

Chapter 6 § 3

Similar Triangles

Definitions :

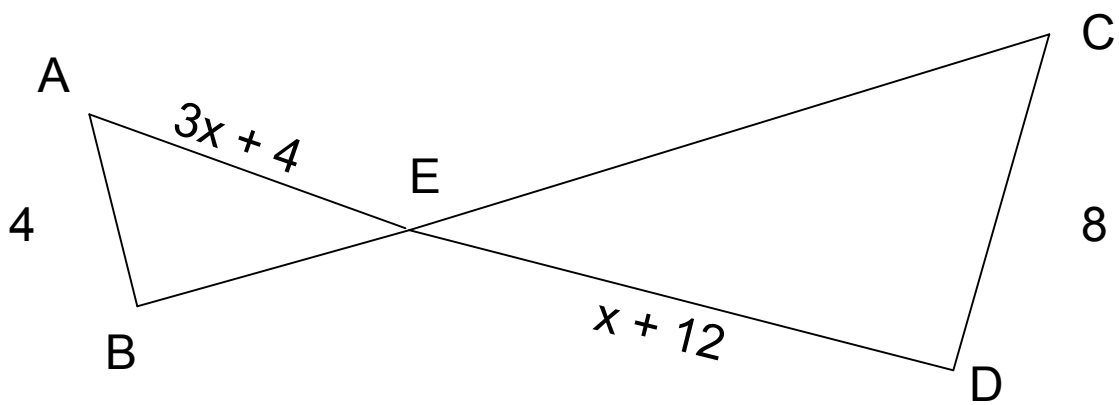
Similar – two figures that have the same shape, but not necessarily the same size.

Theorems :

SSS Similarity (7-1) – If the measure of the corresponding sides of two triangles are proportional, then the triangles are similar.

SAS Similarity (7-2) – If the measures of two sides of a triangle are proportional to the measures of two corresponding sides of another triangle and the included angles are congruent, then the triangles are similar.

(7-3) – Similarity of triangles are reflexive, symmetric, and transitive.



Given $AB \parallel CD$, $AB = 4$, $AE = 3x + 4$, $CD = 8$, and $ED = x + 12$, find the value of X.

$$8 (3x + 4) \qquad 4 (x + 12)$$

$$\frac{3x + 4}{x + 12} = \frac{4}{8}$$

$$8 (3x + 4) = 4 (x + 12)$$

$$24x + 32 = 4x + 48$$

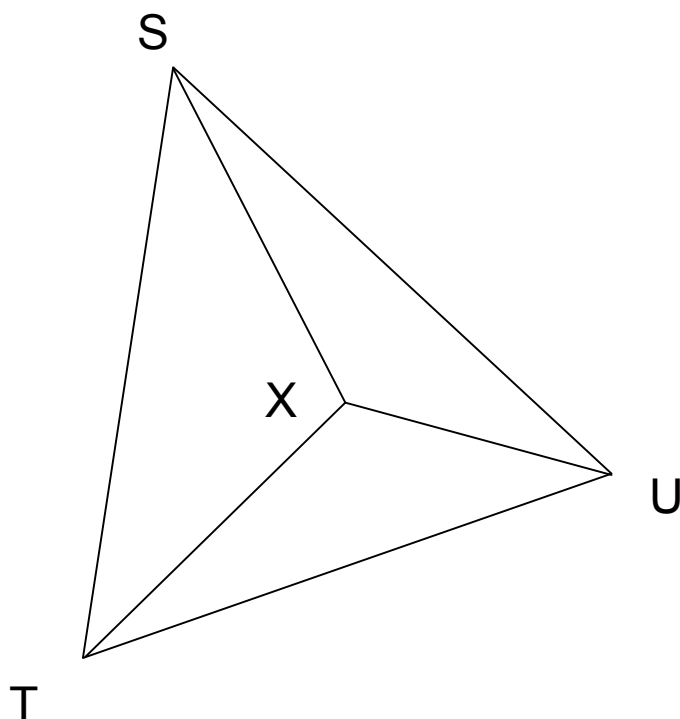
$$\begin{array}{r} -4x \qquad -4x \\ \hline \end{array}$$

$$20x + 32 = 0 + 48$$

$$\begin{array}{r} -32 \qquad -32 \\ \hline \end{array}$$

$$\frac{20x + 0}{20} = \frac{16}{20}$$

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



$\triangle STU$ has point X in its interior. If $\angle TXS$, $\angle SXU$, and $\angle TXU$ each measure 120° , $SX = 16$, $XU = 4$ and $XT = 8$, determine which triangles in the figure are similar.

$$\frac{SX}{UX} = \frac{16}{4} = 4$$

$\triangle SXT \sim \triangle TXU$ by SAS

$$\frac{SX}{TX} = \frac{16}{8} = 2$$

$$\frac{TX}{UX} = \frac{8}{4} = 2$$