

Day 1: Similarity Statements and Using Similarity

look at statements
 If polygons are similar then what do you know about the corresponding sides and the corresponding angles?
Angles are congruent, Sides are proportional

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

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

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

4. $ABCD \sim HGFE$

$\overline{PQ} \rightarrow \overline{DE}$ $\angle Q \rightarrow \angle E$
 $\overline{PR} \rightarrow \overline{DF}$ $\angle P \rightarrow \angle D$
 $\overline{QR} \rightarrow \overline{EF}$ $\angle R \rightarrow \angle F$

$\overline{LM} \rightarrow \overline{RS}$ $\angle L \rightarrow \angle R$
 $\overline{LN} \rightarrow \overline{ST}$ $\angle N \rightarrow \angle T$
 $\overline{MN} \rightarrow \overline{RT}$ $\angle M \rightarrow \angle S$

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

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

$\frac{PQ}{DE} = \frac{PR}{DF} = \frac{RQ}{EF}$ $\frac{LM}{RS} = \frac{LN}{ST} = \frac{MN}{TR}$ $\frac{AB}{HG} = \frac{BC}{GF} = \frac{CD}{FE} = \frac{DA}{EH}$

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

5. $\triangle LKM \sim \triangle RQS$ Scale Factor: $\frac{2}{3}$

6. $CRAD \sim YXWZ$ Scale Factor: $\frac{4}{3}$

7. $\triangle RST \sim \triangle UPQ$ Scale Factor: ~~10/5~~ NOT SIMILAR

8. $\triangle HJG \sim \triangle EFD$ Scale Factor: $\frac{3}{4}$

9. $\triangle NPM \sim \triangle JKL$ Scale Factor: 2

10. $KJML \sim FEHG$ Scale Factor: $\frac{5}{4}$

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

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

12. $\frac{x}{20} = \frac{6}{24}$ $x = 7$

13. $\frac{x}{3} = \frac{6}{4}$ $x = 4.5$

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

14. $\triangle JKL \sim \triangle PQR$ $x = 30$, $y = 14$

15. $\triangle PLMN \sim \triangle KGHJ$ $x = 12$, $y = 10$

16. $\triangle JKLM \sim \triangle NPQR$ $x = 8$, $y = 20$

17. $\triangle DEF \sim \triangle JHG$ $x = 24$, $y = 12$

18. A tree 24 feet tall casts a shadow 12 feet long. Brad is 6 feet tall. How long is Brad's shadow? (draw a diagram and solve)

$\frac{24}{6} = \frac{12}{x}$ $x = 3$

19. Triangles EFG and QRS are similar. The length of the sides of EFG are 144, 128, and 112. The length of the smallest side of QRS is 280, what is the length of the longest side of QRS? (draw a diagram and solve)

$\frac{112}{280} = \frac{144}{x}$ $x = 360$

20. A 40-foot flagpole casts a 25-foot shadow. Find the shadow cast by a nearby building 200 feet tall. (draw a diagram and solve)

$\frac{40}{25} = \frac{200}{x}$ $x = 125$

ORDER MATTERS, MAKE SURE SCALE FACTOR MAKES SENSE!!

Day 1: Similarity Statements and Using Similarity

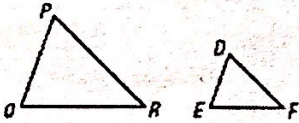
look at statements

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

Angles are congruent, Sides are proportional

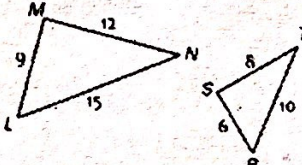
Given the similar figures, name all pairs of corresponding sides and angles. Look at the similarity statement to help.

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



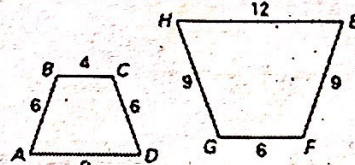
$$\begin{aligned} \overline{PQ} &\rightarrow \overline{DE} & \angle Q &\cong \angle E \\ \overline{PR} &\rightarrow \overline{DF} & \angle P &\cong \angle D \\ \overline{RQ} &\rightarrow \overline{EF} & \angle R &\cong \angle F \end{aligned}$$

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



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

4. $ABCD \sim HGFE$



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

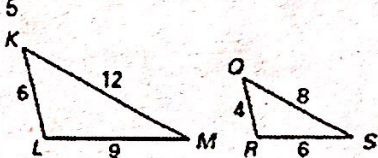
Use the similar polygons above to write the statement of proportionality for each:

$$\frac{QP}{DE} = \frac{PR}{DF} = \frac{RQ}{EF}$$

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

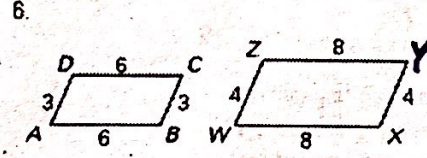
$$\frac{AB}{HG} = \frac{BC}{GF} = \frac{CD}{FE} = \frac{DA}{EH}$$

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



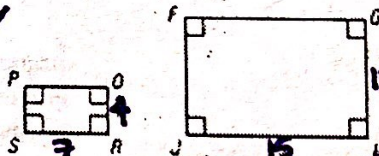
$\triangle LKM \sim \triangle RQS$

Scale Factor: $\frac{2}{3}$



$CRAD \sim YXWZ$

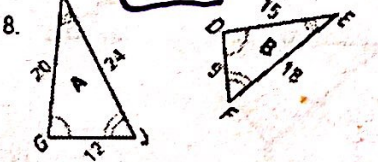
Scale Factor: $\frac{4}{3}$



~~$RSPO \sim HJFG$~~

Scale Factor:

NOT SIMILAR



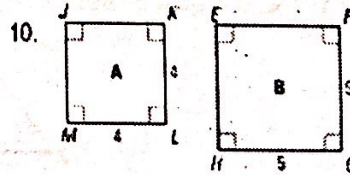
$\triangle HJG \sim \triangle EFD$

Scale Factor: $\frac{3}{4}$



$\triangle NPM \sim \triangle JKL$

Scale Factor: 2

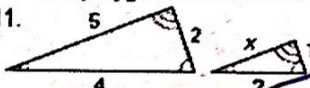


$KJML \sim FEHG$

Scale Factor: $\frac{5}{4}$

ORDER MATTERS, MAKE SURE SCALE FACTOR

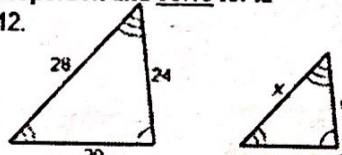
The two polygons are similar. Write a proportion and solve for x.

11. 

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

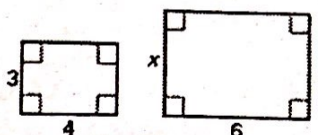
$$2x = 5$$

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

12. 

$$\frac{x}{28} = \frac{6}{24}$$

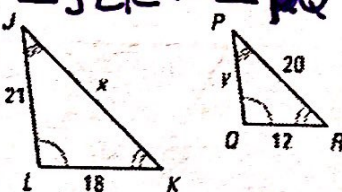
$$x = 7$$

13. 

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

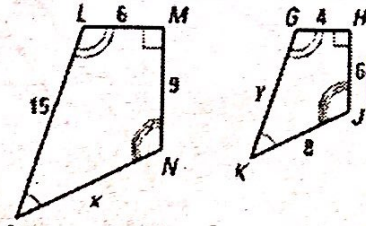
$$x = 4.5$$

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

14. $\triangle JKL \sim \triangle PQR$


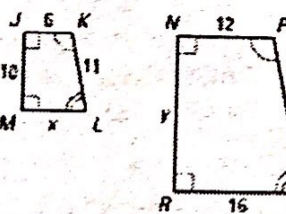
$$x = 30$$

$$y = 14$$

15. $\triangle PLM \sim \triangle KGH$


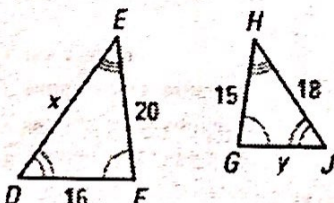
$$x = 12$$

$$y = 10$$

16. $\triangle JKLM \sim \triangle NPQR$


$$x = 8$$

$$y = 20$$

17. $\triangle DEF \sim \triangle JHG$


$$x = 24$$

$$y = 12$$

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$$x = 3$$

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$$x = 360$$

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