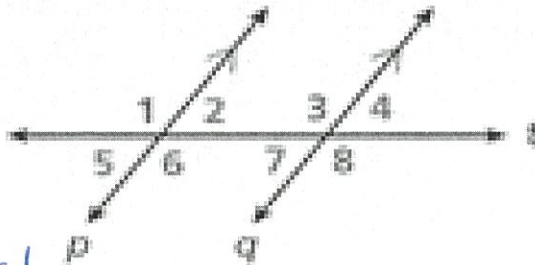


Angle Relationships: Postulates and Theorems



★ Lines are // →
 unique relationships!

<p>Corresponding Angles Postulate If <u>two parallel lines are cut by a transversal</u>, then the pairs of <u>corresponding angles are congruent</u>.</p>	<p>(4) $\angle 1 \cong \angle 3$ $\angle 5 \cong \angle 7$ $\angle 2 \cong \angle 4$ $\angle 6 \cong \angle 8$</p>
<p>Alternate Interior Angles Theorem If <u>two parallel lines are cut by a transversal</u>, then the two pairs of <u>alternate interior angles are congruent</u>.</p>	<p>$\angle 2 \cong \angle 7$ $\angle 6 \cong \angle 3$</p>
<p>Alternate Exterior Angles Theorem If <u>two parallel lines are cut by a transversal</u>, then the two pairs of <u>alternate exterior angles are congruent</u>.</p>	<p>$\angle 1 \cong \angle 8$ $\angle 5 \cong \angle 4$</p>
<p>Same-Side Interior Angles Theorem If <u>two parallel lines are cut by a transversal</u>, then the two pairs of <u>same-side interior angles are supplementary</u>.</p>	<p>$\angle 2 \text{ \& } \angle 3 \text{ are supp. } \angle s \rightarrow m\angle 2 + m\angle 3 = 180^\circ$ $\angle 6 \text{ \& } \angle 7 \text{ are supp. } \angle s \rightarrow m\angle 6 + m\angle 7 = 180^\circ$</p>

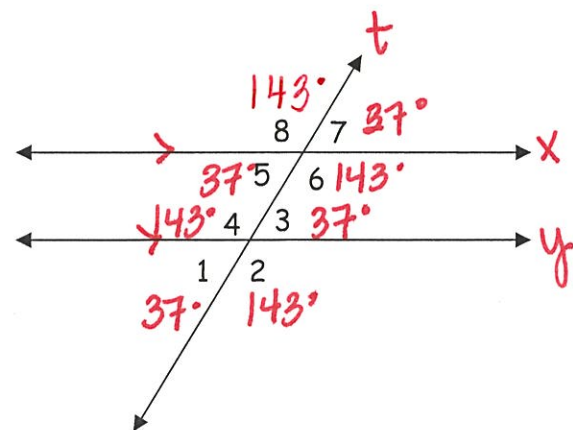
NOTE: If a transversal is perpendicular to two parallel lines, all eight angles are congruent.

All eight angles will measure: 90°

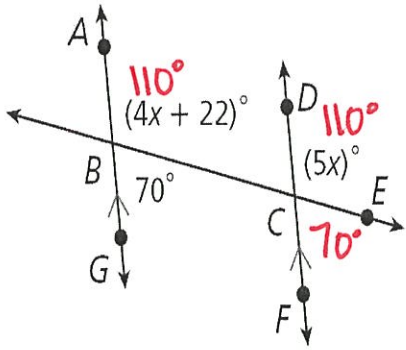
Example 1: Find each angle measure.

Given that $x \parallel y$ and $m\angle 3 = 37^\circ$, find the following:

- | | |
|---|---|
| $m\angle 1 =$ <u>37°</u> | $m\angle 5 =$ <u>37°</u> |
| $m\angle 2 =$ <u>143°</u> | $m\angle 6 =$ <u>143°</u> |
| $m\angle 4 =$ <u>143°</u> | $m\angle 7 =$ <u>37°</u> |
| | $m\angle 8 =$ <u>143°</u> |



Example 2: Find each angle measure.



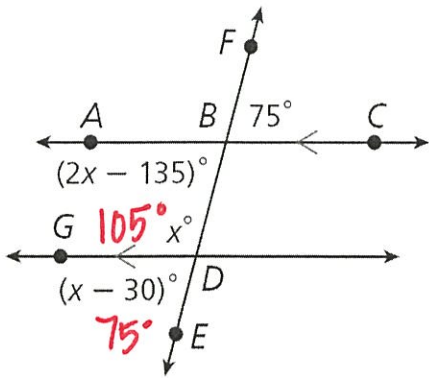
a. $m\angle ECF = \underline{70^\circ}$

b. $m\angle DCE = \underline{110^\circ}$

Corr. \angle s
 $4x + 22 = 5x$
 $22 = x$

Linear Pair
 $4x + 22 + 70 = 180$
 $4x + 92 = 180$
 $4x = 88$
 $x = 22$

Example 3: Find each angle measure.



a. $m\angle EDG = \underline{75^\circ}$

b. $m\angle BDG = \underline{105^\circ}$

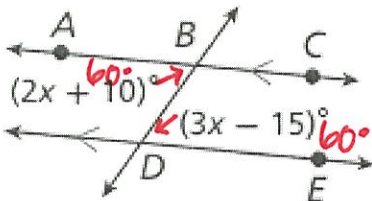
Corr. \angle s
 $2x - 135 = x - 30$
 $x - 135 = -30$
 $x = 105$

Vert \angle s
 $2x - 135 = 75$
 $2x = 210$
 $x = 105$

Same side int
 $2x - 135 + x = 180$
 $3x - 135 = 180$
 $3x = 315$
 $x = 105$

Linear Pair
 $x + x - 30 = 180$
 $2x - 30 = 180$
 $2x = 210$
 $x = 105$

Example 4: Find each angle measure.

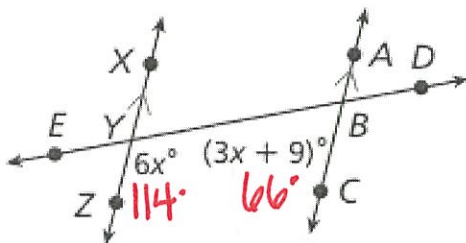


a. $m\angle EDB = \underline{60^\circ}$

b. $m\angle DBC = \underline{120^\circ}$

Alt. int. \angle s
 $2x + 10 = 3x - 15$
 $10 = x - 15$
 $25 = x$

Example 5: Find each angle measure.



a. $m\angle CBY = \underline{66^\circ}$

b. $m\angle EYX = \underline{114^\circ}$

c. $m\angle ZYE = \underline{66^\circ}$

Same side int.
 $6x + 3x + 9 = 180$
 $9x + 9 = 180$
 $9x = 171$
 $x = 19$