

Section 8-2

Name: Notes

Similar Polygons

Date: _____ Period: _____

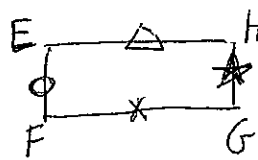
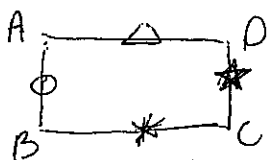
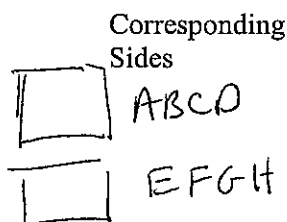
Essential Question

When are two polygons similar?

Similar

Two polygons are similar if:

1. The corresponding angles are \cong .
2. The corresponding sides are proportional.



\overline{AB} and \overline{EF}
 \overline{BC} and \overline{FG}
 \overline{CD} and \overline{GH}
 \overline{AD} and \overline{EH}

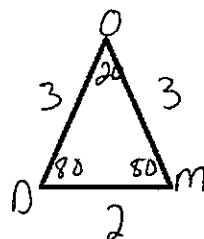
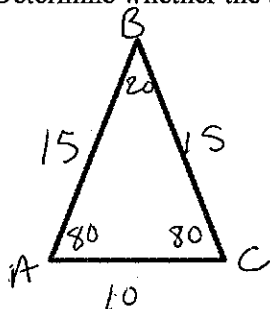
Similarity Ratio or Scale Factor

The ratio of the lengths of corresponding sides.

Example #1

Determine whether the triangles are similar.

- Corresponding \angle s are =
- corresponding sides are proportional



$\angle A = \angle O$
 $\angle B = \angle O$
 $\angle C = \angle M$

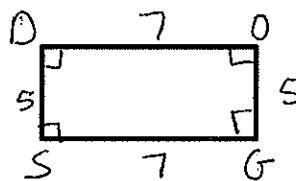
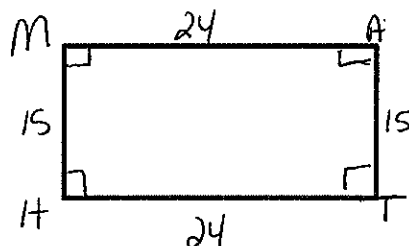
$$\frac{15(\overline{AB})}{3(\overline{DM})} = \frac{15(\overline{BC})}{3(\overline{OM})} = \frac{10(\overline{AC})}{2(\overline{DO})}$$

$$5 = 5 = 5$$

Example #2

The polygons are similar. Find the scale factor.

• yes - angles are \cong



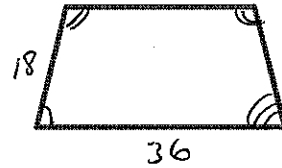
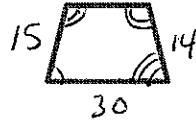
Tell if the polygons are similar

$$\frac{15}{5} = \frac{24}{7}$$

3 3.4 Not Similar

Example #3

The polygons are similar. Find the scale factor.



$\frac{\text{small}}{\text{big}}$

$$\frac{15}{18} = \frac{30}{36}$$

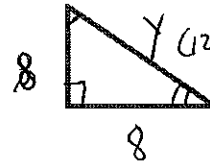
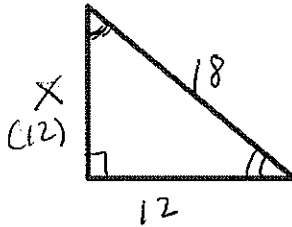
$$\frac{5}{6} = \frac{5}{6}$$

scale factor is 5:6 or 5 to 6.

Example #4

The polygons are similar. Find the missing side length.

use the fishy method
(cross multiply)



$$\frac{\text{big}}{\text{small}} = \frac{18}{8} = \frac{12}{8}$$

$$\frac{\text{big}}{\text{small}} = \frac{X}{8} = \frac{12}{8}$$

$$8X = (8)(12)$$

$$\boxed{X = 12}$$

$$(8)(8) = 12Y$$

$$144 = 12Y$$

$$\boxed{Y = 12}$$

Example #5

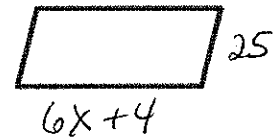
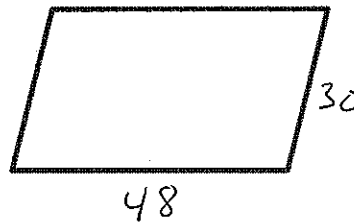
Solve for x. The polygons are similar.

$$\frac{\text{Big}}{\text{small}} = \frac{30}{25} = \frac{48}{6x+4}$$

$$30(6x+4) = (25)(48)$$

$$180x + 120 = 1200$$

$$\begin{array}{r} 180x + 120 = 1200 \\ -120 \quad -120 \\ \hline 180x = 1080 \\ \hline 180 \quad 180 \\ \hline \boxed{x = 6} \end{array}$$



Summary

Two polygons are similar if:

- corresponding angles are \cong
- corresponding sides are proportional

Describe how to find the similarity ratio or scale factor.

Set up a proportion and check to see if the polygons are similar.