Name _____

Reteaching
13-1

Using Ratio Tables

A ratio table showing equal ratios can be used to solve a proportion.

Ross uses 11 skeins of yarn to make 4 scarves. How many scarves can he make from 66 skeins of yarn?

Write a proportion. Use *x* for the number of scarves.

$$\frac{4 \text{ scarves}}{11 \text{ skeins}} = \frac{x \text{ scarves}}{66 \text{ skeins}}$$

Make a ratio table. Multiply or divide to find equal ratios. Find ratios equivalent to $\frac{4}{11}$ by multiplying both terms of the ratio by the same number until you find 66 skeins.

Number of scarves	4	8	12	16	20	24
Number of skeins	11	22	33	44	55	66

$$\frac{4 \text{ scarves}}{11 \text{ skeins}} = \frac{24 \text{ scarves}}{66 \text{ skeins}}$$

So, Ross can make 24 scarves from 66 skeins of yarn.

Answer the question and complete each ratio table.

1. $\frac{\$25}{\square \text{ min}} = \frac{\$200}{1{,}000 \text{ min}}$

Number of dollars	200	100	50	25
Number of minutes	1,000			

2. $\frac{\square \text{ batteries}}{9 \text{ flashlights}} = \frac{12 \text{ batteries}}{3 \text{ flashlights}}$

Number of batteries				
Number of flashlights				

3. $\frac{\square \text{ ft}}{800 \text{ h}} = \frac{9 \text{ ft}}{8 \text{ h}}$

Number of _____				
Number of _____				

4. $\frac{4 \text{ carts}}{16 \text{ horses}} = \frac{\square \text{ carts}}{64 \text{ horses}}$

Number of _____				
Number of _____				

5. Laine was practicing her free throws. She shot nine times and made five baskets. At this rate, how many times will she need to shoot to make 35 baskets?

_____

6. Hiram said that he can use the same ratio table to solve the two proportions below. Do you agree or disagree with Hiram?

$\frac{8 \text{ cows}}{2 \text{ pigs}} = \frac{c \text{ cows}}{10 \text{ pigs}}$ $\quad\quad$ $\frac{2 \text{ pigs}}{8 \text{ cows}} = \frac{10 \text{ pigs}}{c \text{ cows}}$

_____

Name _____

Practice
13-1

Using Ratio Tables

Complete the ratio table. Add columns if needed.

1. $\frac{3 \text{ hops}}{5 \text{ jumps}} = \frac{\square \text{ hops}}{15 \text{ jumps}}$

_____

Number of hops		
Number of jumps		

2. $\frac{\$60}{2 \text{ weeks}} = \frac{\$240}{\square \text{ weeks}}$

_____

3. $\frac{12 \text{ cans}}{7 \text{ bottles}} = \frac{60 \text{ cans}}{\square \text{ bottles}}$

_____

4. How many cups of loam are needed to make 66 c of potting soil? _____

5. How many cups of humus are needed to make 11 c of potting soil? _____

6. Sondra uses 78 c of loam to make potting soil. How many cups of humus did she use ? _____

Potting Soil for Ferns (Makes 22 c)
- 6 c sand
- 6 c loam
- 9 c peat moss
- 3 c humus
- 1 c dried cow manure

7. It takes Renaldo 8 h to make 7 carvings. At this rate, how many hours will it take him to make 63 carvings?

A $7\frac{7}{8}$ h

B 9 h

C 56 h

D 72 h

8. **Writing to Explain** Find three sets of values for x and y to make $\frac{x \text{ mi}}{y \text{ min}} = \frac{4 \text{ mi}}{32 \text{ min}}$ a proportion. Explain how you found the values.

_____

_____

Practice 13-1

Name _____

Reteaching
13-2

Using Unit Rates

A unit rate is a special ratio that compares one quantity to one unit of another quantity. You can use unit rates to solve proportions.

Geraldo earns $100 for 4 hours of work. If he works 7 hours at the same rate of pay, how much will he earn?

Write a proportion. Use *d* for dollars earned. $\frac{\$100}{4\text{ h}} = \frac{\$d}{7\text{h}}$

Find the unit rate. Divide the first term by the second term.

$\$100 \div 4 = \$25$

The unit rate is $\frac{\$25}{1\text{ h}}$.

Think: Find an equal ratio with 1 as the second term.

$\frac{100 \div 4}{4 \div 4} = \frac{25}{1}$

Multiply by the unit rate. $\frac{\$25}{\text{h}} \times 7\text{h} = \$175$

Think: Find an equal ratio.

$\frac{25 \times 7}{1 \times 7} = \frac{175}{7}$

So, $\frac{\$100}{4\text{ h}} = \frac{\$175}{7\text{ h}}$. Geraldo will earn $175 when he works 7 hours.

Use unit rates to solve each proportion. Estimate to check reasonableness.

1. $\frac{\square\text{ g}}{2\text{ kg}} = \frac{30\text{g}}{15\text{ kg}}$

Unit Rate: _____

Multiply: _____

2. $\frac{120\text{ mi}}{3\text{ gal}} = \frac{\square\text{ mi}}{5\text{ gal}}$

Unit Rate: _____

Multiply: _____

3. $\frac{8\text{ in.}}{2\text{ wk}} = \frac{\square\text{ in.}}{5\text{ wk}}$

Unit Rate: _____

Multiply: _____

4. $\frac{\$24}{3\text{ wk}} = \frac{\$\square}{10\text{ wk}}$

5. $\frac{\square\text{ oz}}{7\text{ packs}} = \frac{64\text{ oz}}{8\text{ packs}}$

6. $\frac{200\text{ stamps}}{2\text{ rows}} = \frac{\square\text{ stamps}}{9\text{ rows}}$

7. Wes used 49 quarts of oil when he changed the oil in 7 cars. Complete and solve the proportion to find how many quarts of oil he would use to change the oil in 20 cars, assuming that all cars need the same quantity of oil.

$\frac{49\text{ quarts}}{7\text{ cars}} =$ _____

8. Writing to Explain A café served 180 pickles with 60 sandwiches. If the ratio of sandwiches to pickles is always constant, explain how you can use unit rates and proportions to find how many pickles are needed to serve 32 sandwiches.

_____

Name _____

Practice
13-2

Using Unit Rates

Use unit rates to solve each proportion. Estimate to check for reasonableness.

1. $\frac{a \text{ ft}}{6 \text{ h}} = \frac{20 \text{ ft}}{4 \text{ h}}$ _____

2. $\frac{36 \text{ oz}}{6 \text{ lb}} = \frac{b \text{ oz}}{4 \text{ lb}}$ _____

3. $\frac{c \text{ players}}{10 \text{ teams}} = \frac{27 \text{ players}}{3 \text{ teams}}$ _____

4. $\frac{d \text{ c}}{20 \text{ tsp}} = \frac{60 \text{ c}}{12 \text{ tsp}}$ _____

5. $\frac{e \text{ m}}{12 \text{ cm}} = \frac{63 \text{ m}}{9 \text{ cm}}$ _____

6. $\frac{16 \text{ adults}}{2 \text{ children}} = \frac{f \text{ adults}}{5 \text{ children}}$ _____

7. $\frac{\$g}{30 \text{ lawns}} = \frac{\$200}{8 \text{ lawns}}$ _____

8. $\frac{12 \text{ mL}}{6 \text{ pt}} = \frac{h \text{ mL}}{40 \text{ pt}}$ _____

9. $\frac{33 \text{ meals}}{11 \text{ days}} = \frac{k \text{ meals}}{365 \text{ days}}$ _____

10. It takes DeShawn 30 min to paint 90 feet of fence. If he paints at the same rate, how many feet of fence can he paint in 45 min?

_____

11. Inez types 280 words in 7 minutes. If she types at the same rate, how many words will she type in 1 hour?

_____

12. Algebra Explain how you can tell that $\frac{20 \text{ pens}}{2 \text{ packages}} = \frac{30 \text{ pens}}{3 \text{ packages}}$ using mental math?

_____

_____

13. Darryl was looking at the speeds of different airplanes. When he wrote a proportion to compare the speeds, he forgot to write one term. If the proportion is correct, which is the term he forgot?

$\frac{45 \text{ mi}}{\square} = \frac{135 \text{ mi}}{12 \text{ min}}$

A 4 mi **C** 36 mi

B 4 min **D** 36 min

14. Writing to Explain Jeanette estimates that she mails 2 letters for every 50 e-mails that she sends. She has mailed 9 letters this week. To find how many e-mails she has sent, Jeanette wrote the proportion $\frac{2 \text{ letters}}{50 \text{ e-mails}} = \frac{9 \text{ letters}}{e \text{ e-mails}}$. Tell how she can use unit rates to solve the proportion. Tell how many e-mails she received.

_____

_____

_____

_____

Practice 13-2

Name _____

Reteaching
13-3

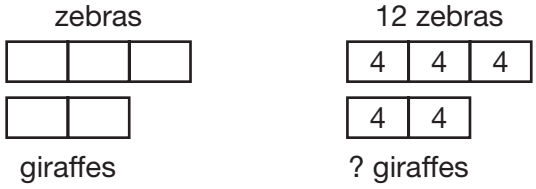
Applying Ratios

You can use a diagram to solve problems about ratios.

A zoo has 3 zebras for every 2 giraffes. How many giraffes does the zoo have if it has 12 zebras? Draw a diagram to solve the problem.

Draw rectangles to model the ratio 3 zebras to 2 giraffes.

Divide the number of zebras into 3 equal parts to find how many animals each part represents. $12 \div 3 = 4$



Then multiply the number of parts for the giraffes times 4 animals per part to find the number of giraffes.

$4 \times 2 = 8$

The zoo has 8 giraffes.

Draw a diagram to help you solve each problem.

1. One exhibit at the zoo has 7 birds for every 2 mammals. If there are 10 mammals in the exhibit, how many birds are there?

_____

2. There are 5 children for every 3 adults who visit the zoo. If there are 30 children at the zoo, how many adults are there?

_____

3. The monkeys get fed 6 buckets of vegetables for every 2 buckets of cereal. How many buckets of vegetables do the monkeys get fed if they get 8 buckets of cereal?

_____

4. It takes 8 minutes for the train to fill 3 cars with people from the zoo. How long does it take the train to fill 18 cars of people from the zoo?

_____

5. **Writing to Explain** Arlen buys 2 small cups of food for the animals for 5 tokens. Explain how to use a diagram to find how many cups of food Arlen could buy for 20 tokens.

_____

_____

Name _____

Practice
13-3

Applying Ratios

In **1** through **8**, draw a diagram to solve the problem.

1. Sam puts 3 tulips and 4 lilacs in each vase. How many lilacs does Sam use if he puts 36 tulips into vases?

_____

2. Seven students ride the bus to school for every 2 students who walk. If there are 105 students who ride the bus, how many students walk?

_____

3. A golf store is having a special, giving away 10 free golf tees for every box of 3 golf balls a customer buys. If a customer buys 24 golf balls, how many golf tees does she get?

_____

4. Sarah's family has an apple orchard. The family sells 8 baskets of apples for every 3 jars of applesauce. How many baskets of apples do they sell if they sell 120 jars of applesauce?

_____

5. Martin enjoys hiking on rural trails near his home in Michigan. He can hike 6 miles in 2 hours. At this rate, how long would it take Martin to hike 24 miles?

_____

6. The coach mixes 15 scoops of powder with 2 gallons of water to make a sports drink for his team. How many scoops of powder does the coach need to mix with 10 gallons of water?

_____

7. A 4-pound bag of potatoes costs $3.16. At that rate, how much would 32 pounds of potatoes cost?

_____

8. Ali packs 54 cans into 3 boxes to ship. How many boxes of the same size will Ali need to ship 324 cans?

_____

9. **Algebra** Which value of p makes the ratios equal?

$$\frac{5}{7} = \frac{p}{56}$$

A 8 **B** 13 **C** 40 **D** 64

10. **Writing to Explain** There are 4 girls to every 3 boys on the school's track team. Explain how to use a diagram to find how many members are on the track team if there are 16 girls on the team.

_____

_____

Practice **13-3**

Name _____

Reteaching
13-5

Ratios and Graphs

You can make or complete a table of equal ratios and graph the values on a coordinate grid.

Complete the table to show equal ratios for $\frac{3}{4}$.

3	6	9	12
4			

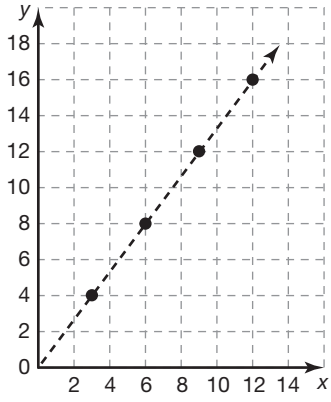
To complete the table, find fractions that are equal to $\frac{3}{4}$ that have numerators of 6, 9, and 12.

$$\frac{3 \times \mathbf{2}}{4 \times \mathbf{2}} = \frac{6}{8} \qquad \frac{3 \times \mathbf{3}}{4 \times \mathbf{3}} = \frac{9}{12} \qquad \frac{3 \times \mathbf{4}}{4 \times \mathbf{4}} = \frac{12}{16}$$

The missing values in the table are the denominators of the equal fractions. The values are: 8, 12, and 16.

Graph the equal ratios on a coordinate grid. Use an appropriate scale for the *x* and *y* axes.

Plot the points for each ratio, *x* to *y*. Draw a dashed line from (0, 0) through the points extending through the final point.



Complete the table to show equal ratios. Graph the set of equal ratios on a coordinate grid.

1.

2	4	6	8	10
3				

2.

1	2	3	4	5
2				

3.

3	6	9	12	15
5				

4.

2	6	12	18	24
7				

5.

4	12	16	48	60
12				

6.

6	18	24	36	48
9				

7.

5	15	25	35	45
8				

8.

1	5	8	10	15
7				

Name _____

Practice
13-5

Ratios and Graphs

For **1** through **6**, complete the table to show equal ratios.

1.

4				
3	6	9	12	15

2.

4	2	8	12	16
6				

3.

10	20	30	40	70
7				

4.

3				
2	4	8	12	24

5.

6				
11	22	44	88	110

6.

12	4	24	36	48
3				

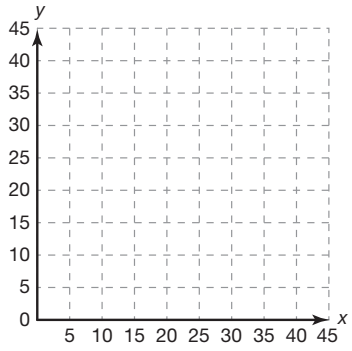
For **7** and **8**, complete the table to show equal ratios, and graph the pairs of values on the coordinate grid.

7.

5	10	15	25	40
4				

8.

5				
2	4	6	10	14



9. Writing to Explain How are the graphs of the ratios in Exercises 7 and 8 alike, and how are they different?

_____

_____

_____

10. A birdwatcher counted 7 robins for every 4 sparrows. Complete the table to show how many robins she counted if she counted 24 sparrows in a weekend. On a separate piece of graph paper, graph the values on a coordinate grid.

4	8	12	16	20	24
7					

Name _____

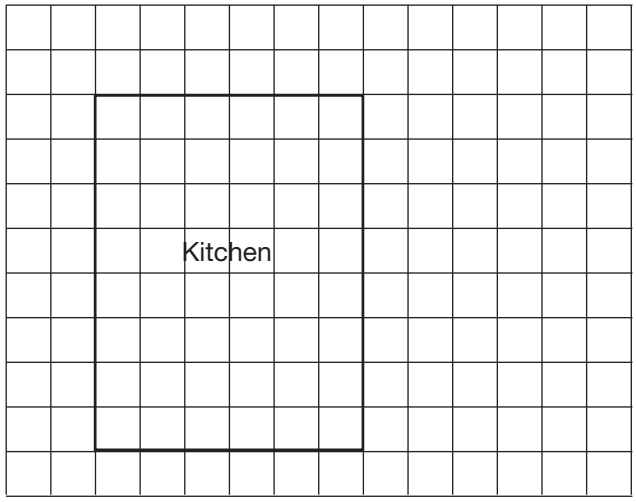
Reteaching
13-6

Maps and Scale Drawings

On the drawing, the scale tells us that 1 cm = 2 ft.

For every 1 cm on the drawing, there are 2 ft in the kitchen.

What is the real length of the room?



Scale: 1 cm = 2ft

Step 1: Set up a proportion.
Write the scale as the first ratio.
Use the information about the kitchen for the second ratio.

$\frac{1 \text{ cm}}{2 \text{ ft}} = \frac{8 \text{ cm}}{x}$

Show the scale data on top and the real data below.

Step 2: Use cross multiplication to solve the proportion.

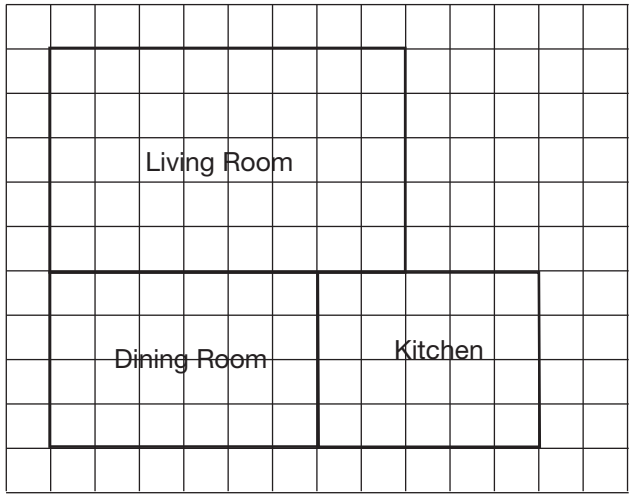
$\frac{1 \text{ cm}}{2 \text{ ft}} = \frac{8 \text{ cm}}{x}$

$1x = 2 \times 8$

$x = 16$

The real room is 16 feet long.

Use the scale drawing to answer **1** through **3**.



Scale: 1 cm = 2.5 ft

1. What is the actual length of the living room?

_____

2. What are the dimensions of the dining room?

_____

3. What are the dimensions of the kitchen?

_____

4. **Reasoning** A room measures 12 ft by 15 ft. Find the scale that would allow the room to be shown as large as possible on a piece of paper 7 in. by 8 in. Explain your reasoning.

_____

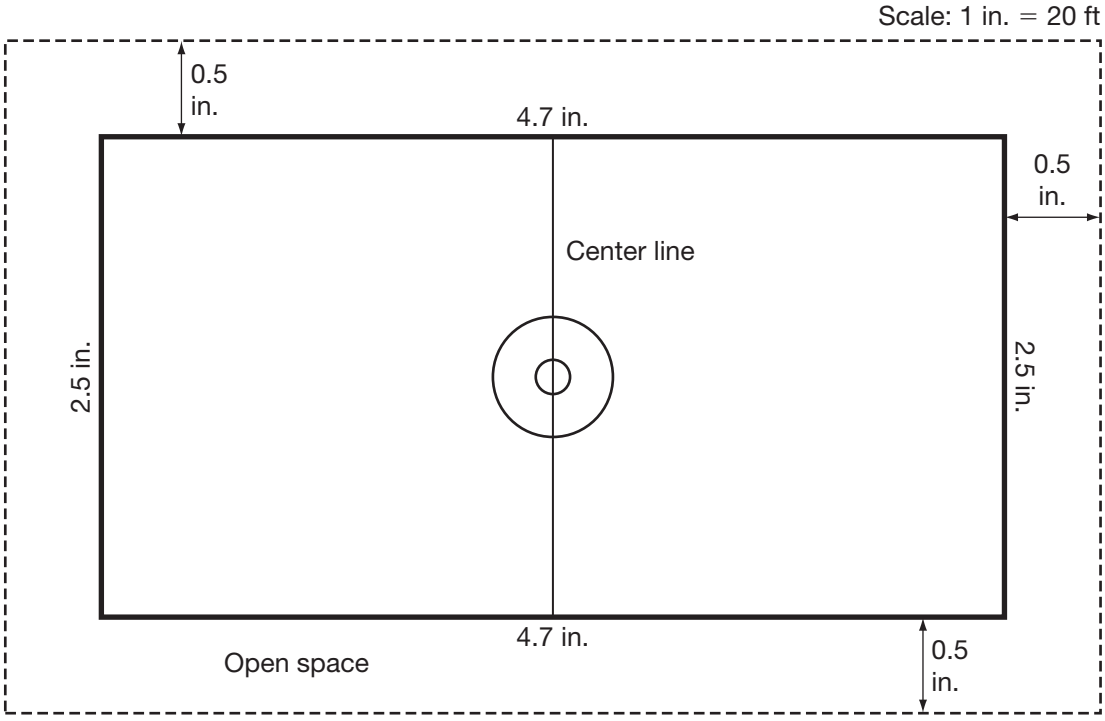
_____

Reteaching **13-6**

Name _____

Practice
13-6

Maps and Scale Drawings



1. What is the actual length and width of a college basketball court?

2. How far should open space extend from each side of the court?

3. What is the actual measurement from the end of the court to the center line?

4. **Reasoning** What is the scale on a map that shows two cities that are 400 mi apart as 2.5 in. apart?

5. If the scale of a drawing is 1 in. = 2.5 ft, which is the actual size of an object that is 2 in. long in the drawing?

A 1 in. **B** 5 in. **C** 2.5 ft **D** 5 ft

6. **Writing to Explain** Explain how you would choose a scale to use for a map. What things would you need to consider?