EUREKA MATH

Grade 4 • MODULE 7

Exploring Measurement with Multiplication

HOMEWORK

Mathematics Curriculum

4
GRADE

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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 _____

1. Complete the tables.

a.

Yards	Feet
1	
2	
3	
5	
10	

b.

Feet	Inches
1	
2	
5	
10	
15	

c.

Yards	Inches
1	
3	
6	
10	
12	

2. Solve.

a. 2 yards 2 inches = _____ inches

b. 9 yards 10 inches = _____ inches

c. 4 yards 2 feet = _____ feet

d. 13 yards 1 foot = _____ feet

e. 17 feet 2 inches = _____ inches

f. 11 yards 1 foot = _____ feet

g. 15 yards 2 feet = _____ feet

h. 5 yards 2 feet = _____ inches

3. Ally has a piece of string that is 6 yards 2 feet long. How many inches of string does she have?

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Lesson 1:   Create conversion tables for length, weight, and capacity units using measurement tools, and use the tables to solve problems.

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4. Complete the table.

Pounds	Ounces
1	
2	
4	
10	
12	

5. Renee's baby sister weighs 7 pounds 2 ounces. How many ounces does her sister weigh?

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. 4 kilograms < 4,100 grams   _____

    b. 10 yards < 360 inches   _____

    c. 10 liters = 100,000 milliliters   _____

Lesson 1:   Create conversion tables for length, weight, and capacity units using measurement tools, and use the tables to solve problems.

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Name _____   Date _____

Use the RDW process to solve Problems 1–3.

1. Dawn needs to pour 3 gallons of water into her fish tank. She only has a 1-cup measuring cup. How many cups of water should she put in the tank?

2. Julia has 4 gallons 2 quarts of water. Ally needs the same amount of water but only has 12 quarts. How much more water does Ally need?

3. Sean drank 2 liters of water today, which was 280 milliliters more than he drank yesterday. How much water did he drink yesterday?

4. Complete the tables.

   a.

Gallons	Quarts
1	
2	
4	
12	
15	

   b.

Quarts	Pints
1	
2	
6	
10	
16	

Lesson 2: Create conversion tables for length, weight, and capacity units using measurement tools, and use the tables to solve problems.

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5. Solve.

a. 6 gallons 3 quarts = _____ quarts

b. 12 gallons 2 quarts = _____ quarts

c. 5 quarts 1 pint = _____ pints

d. 13 quarts 3 pints = _____ cups

e. 17 gallons 2 quarts = _____ pints

f. 27 gallons 3 quarts = _____ cups

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

7. Answer true or false for the following statements. If your answer is false, make the statement true by correcting the right side of the comparison.

a. 2 quarts > 10 pints   _____

b. 6 liters = 6,000 milliliters   _____

c. 16 cups < 4 quarts 1 cup   _____

8. Joey needs to buy 3 quarts of chocolate milk. The store only sells it in pint containers. How many pints of chocolate milk should he buy? Explain how you know.

9. Granny Smith made punch. She used 2 pints of ginger ale, 3 pints of fruit punch, and 1 pint of orange juice. She served the punch in glasses that had a capacity of 1 cup. How many cups can she fill?

Lesson 2:   Create conversion tables for length, weight, and capacity units using measurement tools, and use the tables to solve problems.

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Name _____   Date _____

Use RDW to solve Problems 1–2.

1. Jeffrey practiced his drums from 4:00 p.m. until 7:00 p.m. How many minutes did he practice? Use the number line to show your work.
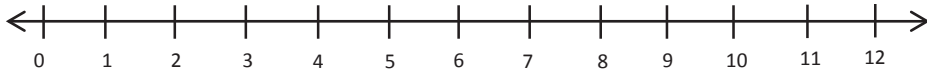
2. Isla used her computer for 5 hours over the weekend. How many minutes did she spend on the computer?

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

a.

Hours	Minutes
1	
2	
5	
9	
12	

The rule for converting hours to minutes is

_____ .

b.

Days	Hours
1	
3	
6	
8	
20	

The rule for converting days to hours is

_____ .

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4.   Solve.

   a.   10 hours 30 minutes = _____ minutes   b.   6 minutes 15 seconds = _____ seconds

   c.   4 days 20 hours = _____ hours   d.   3 minutes 45 seconds = _____ seconds

   e.   23 days 21 hours = _____ hours   f.   17 hours 5 minutes = _____ minutes

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

6.   It took a space shuttle 8 minutes 36 seconds to launch and reach outer space. How many seconds did it take?

7.   Apollo 16's mission lasted just over 1 week 4 days. How many hours are there in 1 week 4 days?

Name _____   Date _____

Use RDW to solve the following problems.

1. Sandy took the train to New York City. The trip took 3 hours. Jackie took the bus, which took twice as long. How many minutes did Jackie's trip take?

2. Coleton's puppy weighed 3 pounds 8 ounces at birth. The vet weighed the puppy again at 6 months, and the puppy weighed 7 pounds. How many ounces did the puppy gain?

3. Jessie bought a 2-liter bottle of juice. Her sister drank 650 milliliters. How many milliliters were left in the bottle?

Lesson 4:   Solve multiplicative comparison word problems using measurement conversion tables.

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4. Hudson has a chain that is 1 yard in length. Myah's chain is 3 times as long. How many feet of chain do they have in all?

5. A box weighs 8 ounces. A shipment of boxes weighs 7 pounds. How many boxes are in the shipment?

6. Tracy's rain barrel has a capacity of 27 quarts of water. Beth's rain barrel has a capacity of twice the amount of water as Tracy's rain barrel. Trevor's rain barrel can hold 9 quarts of water less than Beth's barrel.

   a. What is the capacity of Trevor's rain barrel?

   b. If Tracy, Beth, and Trevor's rain barrels were filled to capacity, and they poured all of the water into a 30-gallon bucket, would there be enough room? Explain.

Name _____   Date _____

Draw a tape diagram to solve the following problems.

1. Timmy drank 2 quarts of water yesterday. He drank twice as much water today as he drank yesterday. How many cups of water did Timmy drink in the two days?

2. Lisa recorded a 2-hour television show. When she watched it, she skipped the commercials. It took her 84 minutes to watch the show. How many minutes did she save by skipping the commercials?

3. Jason bought 2 pounds of cashews. Sarah ate 9 ounces. David ate 2 ounces more than Sarah. How many ounces were left in Jason's bag of cashews?

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

5 feet

?

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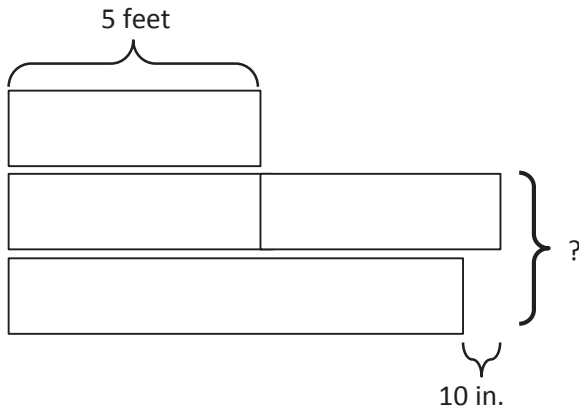
   b. Write a problem of your own that could be solved using the diagram above.

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

3 pounds

?

8 ounces

Name _____   Date _____

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

    a.   5 qt + 3 qt = _____ gal

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

    c.   1 gal – 3 qt = _____ qt

    d.   3 gal – 2 qt = _____ gal _____ qt

    e.   1 c + 3 c = _____ qt

    f.   2 qt 3 c + 5 c = _____ qt

    g.   1 qt – 1 pt = _____ pt

    h.   6 qt – 5 pt = _____ qt _____ pt

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

    a.   4 gal 2 qt + 3 qt = _____ gal _____ qt

    b.   12 gal 2 qt + 5 gal 3 qt = _____ gal _____ qt

    c.   7 gal 2 pt – 3 pt = _____ gal _____ pt

    d.   11 gal 3 pt – 4 gal 6 pt = _____ gal _____ pt

    e.   12 qt 5 c + 6 c = _____ qt _____ c

    f.   8 gal 6 pt + 5 gal 4 pt = _____ gal _____ pt

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3. The capacity of a bucket is 5 gallons. Right now, it contains 3 gallons 2 quarts of liquid. How much more liquid can the bucket hold?

4. Grace and Joyce follow the recipe in the table to make a homemade bubble solution.

    a. How much solution does the recipe make?

Homemade Bubble Solution	
Ingredient	**Amount**
Water	2 gallons 3 pints
Dish Soap	2 quarts 1 cup
Corn Syrup	2 cups

    b. How many more cups of solution would they need to fill a 4-gallon container?

Name _____   Date _____

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

   a. 2 yd 2 ft + 1 ft = _____ yd

   b. 2 yd − 1 ft = _____ yd _____ ft

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

   d. 5 yd − 1 ft = _____ yd _____ ft

   e. 7 in + 5 in = _____ ft

   f. 7 in + 7 in = _____ ft _____ in

   g. 1 ft − 2 in = _____ in

   h. 2 ft − 6 in = _____ ft _____ in

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

   a. 4 yd 2 ft + 2 ft = _____ yd _____ ft

   b. 6 yd 2 ft + 1 yd 1 ft = _____ yd _____ ft

   c. 5 yd 1 ft − 2 ft = _____ yd _____ ft

   d. 7 yd 1 ft − 5 yd 2 ft = _____ yd _____ ft

   e. 7 ft 8 in + 5 in = _____ ft _____ in

   f. 6 ft 5 in + 5 ft 9 in = _____ ft _____ in

   g. 32 ft 3 in − 7 in = _____ ft _____ in

   h. 8 ft 2 in − 3 ft 11 in = _____ ft _____ in

3. Laurie bought 9 feet 5 inches of blue ribbon. She also bought 6 feet 4 inches of green ribbon. How much ribbon did she buy altogether?

4. The length of the room is 11 feet 6 inches. The width of the room is 2 feet 9 inches shorter than the length. What is the width of the room?

5. Tim's bedroom is 12 feet 6 inches wide. The perimeter of the rectangular-shaped bedroom is 50 feet.

   a. What is the length of Tim's bedroom?

   b. How much longer is the length of Tim's room than the width?

Name _____   Date _____

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

   a. 11 oz + 5 oz = _____ lb

   b. 1 lb 7 oz + 9 oz = _____ lb

   c. 1 lb – 11 oz = _____ oz

   d. 12 lb – 8 oz = _____ lb _____ oz

   e. 5 lb 8 oz + 9 oz = _____ lb _____ oz

   f. 21 lb 8 oz + 6 lb 9 oz = _____ lb _____ oz

   g. 23 lb 1 oz – 15 oz = _____ lb _____ oz

   h. 89 lb 2 oz – 16 lb 4 oz = _____ lb _____ oz

2. When David took his dog, Rocky, to the vet in December, Rocky weighed 29 pounds 9 ounces. When he took Rocky back to the vet in March, Rocky weighed 34 pounds 4 ounces. How much weight did Rocky gain?

3. Bianca had 6 identical jars of bubble bath. She put them all in a bag that weighed 2 ounces. The total weight of the bag filled with the six jars was 1 pound 4 ounces. How much did each jar weigh?

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

    a. On Wednesdays, Melissa packs only two notebooks and a binder into her backpack. How much does her full backpack weigh on Wednesdays?

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 Thursdays, Melissa puts her laptop, supply case, two textbooks, and a notebook in her backpack. How much does her full backpack weigh on Thursdays?

    c. How much more does the backpack weigh with 3 textbooks and a notebook than it does with just 1 textbook and the supply case?

Name _____ Date _____

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

   a. 41 min + 19 min = _____ hr

   b. 2 hr 21 min + 39 min = _____ hr

   c. 1 hr – 33 min = _____ min

   d. 3 hr – 33 min = _____ hr _____ min

   e. 31 sec + 29 sec = _____ min

   f. 5 min – 15 sec = _____ min _____ sec

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

   a. 5 hr 30 min + 35 min = _____ hr _____ min

   b. 3 hr 15 min + 5 hr 55 min = _____ hr_____ min

   c. 4 hr 4 min – 38 min = _____ hr _____ min

   d. 7 hr 3 min – 4 hr 25 min = _____ hr _____ min

   e. 3 min 20 sec + 49 sec = _____ min _____ sec

   f. 22 min 37 sec – 5 min 58 sec = ____ min ____ sec

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3. It took 5 minutes 34 seconds for Melissa's oven to preheat to 350 degrees. That was 27 seconds slower than it took Ryan's oven to preheat to the same temperature. How long did it take Ryan's oven to preheat?

4. Joanna read three books. Her goal was to finish all three books in a total of 7 hours. She completed them, respectively, in 2 hours 37 minutes, 3 hours 9 minutes, and 1 hour 51 minutes.

   a. Did Joanna meet her goal? Write a statement to explain why or why not.

   b. Joanna completed the two shortest books in one evening. How long did she spend reading that evening? How long, with her goal in mind, did that leave her to read the third book?

Name _____   Date _____

Use RDW to solve the following problems.

1. On Saturday, Jeff used 2 quarts 1 cup of water from a full gallon to replace some water that leaked from his fish tank. On Sunday, he used 3 pints of water from the same gallon. How much water was left in the gallon after Sunday?

2. To make punch, Julia poured 1 quart 3 cups of ginger ale into a bowl and then added twice as much fruit juice. How much punch did she make in all?

3. Patti went swimming for 1 hour 15 minutes on Monday. On Tuesday, she swam twice as long as she swam on Monday. On Wednesday, she swam 50 minutes less than the time she swam on Tuesday. How much time did she spend swimming during that three-day period?

4. Myah is 4 feet 2 inches tall. Her sister, Ally, is 10 inches taller. Their little brother is half as tall as Ally. How tall is their little brother in feet and inches?

5. Rick and Laurie have three dogs. Diesel weighs 89 pounds 12 ounces. Ebony weighs 33 pounds 14 ounces less than Diesel. Luna is the smallest at 10 pounds 2 ounces. What is the combined weight of the three dogs in pounds and ounces?

Name _____   Date _____

Use RDW to solve the following problems.

1. Ashley ran a marathon and finished 1 hour 40 minutes after P.J., who had a time of 2 hours 15 minutes. Kerry finished 12 minutes before Ashley. How long did it take Kerry to run the marathon?

2. Mr. Foote's deck is 12 ft 6 in wide. Its length is twice the width plus 3 more inches. How long is the deck?

3. Mrs. Lorentz bought 12 pounds 8 ounces of sugar. This is $\frac{1}{4}$ of the sugar she will use to make sugar cookies in her bakery this week. If she uses 10 ounces of sugar for each batch of sugar cookies, how many batches of sugar cookies will she make in a week?

4. Beth Ann practiced piano for 1 hour 5 minutes each day for 1 week. She had 5 songs to practice and spent the same amount of time practicing each song. How long did she practice each song during the week?

5. The concession stand has 18 gallons of punch. If there are a total of 240 students who want to purchase 1 cup of punch each, will there be enough punch for everyone?

Name _____   Date _____

1. Draw a tape diagram to show $1\frac{1}{3}$ yards = 4 feet.

2. Draw a tape diagram to show $\frac{1}{2}$ gallon = 2 quarts.

3. Draw a tape diagram to show $1\frac{3}{4}$ gallons = 7 quarts.

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

   1 foot

   a. $\frac{1}{2}$ foot = _____inches

   b. $\frac{}{12}$ foot = $\frac{1}{4}$ foot = _____inches

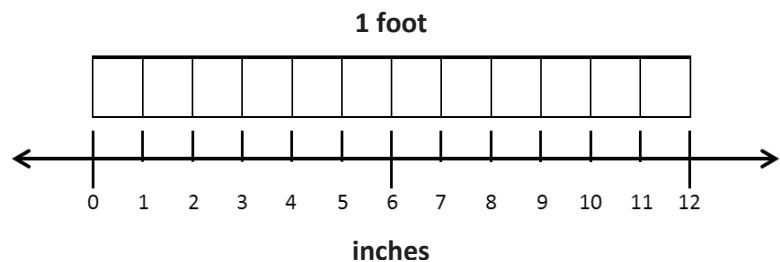   0 1 2 3 4 5 6 7 8 9 10 11 12

   inches

   c. $\frac{}{12}$ foot = $\frac{1}{6}$ foot = _____inches

   d. $\frac{}{12}$ foot = $\frac{1}{3}$ foot = _____inches

   e. $\frac{}{12}$ foot = $\frac{2}{3}$ foot = _____inches

   f. $\frac{}{12}$ foot = $\frac{5}{6}$ foot = _____inches

5. Solve.

a. $2\frac{2}{3}$ yd = _____ ft	b. $3\frac{1}{3}$ yd = _____ ft
c. $3\frac{1}{2}$ gal = _____ qt	d. $5\frac{1}{4}$ gal = _____ qt
e. $6\frac{1}{4}$ ft = _____ in	f. $7\frac{1}{3}$ ft = _____ in
g. $2\frac{1}{2}$ ft = _____ in	h. $5\frac{3}{4}$ ft = _____ in
i. $9\frac{2}{3}$ ft = _____ in	j. $7\frac{5}{6}$ ft = _____ in

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Lesson 12: Use measurement tools to convert mixed number measurements to smaller units.

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Name _____   Date _____

1. Solve.

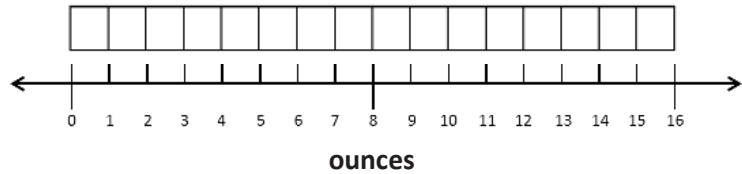   a. $\frac{1}{16}$ pound = _____ ounce

   ounces

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

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

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

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

   f. $\frac{}{16}$ pound = $\frac{5}{8}$ pound = _____ ounces

2. Draw a tape diagram to show $1\frac{1}{4}$ pounds = 20 ounces.

3. Solve.

   1 hour

   minutes

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

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

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

   d. $\frac{}{60}$ hour = $\frac{1}{3}$ hour = _____ minutes

4. Draw a tape diagram to show that $2\frac{1}{4}$ hours = 135 minutes.

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Lesson 13:   Use measurement tools to convert mixed number measurements to smaller units.

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5. Solve.

a. $2\frac{1}{4}$ pounds = _____ ounces	b. $4\frac{7}{8}$ pounds = _____ ounces
c. $6\frac{3}{4}$ lb = _____ oz	d. $4\frac{1}{8}$ lb = _____ oz
e. $1\frac{3}{4}$ hours = _____ minutes	f. $4\frac{1}{2}$ hours = _____ minutes
g. $3\frac{3}{4}$ hr = _____ min	h. $5\frac{1}{3}$ hr = _____ min
i. $4\frac{2}{3}$ yards = _____ feet	j. $6\frac{1}{3}$ yd = _____ ft
k. $4\frac{1}{4}$ gallons = _____ quarts	l. $2\frac{3}{4}$ gal = _____ qt
m. $6\frac{1}{4}$ feet = _____ inches	n. $9\frac{5}{6}$ ft = _____ in

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Lesson 13:   Use measurement tools to convert mixed number measurements to smaller units.

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Name _____   Date _____

Use RDW to solve the following problems.

1. Molly baked a pie for 1 hour and 45 minutes. Then, she baked banana bread for 35 minutes less than the pie. How many minutes did it take to bake the pie and the bread?

2. A slide on the playground is $12\frac{1}{2}$ feet long. It is 3 feet 7 inches longer than the small slide. How long is the small slide?

3. The fish tank holds 8 gallons 2 quarts of water. Jeffrey poured $1\frac{3}{4}$ gallons into the empty tank. How much more water does he still need to pour into the tank to fill it?

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4. The candy shop puts 10 ounces of gummy bears in each box. How many boxes do they need to fill if there are $21\frac{1}{4}$ pounds of gummy bears?

5. Mom can make 10 brownies from a 12-ounce package.

   a. How many ounces of brownie mix would be needed to make 50 brownies?

   b. Extension: The brownie mix is also sold in $1\frac{1}{2}$-pound bags. How many bags would be needed to make 120 brownies?

Lesson 14: Solve multi-step word problems involving converting mixed number measurements to a single unit.
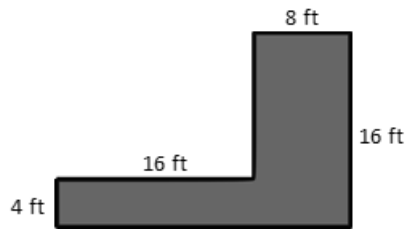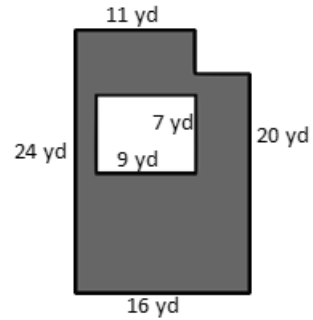
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Name _____   Date _____

For homework, complete the top portion of each page. This will become an answer key for you to refer to when completing the bottom portion as a mini-personal white board activity during the summer.

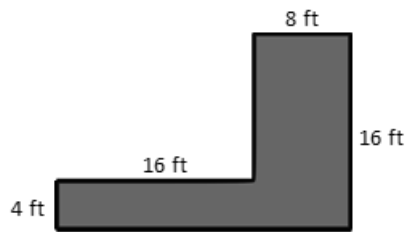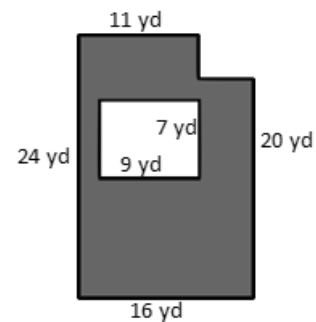Find the area of the figure that is shaded.

1.

8 ft

16 ft

16 ft

4 ft

2.

11 yd

24 yd   7 yd   20 yd
         9 yd

16 yd

- -

Find the area of the figure that is shaded.

1.

8 ft

16 ft

16 ft

4 ft

2.

11 yd

24 yd   7 yd   20 yd
         9 yd

16 yd

Challenge: Replace the given dimensions with different measurements, and solve again.

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Lesson 15:   Create and determine the area of composite figures.

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3. A wall is 8 feet tall and 19 feet wide. An opening 7 feet tall and 8 feet wide was cut into the wall for a doorway. Find the area of the remaining portion of the wall.

Lesson 15:   Create and determine the area of composite figures.

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Name _____   Date _____

For homework, complete the top portion of each page. This will become an answer key for you to refer to when completing the bottom portion as a mini-personal white board activity during the summer.

Use a ruler and protractor to create and shade a figure according to the directions. Then, find the area of the unshaded part of the figure.

1. Draw a rectangle that is 18 cm long and 6 cm wide. Inside the rectangle, draw a smaller rectangle that is 8 cm long and 4 cm wide. Inside the smaller rectangle, draw a square that has a side length of 3 cm. Shade in the smaller rectangle, but leave the square unshaded. Find the area of the unshaded space.

- -

1. Draw a rectangle that is 18 cm long and 6 cm wide. Inside the rectangle, draw a smaller rectangle that is 8 cm long and 4 cm wide. Inside the smaller rectangle, draw a square that has a side length of 3 cm. Shade in the smaller rectangle, but leave the square unshaded. Find the area of the unshaded space.

Lesson 16:   Create and determine the area of composite figures.

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2. Emanuel's science project display board is 42 inches long and 48 inches wide. He put a 6-inch border around the edge inside the board and placed a title in the center of the board that is 22 inches long and 6 inches wide. How many square inches of open space does Emanuel have left on his board?

   Challenge: Replace the given dimensions with different measurements, and solve again.

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Lesson 16: Create and determine the area of composite figures.

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