Similar Polygons

Today I Can

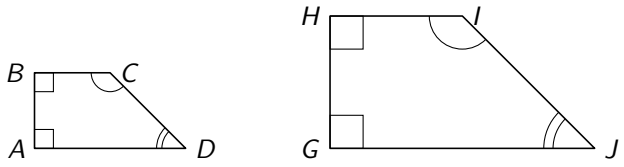
1. Identify and apply similar polygons.

Similar Figures

Figures that have the same shape but not the same size. The symbol for similar is $\sim$.

Similar Polygons

Polygons that have congruent corresponding angles and proportional lengths of corresponding sides.



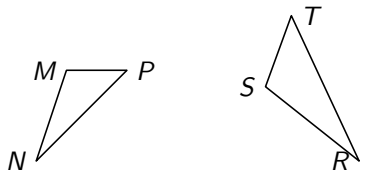
$$\angle A \cong \angle G, \quad \angle B \cong \angle H, \quad \angle C \cong \angle I, \quad \angle D \cong \angle J$$

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

Scale Factor

The ratio of corresponding side lengths of two similar figures. (*i.e.* what you multiply or divide sides of one shape by to get the other).

Example 1. $\triangle MNP \sim \triangle SRT$

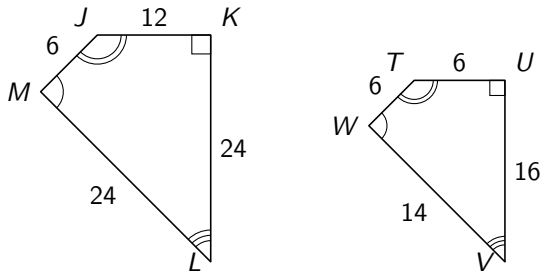


(a) What are the pairs of congruent angles?

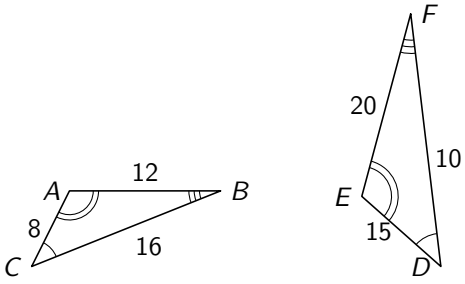
(b) What is the extended proportion for the ratios of corresponding sides?

Example 2. Are the polygons similar? If they are, write a similarity statement and give the scale factor.

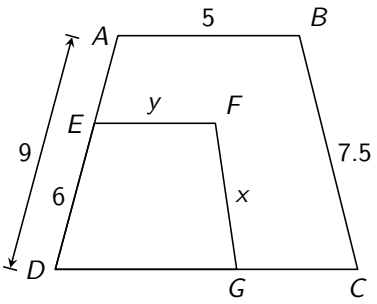
(a) *JKLM* and *TUVW*



(b) $\triangle ABC$ and $\triangle EFD$



Example 3. $ABCD \sim EFGD$. Find the values of the variables.



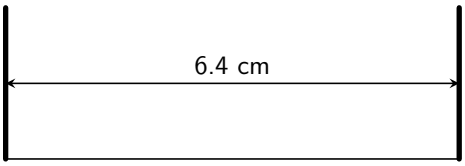
Scale Drawing

A drawing in which all lengths are proportional to their actual lengths.

The **scale** is the ratio that compares each length in the drawing to its actual length.

$$\frac{\text{Drawing}}{\text{Actual}}$$

Example 4. The diagram shows a scale drawing of the Golden Gate Bridge in San Francisco. The distance between the two towers is the *main span*. What is the actual length of the main span?



1 cm = 200 m