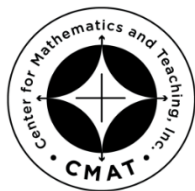Name _____   Period _____   Date _____

MathLinks

MATHLINKS: GRADE 6
STUDENT PACKET 16
APPLICATIONS OF PROPORTIONAL REASONING

WORD BANK

Word or Phrase	Definition or Description	Example or Picture
coordinate plane		
dependent variable		
double number line diagram		
equivalent ratios		
independent variable		
input-output rule		
ordered pair		
tape diagram		
unit price		
unit rate		

SAVING FOR A PURCHASE

<table>
<tr><td>

Summary

We will use input-output equations, tables, and graphs to determine how much time is needed to save for purchases. We will use this context to recognize the relationship between independent and dependent variables.

</td><td>

Goals

- Set up equations to model real-world problems involving saving for purchases.
- Analyze the problems using tables, graphs, and words.
- Understand the relationship between dependent and independent variables.

</td></tr>
</table>

Warmup

Rule: Multiply each input number by 3 and then add 5 to get each output number below.

Input number (x)	Substitute	Output number (y)
10	3(_____) + 5	
1		
0		
9		
11		
20		
x		y

JULIE'S CAMERA

A camera costs $240.

Julie wants to save for the camera. She has $100 in the bank to start, and she is going to save $20 each month.

How many months will it take Julie to save for the camera?

1. Complete the table below to keep track of the amount that Julie has when she starts to save, and how much she has at the end of each month until she reaches her goal.

# of months (x)	Computation	total saved (y)
1	20(___) + 100 = ____ + 100	

We will now create an equation to describe Julie's saving pattern.

- Let **m** represent the amount of money that Julie is going to deposit in her bank account each **month**.

- Let **b** represent the amount that Julie already has in the **bank** to start.

- Let **x** represent the number of months that Julie has been saving and **y** represent the total amount of money saved.

2. How much does Julie deposit in her bank account each **m**onth? _____

3. How much does Julie have in the **b**ank to start? _____

4. Write an equation to describe Julie's saving plan in the form $y = mx + b$.

   $y =$ _____

JULIE'S CAMERA (Continued)

5. Write 6 ordered pairs (*x*, *y*) to represent (# of months, total saved) for Julie.

(___, ___)   (___, ___)   (___, ___)   (___, ___)   (___, ___)   (___, ___)

6. Use your points from above and the data from the table on the previous page to make a graph below representing the total amount of money that Julie will save each month.

Total amount saved (*y*)

$20

$0

0   2

Number of months (*x*)
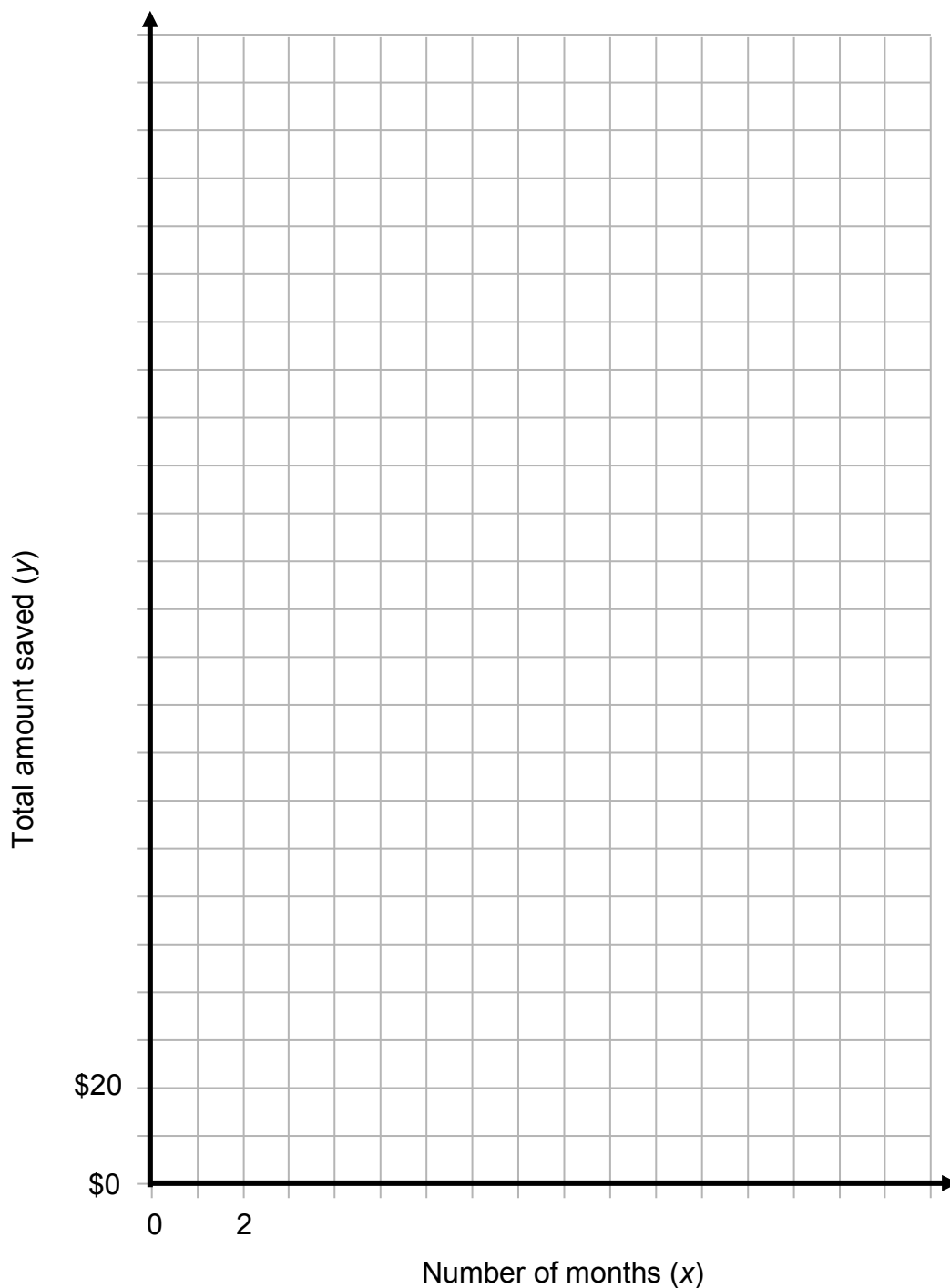
JULIE'S CAMERA (Continued)

7. How many months will it take for Julie to save for the camera? _____.
   How do you know from the graph?

8. Recall, an equation for the amount that Julie saved *(y)* at the end of any month *(x)* is

   y = _____ .

   Verify that it will take Julie _____ months to save for the camera by substituting the correct values into the above equation.

9. What ordered pair represents the amount saved at the end of the 3rd month?

   What ordered pair represents the amount saved at the end of the 6th month?

   Do these ordered pairs of numbers represent equivalent ratios? _____. Explain.

10. Since the total amount saved depends on the number of months, we call number of months the <u>independent variable</u> and the total saved the <u>dependent variable</u>.

    Which variable represents the independent variable? _____

    Which variable represents the dependent variable? _____

    The independent variable is graphed on the _____ - axis.

    The dependent variable is graphed on the _____ - axis.

11. List the different representations you used to describe Julie's savings plan.

THERESA'S PRINTER

A printer costs $150. Theresa wants to save for the printer. She is going to save $25 each month. How many months will it take Theresa to save for a printer?

1. Complete the table below to show how much Theresa saves each month.

# of months (*x*)	computation	total saved (*y*)

2. How much will Theresa deposit in her bank account each *m*onth? _____

How much does Theresa have in the *b*ank to start? _____

Write an equation to describe Theresa's saving plan in the form $y = mx + b$.

$y =$ _____

3. What ordered pair represents the amount saved at the end of the 1st month? _____

What ordered pair represents the amount saved at the end of the 5th month? _____

Do these ordered pairs of numbers represent equivalent ratios? _____ Explain.

4. Use the graph below to show how much Theresa saves each month. Label and scale the grid appropriately.
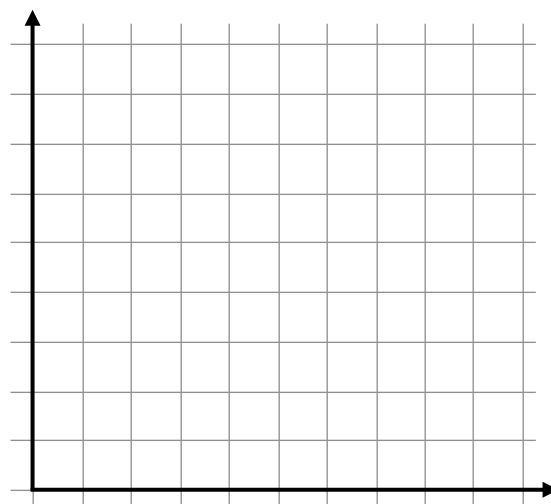
5. How long will it take for Theresa to save for the printer? _____ How do you know this from the graph?

6. Verify how long it will take Theresa to save for the printer by substituting into your equation.

7. In this situation, the _____ depends on the _____. Therefore, the _____ is the independent variable and it is graphed on the _____- axis, and the _____ is the dependent variable, and it is graphed on the _____-axis.

SOFIA'S PHONE

Sofia is saving up for a phone that costs $125. She saves $20 each week.

1. Make a table that shows how much Sofia saves each week.

2. Write an equation to describe Sofia's savings plan.

3. Show that your equation is true for the amount Sofia has saved at the end of 4 weeks.

4. Do the ordered pairs of numbers in the table represent equivalent ratios? _____ Explain.

5. Use the graph below to show how much Sofia saves each month. Label and scale the grid appropriately.
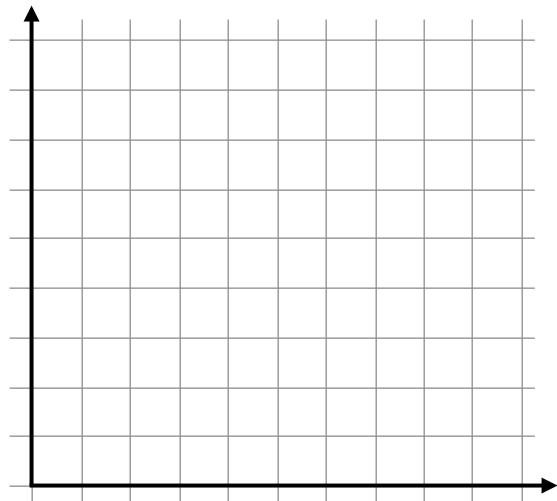
6. How long did it take for Sofia to save for the phone?   Explain how you know based on two different representations.

7. Based on your table and graph, which is the independent variable?

BEST BUY PROBLEMS

Summary	Goals
We will use numbers, graphs, and equations to determine which choices are better buys.	• Set up equations for the cost of a purchase. • Set up equations to model real-world problems involving best buys. • Analyze the problems using tables, graphs, and words.

Warmup

1. You can buy two granola bars for $1.80, and you can buy any whole number of granola bars at this rate. Complete the table below based on this information.

# of granola bars		2	4						
price in dollars									

2. Write the ordered pairs that represent buying the following:

   9 granola bars: (_____, _____)   1 granola bar: (_____, _____)

3. Recall that the cost for one bar is called a _____ rate. Explain how you found the cost of 1 granola bar.

4. Write the ordered pair that represents buying 50 granola bars.   (_____, _____) Explain how you figured out the cost of 50 granola bars.

5. Do ordered pairs of numbers in the table represent equivalent ratios? _____ Explain.

6. If price in dollars depends on the number of granola bars, the _____ is the independent variable and the _____ is the dependent variable.

WHAT'S THE BETTER BUY?

Circle the better buy for each situation and explain your reasoning.

1. You can buy:	2. You can buy:
1.2 pounds of onions for $1.00	2 pounds of berries for $4.30
or	or
1.8 pounds of onions for $1.00	2 pounds of berries for $4.45

Suppose you are running out of your favorite pens and pencils, so you compare prices at two stores before making a purchase.

VALUE-MART

Pens: 6 for $7.50

Pencils: 12 for $6.80

SAVINGS HUT

Pens: 6 for $8.25

Pencils: 14 for $6.80

3. Without doing any calculations, explain which store offers the better buy for pens.	4. Without doing any calculations, explain which store offers the better buy for pencils.

Find each unit price. Round to the nearest penny as needed.

5. Pens at:		6. Pencils at:	
a. Value-Mart	b. Savings Hut	a. Value-Mart	b. Savings Hut

7. Do these unit price calculations support your answers to problems 3 and 4? Explain.

BAGELS

SHMEAR 'N THINGS
4 bagels for $3.00

HOLE-Y BREAD
5 bagels for $4.00

Assume you can buy any number of bagels at this rate. Complete the tables and answer the questions below.

1.

SHMEAR 'N THINGS
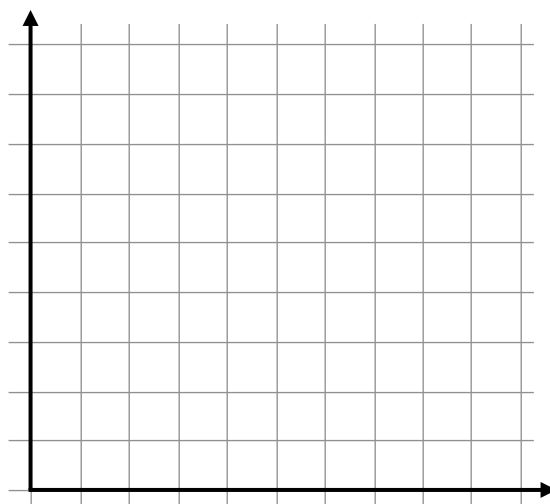
# of bagels (x)	cost (y)
4	
8	
12	
16	
20	

HOLE-Y BREAD

# of bagels (x)	cost (y)
5	
10	
15	
20	
25	

2. Which shop has the better buy? Use entries in the tables above to explain your reasoning.

3. Label and scale the grid. Graph the data using two different colors. Explain how to use the graph above to tell which bagel is the better buy.

4. Find the unit price for bagels at both shops. Use these numbers to explain which shop has the better buy.

5. Write an equation to represent the cost (dependent variable), given the number of bagels (independent variable), for:

a. Shmear 'n Things: $y =$ _____

b. Hole-y Bread: $y =$ _____

TORTILLAS

FLAT 'N ROUND
3 tortillas for $0.60

WRAP IT UP
4 tortillas for $0.76

Assume you can buy any number of tortillas at this rate. Complete the tables and answer the questions below.

1.

FLAT 'N ROUND

# of tortillas (x)	cost (y)
3	
6	

WRAP IT UP

# of tortillas (x)	cost (y)
4	
8	

2. Which shop has the better buy? Use your entries in the tables above to explain your reasoning.

3. Label and scale the grid above. Graph the data using two different colors. Explain which graph illustrates the slower rate of price increase for tortillas.

4. Find the unit prices for tortillas at both shops. Use these numbers to explain which shop has the better buy.

5. Write an equation to represent the cost (_____ variable), given the number of tortillas (_____ variable), for:

   a. Flat 'n Round: _____

   b. Wrap It Up: _____

CROISSANTS

MOON'S
5 croissants for $3.00

CURVEY'S
8 croissants for $4.50

Assume you can buy any number of croissants at this rate. Complete the tables and answer the questions below.
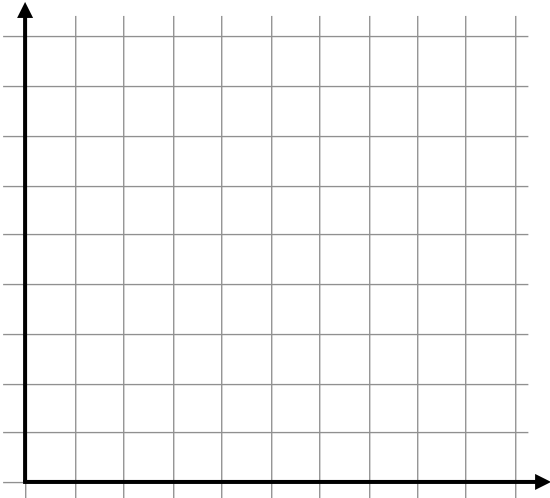
1.

MOON'S

# of croissants (x)	cost (y)

CURVEY'S

# of croissants (x)	cost (y)

2. Which shop has the better buy? Use entries in the tables above to explain your reasoning.

3. Label and scale the grid above. Graph the data using two different colors. Explain which graph illustrates the slower rate of price increase for croissants.

4. Find the unit prices for croissants at both shops. Use these numbers to explain which shop has the better buy (for Curvey's, round to the nearest penny).

5. Write an equation to represent the _____ (dependent variable), given the number of _____ (independent variable) for:

   a. Moon's: _____

   b. Curvey's: _____

PAINTING A ROOM

Summary	Goals
We will solve problems that involve ratio reasoning and many of the mathematical concepts and skills we have learned this year.	• Set up equations to model real-world problems involving painting a room. • Analyze the problems using tables, graphs, and words.

Warmup

Jenna mixes one tablespoon of red paint and four tablespoons of white paint to create her favorite color of pink.

1. Draw a tape diagram to illustrate this mixture.

2. If Jenna wants to make 100 tablespoons of pink paint, how many tablespoons of each color of paint should she use?

3. There are four tablespoons in one-fourth cup. Will Jenna's paint fit in a half-gallon milk carton?

MARCO'S ROOM

Marco wants to paint his room. The floor of Marco's room is 12 feet by 14 feet. His walls are 10 feet high. He plans to paint the walls, but not the ceiling or floor.

1. Make a sketch to represent the area he needs to paint. You can draw a picture of the inside of his room or simply draw separate walls.

2. Circle all of the expressions that Marco could use to compute the number of square feet he will paint.

   $12 \bullet 14 \bullet 10$ $(12 + 14) \bullet 2 \bullet 10$

   $10 \bullet 12 + 10 \bullet 14 + 10 \bullet 12 + 10 \bullet 14$ $(12 + 14) \bullet 10$

   $10 \bullet 12 \bullet 2 \ + 10 \bullet 14 \bullet 2$ $(12 + 14) \bullet 10 + (12 + 14) \bullet 10$

   $2(10 \bullet 12 + 10 \bullet 14)$ $2(12 + 14) \bullet 10$

3. Find the number of square feet Marco will paint.

4. Marco learns online that a gallon of paint will cover about 350 square feet of wall space. He wants to paint his walls with two coats of paint. About how many gallons of paint will he need? Explain.

MIXING PAINT

On page 13, you determined that Marco needs _____ gallons of paint. Marco finds 3 gallons of blue paint and 3 gallons of yellow paint in his garage. He wants to paint his room green by mixing 1 part blue for every 3 parts yellow.   Show all your work and explain your answer to each question.

1. How many gallons of blue paint and how many gallons of yellow paint should he mix together if wants to use all the paint he mixes?

After mixing the paint, Marco decides that it is too yellow so he adds a quart of blue to the mixture.

2. How much total paint does he have now? _____

3. What is his ratio of parts blue to parts yellow now? _____

4. Marco's brother Rocky wants to paint his room using a mixture that is 1 part blue and 2 parts yellow. Whose paint color is bluer?

5. Rocky's room is the same size as Marco's room, but he only wants to use one coat of paint. Is there enough paint left in the garage to paint Rocky's room?

OFF TO THE PAINT STORE

Marco and Rocky need to buy supplies at the paint store so they can paint their rooms. Marco rides his bike at a rate of 10 miles per hour. It takes Rocky 5 minutes to go half a mile on his skateboard.

1. Complete the table below to show different distances that Marco could travel for different amounts of time.

2. Complete the double number line diagram below to show different distances that Rocky could travel for different amounts of time.
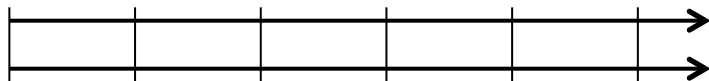
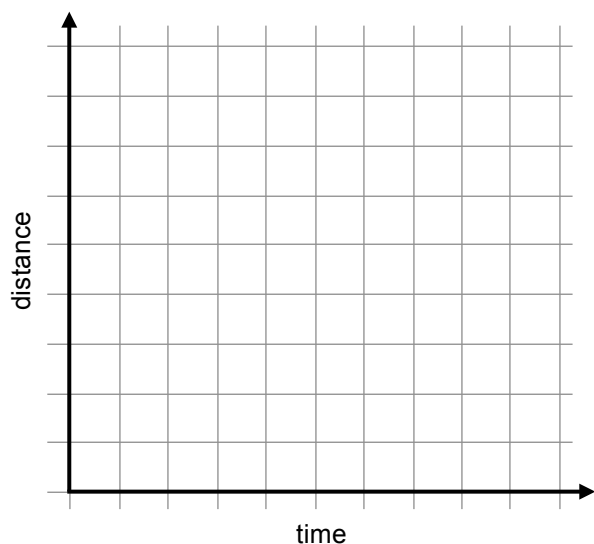3. Write equations that can be used to find the distance traveled when given the time traveled for each boy.

   Marco: $D =$ _____

   Rocky: $D =$ _____

4. Draw two graphs below in different colors that show the distance in terms of time for each boy. Scale the axes appropriately.

   distance

   time

5. The independent variable is

   _____.

6. Who travels faster? _____

   How do you know?

7. Paints-R-Us is 4 miles away. If they both leave at 2:00 pm, about what time will each boy arrive at the store?

   How do you know?

OFF TO THE PAINT STORE (Continued)

Below is a price list of paint supplies at Paints-R-Us. Rocky and Marco found some supplies in the garage, but they need to buy 2 paint roller covers, 2 paint brushes and painter's tape for the windows and doors.

7-Piece Painting Set (2 rollers, 2 covers, 2 brushes, and painting tray)	$15.99
Painter's Tape – tan (60 yards)	$5.93
Painter's Tape – gray (180 feet)	$4.99
Paint Roller Cover (1 roller)	$4.58
Paint Roller Covers (package of 3)	$8.99
Paint Brush Set (3 brushes in different sizes)	$7.97
Paint Brush (1 brush)	$2.99
Yellow paint (1 gallon)	$25.99
Yellow paint (1 quart)	$8.99

8. Recommend to Marco and Rocky what they should purchase, and explain your reasoning. Products listed with different quantities are the same brand.

9. Compute the cost of their purchase, including tax of 8.5%.

PAINTING THE ROOMS

Marco and Rocky go home and get ready to paint. When they were calculating the amount of paint they needed, they forgot to account for the fact that they are not painting windows and doors. Each of their rooms has a window that is $4\frac{1}{2}$ feet by 3 feet, and a door that is 36 inches by 81 inches. They need to tape around them to create a straight paint line.

1. About how much painter's tape will they need to go around their windows and doors?

2. About what percent of the roll of tape will be leftover after they tape the windows and doors?

Marco and Rocky estimate that if they work together, it will take about 90 minutes to tape all of the windows and doors. Then they estimate that they can paint about 100 square feet in $\frac{1}{3}$ hour. Remember that it takes paint a little time to dry.

3. Write out a sequence of steps you'd take to complete the job, and include a time estimate for how long it will take them to paint both rooms. Remember that Marco's room requires two coats of paint.
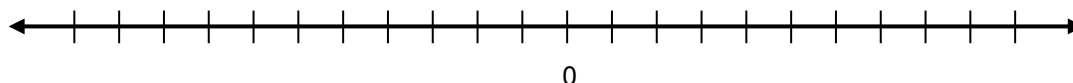
SKILL BUILDERS, VOCABULARY, AND REVIEW

SKILL BUILDER 1

Compute.

1. 5^3	2. 12^2	3. 2^5

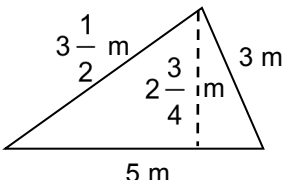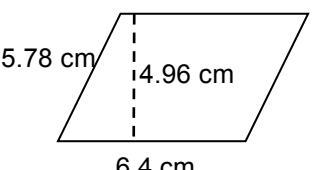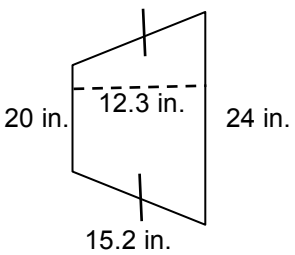|	
4. $56 - 4(18 - 7) + (5)^2$	5. $\dfrac{3^2 + 4(3)}{9 - 2^1}$
6. $0.5[24 - (2)(5.25)]$	7. $3\dfrac{3}{4} + (5)\left(7\dfrac{1}{2}\right) - 5$

A ladybug is jumping around on the number line below.

0

8. If she starts at 2 and jumps 4 units to the right, where is she on the number line? _____ How far away is she from zero? _____	9. If she starts at 2 and jumps 4 units to the left, where is she on the number line? _____ How far away is she from zero? _____
10. If the ladybug starts at 0 and jumps 6 units away, where might she have landed? _____ or _____	11. If the ladybug jumps 3 units and lands at zero, where might she have started? _____ or _____

12. The absolute value of the ladybug's location is 5 and she is to the left of zero. Where is she on the number line? Explain.

SKILL BUILDER 2

Find the perimeter and area of each figure. Assume any angle that looks like a right angle is a right angle, and any sides that look parallel are parallel.

1.	2.	3.
$3\frac{1}{2}$ m, $2\frac{3}{4}$ m, 3 m, 5 m	5.78 cm, 4.96 cm, 6.4 cm	20 in., 12.3 in., 24 in., 15.2 in.
Perimeter: _____	Perimeter: _____	Perimeter: _____
Area: _____	Area: _____	Area: _____

For problems 4-7, use the grid to the right.

4. Graph the following two coordinates on the coordinate plane. Scale the axes appropriately.
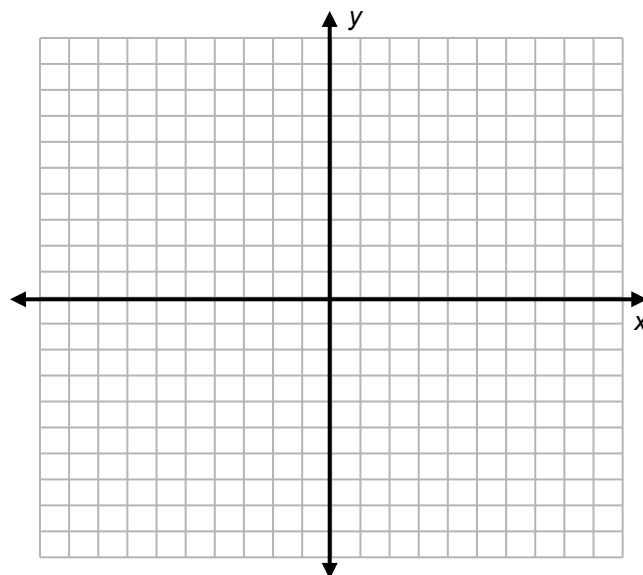
   A (-0.8, 0.1)   *B* (-0.8, 0.7)

5. Reflect points *A* and *B* across the *y*-axis and label them *P* and *Q* respectively. Draw *ABQP*. What shape does it make

6. Find $\left| AB \right|$.

7. Find $\left| AP \right|$.

8. The volume of a rectangular prism is 576 cubic meters. The area of the base is 64 square meters. What is the height of the prism?

SKILL BUILDER 3

For each situation, write an appropriate sentence to identify the independent variable and the dependent variable.

1. <u>DVD rentals</u>: cost of DVD rental (*c*); number of DVDs (*n*)

    Sentence: If _____ (____) depends on

    _____ (____),

    then the independent variable is _____ (____)

    and the dependent variable _____ (____).

2. <u>Squares</u>: length of the side of a square (*s*); perimeter of the square (*p*)

    Sentence: If…

3. Michael is nearing the end of the jog-a-thon, and needs to complete more than three more laps in order to reach his minimum goal. Write an inequality to represent this situation and graph the inequality on the number line.
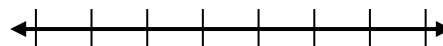
Solve. If you use mental math, write MM. Otherwise show all your work.

4. $x - 12 = 43$	5. $y + 3\frac{1}{2} = 9$	6. $8\frac{1}{4} = g + 2\frac{1}{4}$
7. $4\frac{1}{8}m = 1\frac{3}{4}$	8. $4125 = 33n$	9. $0.003p = 1.68$

SKILL BUILDER 4

A rectangular prism has a length of 2 m, a width of 4 m and a height of 10 m.

1. Draw the prism and label it.	2. Find the volume of the prism.
3. Find the surface area of the prism.	4. By how many times will the volume of the prism increase, if the length, width, and height were all multiplied by 2?

5. Alexa took a midterm that was a total of 40 points. She missed 8 points on the test. What percent of problems did she get correct?

For problems 6-8, use the following information. Below are the 20 birth weights, in ounces, of all the pigs born at Fred's farm in the last six months.

26, 30, 30, 31, 32, 32, 32, 34, 34, 36, 37, 38, 38, 38, 38, 38, 38, 38, 39, 40

6. Make an appropriate graph to summarize these birth weights.

7. Describe the distribution of birth weights for pigs born at Fred's farm in the last six months. Be sure to describe shape, center and variability.

8. What is a typical birth weight for pigs born at Fred's farm in the last six months? Explain why you chose this value.

SKILL BUILDER 5

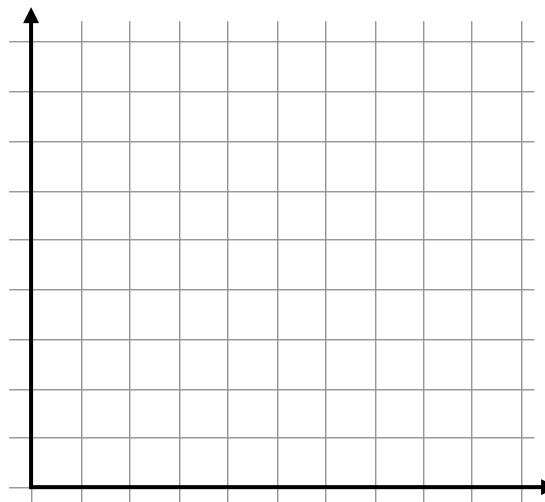Use the ratios stated above to complete the tables and answer the questions below.

1.

ELSA'S

# of ounces (x)	cost (y)

ANNA'S

# of ounces (x)	cost (y)

2. Which shop has the better buy? Use entries in the tables above to explain your reasoning.

3. Label and scale the grid above. Graph the data using two different colors. Explain which graph illustrates the slower rate of price increase for yogurt.

4. Find the unit prices for frozen yogurt at both shops. Use these numbers to explain which shop has the better buy (round to the nearest penny, if necessary).

5. Write an equation to represent the _____ (dependent variable), given the number of _____ (independent variable) for:

   a. Elsa's: _____

   b. Anna's: _____

SKILL BUILDER 6

Lucia participated in a walk-a-thon to raise money for her charity. She recorded the total distance walked at several different points in time, but a few of the entries got wet and she cannot read them. The times and distances that can still be read are listed in the table below.

1. Assume Lucia walked at a constant speed. Complete the table and plot Lucia's progress in the coordinate plane.

Time (hours)	Distance (miles)
1	
2	8
	14
6	
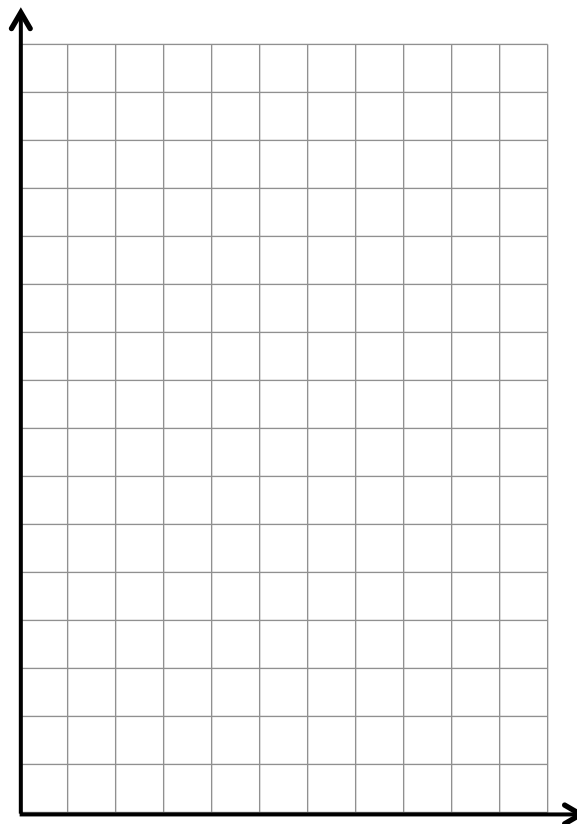
2. What does the ordered pair (1, 4) on the coordinate plane represent?

3. How long did it take Lucia to walk one mile? What ordered pair would represent this information on the graph?

4. Write an equation for the distance d, in miles, that Lucia walked in h hours.

5. Next year Lucia is planning to walk for eight hours. If she walks at the same speed next year, how many miles will she walk?

FOCUS ON VOCABULARY
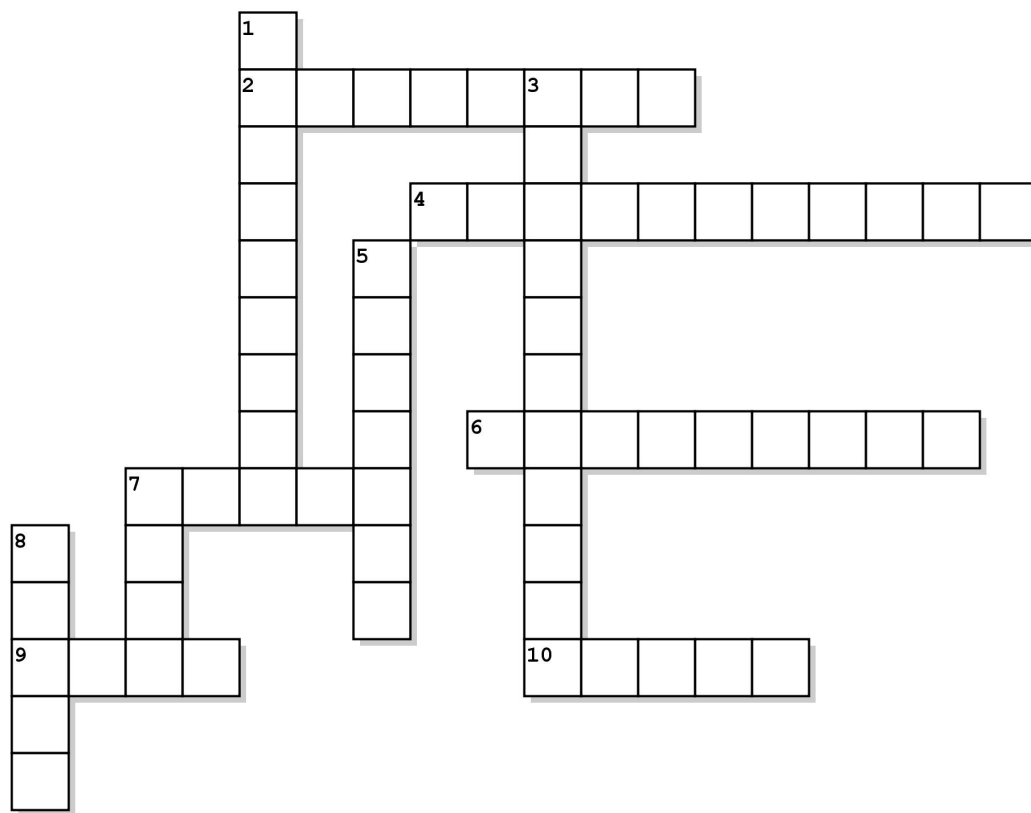
Across

2   statement that asserts that two expressions are equal, such as $y = 5x - 3$

4   coordinates of a location (two words)

6   cost for one item (two words)

7    $\frac{1}{4}$ gallon blue paint for every 100 square feet wall space is a _____.

9   measured in square units

10   a numerical representation of data

Down

1   variable that represents outputs to an equation

3   variable that represents inputs to an equation

5   the variable x

7    $\frac{1}{4}$ gallon blue paint per room is a unit ____.

8   pictorial representation

SELECTED RESPONSE

Show your work on a separate sheet of paper and select the best answer(s).

1. Sierra is saving for a printer that costs $150. She has an initial amount of $75 already saved in the bank and is going to save $35 each month. How many months will it take her to save enough money to buy the printer?

   A.   One month   B.   Two months   C.   Three months   D.   Four months

2. Wanda wants to save monthly for a summer college trip. She has some money already saved, and will save the same amount each month. Her saving plan can be modeled by the equation $y = 250x + 400$ where y represents the total amount she saves and x represents the number of months she saves. Which of the following statements are true about Wanda's saving plan? Choose all that apply.

   A.   She will save $250 per month.   B.   She will save $400 per month.

   C.   She will start with $250 already saved.   D.   She will start with $400 already saved.

3. Juice Giant sells 3 juice bottles for $6. Which of the following statements are true? Choose all that apply.

   A.   The unit price is $2 per bottle.   B.   The unit price is $0.50 per bottle.

   C.   18 juice bottles will cost $9.   D.   18 juice bottles will cost $36.

4. Yogi Yoga sells a package of 6 yoga classes for $30. Yoga-Rama sells packages of 4 yoga classes and they want to offer a better buy. Which of the following prices for 4 yoga classes would make Yoga-Rama a better buy than Yogi Yoga? Choose all that apply.

   A. $10   B. $15   C. $20   D. $25

Davis wants to make green paint by mixing 3 cups of blue paint for every 2 cups of yellow paint. Use this information to answer problems 5-6.

5. If he uses 33 cups of blue paint, how much yellow paint should he use?

   A.   11 cups   B.   22 cups   C.   55 cups   D.   None of these

6. If he needs 50 total cups of green paint, how much blue paint does he need?

   A.   10 cups   B.   20 cups   C.   30 cups   D.   150 cups

7. A container of paint will cover 50 square feet of wall space. Bart needs to paint a wall that is 8 feet by 20 feet and a second wall that is 10 feet by 32 feet. What is the fewest number of containers that Bart needs to complete the job?

   A.   2 containers   B.   9 containers   C.   10 containers   D.   96 containers

KNOWLEDGE CHECK

Show your work on a separate sheet of paper and write your answers on this page.

16.1 Saving for a Purchase

Kyle is saving to buy a ticket to a concert. The ticket costs $80. He has $30 already saved and he plans to save $10 a month.

1. Make a table and a graph that models Kyle's saving plan.

2. How many months will it take Kyle to save enough money to buy a ticket?

16.2 Best Buy Problems

Office Supply and Office Plus both sell notebooks. Office Supply sells 8 notebooks for $6. Office Plus sells 10 of the same notebooks for $7. Both stores will sell you any number of notebooks at the listed rate.

3. Complete each table below.

Office Supply

# of notebooks (x)	8	16	24	32	40
cost (y)					

Office Plus

# of notebooks (x)	10	20	30	40	50
cost (y)					

4. Which store offers the better buy? Explain your reasoning in two different ways.

16.3 Painting a Room

Philip needs to paint a floor in a rectangular studio that measures 18 feet by 25 feet. Each container of paint covers 200 square feet of space.

5. How many containers must he buy if he wants to use one coat of paint?

   Two coats of paint?

   Three coats?

HOME-SCHOOL CONNECTION

Here are some problems to review with your young mathematician.

1. You are saving to buy a new phone that costs $350. You already have $125 saved. You plan to save $10 a week. How many weeks will it take to save enough money to buy the phone?

    Answer using at least one of the following: a table, a graph, an equation.

2. T-Shirt Mania and Shirts R' Us sell souvenir t-shirts. T-Shirt Mania charges $18 for three t-shirts and Shirts R' Us charges $25 for four t-shirts.

    Use numbers and words to explain which store has the better buy.

3. Paula wants to make purple paint that is in a ratio of 5 parts blue to 2 parts red. If she needs to make 42 cups of paint total, how much of each color should she use?

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COMMON CORE STATE STANDARDS – MATHEMATICS

STANDARDS FOR MATHEMATICAL CONTENT

6.RP.A	**Understand ratio concepts and use ratio reasoning to solve problems.**
6.RP.2	Understand the concept of a unit rate a/b associated with a ratio a:b with b ≠ 0, and use rate language in the context of a ratio relationship. *For example, "This recipe has a ratio of 3 cups of flour to 4 cups of sugar, so there is 3/4 cup of flour for each cup of sugar." "We paid $75 for 15 hamburgers, which is a rate of $5 per hamburger."*
6.RP.3a	Use ratio and rate reasoning to solve real-world and mathematical problems, e.g., by reasoning about tables of equivalent ratios, tape diagrams, double number line diagrams, or equations: Make tables of equivalent ratios relating quantities with whole number measurements, find missing values in the tables, and plot the pairs of values on the coordinate plane. Use tables to compare ratios.
6.RP.3b	Use ratio and rate reasoning to solve real-world and mathematical problems, e.g., by reasoning about tables of equivalent ratios, tape diagrams, double number line diagrams, or equations: Solve unit rate problems including those involving unit pricing and constant speed. *For example, if it took 7 hours to mow 4 lawns, then at that rate, how many lawns could be mowed in 35 hours? At what rate were lawns being mowed?*
6.RP.3c	Use ratio and rate reasoning to solve real-world and mathematical problems, e.g., by reasoning about tables of equivalent ratios, tape diagrams, double number line diagrams, or equations: Find a percent of a quantity as a rate per 100 (e.g., 30% of a quantity means 30/100 times the quantity); solve problems involving finding the whole, given a part and the percent.
6.RP.3d	Use ratio and rate reasoning to solve real-world and mathematical problems, e.g., by reasoning about tables of equivalent ratios, tape diagrams, double number line diagrams, or equations: Use ratio reasoning to convert measurement units; manipulate and transform units appropriately when multiplying or dividing quantities.
6.EE.A	**Apply and extend previous understandings of arithmetic to algebraic expressions.**
6.EE.4	Identify when two expressions are equivalent (i.e., when the two expressions name the same number regardless of which value is substituted into them). *For example, the expressions y + y + y and 3y are equivalent because they name the same number regardless of which number y stands for.*
6.EE.B	**Reason about and solve one-variable equations and inequalities.**
6.EE.6	Use variables to represent numbers and write expressions when solving a real-world or mathematical problem; understand that a variable can represent an unknown number, or, depending on the purpose at hand, any number in a specified set.
6.EE.C	**Represent and analyze quantitative relationships between dependent and independent variables.**
6.EE.9	Use variables to represent two quantities in a real-world problem that change in relationship to one another; write an equation to express one quantity, thought of as the dependent variable, in terms of the other quantity, thought of as the independent variable. Analyze the relationship between the dependent and independent variables using graphs and tables, and relate these to the equation. *For example, in a problem involving motion at constant speed, list and graph ordered pairs of distances and times, and write the equation d = 65t to represent the relationship between distance and time.*
6.G.A	**Solve real-world and mathematical problems involving area, surface area, and volume.**
6.G.4	Represent three-dimensional figures using nets made up of rectangles and triangles, and use the nets to find the surface area of these figures. Apply these techniques in the context of solving real-world and mathematical problems.

STANDARDS FOR MATHEMATICAL PRACTICE

MP1	Make sense of problems and persevere in solving them.
MP2	Reason abstractly and quantitatively.
MP3	Construct viable arguments and critique the reasoning of others.
MP4	Model with mathematics.
MP5	Use appropriate tools strategically.
MP6	Attend to precision.
MP7	Look for and make use of structure.
MP8	Look for and express regularity in repeated reasoning.

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