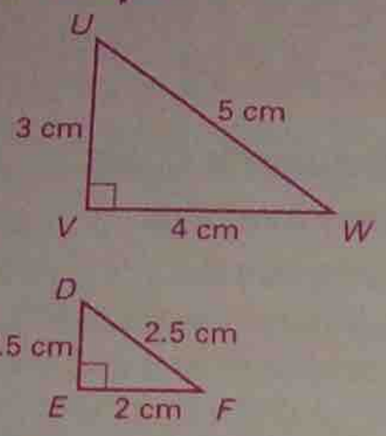
3. ***Sample:***



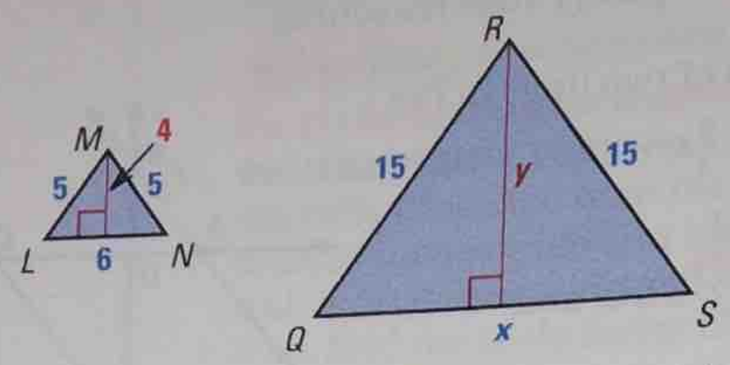
7d. Yes. *Sample answer:* If apple production decreases due to weather conditions apples become less plentiful and the per capita consumption would decrease.

MIXED REVIEW of Problem Solving

STATE TEST PRACTICE classzone.com

Lessons 6.1–6.3

1. **MULTI-STEP PROBLEM** In the diagram, $\triangle LMN \sim \triangle QRS$.



   a. Find the scale factor of $\triangle LMN$ to $\triangle QRS$. Then find the values of x and y. $\frac{1}{3}$; 18, 12

   b. Find the perimeters of $\triangle LMN$ and $\triangle QRS$. 16, 48

   c. Find the areas of $\triangle LMN$ and $\triangle QRS$. 12, 108

   d. *Compare* the ratio of the perimeters to the ratio of the areas of $\triangle LMN$ to $\triangle QRS$. What do you notice? **The ratio of areas is the square of the ratio of perimeters.**

2. **GRIDDED ANSWER** In the diagram, $AB : BC$ is 3 : 8. Find AC. 1562

3. **OPEN-ENDED** $\triangle UVW$ is a right triangle with side lengths of 3 cm, 4 cm, and 5 cm. Draw and label $\triangle UVW$. Then draw a triangle similar to $\triangle UVW$ and label its side lengths. What scale factor did you use? **See margin for art.** ***Sample answer:*** $\frac{1}{2}$

4. **MULTI-STEP PROBLEM** Kelly is going on a trip to England. She takes 600 U.S. dollars with her.

   a. In England, she exchanges her U.S. dollars for British pounds. During her stay, Kelly spends 150 pounds. How many British pounds does she have left? **174 British pounds**

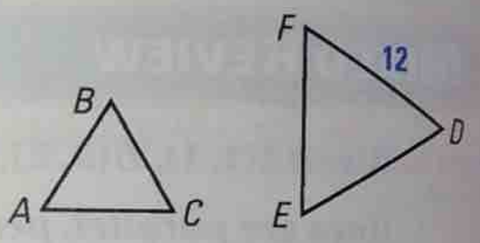
   b. When she returns home, she exchanges her money back to U.S. dollars. How many U.S. dollars does she have at the end of her trip? **$322.22**

5. **SHORT RESPONSE** Kelly bought a 3-D scale model of the Tower Bridge in London, England. The towers of the model are 9 inches tall. The towers of the actual bridge are 206 feet tall, and there are two walkways that are 140 feet high.

   a. Approximate the height of the walkways on the model. **about 6 in.**

   b. About how many times as tall as the model is the actual structure? **about 275 times**

6. **GRIDDED ANSWER** In the diagram, $\triangle ABC \sim \triangle DEF$. The scale factor of $\triangle ABC$ to $\triangle DEF$ is 3 : 5. Find AC. 7.2



7. **EXTENDED RESPONSE** In the United States, 4634 million pounds of apples were consumed in 2002. The population of the United States in that year was 290 million.

   a. Divide the total number of apples consumed by the population to find the per capita consumption. **about 16 lb per person**

   b. About how many pounds of apples would a family of four have consumed in one year? in one month? **about 64 lb; about 5 lb**

   c. A medium apple weighs about 5 ounces. Estimate how many apples a family of four would have consumed in one month. **about 16 apples**

   d. Is it reasonable to assume that a family of four would have eaten that many apples? What other factors could affect the per capita consumption? *Explain.* **See margin.**

6 CHAPTER REVIEW

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- Multi-Language Glossary
- Vocabulary practice

REVIEW KEY VOCABULARY

For a list of postulates and theorems, see pp. 926–931.

- ratio, *p. 356*
- proportion, *p. 358*
  means, extremes
- geometric mean, *p. 359*
- scale drawing, *p. 365*
- scale, *p. 365*
- similar polygons, *p. 372*
- scale factor of two similar polygons, *p. 373*
- dilation, *p. 409*
- center of dilation, *p. 409*
- scale factor of a dilation, *p. 409*
- reduction, *p. 409*
- enlargement, *p. 409*

VOCABULARY EXERCISES

Copy and complete the statement.

1. A ? is a transformation in which the original figure and its image are similar. **dilation**
2. If $\triangle PQR \sim \triangle XYZ$, then $\frac{PQ}{XY} = \frac{?}{YZ} = \frac{?}{?}$. **RP, ZX, QR**
3. **WRITING** *Describe* the relationship between a ratio and a proportion. Give an example of each. **In a ratio two numbers are compared. In a proportion two ratios are set equal to one another. *Sample answer:* $\frac{2}{4}, \frac{6}{10} = \frac{3}{5}$**

REVIEW EXAMPLES AND EXERCISES

Use the review examples and exercises below to check your understanding of the concepts you have learned in each lesson of Chapter 6.

6.1 Ratios, Proportions, and the Geometric Mean *pp. 356–363*

EXAMPLE

The measures of the angles in $\triangle ABC$ are in the extended ratio of 3:4:5. Find the measures of the angles.

Use the extended ratio of 3:4:5 to label the angle measures as $3x°$, $4x°$, and $5x°$.

$3x° + 4x° + 5x° = 180°$ **Triangle Sum Theorem**

$12x = 180$ **Combine like terms.**

$x = 15$ **Divide each side by 12.**

So, the angle measures are $3(15°) = 45°$, $4(15°) = 60°$, and $5(15°) = 75°$.

EXERCISES

EXAMPLES 1, 3, and 6 on pp. 356–359 for Exs. 4–6

4. The length of a rectangle is 20 meters and the width is 15 meters. Find the ratio of the width to the length of the rectangle. Then simplify the ratio. **$\frac{15}{20}, \frac{3}{4}$**
5. The measures of the angles in $\triangle UVW$ are in the extended ratio of 1:1:2. Find the measures of the angles. **45°, 45°, 90°**
6. Find the geometric mean of 8 and 12. **$4\sqrt{6}$**

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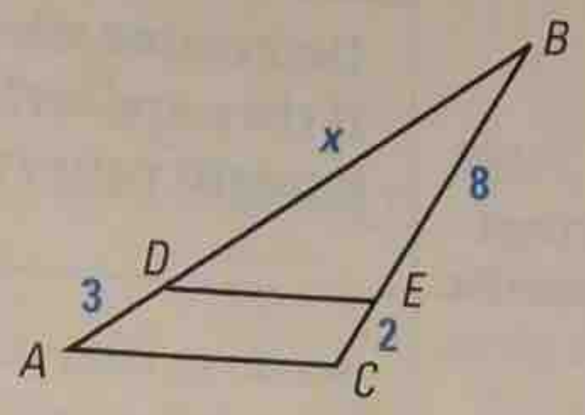
Chapter Review Practice

6.2 Use Proportions to Solve Geometry Problems

pp. 364–370

EXAMPLE

In the diagram, $\frac{BA}{DA} = \frac{BC}{EC}$. Find BD.



$\frac{x+3}{3} = \frac{8+2}{2}$ **Substitution Property of Equality**

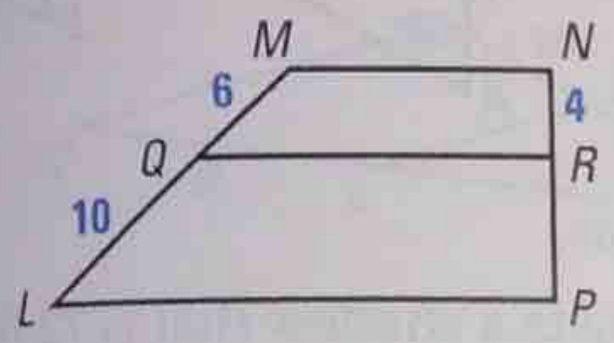
$2x + 6 = 30$ **Cross Products Property**

$x = 12$ **Solve for x.**

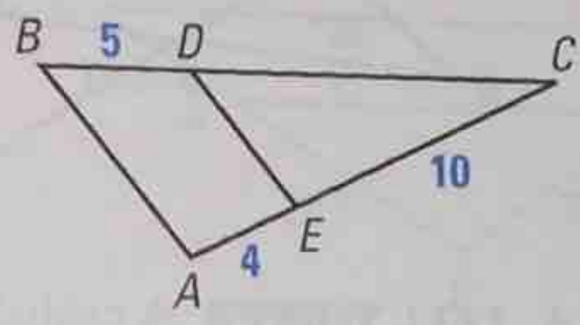
EXERCISES

Use the diagram and the given information to find the unknown length.

7. Given $\frac{RN}{RP} = \frac{QM}{QL}$, find RP. **20/3**



8. Given $\frac{CD}{DB} = \frac{CE}{EA}$, find CD. **25/2**

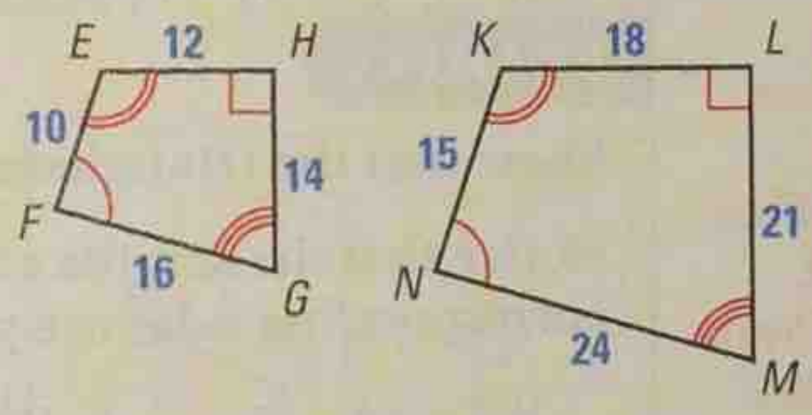


6.3 Use Similar Polygons

pp. 372–379

EXAMPLE

In the diagram, $EHGF \sim KLMN$. Find the scale factor.

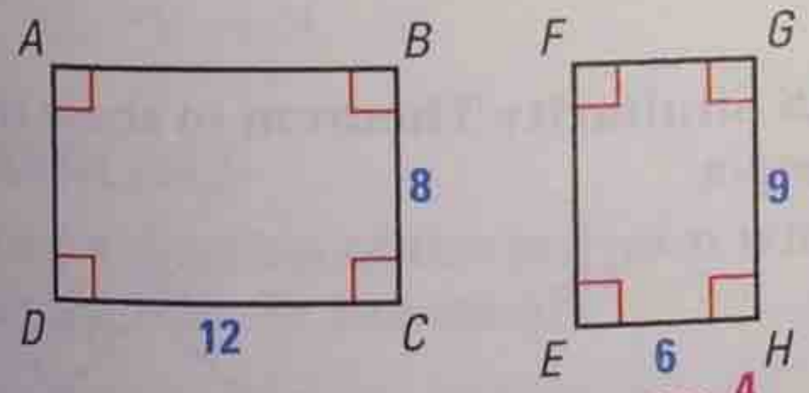


From the diagram, you can see that $\overline{EH}$ and $\overline{KL}$ correspond. So, the scale factor of $EHGF$ to $KLMN$ is $\frac{EH}{KL} = \frac{12}{18} = \frac{2}{3}$.

EXERCISES

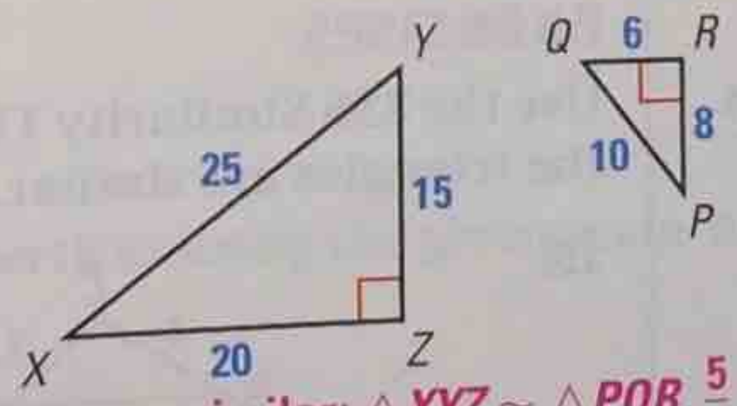
In Exercises 9 and 10, determine whether the polygons are similar. If they are, write a similarity statement and find the scale factor.

9.



similar; $ABCD \sim EFGH$, $\frac{4}{3}$

10.



similar; $\triangle XYZ \sim \triangle PQR$, $\frac{5}{2}$

11. **POSTERS** Two similar posters have a scale factor of 4 : 5. The large poster's perimeter is 85 inches. Find the small poster's perimeter. **68 in.**