

Geometry Worksheet

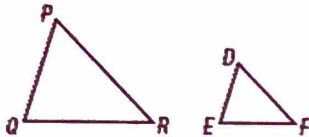
Similar polygons

Name Key

1. If polygons are similar then what do you know about the corresponding sides and the corresponding angles?

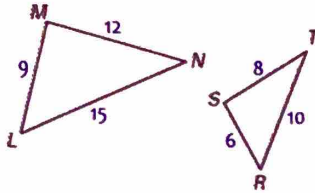
Given the similar figures, name all pairs of corresponding sides and angles. Look at the similarity statement to help.

2. $\triangle PQR \sim \triangle DEF$



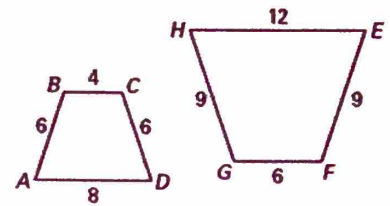
$$\begin{aligned} \overline{QP} &\rightarrow \overline{ED} & \angle Q &\cong \angle E \\ \overline{PR} &\rightarrow \overline{DF} & \angle P &\cong \angle D \\ \overline{RQ} &\rightarrow \overline{FE} & \angle R &\cong \angle F \end{aligned}$$

3. $\triangle LMN \sim \triangle RST$



$$\begin{aligned} \overline{LM} &\rightarrow \overline{RS} & \angle L &\cong \angle R \\ \overline{MN} &\rightarrow \overline{ST} & \angle M &\cong \angle S \\ \overline{NL} &\rightarrow \overline{TR} & \angle N &\cong \angle T \end{aligned}$$

4. $ABCD \sim HGFE$



$$\begin{aligned} \overline{AB} &\rightarrow \overline{HG} & \angle A &\cong \angle H \\ \overline{BC} &\rightarrow \overline{GF} & \angle B &\cong \angle G \\ \overline{CD} &\rightarrow \overline{FE} & \angle C &\cong \angle F \\ \overline{DA} &\rightarrow \overline{EH} & \angle D &\cong \angle E \end{aligned}$$

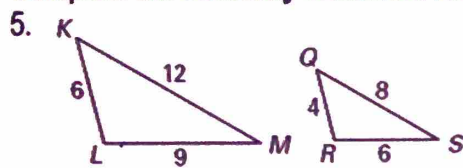
Use the similar polygons above to write the statement of proportionality for each:

$$\frac{ED}{QP} = \frac{DF}{PR} = \frac{FE}{RQ}$$

$$\frac{RS}{LM} = \frac{ST}{MN} = \frac{TR}{NL}$$

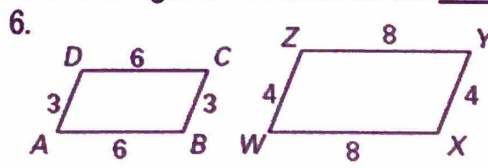
$$\frac{HG}{AB} = \frac{GF}{BC} = \frac{FE}{CD} = \frac{EH}{DA}$$

Complete the similarity statement for the similar figures and then find the scale factor. REDUCE fractions!



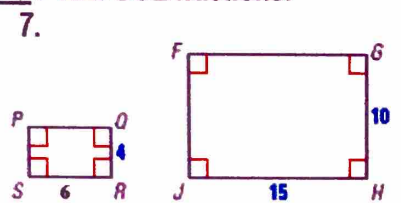
$\triangle KLM \sim \triangle RQS$

Scale Factor: $\frac{LK}{RQ} = \frac{6}{8} = \frac{3}{4}$ OR $\frac{2}{3}$



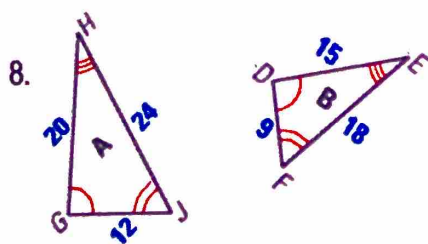
$CBAD \sim YXWZ$

Scale Factor: $\frac{CB}{YX} = \frac{6}{8} = \frac{3}{4}$ OR $\frac{4}{3}$



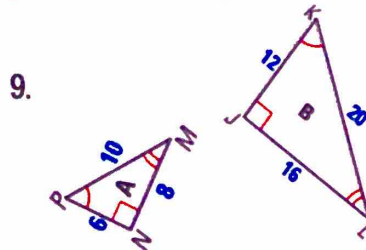
$RSPQ \sim HJFG$

Scale Factor: $\frac{RS}{HJ} = \frac{6}{15} = \frac{2}{5}$ OR $\frac{5}{2}$



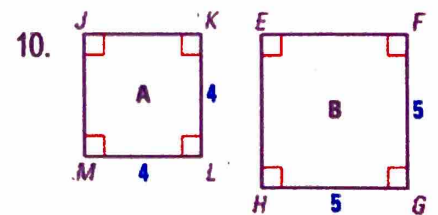
$\triangle HJG \sim \triangle EFD$

Scale Factor: $\frac{HJ}{EF} = \frac{24}{18} = \frac{4}{3}$ OR $\frac{3}{4}$



$\triangle NPM \sim \triangle JKL$

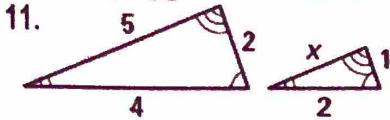
Scale Factor: $\frac{NP}{JK} = \frac{6}{12} = \frac{1}{2}$ OR 2



$KJML \sim FEHG$

Scale Factor: $\frac{KJ}{FE} = \frac{4}{5}$ OR $\frac{5}{4}$

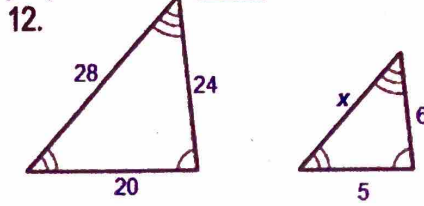
The two polygons are similar. Write a proportion and solve for x.



$$\frac{5}{x} = \frac{2}{1}$$

$$\frac{5}{2} = \frac{2x}{2}$$

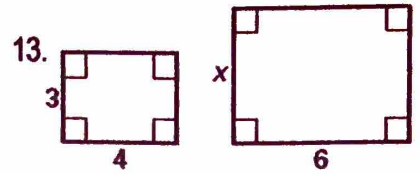
$$x = \frac{5}{2}$$



$$\frac{28}{x} = \frac{20}{5}$$

$$\frac{28}{x} = \frac{4}{1}$$

$$\frac{28}{4} = \frac{4x}{4} \Rightarrow x = 7$$



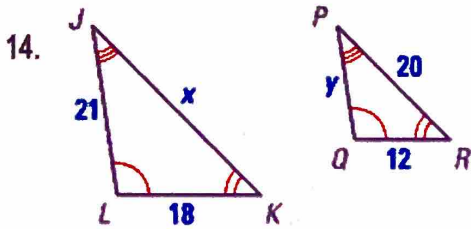
$$\frac{3}{x} = \frac{4}{6}$$

$$\frac{18}{4} = \frac{4x}{4}$$

$$x = \frac{18}{4}$$

$$x = \frac{9}{2}$$

Complete the similarity statement for the similar figures and then find the scale factor. Next, write proportions and SOLVE for the missing lengths.



$$\triangle JKL \sim \triangle PRQ$$

$$S.F. = \frac{JK}{PQ} = \frac{18}{12} = \frac{3}{2}$$

$$\frac{3}{2} = \frac{x}{20}$$

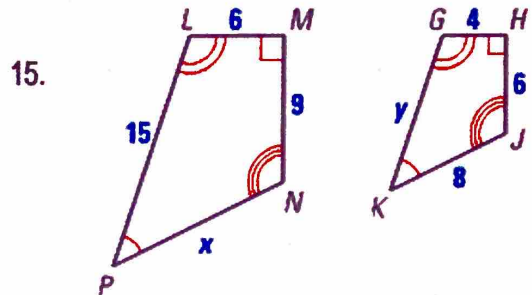
$$\frac{60}{2} = \frac{2x}{2}$$

$$x = 30$$

$$\frac{3}{2} = \frac{y}{21}$$

$$\frac{42}{3} = \frac{3y}{3}$$

$$y = 14$$



$$LMNP \sim GHJK$$

$$S.F. = \frac{LM}{GH} = \frac{6}{4} = \frac{3}{2}$$

$$\frac{3}{2} = \frac{x}{8}$$

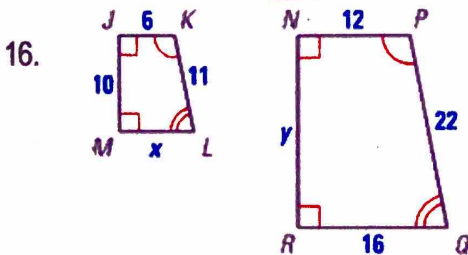
$$\frac{24}{2} = \frac{2x}{2}$$

$$x = 12$$

$$\frac{3}{2} = \frac{y}{9}$$

$$\frac{18}{3} = \frac{3y}{3}$$

$$y = 6$$



$$\triangle JKLM \sim \triangle NRPQ$$

$$S.F. = \frac{JK}{NP} = \frac{6}{12} = \frac{1}{2}$$

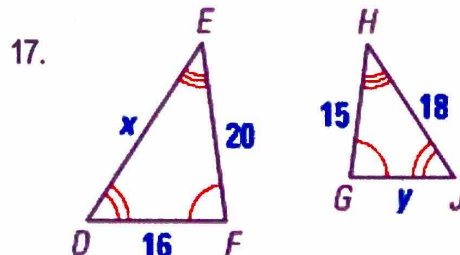
$$\frac{1}{2} = \frac{x}{16}$$

$$\frac{16}{2} = \frac{2x}{2}$$

$$x = 8$$

$$\frac{1}{2} = \frac{y}{22}$$

$$y = 22$$



$$\triangle DEF \sim \triangle JHG$$

$$S.F. = \frac{EF}{HG} = \frac{20}{15} = \frac{4}{3}$$

$$\frac{4}{3} = \frac{x}{16}$$

$$\frac{72}{3} = \frac{3x}{3}$$

$$x = 24$$

$$\frac{4}{3} = \frac{16}{y}$$

$$\frac{48}{4} = \frac{4y}{4}$$

$$y = 12$$