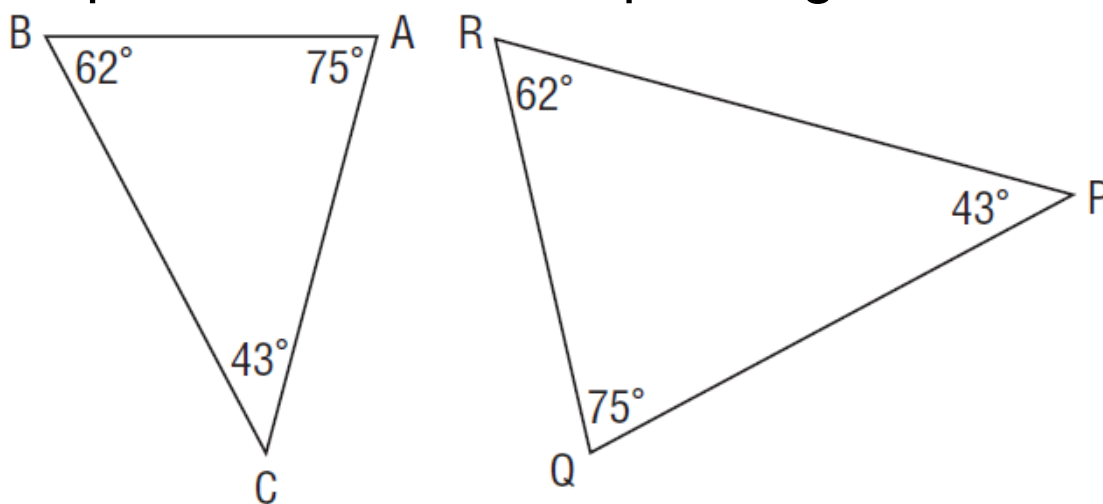


► Properties of Similar Triangles

To identify that $\triangle PQR$ and $\triangle STU$ are similar, we only need to know that:

- $\angle P = \angle S$ and $\angle Q = \angle T$ and $\angle R = \angle U$;
- $\frac{PQ}{ST} = \frac{QR}{TU} = \frac{PR}{SU}$

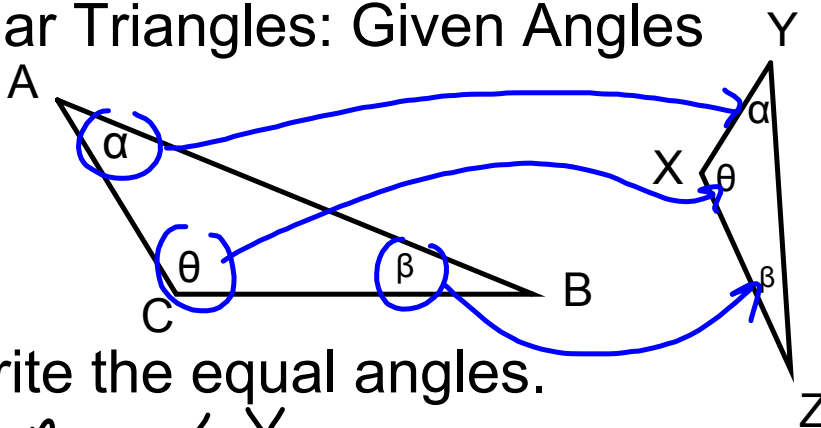
Example: Write the corresponding side ratios.



Write the corresponding angles:

$$\begin{aligned} \angle A &= \angle Q & \triangle ABC &\sim \triangle QRP \\ \angle B &= \angle R & \frac{AB}{QR} &= \frac{BC}{RP} = \frac{AC}{QP} \\ \angle C &= \angle P & & \end{aligned}$$

Similar Triangles: Given Angles



1. Write the equal angles.

$$\angle A = \angle Y$$

$$\angle B = \angle Z$$

$$\angle C = \angle X$$

2. Write the corresponding side ratios.

$$\frac{AB}{YZ} = \frac{BC}{ZX} = \frac{AC}{YX}$$

3. Write the similarity statement.

$$\triangle ABC \sim \triangle YZX$$

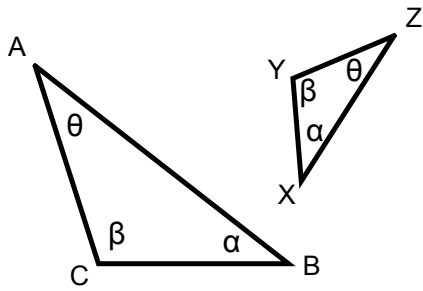
similarity symbol

Similar Triangles Practice: Given Equal Angles

1, 3, 2

For each pair of triangles:

1. Write the equal angles.
2. Write the corresponding side ratios.
3. Complete the similarity statement for each: $\triangle ABC \sim$

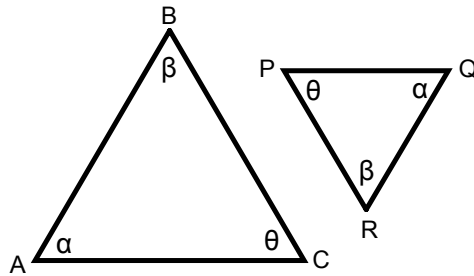


$$\angle A = \angle Z$$

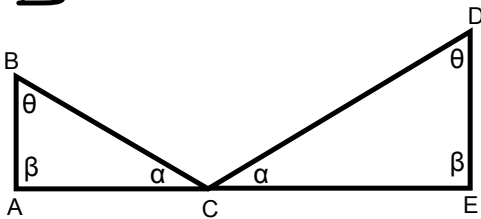
$$\angle B = \angle X$$

$$\angle C = \angle Y$$

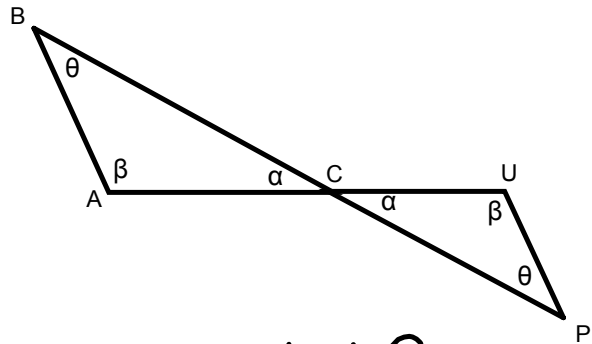
$$\triangle ABC \sim \triangle ZXY$$



$$\triangle ABC \sim \triangle QRP$$

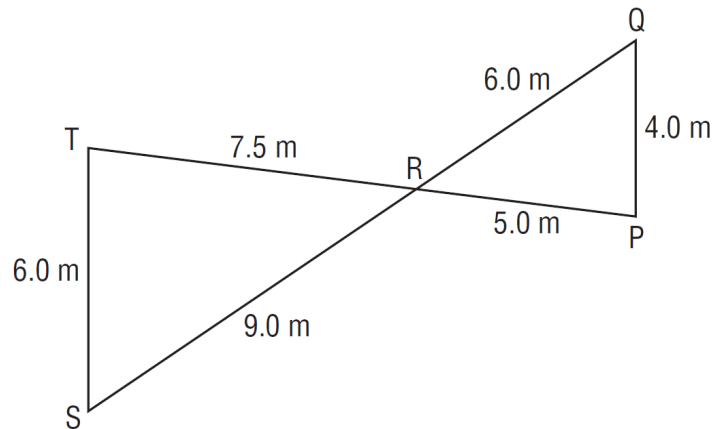


$$\triangle ABC \sim \triangle EDC$$



$$\triangle ABC \sim \triangle UPC$$

Similar Triangles: Given Side Lengths



1. For each triangle list the sides from longest to shortest.

$$\triangle RST \rightarrow 6, 7.5, 9 \rightarrow ST, RT, RS$$

$$\triangle QRP \rightarrow 4, 5, 6 \rightarrow PQ, PR, QR$$

2. Write and calculate the corresponding side ratios.

$$\frac{ST}{PQ} = \frac{RT}{PR} = \frac{RS}{QR}$$

$$\frac{6}{4} = \frac{7.5}{5} = \frac{9}{6}$$

3. Write the similarity statement.

$$\triangle STR \sim \triangle QPR$$

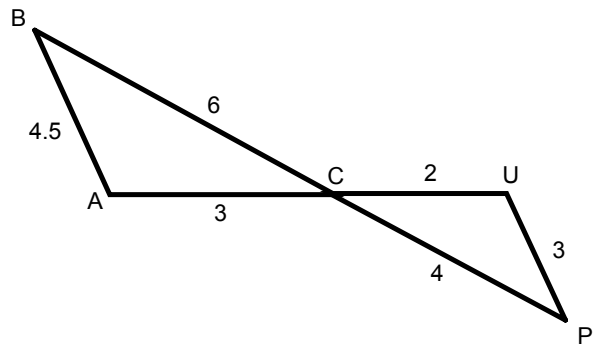
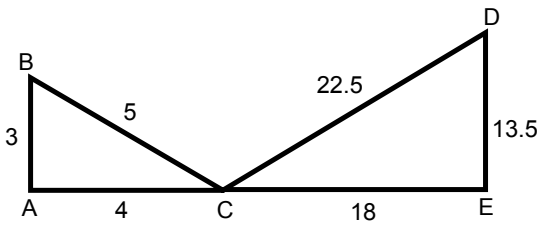
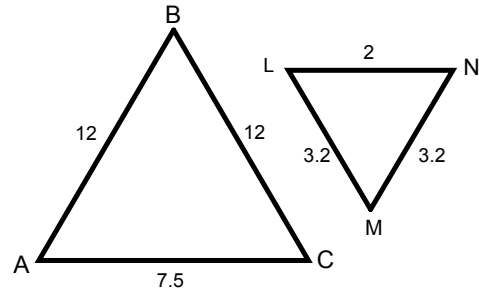
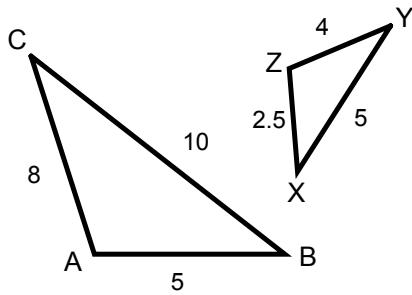
4. Write the equal angles.

$$\angle S = \angle Q, \angle T = \angle P, \angle R = \angle R$$

Similar Triangles Practice: Given Side Lengths

For each pair of triangles:

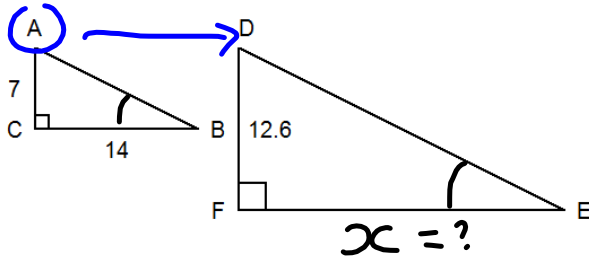
1. List the sides from longest to shortest.
2. Write and calculate the corresponding side ratios.
3. Complete the similarity statement for each: $\triangle ABC \sim$
4. Write the equal angles.



•

Examples: Write the similarity statement and the corresponding side ratios then solve.

Determine the length of EF in these similar triangles.



$$\triangle ABC \sim \triangle DEF$$

$$\frac{AB}{DE} = \frac{BC}{EF} = \frac{AC}{DF}$$

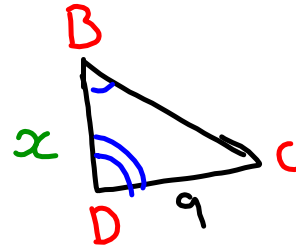
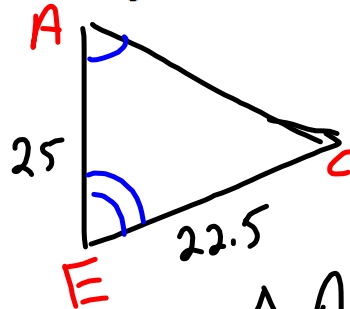
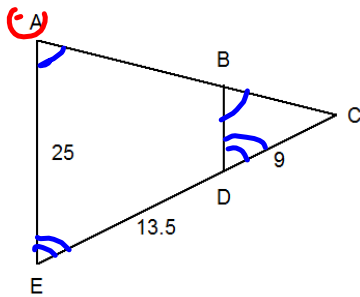
~~$$\frac{AB}{DE} = \frac{14}{x} = \frac{7}{12.6}$$~~

$$7x = (14)(12.6)$$

$$7x = 176.4$$

$$x = 25.2$$

Determine the length of BD in these similar triangles.



$$\triangle ACE \sim \triangle BCD$$

$$x = 10$$

Determine the lengths of CD and CE in these similar triangles.

