

Independent Practice

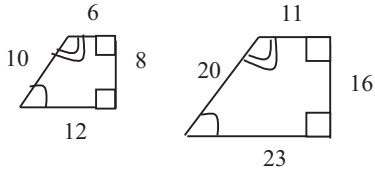
9.4

NAME _____

Module 9 Characteristics of Geometric Shapes
Lesson 4 Similar Polygons

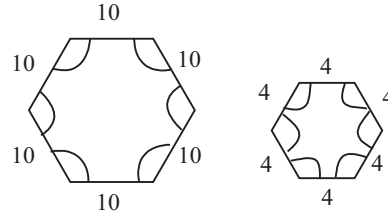
Determine if each pair of polygons is similar. Explain why or why not.

1.



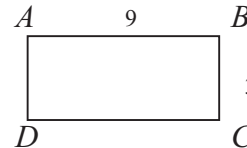
No: The corresponding sides are not all proportional.

2.

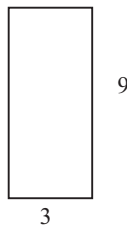


Yes: Corresponding angles are congruent, and corresponding sides are proportional.

Determine which rectangles are similar to rectangle $ABCD$. Write *yes* or *no*.

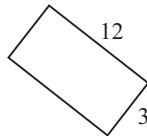


3.



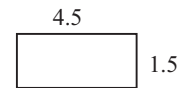
Yes

4.



No

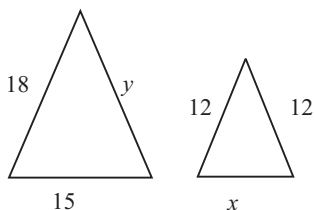
5.



Yes

Find the unknown lengths in each pair of similar figures.

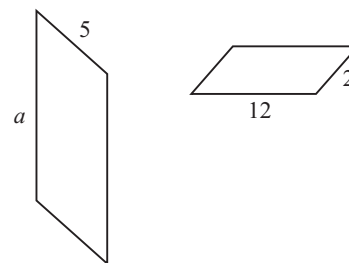
6.



$$x = 10$$

$$y = 18$$

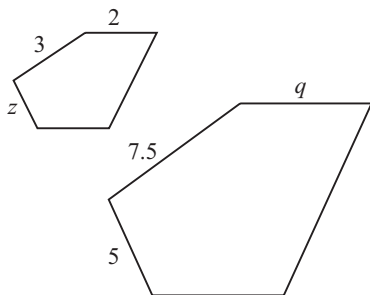
7.



$$a = 30$$

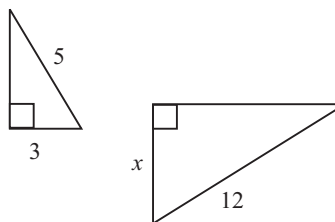
Find the unknown lengths in each pair of similar figures.

8.



$$q = 5$$
$$z = 2$$

9.



$$x = 7.2$$

10. Juan made an 800% enlargement of a photo of his dog. The width of the original photo is two inches. Find the width of the enlarged photo.

The width of the enlarged photo is 16 inches.

11. A map has a scale of 1 inch to 25 miles. The distance between two cities on the map is 7.5 inches. What is the actual distance between the two cities?

The distance between the two cities is 187.5 miles.

12. Lenora is building a model of Mt. Rushmore using a scale of 1 inch to 275 feet. The finished model has a height of 20 inches. How many feet high is Mt. Rushmore?

Mt. Rushmore is 5,500 feet high.

13. An overhead projector enlarges an $8\frac{1}{2}$ inch by 10 inch piece of paper to $21\frac{1}{4}$ inches by 25 inches. What is the scale factor, written as a percent?

The scale factor is 250%.

NAME _____

Module 9 **Characteristics of Geometric Shapes**
Lesson 4 **Similar Polygons**

Journal

1. Charlie said that if two polygons are similar they are also congruent. Simone said that if two polygons are congruent they are also similar. Who is correct? Justify your answer.
2. Are all squares similar? Explain your answer.
3. How does the value of the scale factor help you determine if the change is a reduction or an enlargement? Explain.

Cumulative Review

Tell if each polygon is convex or concave.

1.



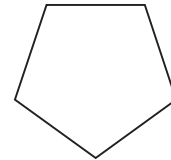
Concave

2.



Convex

3.



Convex

4. A regular octagon has a perimeter of 32 inches. Find the length of each side.

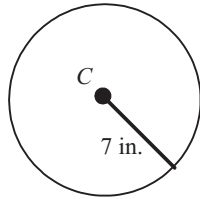
The length of each side is four inches.

5. The sum of the measures of the angles of a regular 18-sided polygon is 2,880°. Find the measure of each angle.

Each angle measures 160°.

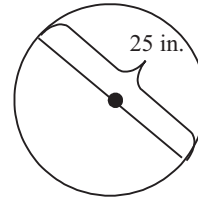
Find the circumference of each circle to the nearest inch.

6. Circle C



About 44 in.

7. Circle O



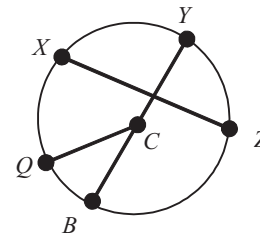
About 79 in.

Circle C is shown at right.

8. Name all the radii. $\overline{CQ}, \overline{CB}, \overline{CY}$

9. Name all the diameters. \overline{YB}

10. Name all the chords. $\overline{YB}, \overline{XZ}$



Possible Journal Answers

1. Simone is correct. Charlie is incorrect. Since congruent triangles have congruent corresponding sides and angles, they are also similar. Two similar triangles can have corresponding sides that are not congruent, so two similar triangles are not necessarily congruent.
2. Yes: All squares have four right angles, so the corresponding angles of all squares are congruent. Since all four sides of any square are congruent, the corresponding sides of any two squares will always be proportional.
3. Multiplying a number by a number greater than one, or a percent greater than 100%, results in a number greater than the original number. If the scale factor is greater than one, the change is an enlargement. Multiplying a number by a number between zero and one, or a percent between 0% and 100%, results in a number less than the original number. If the scale factor is between zero and one, it is a reduction.