Chapter 6.3: Use Similar Polygons

Polygons are similar if their corresponding angles are congruent and corresponding sides are proportional

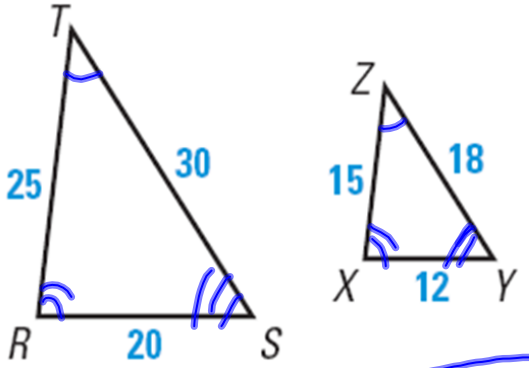
- Scale Factor is the ratio between side lengths of similar polygons

List all pairs of congruent angles

$\angle T \cong \angle Z$, $\angle R \cong \angle X$, $\angle S \cong \angle Y$

Check that the ratios of sides are equal

write a statement of proportionality



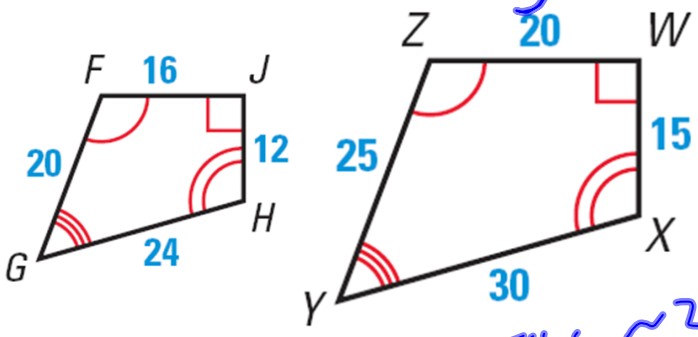
$\frac{25}{15} = \frac{30}{18} = \frac{20}{12}$

$\frac{5}{3} = \frac{5}{3} = \frac{5}{3}$

$\triangle TRS \sim \triangle ZXY$

Determine whether the polygons are similar. If they are, write a similarity statement and find the scale factor of ZYXW to FGHJ

$\angle F \cong \angle Z$
$\angle J \cong \angle W$
$\angle G \cong \angle Y$
$\angle H \cong \angle X$

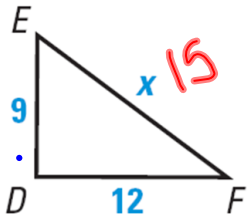


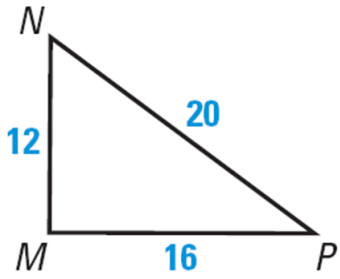
$FJHG \sim ZWXY$

$\frac{20}{25} = \frac{16}{20} = \frac{12}{15} = \frac{24}{30}$

$\frac{4}{5} = \frac{4}{5} = \frac{4}{5} = \frac{4}{5}$

In the diagram, $\Delta DEF \sim \Delta MNP$ find the value of x.





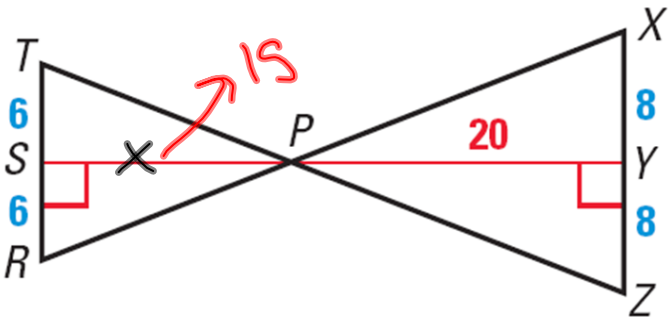
$\frac{20}{x} = \frac{12}{9}$

$12x = 180$

$\frac{12x}{12} = \frac{180}{12}$

If two polygons are similar, then the ratio of their perimeters is equal to the ratios of their corresponding side lengths.

In the diagram, $\Delta TPR \sim \Delta XPZ$ Find the length of the altitude PS



$\frac{20}{x} \times \frac{8}{6}$

$\frac{8x}{8} = \frac{120}{8}$

$x = 15$

A town is building a new swimming pool. An Olympic pool is rectangular with length 50 meters and width 25 meters. The new pool will be similar in shape, but only 40 meters long.

- Find the scale factor of the new pool to the Olympic pool.

$\frac{40m}{50m}$ $\frac{4}{5}$

- Find the perimeter of an Olympic pool and the new pool.

$2l+2w=P$

$2(50)+2(25)$

$100+50$

$150m=OP$

P of NP

$150\left(\frac{4}{5}\right)$

$120m$

Homework: Chapter 6.3
pg.376 #'s 4,6,8-11,19,32