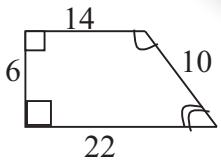
NAME_____

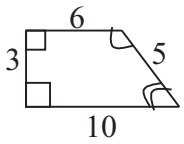
Module 9 **Characteristics of Geometric Shapes**
Lesson 4 **Similar Polygons**

Guided Practice 9.4

Set 1

1 Are the quadrilaterals similar? Explain why or why not.

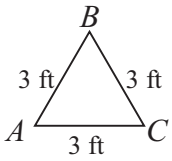


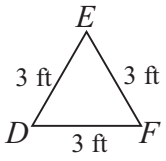


$$\frac{6}{3} = \frac{10}{5} \neq \frac{22}{10} \neq \frac{14}{6}$$

The quadrilaterals are not similar because the sides are not proportional.

2 Is $\triangle ABC$ similar to $\triangle DEF$? Explain why or why not.

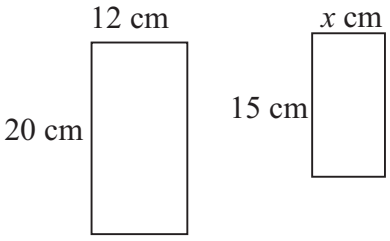




Yes: The triangles are both equilateral, so they are equiangular, and all the angles are 60°. The corresponding sides have the ratio of 3 : 3, or 1 : 1.

Set 2

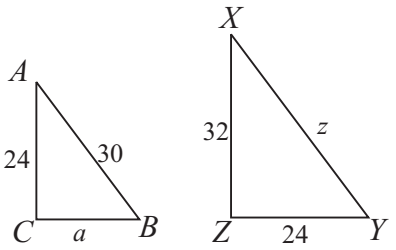
1 The rectangles shown are similar. Find the unknown length.



$$\frac{20}{15} = \frac{12}{x}$$
$$20x = 180$$
$$x = 9$$

The unknown length is nine cm.

2 $\triangle ABC$ is similar to $\triangle XYZ$.
Find the unknown lengths z and a.



Scale factor: $\frac{AC}{XZ} = \frac{24}{32} = \frac{3}{4}$

$$\frac{3}{4} = \frac{30}{z} \qquad \frac{3}{4} = \frac{a}{24}$$
$$3z = 120 \qquad 4a = 72$$
$$z = 40 \qquad a = 18$$

Set 3

1 Use the percent proportion to find the dimensions of a 25% copy of an 8 in. by 10 in. photo.

8 inch: $\frac{x}{8} = \frac{25}{100}$, $100x = 200$, $x = 2$

10 inch: $\frac{y}{10} = \frac{25}{100}$, $100y = 250$, $y = 2.5$

A 25% copy equals 2 in. by 2 ½ in.

2 Bridgette enlarged a flyer to make a poster. The original size of the flyer was 10 centimeters by 14 centimeters. The poster is 80 centimeters by 112 centimeters. What is the scale factor written as a percent?

$$\frac{80 \text{ cm}}{10 \text{ cm}} = 8 = 800\%$$

$$\frac{112 \text{ cm}}{14 \text{ cm}} = 8 = 800\%$$

The scale factor is eight.

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Set 4

1 A map has a scale of one inch to 40 miles. The distance between two cities on the map is five inches. What is the actual distance between the two cities?

$$\frac{\text{Map (in.)} \rightarrow}{\text{Actual (mi.)} \rightarrow} \quad \frac{1}{40} = \frac{5}{x}$$

$$x = 200$$

The actual distance is 200 miles.

2 Denise is making a scale drawing of a tennis court. The scale is one-fourth inch equals one foot. The actual tennis court is 36 feet wide. Find the width on the drawing.

$$\frac{\text{Drawing (in.)} \rightarrow}{\text{Actual (ft)} \rightarrow} \quad \frac{\frac{1}{4}}{1} = \frac{x}{36}$$

$$x = \tfrac{1}{4} \times 36 = 9$$

The width on the drawing is nine inches.