

Warm Up:

Solve each proportion:

1. $\frac{y}{10} = \frac{15}{25}$ $25y = 15 \cdot 10$
 $\frac{y}{10} = \frac{15}{25}$ $\frac{25y}{25} = \frac{150}{25}$
 $y = 6$

2. $\frac{y+7}{8} = \frac{8}{5}$

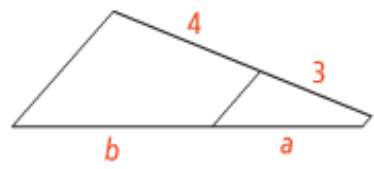
$5(y+7) = 8 \cdot 8$
 $5y + 35 = 64$
 $-35 \quad -35$
 $5y = 29$
 $\frac{5y}{5} = \frac{29}{5}$
 $y = 5.8$

$\frac{10}{6} = \frac{15}{25} = \frac{3}{5}$

In the diagram, $\frac{a}{b} = \frac{3}{4}$. Complete each statement. Justify your answer.

27. $\frac{b}{a} = \frac{4}{3}$ 28. $4a = 3b$ 29. $\frac{a}{b} = \frac{b}{4} = \frac{3}{4}$

30. $\frac{a}{b} = \frac{7}{4} = \frac{b+a}{b}$



Learning Goal: Today I will learn about similar polygons.

Success Criteria: I am able to prove polygons similar using a similarity statement and/or extended proportion.

7.2 Similar Figures

*Similar Figures

Figures that have the same shape but not necessarily the same size.



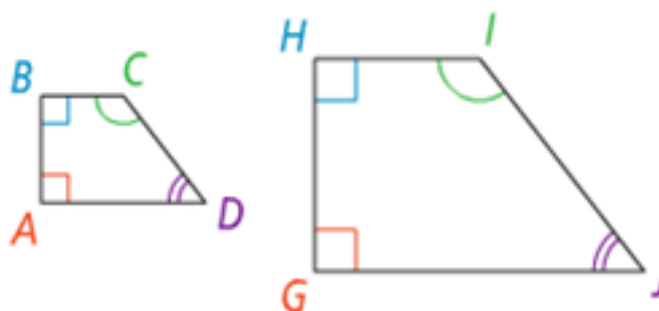
~ means similar to

*Similar Polygons

Two polygons whose corresponding angles are congruent and whose lengths of corresponding sides are proportional.

$$ABCD \sim GHIJ$$

$$\begin{aligned} \angle A &\cong \angle G \\ \angle B &\cong \angle H \\ \angle C &\cong \angle I \\ \angle D &\cong \angle J \\ \frac{AB}{GH} &= \frac{BC}{HI} = \frac{CD}{IJ} = \frac{AD}{GJ} \end{aligned}$$



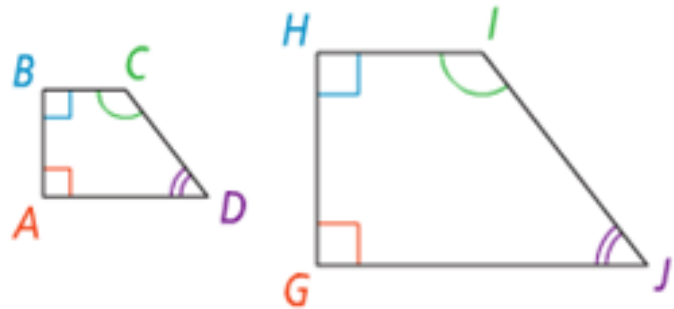
*Extended Proportion

When 3 or more ratios are equal.

$$ABCD \sim GHIJ$$

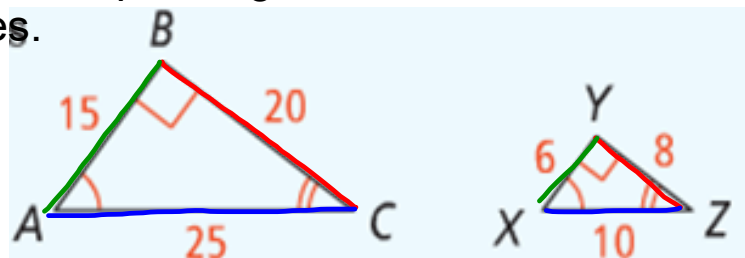
$$\frac{AB}{GH} = \frac{BC}{HI} = \frac{CD}{IJ} = \frac{AD}{GJ}$$

$$\frac{1}{2} = \frac{2}{4} = \frac{3}{6} = \frac{4}{8}$$



*Scale Factor

The ratio of corresponding linear measurements of 2 similar figures.



$$\frac{BC}{YZ} = \frac{20}{8} = \frac{5}{2}$$

Scale factor
Can also be 5:2

Scale factor will be the same for all corresponding sides!

$$\frac{AB}{XY} = \frac{15}{6} = \frac{5}{2}$$

$$\frac{AC}{XZ} = \frac{25}{10} = \frac{5}{2}$$

*Scale

The ratio that compares each length in a scale drawing to the actual length.

1 cm = 200 meters

1 inch = 100 miles

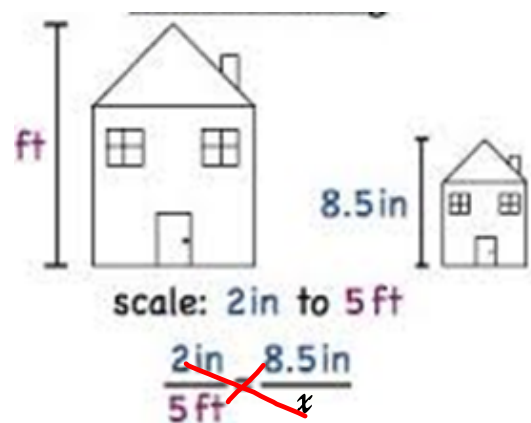
scale : actual

$$\frac{1\text{cm}}{200\text{m}}$$

*Scale Drawing

A drawing whose lengths are proportional to their corresponding actual lengths.

How tall is the actual house?

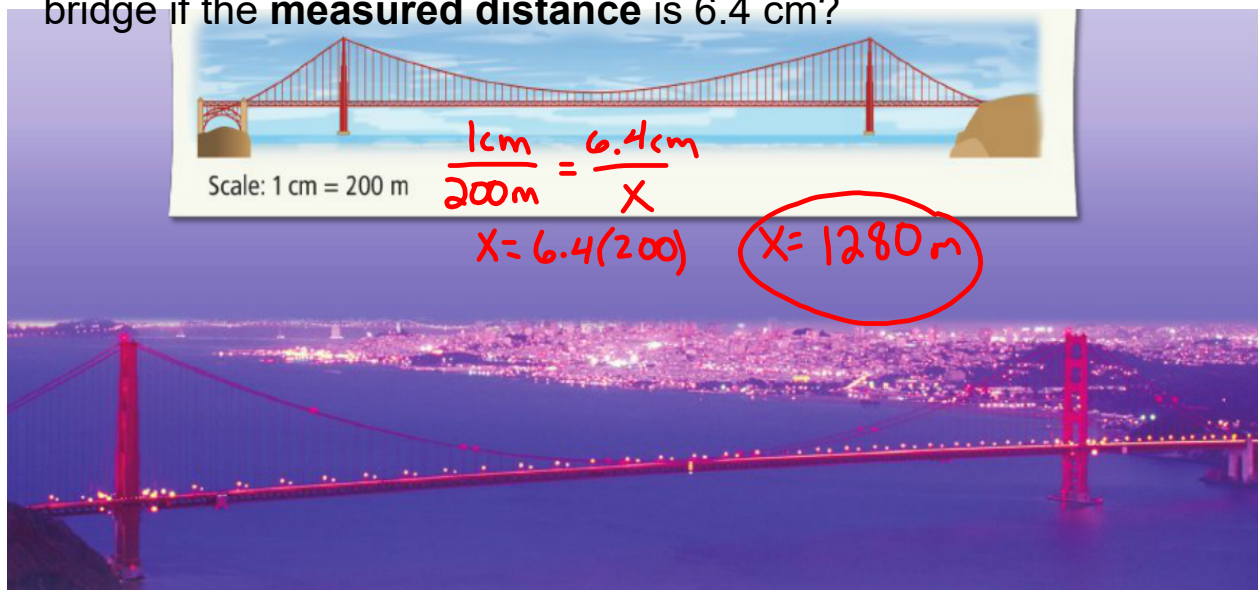


$$2x = (8.5)5$$

$$\frac{2x}{2} = \frac{42.5}{2}$$

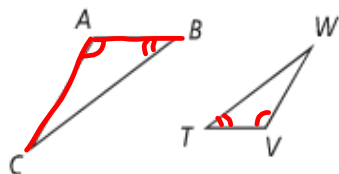
$$x = 21.25 \text{ ft}$$

The diagram shows a scale drawing of the Golden Gate Bridge in San Francisco. The distance between the 2 towers is called the main span. What is the actual length of the main span of the bridge if the **measured distance** is 6.4 cm?



List the pairs of congruent angles and the extended proportion that relates the corresponding sides for the similar polygons.

$$\triangle CAB \sim \triangle WVT$$



$$\angle A \cong \angle V$$

$$\angle B \cong \angle T$$

$$\angle C \cong \angle W$$

$$\frac{AB}{VT} = \frac{AC}{VW} = \frac{BC}{TW}$$

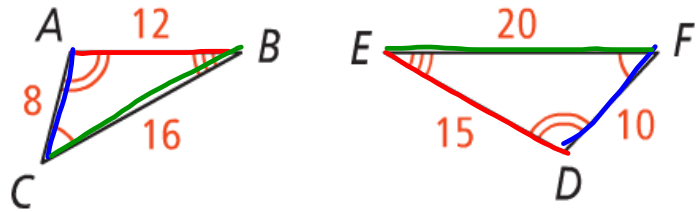
You Try! Determining Similarity

Are the polygons similar?

If so, write a similarity statement and give the scale factor.

Step 1: Identify pairs of congruent angles.

$$\begin{aligned} \angle A &\cong \angle D \\ \angle B &\cong \angle E \\ \angle C &\cong \angle F \end{aligned}$$



Step 2: Compare the ratios of corresponding sides. (They must ALL be the same)

$$\frac{AB}{DE} = \frac{12}{15} = \frac{4}{5}$$

$$\frac{AC}{DF} = \frac{8}{10} = \frac{4}{5}$$

$$\frac{BC}{EF} = \frac{16}{20} = \frac{4}{5}$$

yes, $\triangle ABC \sim \triangle DEF$, $\frac{4}{5}$

Determining Side Length

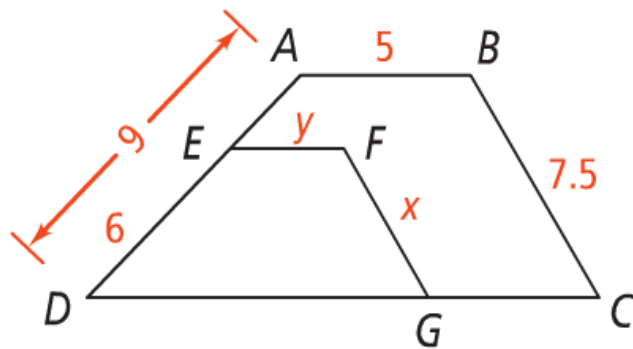
$$ABCD \sim EFGD$$

What is the scale factor?

$$\frac{6}{9} = \frac{2}{3}$$

Solve for x.

$$\frac{2}{3} = \frac{x}{7.5}$$



Solve for y. $\frac{2}{3} = \frac{y}{5}$

Closure: Today I learned about polygon similarity and similarity statements.

Today's Work:

Copy notes from classmate if absent.

OR

Complete PS#1

OR

Start PS#2

