

SIMILAR TRIANGLES

OBJECTIVE

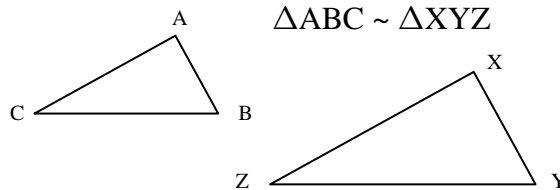
1. SWBAT apply properties of similar triangles to solve problems.

NOTES

DEFINITION OF SIMILAR TRIANGLES

If two triangles are similar, then corresponding angles are congruent and corresponding sides are proportional.

$$\angle A \cong \angle X, \angle B \cong \angle Y, \angle C \cong \angle Z \quad \frac{AB}{XY} = \frac{BC}{YZ} = \frac{CA}{ZX}$$



PROVING SIMILARITY

ANGLE-ANGLE SIMILARITY POSTULATE

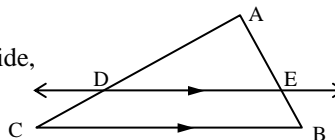
If two angles in one triangle are congruent to two angles in another triangle, then the triangles are similar.

SIDE-SIDE-SIDE SIMILARITY THEOREM

If the three sides of one triangle are proportional to the three corresponding sides in another triangle, then the triangles are similar.

TRIANGLE PROPORTIONALITY THEOREM

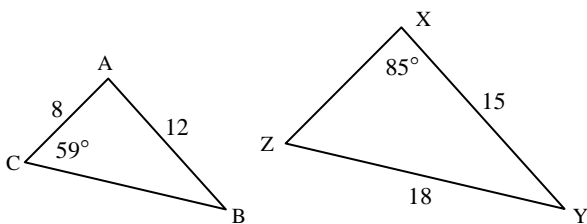
If a line intersects 2 sides of a triangle and is parallel to the third side, then the two intersected sides are divided proportionally. (converse is also true.)



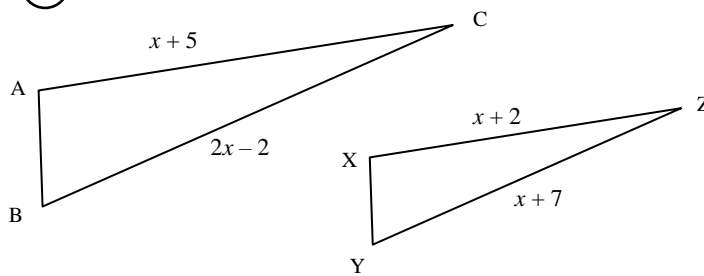
$$\frac{AD}{DC} = \frac{AE}{EB}$$

EXAMPLES

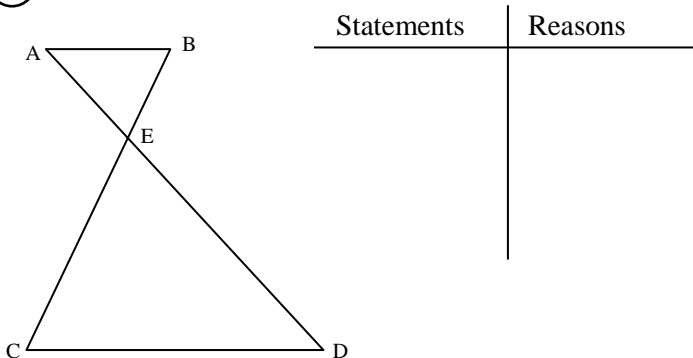
1. If $\triangle ABC \sim \triangle XYZ$, find the measure of every missing side or angle.



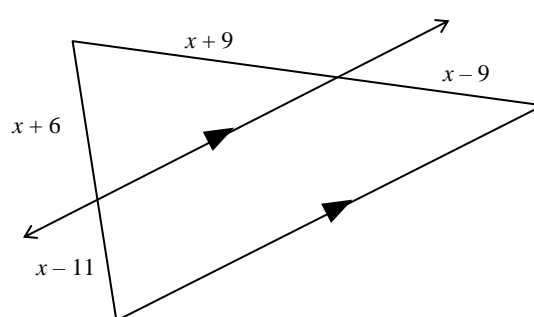
2. If $\triangle ABC \sim \triangle XYZ$, solve for x .



3. Given $\overline{AB} \parallel \overline{CD}$, prove $\triangle ABE \sim \triangle DCE$

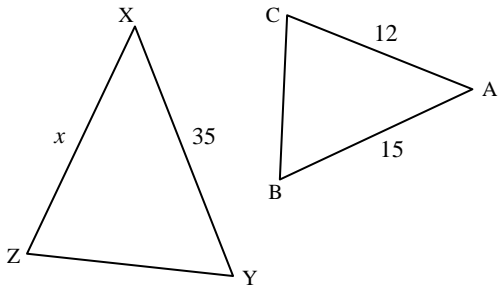


4. Solve for x .

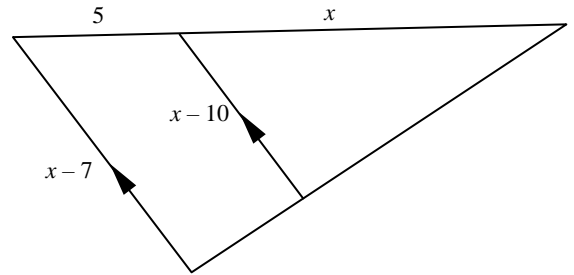


Solve for x .

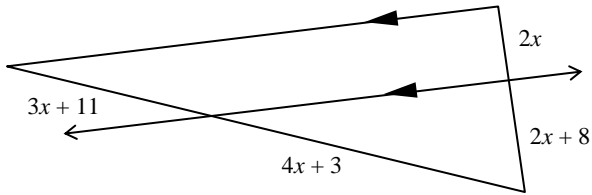
1. $\triangle ABC \sim \triangle XYZ$



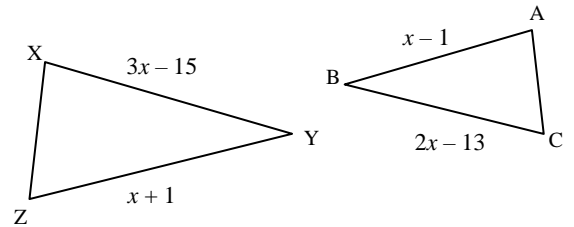
2.



3.

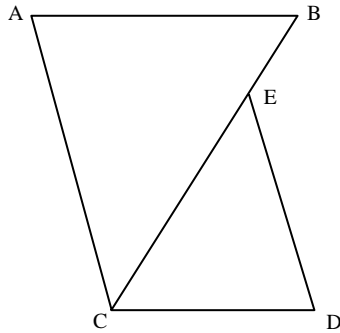


4. $\triangle ABC \sim \triangle XYZ$



Complete the proof.

5. Given $\overline{AB} \parallel \overline{CD}$ and $\overline{AC} \parallel \overline{ED}$
 Prove that $\triangle ABC \sim \triangle DCE$

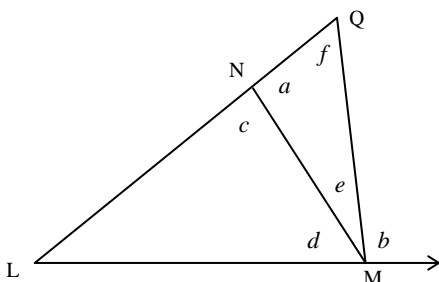


Statements	Reasons

6. One triangle has side lengths in centimeters of 3, 7 and 8. Another triangle has side lengths in centimeters of 20, 7.5 and 17.5. Are the triangles similar? Show work to justify your answer.

7. Given that $\triangle TUV \sim \triangle RQP$, and $m\angle T = 42^\circ$, and $\angle T \cong \angle Q$, then what is the measure of $\angle V$?

- ★ 8. Given that $a = b$; Prove that $\triangle LNM \sim \triangle LMQ$



Statements	Reasons