EUREKA MATH

A STORY OF UNITS

Mathematics Curriculum

Grade 4 • MODULE 7

Exploring Measurement with Multiplication

PROBLEM SETS

Info for parents: http://bit.ly/pusdmath

Video tutorials: http://embarc.online

Version 3

Table of Contents

GRADE 4 • MODULE 7

Exploring Measurement with Multiplication

NOTE: Student sheets should be printed at 100% scale to preserve the intended size of figures for accurate measurements. Adjust copier or printer settings to *actual size* and set page scaling to *none*.

Name _____ Date _____

a.

Pounds	Ounces
1	
2	
3	
4	
5	
6	
7	
8	
9	
10	

The rule for converting pounds to ounces is _____.

b.

Yards	Feet
1	
2	
3	
4	
5	
6	
7	
8	
9	
10	

The rule for converting yards to feet is _____.

c.

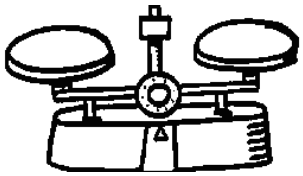
Feet	Inches
1	
2	
3	
4	
5	
6	
7	
8	
9	
10	

The rule for converting feet to inches is _____.

Name _____ Date _____

Use RDW to solve Problems 1–3.

1. Evan put a 2-pound weight on one side of the scale. How many 1-ounce weights will he need to put on the other side of the scale to make them equal?



2. Julius put a 3-pound weight on one side of the scale. Abel put 35 1-ounce weights on the other side. How many more 1-ounce weights does Abel need to balance the scale?

3. Mrs. Upton's baby weighs 5 pounds and 4 ounces. How many total ounces does the baby weigh?

4. Complete the following conversion tables, and write the rule under each table.

a.

Pounds	Ounces
1	
3	
7	
10	
17	

The rule for converting pounds to ounces is _____.

b.

Feet	Inches
1	
2	
5	
10	
15	

The rule for converting feet to inches is _____.

c.

Yards	Feet
1	
2	
4	
10	
14	

The rule for converting yards to feet is _____.

5. Solve.

a. 3 feet 1 inch = _____ inches

b. 11 feet 10 inches = _____ inches

c. 5 yards 1 foot = _____ feet

d. 12 yards 2 feet = _____ feet

e. 27 pounds 10 ounces = _____ ounces

f. 18 yards 9 feet = _____ feet

g. 14 pounds 5 ounces = _____ ounces

h. 5 yards 2 feet = _____ inches

6. Answer *true* or *false* for the following statements. If the statement is false, change the right side of the comparison to make it true.

a. 2 kilograms > 2,600 grams _____

b. 12 feet < 140 inches _____

c. 10 kilometers = 10,000 meters _____

Name _____ Date _____

a.

Gallons	Quarts
1	
2	
3	
4	
5	
6	
7	
8	
9	
10	

The rule for converting gallons to quarts is _____.

b.

Quarts	Pints
1	
2	
3	
4	
5	
6	
7	
8	
9	
10	

The rule for converting quarts to pints is _____.

c.

Pints	Cups
1	
2	
3	
4	
5	
6	
7	
8	
9	
10	

The rule for converting pints to cups is _____.

d. 1 gallon = ____ pints

1 quart = ____ cups

1 gallon = ____ cups

Name _____ Date _____

Use RDW to solve Problems 1–3.

1. Susie has 3 quarts of milk. How many pints does she have?

2. Kristin has 3 gallons 2 quarts of water. Alana needs the same amount of water but only has 8 quarts. How many more quarts of water does Alana need?

3. Leonard bought 4 liters of orange juice. How many milliliters of juice does he have?

4. Complete the following conversion tables and write the rule under each table.

a.

Gallons	Quarts
1	
3	
5	
10	
13	

The rule for converting gallons to quarts is _____.

b.

Quarts	Pints
1	
2	
6	
10	
16	

The rule for converting quarts to pints is _____.

5. Solve.

   a. 8 gallons 2 quarts = _____ quarts
   b. 15 gallons 2 quarts = _____ quarts
   c. 8 quarts 2 pints = _____ pints
   d. 12 quarts 3 pints = _____ cups
   e. 26 gallons 3 quarts = _____ pints
   f. 32 gallons 2 quarts = _____ cups

6. Answer true or false for the following statements. If your answer is false, make the statement true.

   a. 1 gallon > 4 quarts _____
   b. 5 liters = 5,000 milliliters _____
   c. 15 pints < 1 gallon 1 cup _____

7. Russell has 5 liters of a certain medicine. If it takes 2 milliliters to make 1 dose, how many doses can he make?

8. Each month, the Moore family drinks 16 gallons of milk and the Siler family goes through 44 quarts of milk. Which family drinks more milk each month?

9. Keith's lemonade stand served lemonade in glasses with a capacity of 1 cup. If he had 9 gallons of lemonade, how many cups could he sell?

Name _____ Date _____

a.

Minutes	Seconds
1	
2	
3	
4	
5	
6	
7	
8	
9	
10	

The rule for converting minutes to seconds is _____.

b.

Hours	Minutes
1	
2	
3	
4	
5	
6	
7	
8	
9	
10	

The rule for converting hours to minutes is _____.

c.

Days	Hours
1	
2	
3	
4	
5	
6	
7	
8	
9	
10	

The rule for converting days to hours is _____.

Name _____ Date _____

Use RDW to solve Problems 1–2.

1. Courtney needs to leave the house by 8:00 a.m. If she wakes up at 6:00 a.m., how many minutes does she have to get ready? Use the number line to show your work.

2. Giuliana's goal was to run a marathon in under 6 hours. What was her goal in minutes?

3. Complete the following conversion tables and write the rule under each table.

a.

Hours	Minutes
1	
3	
6	
10	
15	

The rule for converting hours to minutes and minutes to seconds is

_____.

b.

Days	Hours
1	
2	
5	
7	
10	

The rule for converting days to hours is

_____.

4. Solve.

   a. 9 hours 30 minutes = _____ minutes

   b. 7 minutes 45 seconds = _____ seconds

   c. 9 days 20 hours = _____ hours

   d. 22 minutes 27 seconds = _____ seconds

   e. 13 days 19 hours = _____ hours

   f. 23 hours 5 minutes = _____ minutes

5. Explain how you solved Problem 4(f).

6. How many seconds are in 14 minutes 43 seconds?

7. How many hours are there in 4 weeks 3 days?

Name _____ Date _____

Use RDW to solve the following problems.

1. Beth is allowed 2 hours of TV time each week. Her sister is allowed 2 times as much. How many minutes of TV can Beth's sister watch?

2. Clay weighs 9 times as much as his baby sister. Clay weighs 63 pounds. How much does his baby sister weigh in ounces?

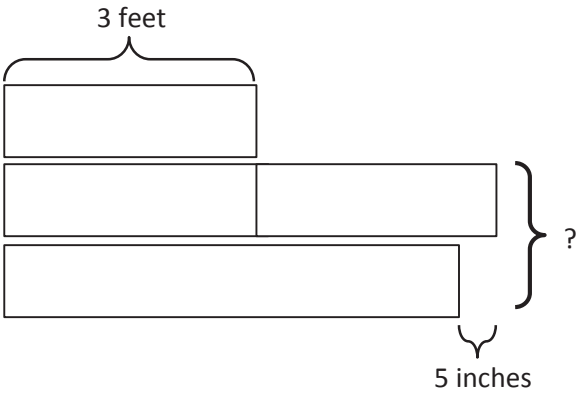
3. Helen has 4 yards of rope. Daniel has 4 times as much rope as Helen. How many more feet of rope does Daniel have compared to Helen?

4. A dishwasher uses 11 liters of water for each cycle. A washing machine uses 5 times as much water as a dishwasher uses for each load. Combined, how many milliliters of water are used for 1 cycle of each machine?

5. Joyce bought 2 pounds of apples. She bought 3 times as many pounds of potatoes as pounds of apples. The melons she bought were 10 ounces lighter than the total weight of the potatoes. How many ounces did the melons weigh?

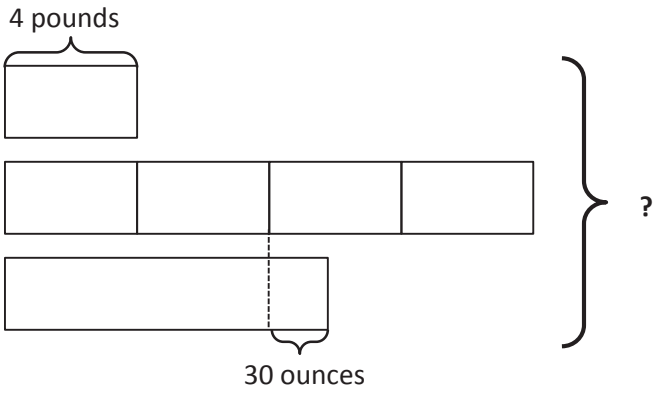
Name _____ Date _____

1. a. Label the rest of the tape diagram below. Solve for the unknown.



b. Write a problem of your own that could be solved using the diagram above.

2. Create a problem of your own using the diagram below, and solve for the unknown.



Classmate:		**Problem Number:**	
Strategies my classmate used:			
Things my classmate did well:			
Suggestions for improvement:			
Changes I would make to my work based on my classmate's work:			

Classmate:		**Problem Number:**	
Strategies my classmate used:			
Things my classmate did well:			
Suggestions for improvement:			
Changes I would make to my work based on my classmate's work:			

peer share and critique form

Name _____ Date _____

1. Determine the following sums and differences. Show your work.

a. 3 qt + 1 qt = _____ gal

b. 2 gal 1 qt + 3 qt = _____ gal

c. 1 gal – 1 qt = _____ qt

d. 5 gal – 1 qt = _____ gal _____ qt

e. 2 c + 2 c = _____ qt

f. 1 qt 1 pt + 3 pt = _____ qt

g. 2 qt – 3 pt = _____ pt

h. 5 qt – 3 c _____ qt _____ c

2. Find the following sums and differences. Show your work.

a. 6 gal 3 qt + 3 qt = _____ gal _____ qt

b. 10 gal 3 qt + 3 gal 3 qt = _____ gal _____ qt

c. 9 gal 1 pt – 2 pt = _____ gal _____ pt

d. 7 gal 1 pt – 2 gal 7 pt = _____ gal _____ pt

e. 16 qt 2 c + 4 c = _____ qt _____ c

f. 6 gal 5 pt + 3 gal 3 pt = _____ gal _____ pt

3. The capacity of a pitcher is 3 quarts. Right now, it contains 1 quart 3 cups of liquid. How much more liquid can the pitcher hold?

4. Dorothy follows the recipe in the table to make her grandma's cherry lemonade.

   a. How much lemonade does the recipe make?

Cherry Lemonade	
Ingredient	**Amount**
Lemon Juice	5 pints
Sugar Syrup	2 cups
Water	1 gallon 1 quart
Cherry Juice	3 quarts

   b. How many more cups of water could Dorothy add to the recipe to make an exact number of gallons of lemonade?

Name _____ Date _____

1. Determine the following sums and differences. Show your work.

a. 1 ft + 2 ft = _____ yd

b. 3 yd 1 ft + 2 ft = _____ yd

c. 1 yd – 1 ft = _____ ft

d. 8 yd – 1 ft = _____ yd _____ ft

e. 3 in + 9 in = _____ ft

f. 6 in + 9 in = _____ ft _____ in

g. 1 ft – 8 in = _____ in

h. 5 ft – 8 in = _____ ft _____ in

2. Find the following sums and differences. Show your work.

a. 5 yd 2 ft + 2 ft = _____ yd _____ ft

b. 7 yd 2 ft + 2 yd 2 ft = _____ yd _____ ft

c. 4 yd 1 ft – 2 ft = _____ yd _____ ft

d. 6 yd 1 ft – 2 yd 2 ft = _____ yd _____ ft

e. 6 ft 9 in + 4 in = _____ ft _____ in

f. 4 ft 4 in + 3 ft 11 in = _____ ft _____ in

g. 34 ft 4 in – 8 in = _____ ft _____ in

h. 7 ft 1 in – 5 ft 10 in = _____ ft _____ in

3. Matthew is 6 feet 2 inches tall. His little cousin Emma is 3 feet 6 inches tall. How much taller is Matthew than Emma?

4. In gym class, Jared climbed 10 feet 4 inches up a rope. Then, he continued to climb up another 3 feet 9 inches. How high did Jared climb?

5. A quadrilateral has a perimeter of 18 feet 2 inches. The sum of three of the sides is 12 feet 4 inches.

   a. What is the length of the fourth side?

   b. An equilateral triangle has a side length equal to the fourth side of the quadrilateral. What is the perimeter of the triangle?

Name _____ Date _____

1. Determine the following sums and differences. Show your work.

a. 7 oz + 9 oz = _____ lb

b. 1 lb 5 oz + 11 oz = _____ lb

c. 1 lb – 13 oz = _____ oz

d. 12 lb – 4 oz = _____ lb _____ oz

e. 3 lb 9 oz + 9 oz = _____ lb _____ oz

f. 30 lb 9 oz + 9 lb 9 oz _____ lb _____ oz

g. 25 lb 2 oz – 14 oz = _____ lb _____ oz

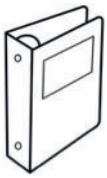
h. 125 lb 2 oz – 12 lb 3 oz = _____ lb _____ oz

2. The total weight of Sarah and Amanda's full backpacks is 27 pounds. Sarah's backpack weighs 15 pounds 9 ounces. How much does Amanda's backpack weigh?

3. In Emma's supply box, a pencil weighs 3 ounces. Her scissors weigh 3 ounces more than the pencil, and a bottle of glue weighs three times as much as the scissors. How much does the bottle of glue weigh in pounds and ounces?

4. Use the information in the chart about Jodi's school supplies to answer the following questions:

   a. On Mondays, Jodi packs only her laptop and supply case into her backpack. How much does her full backpack weigh?

 Textbook 3 lb 8 oz	 Supply Case 1 lb	 Binder 2 lb 5 oz
 Laptop 5 lb 12 oz	 Notebook 11 oz	 Backpack (empty) 2 lb 14 oz

   b. On Tuesdays, Jodi brings her laptop, supply case, two notebooks, and two textbooks in her backpack. On Fridays, Jodi only packs her binder and supply case. How much less does Jodi's full backpack weigh on Friday than it does on Tuesday?

Name _____ Date _____

1. Determine the following sums and differences. Show your work.

   a. 23 min + 37 min = _____ hr

   b. 1 hr 11 min + 49 min = _____ hr

   c. 1 hr – 12 min = _____ min

   d. 4 hr – 12 min = _____ hr _____ min

   e. 22 sec + 38 sec = _____ min

   f. 3 min – 45 sec = _____ min _____ sec

2. Find the following sums and differences. Show your work.

   a. 3 hr 45 min + 25 min = _____ hr _____ min

   b. 2 hr 45 min + 6 hr 25 min = _____ hr _____ min

   c. 3 hr 7 min – 42 min = _____ hr _____ min

   d. 5 hr 7 min – 2 hr 13 min = _____ hr _____ min

   e. 5 min 40 sec + 27 sec = _____ min _____ sec

   f. 22 min 48 sec – 5 min 58 sec = ____ min ____ sec

3. At the cup-stacking competition, the first place finishing time was 1 minute 52 seconds. That was 31 seconds faster than the second place finisher. What was the second place time?

4. Jackeline and Raychel have 5 hours to watch three movies that last 1 hour 22 minutes, 2 hours 12 minutes, and 1 hour 57 minutes, respectively.

   a. Do the girls have enough time to watch all three movies? Explain why or why not.

   b. If Jackeline and Raychel decide to watch only the two longest movies and take a 30-minute break in between, how much of their 5 hours will they have left over?

Name _____ Date _____

Use RDW to solve the following problems.

1. Paula's time swimming in the Ironman Triathlon was 1 hour 25 minutes. Her time biking was 5 hours longer than her swimming time. She ran for 4 hours 50 minutes. How long did it take her to complete all three parts of the race?

2. Nolan put 7 gallons 3 quarts of gas into his car on Monday and twice as much on Saturday. What was the total amount of gas put into the car on both days?

3. One pumpkin weighs 7 pounds 12 ounces. A second pumpkin weighs 10 pounds 4 ounces. A third pumpkin weighs 2 pounds 9 ounces more than the second pumpkin. What is the total weight of all three pumpkins?

4. Mr. Lane is 6 feet 4 inches tall. His daughter, Mary, is 3 feet 8 inches shorter than her father. His son is 9 inches taller than Mary. How many inches taller is Mr. Lane than his son?

Name _____ Date _____

Use RDW to solve the following problems.

1. Lauren ran a marathon and finished 1 hour 15 minutes after Amy, who had a time of 2 hours 20 minutes. Cassie finished 35 minutes after Lauren. How long did it take Cassie to run the marathon?

2. Chef Joe has 8 lb 4 oz of ground beef in his freezer. This is $\frac{1}{3}$ of the amount needed to make the number of burgers he planned for a party. If he uses 4 oz of beef for each burger, how many burgers is he planning to make?

3. Sarah read for 1 hour 17 minutes each day for 6 days. If she took 3 minutes to read each page, how many pages did she read in 6 days?

4. Grades 3, 4, and 5 have their annual field day together. Each grade level is given 16 gallons of water. If there are a total of 350 students, will there be enough water for each student to have 2 cups?

Name _____ Date _____

1. Draw a tape diagram to show 1 yard divided into 3 equal parts.

   a. $\frac{1}{3}$ yd = _____ ft

   b. $\frac{2}{3}$ yd = _____ ft

   c. $\frac{3}{3}$ yd = _____ ft

2. Draw a tape diagram to show $2\frac{2}{3}$ yards = 8 feet.

3. Draw a tape diagram to show $\frac{3}{4}$ gallon = 3 quarts.

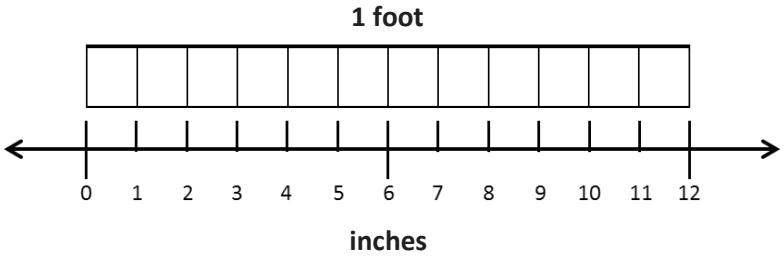
4. Draw a tape diagram to show $3\frac{3}{4}$ gallons = 15 quarts.

5. Solve the problems using whatever tool works best for you.

   a. $\frac{1}{12}$ ft = _____ in

   b. ____ ft = $\frac{1}{2}$ ft = _____ in

   c. ____ ft = $\frac{1}{4}$ ft = _____ in



d. ____ ft = $\frac{3}{4}$ ft = _____ in

e. ____ ft = $\frac{1}{3}$ ft = _____ in

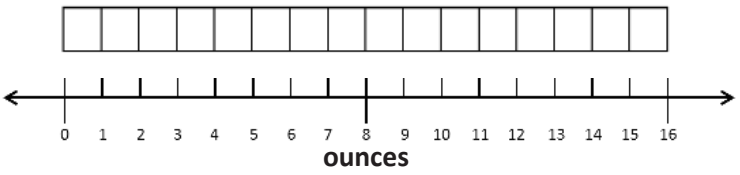
f. ____ ft = $\frac{2}{3}$ ft = _____ in

6. Solve.

a. $1\frac{1}{3}$ yd = _____ ft	b. $4\frac{2}{3}$ yd = _____ ft
c. $2\frac{1}{2}$ gal = _____ qt	d. $7\frac{3}{4}$ gal = _____ qt
e. $1\frac{1}{2}$ ft = _____ in	f. $6\frac{1}{2}$ ft = _____ in
g. $1\frac{1}{4}$ ft = _____ in	h. $6\frac{1}{4}$ ft = _____ in

Name _____ Date _____

1. Solve.



   a. $\frac{1}{16}$ pound = _____ ounce

   b. $\frac{\quad}{16}$ pound = $\frac{1}{2}$ pound = _____ ounces

   c. $\frac{\quad}{16}$ pound = $\frac{1}{4}$ pound = _____ ounces

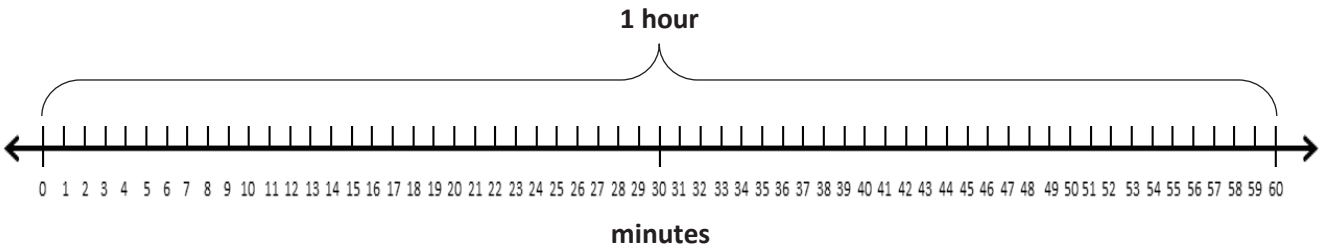
   d. $\frac{\quad}{16}$ pound = $\frac{3}{4}$ pound = _____ ounces

   e. $\frac{\quad}{16}$ pound = $\frac{1}{8}$ pound = _____ ounces

   f. $\frac{\quad}{16}$ pound = $\frac{3}{8}$ pound = _____ ounces

2. Draw a tape diagram to show $2\frac{1}{2}$ pounds = 40 ounces.

3.



   a. $\frac{1}{60}$ hour = _____ minute

   b. $\frac{\quad}{60}$ hour = $\frac{1}{2}$ hour = _____ minutes

   c. $\frac{\quad}{60}$ hour = $\frac{1}{4}$ hour = _____ minutes

4. Draw a tape diagram to show that $1\frac{1}{2}$ hours = 90 minutes.

5. Solve.

a. $1\frac{1}{8}$ pounds = _____ ounces	b. $3\frac{3}{8}$ pounds = _____ ounces
c. $5\frac{3}{4}$ lb = _____ oz	d. $5\frac{1}{2}$ lb = _____ oz
e. $1\frac{1}{4}$ hours = _____ minutes	f. $3\frac{1}{2}$ hours = _____ minutes
g. $2\frac{1}{4}$ hr = _____ min	h. $5\frac{1}{2}$ hr = _____ min
i. $3\frac{1}{3}$ yards = _____ feet	j. $7\frac{2}{3}$ yd = _____ ft
k. $4\frac{1}{2}$ gallons = _____ quarts	l. $6\frac{3}{4}$ gal = _____ qt
m. $5\frac{3}{4}$ feet = _____ inches	n. $8\frac{1}{3}$ ft = _____ in

Name _____ Date _____

Use RDW to solve the following problems.

1. A cartoon lasts $\frac{1}{2}$ hour. A movie is 6 times as long as the cartoon. How many minutes does it take to watch both the cartoon and the movie?

2. A large bench is $7\frac{1}{6}$ feet long. It is 17 inches longer than a shorter bench. How many inches long is the shorter bench?

3. The first container holds 4 gallons 2 quarts of juice. The second container can hold $1\frac{3}{4}$ gallons more than the first container. Altogether, how much juice can the two containers hold?

4. A girl's height is $3\frac{1}{3}$ feet. A giraffe's height is 3 times that of the girl's. How many inches taller is the giraffe than the girl?

5. Five ounces of pretzels are put into each bag. How many bags can be made from $22\frac{3}{4}$ pounds of pretzels?

6. Twenty servings of pancakes require 15 ounces of pancake mix.

   a. How much pancake mix is needed for 120 servings?

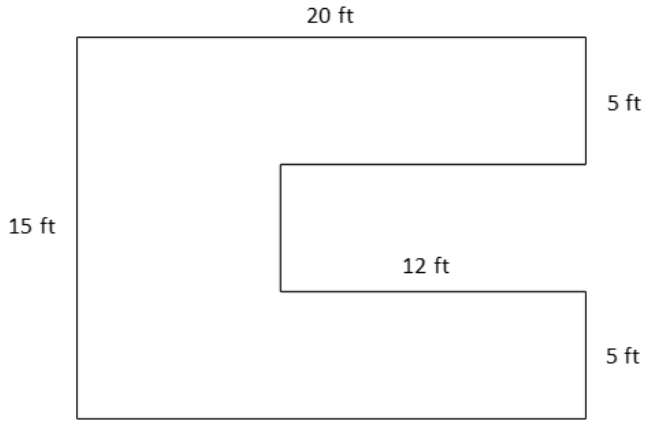
   b. Extension: The mix is bought in $2\frac{1}{2}$-pound bags. How many bags will be needed to make 120 servings?

Name _____ Date _____

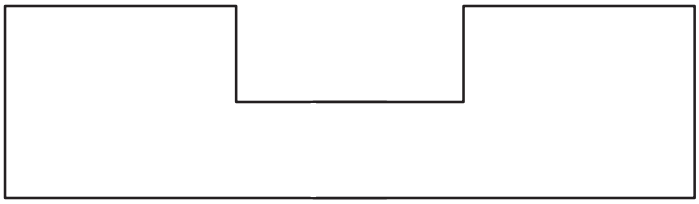
1. Emma's rectangular bedroom is 11 ft long and 12 ft wide with an attached closet that is 4 ft by 5 ft. How many square feet of carpet does Emma need to cover both the bedroom and closet?

2. To save money, Emma is no longer going to carpet her closet. In addition, she wants one 3 ft by 6 ft corner of her bedroom to be wood floor. How many square feet of carpet will she need for the bedroom now?

3. Find the area of the figure pictured to the right.



4. Label the sides of the figure below with measurements that make sense. Find the area of the figure.



5. Peterkin Park has a square fountain with a walkway around it. The fountain measures 12 feet on each side. The walkway is $3\frac{1}{2}$ feet wide. Find the area of the walkway.

6. If 1 bag of gravel covers 9 square feet, how many bags of gravel will be needed to cover the entire walkway around the fountain in Peterkin Park?

Name _____ Date _____

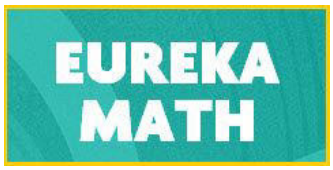
Work with your partner to create each floor plan on a separate piece of paper, as described below.

You should use a protractor and a ruler to create each floor plan and be sure each rectangle you create has two sets of parallel lines and four right angles.

Be sure to label each part of your model with the correct measurement.

1. The bedroom in Samantha's dollhouse is a rectangle 26 centimeters long and 15 centimeters wide. It has a rectangular bed that is 9 centimeters long and 6 centimeters wide. The two dressers in the room are each 2 centimeters wide. One measures 7 centimeters long, and the other measures 4 centimeters long. Create a floor plan of the bedroom containing the bed and dressers. Find the area of the open floor space in the bedroom after the furniture is in place.

2. A model of a rectangular pool is 15 centimeters long and 10 centimeters wide. The walkway around the pool is 5 centimeters wider than the pool on each of the four sides. In one section of the walkway, there is a flowerbed that is 3 centimeters by 5 centimeters. Create a diagram of the pool area with the surrounding walkway and flowerbed. Find the area of the open walkway around the pool.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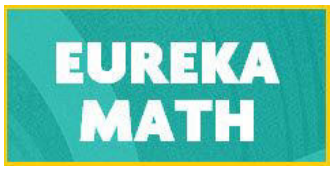
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