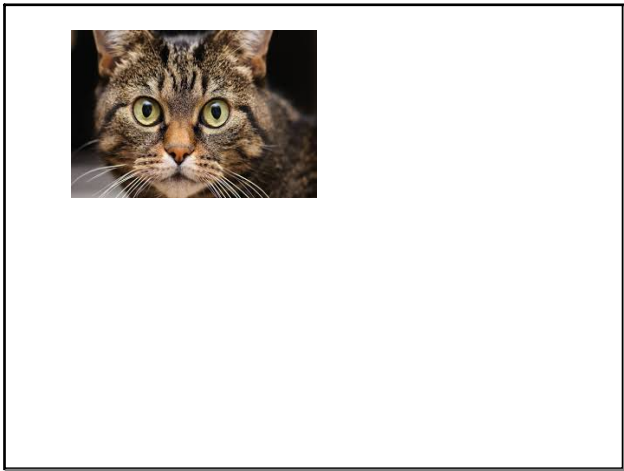


# Similar Polygons



title

Jan 6-8:27 AM

Similar figures—figures with the same shape, but not necessarily the same size

- Corresponding angles are congruent.
- Corresponding side lengths are proportional.
- The symbol for "is similar to" is  $\sim$ .

similar

not similar

similar

**Similarity Statement**  
 $\triangle ABC \sim \triangle ZYX$

Corresponding Angles

$\angle A \cong \angle Z$   
 $\angle X \cong \angle C$   
 $\angle B \cong \angle Y$

Corresponding Sides

$\frac{AB}{ZY} \quad \frac{BC}{YX} \quad \frac{CA}{XZ}$

corresponding parts

Scale factor—the ratio of the lengths of two corresponding sides of two similar polygons

Is  $JKLM \sim PQRS$ ? If similar, state the scale factor.

$\frac{20}{12} = \frac{5}{3}$   
 $\frac{10}{6} = \frac{5}{3}$   
 Similar  $\frac{5}{3}$

scale factor

Are the polygons similar? If they are similar, write a similarity statement and state the scale factor. If they are not similar, explain why.

$\frac{24}{12} = \frac{2}{1}$   
 $\frac{12}{8} = \frac{3}{2}$   
 Not Similar different scale factors

$\frac{6}{12} = \frac{1}{2}$   
 $\frac{3.2}{6.4} = \frac{1}{2}$   
 $\frac{4}{8} = \frac{1}{2}$   
 $JKLM \sim OPQN$   
 $\frac{1}{2}$

examples

The two polygons are similar.

Find the scale factor.

Lg Sm  $\frac{8}{6} = \frac{4}{3}$

Find the values of  $x$ ,  $y$ , and  $z$ .

$x^2 = 81$   
 $x = 9$

$2y + 30 = 126$   
 $2y = 96$   
 $y = 48$

$4z - 16 = 27$   
 $4z = 43$   
 $z = 10.75$

examples

$\triangle DEF \sim \triangle GHI$

Scale factor =  $\frac{18}{27} = \frac{2}{3}$  Sm Lg

$P_{\triangle DEF} = 42$

$P_{\triangle GHI} = 63$

Ratio of perimeters =  $\frac{42}{63} = \frac{2}{3}$

The ratio of the perimeters of similar polygons is the same as the scale factor.

perimeter

**Conclusion**

1. What does it mean to have similar figures? *Same shape, different size*
2. How can you tell if two figures are similar? *Scale factor of all sides are =*
3. What do you ~~do~~ to find the scale factor?  
*Set up ratio of sides*  
Does the order matter?  
*yes*
4. Questions????

Dec 10-3:06 PM

**Assignment**  
**Similar Polygons**  
**Day 1 Wkst**

Dec 10-3:08 PM