



- ✓ I can use ratios to find dimensions.
- ✓ I can use extended ratios to solve problems.
- ✓ I can use proportions to solve problems.
- ✓ I can use a scale drawing to solve problems.

✓ **I can use a ratio to find a dimension.**

You are painting some barn doors. You know that the perimeter of the doors is 64 feet and that the ratio of the length to height is 3:5. Find the area of the doors.



- a) Step 1: Write equivalent ratio
  
- b) Step 2: Set up and solve equation to find x.
  
- c) Step 3: Evaluate the equivalent expressions for length and width.
  
- d) Step 4: Answer the question – find area!

✓ **I can use extended ratios to solve problems.**

An extended ratio compares more than 2 items.

- a) The measures of the angles in  $\triangle ABC$  are in the extended ratio of 2:3:4. Find the measures of the angles.

Step 1: Write an equivalent ratio for the given ratio.

Step 2: Draw and label a diagram using the given information.

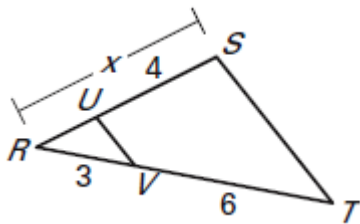
Step 3: Set up and solve an equation to find x.

Step 4: Answer the question!



✓ **I can use proportions to solve problems.**

- a) In the diagram below,  $\frac{RU}{US} = \frac{RV}{VT}$ . Find x.



- b) As part of a science project, you need to estimate the number of blue spruce trees in a 50 acre forest. You count 36 trees in 3 acres and notice that the trees seem to be evenly distributed. Estimate the total number of blue spruce trees in the forest.



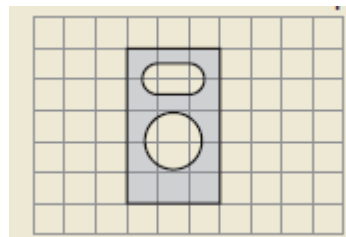
Step 1: Write and solve a proportion involving two ratios that compare the two quantities (in this case the number of trees and the number of acres).

Step 2: Answer the question!

✓ **I can use scale drawings to solve problems.**

A **scale** is a ratio that describes how the dimensions in a drawing are related to the actual dimensions of the object.  $scale = \frac{\text{dimension in drawing}}{\text{actual dimension}}$

- a) The blueprint below shows a scale drawing of an MP3 music player. The diameter of the round speaker on the blueprint is 0.4 inch. The actual length is 1.6 inches. What is the scale of the blueprint?



- b) The scale of a map is 1 in : 1440 ft. Find the actual length of the street if the distance on the map is 3 inches.

The perimeter and the ratio of the length to the width of a rectangle are given. Find the length and width of the rectangle.

1. Perimeter: 132 cm  
 $l : w = 7 : 4$

2. Perimeter: 280 ft  
 $l : w = 11 : 9$

3. The perimeter of a rectangular pen is 420 yd. The ratio of its length to its width is 17 to 13. What is the area of the pen?

The area and the ratio of the length to the width of a rectangle are given. Find the length and width of the rectangle.

4. Area: 192 ft<sup>2</sup>  
 $l : w = 1 : 3$

5. Area: 294 yd<sup>2</sup>  
 $l : w = 3 : 2$

The measures of the angles of a triangle are in the extended ratio given. Find the measures of the angles of the triangle.

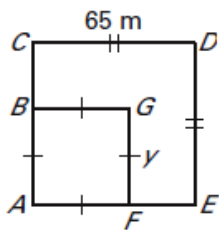
6. 2:5:5

7. 3:7:10

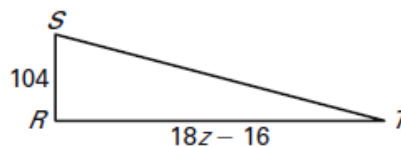
8. 7:16:22

Use the given ratio and the information in the figure to find the value of the variable(s).

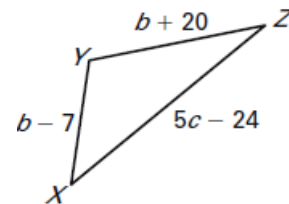
9.  $CD : AB = 5 : 3$



10.  $RS : RT = 13 : 25$



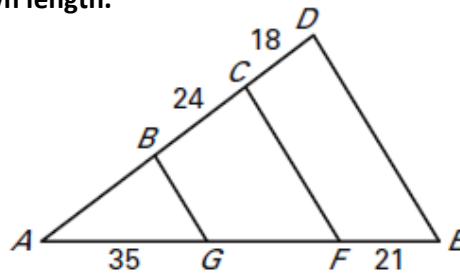
11.  $XY : YZ : XZ = 7 : 10 : 14$



In the diagram,  $\frac{AB}{CD} = \frac{AG}{FE}$  and  $\frac{AB}{AC} = \frac{AG}{AF}$ . Find the unknown length.

12. Find  $AB$ .

13. Find  $GF$ .



14. A carpet cleaning solution calls for a mixture of 1 ounce of cleaner per 2 quarts of water. You use a total of 13 gallons of water in mixing the solution according to these directions. How much cleaning solution do you use? (Hint: There are 4 quarts in 1 gallon).

15. Over a given period of time, you can lose weight if your body burns more Calories than it consumes. Specifically, it takes a difference of 3500 Calories to lose 1 pound of body weight. Suppose your total body weight decreases by 42 ounces while you are training for a sport. How many more Calories has your body burned than it has consumed during this time? (Hint: there are 16 ounces in 1 pound).

16. You and a friend win a free trip to Europe. The plane trip includes a layover in Canada before continuing service to Europe. At the time of the trip, the currency exchange rates are 1 U.S. dollar per 1.34 Canada dollar and 1 U.S. dollar per 0.94 Euros.

a. During the layover, you purchase a book that costs \$20 in Canadian currency. How much does the book cost in U.S. dollars?

b. Once you arrive in Europe, you exchange \$80 in U.S. currency. How many Euros do you get for that amount?

c. Your friend exchanges \$25 in Canadian currency for Euros. How many Euros does your friend receive?

17. A photograph of a crime scene depicts several objects on the ground. Of particular interest to the police is a bare human footprint made by the suspect. The footprint is right next to a CD case known to have an actual length of 5.6 inches. In the picture, the CD case is 12 millimeters long and the footprint is about 22.5 millimeters long. What is the actual length of the footprint?
18. The sun's UV rays quickly dissipate the chlorine in outdoor swimming pools. Cyanuric acid is a chemical that protects chlorine from these harmful UV rays. This chemical saves on the amount of money spent on chlorine. The recommended rate for adding cyanuric acid to a swimming pool is 4 ounces (measured as a weight) to each 625 gallons of water. How much cyanuric acid should be added to a 4500 gallon swimming pool?
19. The scale on a map is 1 centimeter:1.8 miles. You measure the distance between two cities to be 11.5 inches. What is the actual distance between the two cities? (Use 1 in. = 2.54 cm)

**Answer Key:**

- |  |  |   |
|--|--|---|
| 1) $l = 42\text{cm}$ , $w = 24\text{cm}$               | 2) $l = 77\text{ ft}$ , $w = 63\text{ ft}$ |   |
| 2) 3) $A = 10829\text{ yd}^2$                          |  |   |
| 4) $l = 8\text{ft}$ , $w = 24\text{ ft}$               | 5) $l = 21\text{ yd}$ , $w = 14\text{ yd}$ |   |
| 6) $30^\circ$ , $75^\circ$ , $75^\circ$                | 7) $27^\circ$ , $63^\circ$ , $90^\circ$    | 8) $28^\circ$ , $64^\circ$ , $88^\circ$ |
| 9) $y = 39\text{ m}$                                   | 10) $z = 12$                               | 11) $b = 70$ , $c = 30$                 |
| 12) 30   | 13) 28                                     |   |
| 14) 26 oz  | 15) 9187.5                                 |   |
| 16) a) \$14.93      b) 75.20 Euros      c) 17.54 Euros |  |   |
| 17) 10.5 in  | 18) 28.8 oz                                | 19) 52.578 miles                        |