

Congruent Figures

Thm. Corresponding parts of congruent figures are congruent.

Ex. $\triangle DEF \cong \triangle RST$

← Congruence Statement

$$\overline{DF} \cong \underline{\overline{RT}}$$

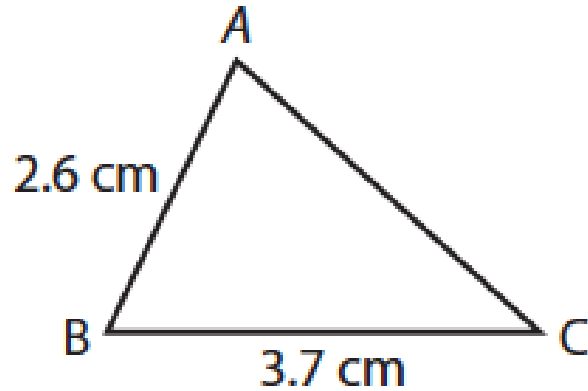
$$\angle E \cong \underline{\angle S}$$

$$\overline{ST} \cong \underline{\overline{EF}}$$

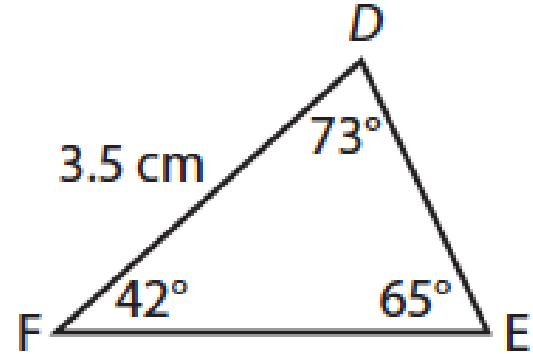
$$\angle T \cong \underline{\angle F}$$

Ex. If $\triangle ABC \cong \triangle DEF$, find the given side length or angle measure.

a. $DE = AB = 2.6$

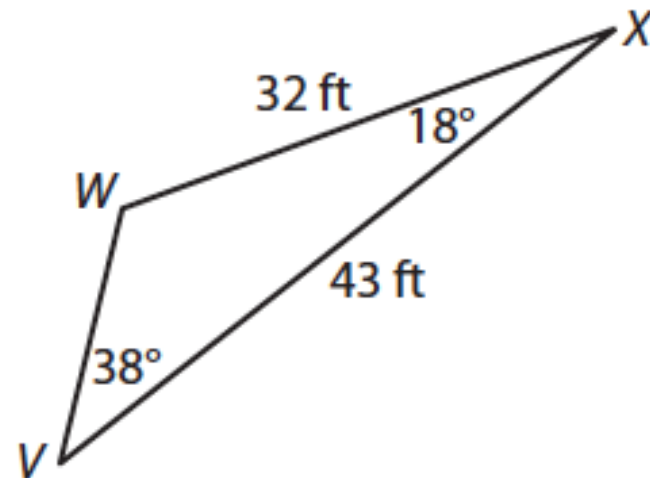
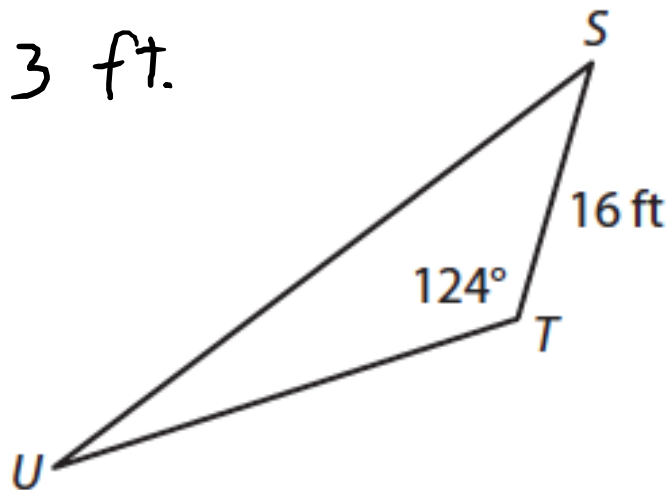


b. $m\angle B = m\angle E = 65^\circ$



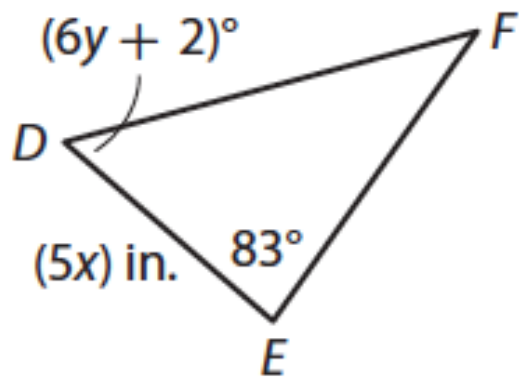
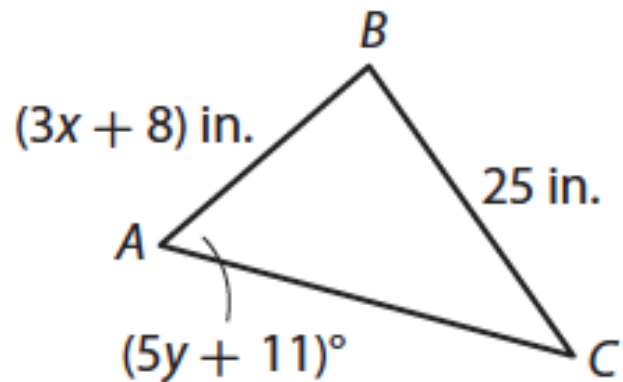
Ex. If $\triangle STU \cong \triangle VWX$, find the given side length or angle measure.

a. $SU = VX = 43$ ft.



b. $m\angle S = m\angle V = 38^\circ$

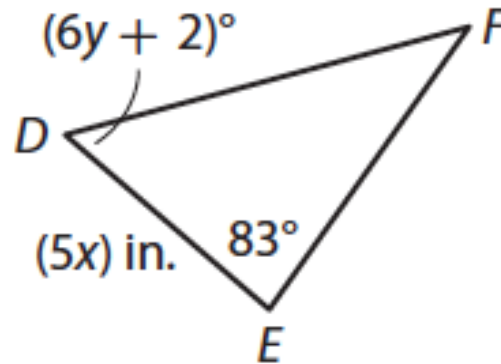
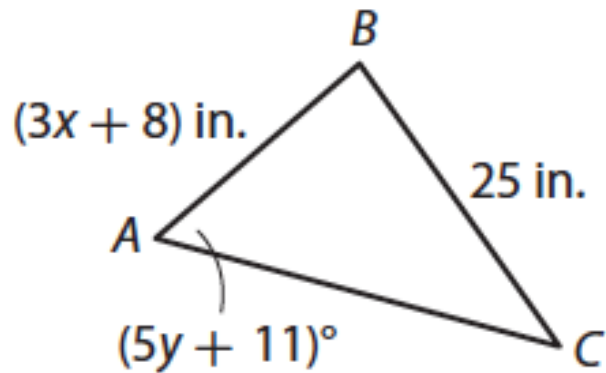
Ex. If $\triangle ABC \cong \triangle DEF$, find AB .



$$\begin{aligned} AB &= DE \\ 3x + 8 &= 5x \\ \cancel{3x} + 8 &= \cancel{5x} \\ 8 &= 2x \\ \frac{8}{2} &= \frac{2x}{2} \\ x &= 4 \end{aligned}$$

$$AB = 3(4) + 8 = \boxed{20}$$

Ex. If $\triangle ABC \cong \triangle DEF$, find $m\angle D$.



$$m\angle D = 6(9) + 2 = \boxed{56}$$

$$\begin{aligned} m\angle D &= m\angle A \\ 6y + 2 &= 5y + 11 \\ -5y & \quad -5y \\ 6y + 2 &= 5y + 11 \\ -5y & \quad -5y \\ y + 2 &= 11 \\ -2 & \quad -2 \\ y &= 9 \end{aligned}$$

Ex. If $GHJK \cong LMNP$, find the following.

a. $LM = GH$

$$\begin{array}{r} 6x - 13 = 4x + 3 \\ +13 \qquad +13 \\ \hline 6x = 4x + 16 \end{array}$$

$$\begin{array}{r} 6x = 4x + 16 \\ -4x \quad -4x \\ \hline 2x = 16 \end{array}$$

$$\frac{2x}{2} = \frac{16}{2} \rightarrow x = 8$$

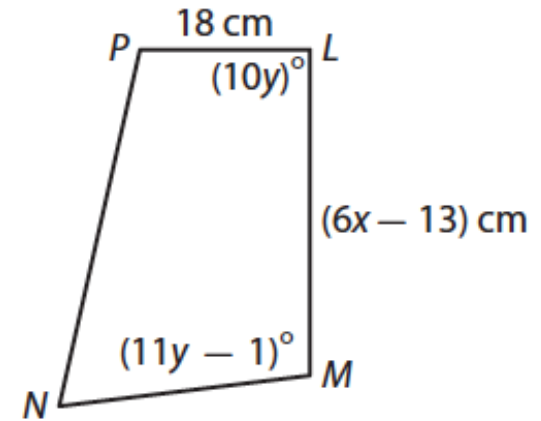
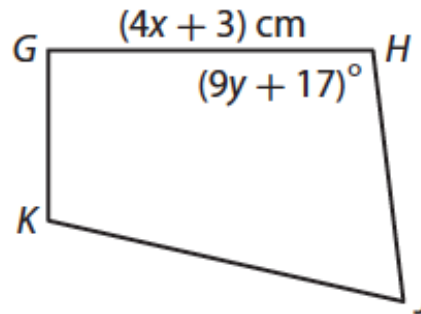
b. $m\angle H = m\angle M$

$$\begin{array}{r} 9y + 17 = 11y - 1 \\ -9y \qquad -9y \\ \hline 17 = 2y - 1 \end{array}$$

$$17 = 2y - 1$$

$$\begin{array}{r} 17 = 2y - 1 \\ +1 \qquad +1 \\ \hline 18 = 2y \\ \frac{18}{2} = \frac{2y}{2} \rightarrow y = 9 \end{array}$$

$$LM = 6(8) - 13 = \boxed{35}$$



$$m\angle H = 9(9) + 17 = \boxed{98}$$