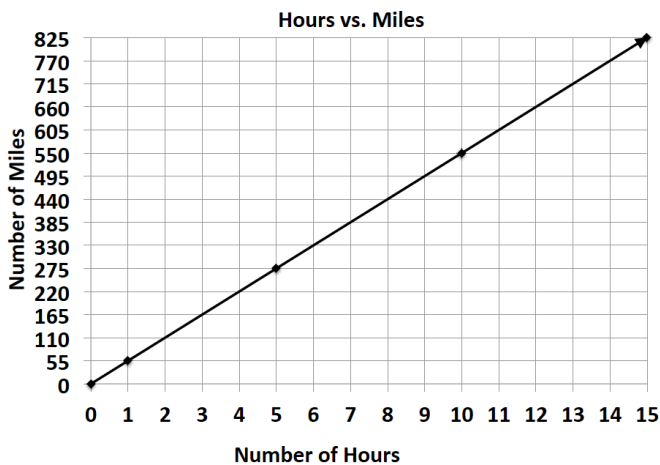
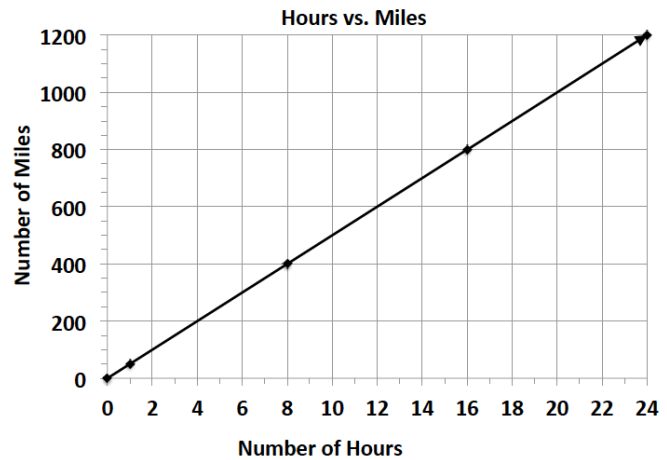
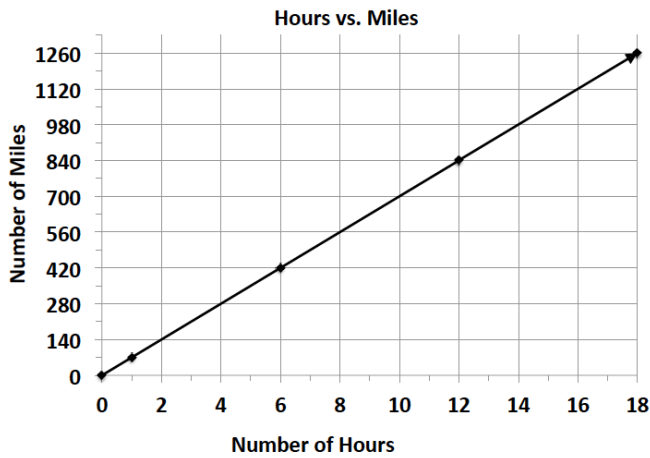
### Exit Ticket

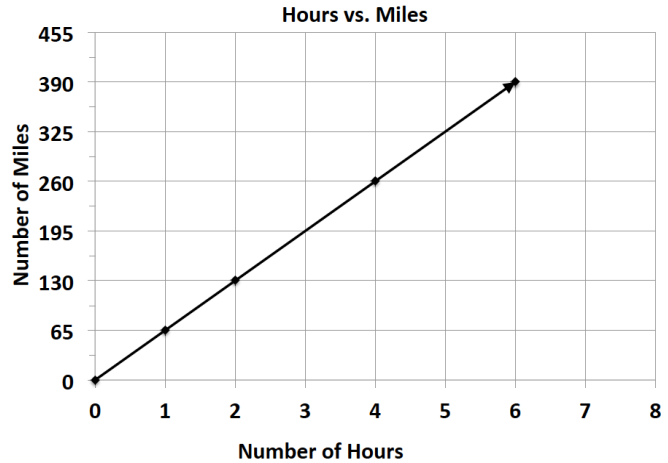
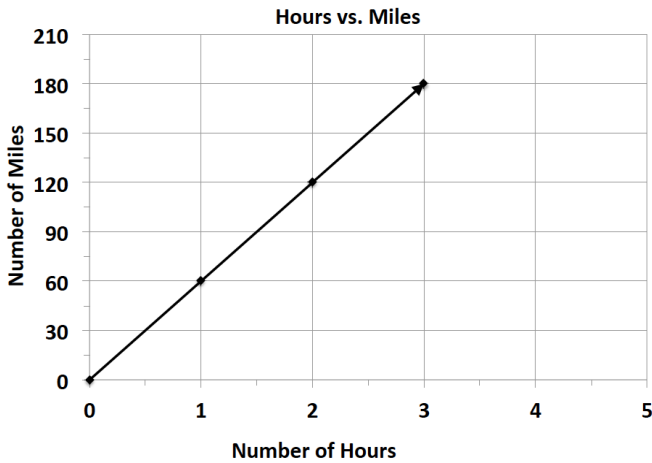
Alejandra drove from Michigan to Colorado to visit her friend. The speed limit on the highway is 70 miles/hour. If Alejandra's combined driving time for the trip was 14 hours, how many miles did Alejandra drive?

### Example 3: Matching

Match an equation, table, and graph that represent the same unit rate. Students work individually or in pairs.

Cut apart the data representations below and supply each student-pair with a set.





$m = 65h$	$m = 45h$	$m = 55h$																														
$m = 70h$	$m = 50h$	$m = 60h$																														
<table><tr><td><math>h</math></td><td>0</td><td>2</td><td>4</td><td>6</td></tr><tr><td><math>m</math></td><td>0</td><td>130</td><td>260</td><td>390</td></tr></table>	$h$	0	2	4	6	$m$	0	130	260	390	<table><tr><td><math>h</math></td><td>0</td><td>3</td><td>6</td><td>9</td></tr><tr><td><math>m</math></td><td>0</td><td>135</td><td>270</td><td>405</td></tr></table>	$h$	0	3	6	9	$m$	0	135	270	405	<table><tr><td><math>h</math></td><td>0</td><td>5</td><td>10</td><td>15</td></tr><tr><td><math>m</math></td><td>0</td><td>275</td><td>550</td><td>825</td></tr></table>	$h$	0	5	10	15	$m$	0	275	550	825
$h$	0	2	4	6																												
$m$	0	130	260	390																												
$h$	0	3	6	9																												
$m$	0	135	270	405																												
$h$	0	5	10	15																												
$m$	0	275	550	825																												
<table><tr><td><math>h</math></td><td>0</td><td>1</td><td>2</td><td>3</td></tr><tr><td><math>m</math></td><td>0</td><td>60</td><td>120</td><td>180</td></tr></table>	$h$	0	1	2	3	$m$	0	60	120	180	<table><tr><td><math>h</math></td><td>0</td><td>8</td><td>16</td><td>24</td></tr><tr><td><math>m</math></td><td>0</td><td>400</td><td>800</td><td>1200</td></tr></table>	$h$	0	8	16	24	$m$	0	400	800	1200	<table><tr><td><math>h</math></td><td>0</td><td>6</td><td>12</td><td>18</td></tr><tr><td><math>m</math></td><td>0</td><td>420</td><td>840</td><td>1260</td></tr></table>	$h$	0	6	12	18	$m$	0	420	840	1260
$h$	0	1	2	3																												
$m$	0	60	120	180																												
$h$	0	8	16	24																												
$m$	0	400	800	1200																												
$h$	0	6	12	18																												
$m$	0	420	840	1260																												

Name \_\_\_\_\_

Date \_\_\_\_\_

## Lesson 19: Comparison Shopping—Unit Price and Related Measurement Conversions

### Exit Ticket

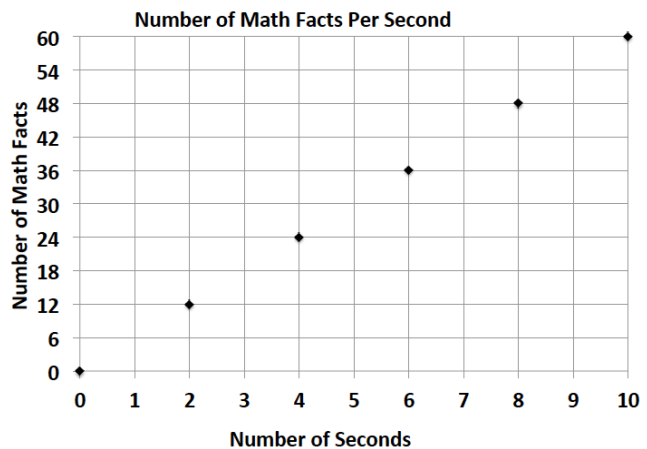
Kiara, Giovanni, and Ebony are triplets and always argue over who can answer basic math facts the fastest. After completing a few different math fact activities, Kiara, Giovanni, and Ebony recorded their data, which is shown below.

Kiara:  $m = 5t$ , where  $t$  represents the time in seconds and  $m$  represents the number of math facts completed

Giovanni:

Seconds	5	10	15
Math Facts	20	40	60

Ebony:



1. What is the math fact completion rate for each student?

2. Who would win the argument? How do you know?

Name \_\_\_\_\_

Date \_\_\_\_\_

## Lesson 20: Comparison Shopping—Unit Price and Related Measurement Conversions

### Exit Ticket

Value Grocery Mart and Market City are both having a sale on the same popular crackers. McKayla is trying to determine which sale is the better deal. Using the given table and equation, determine which store has the better deal on crackers? Explain your reasoning. (Remember to round your answers to the nearest penny.)

Value Grocery Mart:

Number of Boxes of Crackers	3	6	9	12
Cost (in dollars)	5	10	15	20

Market City:

$c = 1.75b$ , where  $c$  represents the cost in dollars and  $b$  represents the number of boxes of crackers

Name \_\_\_\_\_

Date \_\_\_\_\_

## Lesson 21: Getting the Job Done—Speed, Work, and Measurement Units

### Exit Ticket

Jill and Erika made 4 gallons of lemonade for their lemonade stand. How many quarts did they make? If they charge \$2.00 per quart, how much money will they make if they sell it all?

U.S. Customary Length	Conversion
Inch (in.)	1 in. = $\frac{1}{12}$ ft.
Foot (ft.)	1 ft. = 12 in.
Yard (yd.)	1 yd. = 3 ft. 1 yd. = 36 in.
Mile (mi.)	1 mi. = 1,760 yd. 1 mi. = 5,280 ft.

Metric Length	Conversion
Centimeter (cm)	1 cm = 10 mm
Meter (m)	1 m = 100 cm 1 m = 1,000 mm
Kilometer (km)	1 km = 1,000 m

U.S. Customary Weight	Conversion
Pound (lb.)	1 lb. = 16 oz.
Ton (T.)	1 T. = 2,000 lb.

Metric Capacity	Conversion
Liter (L)	1 L = 1,000 ml
Kiloliter (kL)	1 kL = 1,000 L

U.S. Customary Capacity	Conversion
Cup (c.)	1 c. = 8 fluid ounces
Pint (pt.)	1 pt. = 2 c.
Quart (qt.)	1 qt. = 4 c. 1 qt. = 2 pt. 1 qt. = 32 fluid ounces
Gallon (gal.)	1 gal. = 4 qt. 1 gal. = 8 pt. 1 gal. = 16 c. 1 gal. = 128 fluid ounces

Metric Mass	Conversion
Gram (g)	1 g = 1,000 mg
Kilogram (kg)	1 kg = 1,000 g

Name \_\_\_\_\_

Date \_\_\_\_\_

## Lesson 22: Getting the Job Done—Speed, Work, and Measurement Units

### Exit Ticket

Franny took a road trip to her grandmother's house. She drove at a constant speed of 60 miles per hour for 2 hours. She took a break and then finished the rest of her trip driving at a constant speed of 50 miles per hour for 2 hours. What was the total distance of Franny's trip?



Name \_\_\_\_\_

Date \_\_\_\_\_

## Lesson 23: Problem Solving Using Rates, Unit Rates, and Conversions

### Exit Ticket

A 6<sup>th</sup> grade math teacher can grade 25 homework assignments in 20 minutes.

Is he working at a faster rate or slower rate than grading 36 homework assignments in 30 minutes?

Name \_\_\_\_\_

Date \_\_\_\_\_

## Lesson 24: Percents and Rates per 100

### Exit Ticket

One hundred offices need to be painted. The workers choose between yellow, blue, or beige paint. They decide that 45% of the offices will be painted yellow; 28% will be painted blue, and the remaining offices will be painted beige. Create a model that shows the percent of offices that will be painted by each color. Write the amounts as decimals and fractions.

Color	%	Fraction	Decimal
Yellow			
Blue			
Beige			


Name \_\_\_\_\_

Date \_\_\_\_\_

## Lesson 25: A Fraction as a Percent

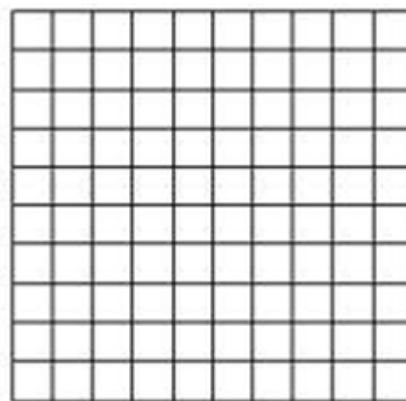
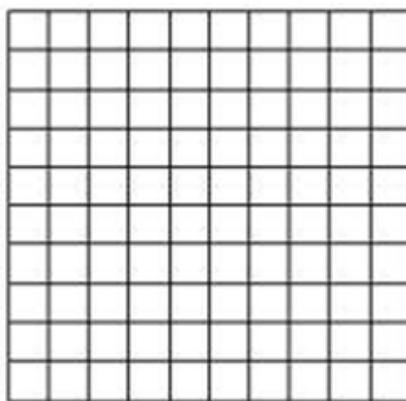
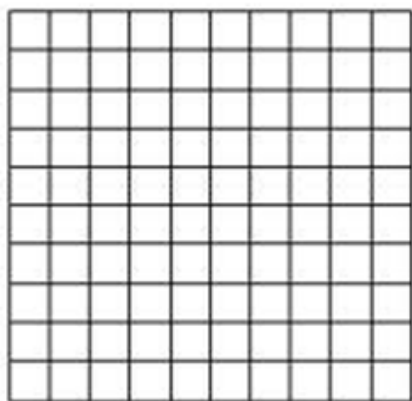
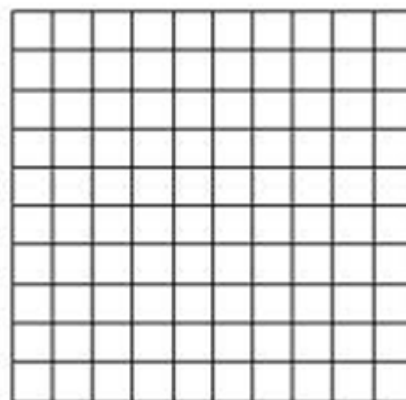
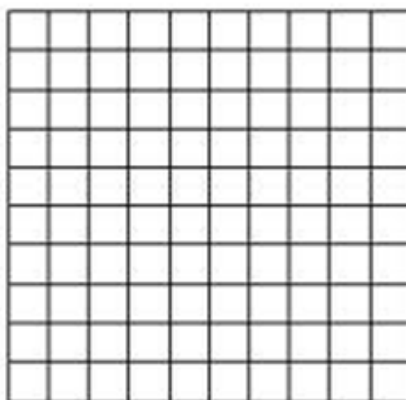
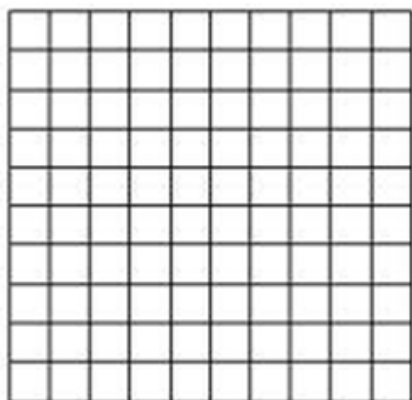
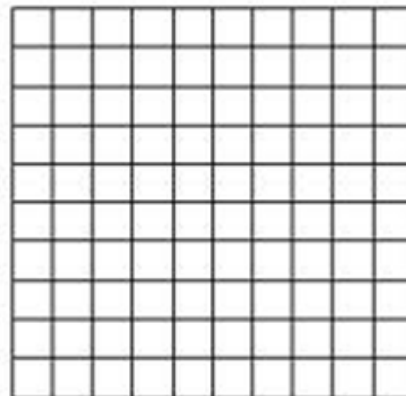
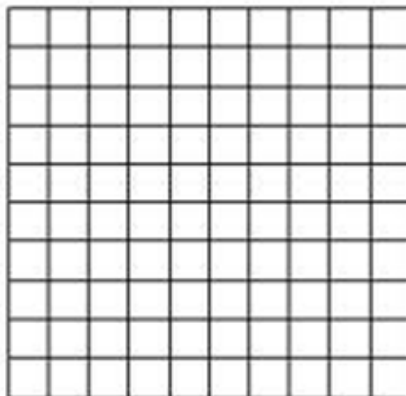
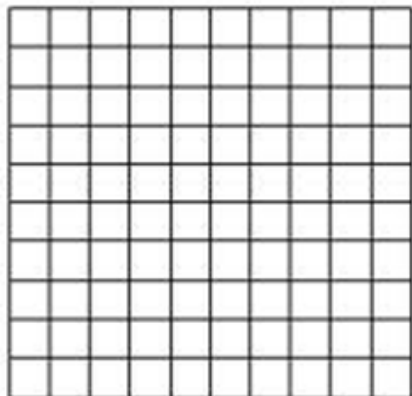
### Exit Ticket

Show all the necessary work to support your answer.

1. Convert 0.3 to a fraction and a percent.

2. Convert 9% to a fraction and a decimal.

3. Convert  $\frac{3}{8}$  to a decimal and percent.

**10 × 10 Grid Reproducible**

Name \_\_\_\_\_

Date \_\_\_\_\_

## Lesson 26: Percent of a Quantity

### Exit Ticket

1. Find 40% of 60 using two different strategies, one of which must include a pictorial model or diagram.
2. 15% of an amount is 30. Calculate the whole amount using two different strategies, one of which must include a pictorial model.

Name \_\_\_\_\_

Date \_\_\_\_\_

## Lesson 27: Solving Percent Problems

### Exit Ticket

Jane paid \$40 for an item after she received a 20% discount. Jane's friend says this means that the original price of the item was \$48.

a. How do you think Jane's friend arrived at this amount?

b. Is her friend correct? Why or why not?

Name \_\_\_\_\_

Date \_\_\_\_\_

## Lesson 28: Solving Percent Problems

## Exit Ticket

1. Write one problem using a dollar amount of \$420 and a percent of 40%. Provide the solution to your problem.
2. The sale price of an item is \$160 after a 20% discount. What was the original price of the item?

Name \_\_\_\_\_

Date \_\_\_\_\_

## Lesson 29: Solving Percent Problems

### Exit Ticket

Angelina received two discounts on a \$50 pair of shoes. The discounts were taken off one after the other. If she paid \$30 for the shoes, what was the percent discount for each coupon? Is there only one answer to this question?



Name \_\_\_\_\_

Date \_\_\_\_\_

1. Jasmine has taken an online boating safety course and is now completing her end of course exam. As she answers each question, the progress bar at the bottom of the screen shows what portion of the test she has finished. She has just completed question 16 and the progress bar shows she is 20% complete. How many total questions are on the test? Use a table, diagram, or equation to justify your answer.

2. Alisa hopes to play beach volleyball in the Olympics someday. She has convinced her parents to allow her to set up a beach volleyball court in their back yard. A standard beach volleyball court is approximately 26 feet by 52 feet. She figures that she will need the sand to be one foot deep. She goes to the hardware store to shop for sand and sees the following signs on pallets containing bags of sand.



- a. What is the rate that Brand A is selling for? Give the rate and then specify the unit rate.

- b. Which brand is offering the better value? Explain your answer.
- c. Alisa uses her cell phone to search how many pounds of sand is required to fill 1 cubic foot and finds the answer is 100 pounds. Choose one of the brands and compute how much it will cost Alisa to purchase enough sand to fill the court. Identify which brand was chosen as part of your answer.

3. Loren and Julie have different part time jobs after school. They are both paid at a constant rate of dollars per hour. The tables below show Loren and Julie's total income (amount earned) for working a given amount of time.

Loren

Hours	2	4	6	8	10	12	14	16	18
Dollars	18	36	54	72	90	108			162

Julie

Hours	3	6	9	12	15	18	21	24	27
Dollars	36		108	144	180	216		288	324

- a. Find the missing values in the two tables above.
- b. Who makes more per hour? Justify your answer.
- c. Write how much Julie makes as a rate. What is the unit rate?

- d. How much money would Julie earn for working 16 hours?
- e. What is the ratio between how much Loren makes per hour and how much Julie makes per hour?
- f. Julie works  $\frac{1}{12}$  hours/dollar. Write a one or two-sentence explanation of what this rate means. Use this rate to find how long it takes for Julie to earn \$228.

4. Your mother takes you to your grandparents' house for dinner. She drives 60 minutes at a constant speed of 40 miles per hour. She reaches the highway and quickly speeds up and drives for another 30 minutes at constant speed of 70 miles per hour.
- a. How far did you and your mother travel altogether?
- b. How long did the trip take?
- c. Your older brother drove to your grandparents' house in a different car, but left from the same location at the same time. If he traveled at a constant speed of 60 miles per hour, explain why he would reach your grandparents house first. Use words, diagrams, or numbers to explain your reasoning.