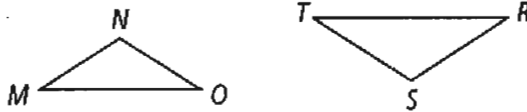


## 7.2 – Similar Polygons

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

1)  $\triangle MNO \sim \triangle RST$

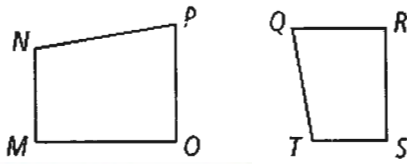
$\angle M \cong \angle R$   
 $\angle N \cong \angle S$   
 $\angle O \cong \angle T$



$\frac{MN}{RS} = \frac{NO}{ST} = \frac{OM}{TR}$

2)  $NPOM \sim TQRS$

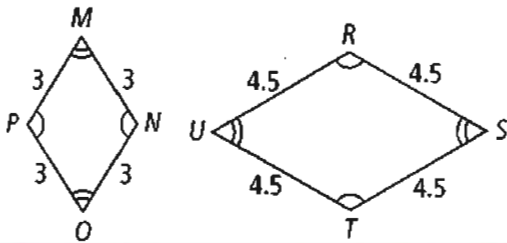
$\angle N \cong \angle T$   
 $\angle P \cong \angle Q$   
 $\angle O \cong \angle R$   
 $\angle M \cong \angle S$



$\frac{NP}{TQ} = \frac{PO}{QR} = \frac{OM}{RS} = \frac{MN}{ST}$

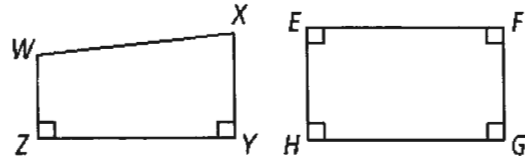
Determine whether the polygons are similar. If so, write a similarity statement and give the scale factor. If not, explain.

3)



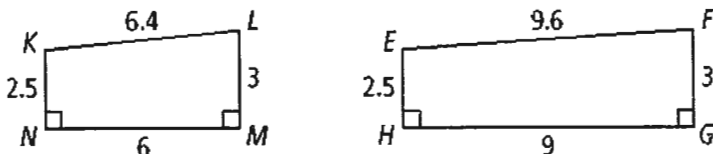
Yes. Angles are congruent and corresponding sides are proportional  
 $MNOP \sim RSTU$  or  $MNOP \sim TURS$

4)



No. Corresponding angles are not congruent.

5)



$\frac{2.5}{2.5} \neq \frac{6.4}{9.6} \neq \frac{3}{3} \neq \frac{6}{9}$

No. Corresponding sides are not proportional.

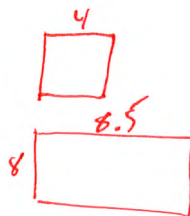
Determine whether the polygons are similar.

- 6) an equilateral triangle with side length 6 and an equilateral triangle with side length 15



Yes. All angles congruent.  
All corr. sides are proportional

- 7) a square with side length 4 and a rectangle with width 8 and length 8.5



No. Corr. sides are not proportional.

- 8) a triangle with side lengths 3 cm, 4 cm, and 5 cm, and a triangle with side lengths 18 cm, 19 cm, and 20 cm

No. Corr. sides are not proportional!

- 9) a rhombus with side lengths 8 and consecutive angles  $50^\circ$  and  $130^\circ$ , and a rhombus with side lengths 13 and consecutive angles  $50^\circ$  and  $130^\circ$

Yes. Corr. angles congruent and corr. sides are proportional.

- 10) An architect is making a scale drawing of a building. She uses the scale 1 in. = 15 ft.

- a. If the building is 48 ft tall, how tall should the scale drawing be?

$$\frac{1 \text{ in}}{15 \text{ ft}} = \frac{x}{48 \text{ ft}}$$

$$x = 3.2 \text{ in}$$

- b. If the building is 90 ft wide, how wide should the scale drawing be?

$$\frac{1 \text{ in}}{15 \text{ ft}} = \frac{x}{90 \text{ ft}}$$

$$x = 6 \text{ in.}$$

Determine whether each statement is *always*, *sometimes*, or *never* true.

- 11) Two squares are similar.

Always

- 12) Two hexagons are similar.

Sometimes

- 13) Two similar triangles are congruent.

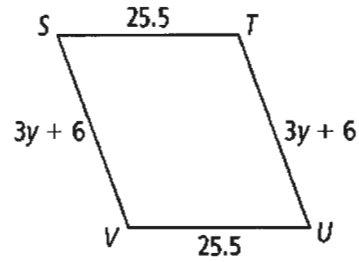
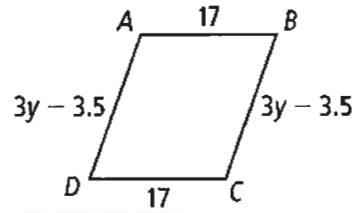
Sometimes

- 14) A rhombus and a pentagon are similar.

Never

Find the value of  $y$ . Give the scale factor of the polygons.

15)  $ABCD \sim TSVU$



$$\frac{17}{25.5} = \frac{3y - 3.5}{3y + 6}$$

$$25.5(3y - 3.5) = 17(3y + 6)$$

$$76.5y - 89.25 = 51y + 102$$

$$25.5y = 191.25$$

$$y = 7.5$$

$$\text{Scale factor} = \frac{17}{25.5} = .66\bar{6} = \frac{2}{3}$$

In the diagram below,  $\triangle PRQ \sim \triangle DEF$ . Find each of the following.

16) the scale factor of  $\triangle PRQ$  to  $\triangle DEF$

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

17)  $m\angle D = 56^\circ$

18)  $m\angle R = 35^\circ$

19)  $m\angle P = 56^\circ$

20)  $DE = 48$

21)  $FE = 43.2$

