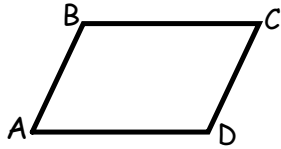


Notes 9-2 Parallel Lines - Numerical Problems:

Ex. 1 If $m\angle A = 100 + 3x$ and $m\angle B = 80 - 3x$, explain why $\overline{AD} \parallel \overline{BC}$



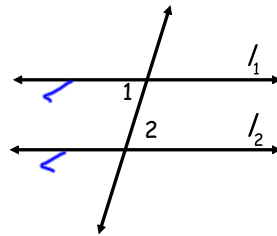
$$m\angle A + m\angle B$$

$$100 + 3x + 80 - 3x$$

$$180^\circ$$

$\overline{AD} \parallel \overline{BC}$ because the consecutive interior angles are supplementary.

Ex. 2 Given: $l_1 \parallel l_2$
 $m\angle 1 = 4x + 30$
 $m\angle 2 = 6x + 10$



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Find x and each angle.

$$x = 10$$

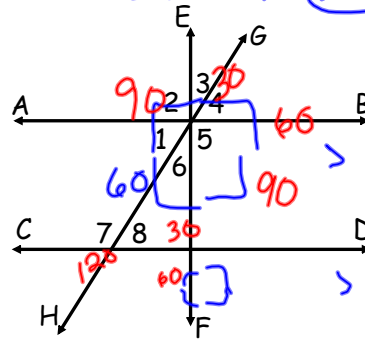
$$\angle 1 = 4(10) + 30 = 70$$

$$\angle 2 = 6(10) + 10 = 70$$

$$4x + 30 = 6x + 10$$

$$\begin{array}{r} -4x \quad -4x \\ \hline 30 = 2x + 10 \\ -10 \quad -10 \\ \hline 20 = 2x \quad (x = 10) \end{array}$$

Ex. 3 Given: $\overline{AB} \parallel \overline{CD}$
 $\overline{EF} \perp \overline{AB}$
 $\overline{EF} \perp \overline{CD}$
 $m\angle 1 = 60$



Find: $m\angle 1 - m\angle 8$

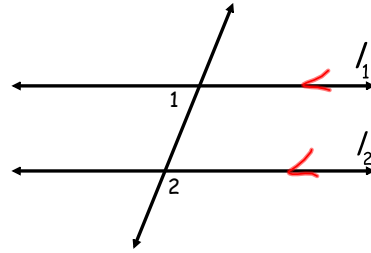
$$\angle 1 = 60 \quad \angle 5 = 90$$

$$\angle 2 = 90 \quad \angle 6 = 30$$

$$\angle 3 = 30 \quad \angle 7 = 120$$

$$\angle 4 = 60 \quad \angle 8 = 60$$

Ex. 4 Given: $l_1 \parallel l_2$
 $m\angle 1 = 4x - 15$
 $m\angle 2 = 2x + 45$



Find x and each angle.

$$m\angle 1 + m\angle 2 = 180$$

$$4x - 15 + 2x + 45 = 180$$

$$6x + 30 = 180$$

$$\begin{array}{r} -30 \\ -30 \end{array}$$

$$\hline 6x = 150$$

$$\boxed{x = 25}$$

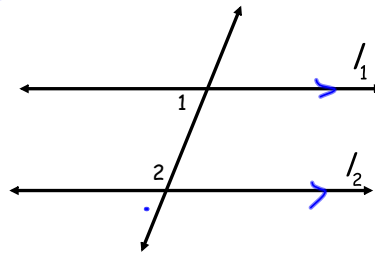
$$m\angle 1 = 4(25) - 15$$

$$100 - 15 = 85$$

$$m\angle 2 = 2(25) + 45$$

$$50 + 45 = 95$$

Ex. 5: Given: $l_1 \parallel l_2$
 $m\angle 1 = 4x + 10$
 $m\angle 2 = 6x + 20$



Find x and each angle.

$$4x + 10 + 6x + 20 = 180$$

$$10x + 30 = 180$$

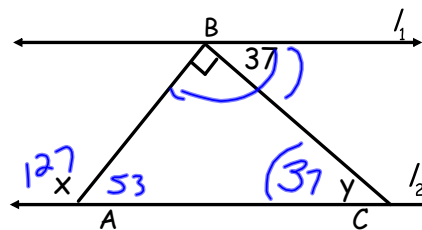
$$10x = 150$$

$$x = 15$$

$$m\angle 1 = 70$$

$$m\angle 2 = 110$$

Ex. 6 Given: $l_1 \parallel l_2$
 Find x and y



$$\begin{array}{r} 37 \\ 90 \\ \hline 127 \end{array}$$

$$\begin{array}{r} 180 \\ -127 \\ \hline 53 \end{array}$$