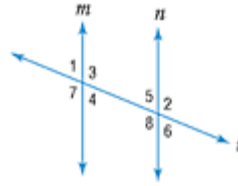


Lesson 10-1

Example 1 Find Measures of Angles

In the figure at the right, $m \parallel n$ and t is a transversal. If $m\angle 6 = 55^\circ$, find $m\angle 4$ and $m\angle 1$.



Since $\angle 6$ and $\angle 4$ are corresponding angles, they are congruent. So, $m\angle 4 = 55^\circ$.

Since $\angle 6$ and $\angle 1$ are alternate exterior angles, they are congruent. So, $m\angle 1 = 55^\circ$.

Example 2 Find a Missing Angle Measure

Multiple-Choice Test Item

If $m\angle D = 34^\circ$ and $\angle C$ and $\angle D$ are complementary, what is $m\angle C$?

- A. 146° B. 56° C. 34° D. 134°

Read the Test Item

Since $\angle C$ and $\angle D$ are complementary, $m\angle C + m\angle D = 90^\circ$.

Solve the Test Item

$$m\angle C + m\angle D = 90^\circ$$

$$m\angle C + 34^\circ = 90^\circ$$

$$m\angle C + 34^\circ - 34^\circ = 90^\circ - 34^\circ$$

$$m\angle C = 56^\circ$$

Complementary angles

Replace $m\angle D$ with 34° .

Subtract 34° from each side.

The answer is B.

Example 3 Find Measures of Angles

ALGEBRA Angles DEF and GHI are supplementary. If $m\angle DEF = x - 6$ and $m\angle GHI = 2x + 9$, find the measure of each angle.

Step 1 Find the value of x .

$m\angle DEF + m\angle GHI = 180^\circ$	Supplementary angles
$(x - 6) + (2x + 9) = 180^\circ$	Substitution
$3x + 3 = 180^\circ$	Combine like terms.
$3x = 177^\circ$	Subtract 3 from each side.
$x = 59^\circ$	Divide each side by 3.

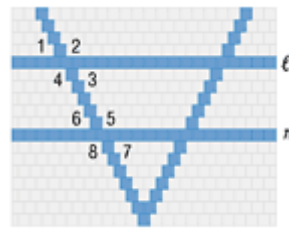
Step 2 Replace x with 59 to find the measure of each angle.

$m\angle DEF = x - 6$	$m\angle GHI = 2x + 9$
$= 59 - 6$ or 53	$= 2(59) + 9$ or 127

So, $m\angle DEF = 53^\circ$ and $m\angle GHI = 127^\circ$.

Example 4 Apply Angle Relationships

FLOORING A tile floor is being laid in a pattern as shown at the right. If $l \parallel m$ and $m\angle 2 = 98^\circ$, find $m\angle 8$ and $m\angle 6$.



Since $\angle 2$ and $\angle 8$ are alternate exterior angles, they are congruent. So, $m\angle 8 = 98^\circ$.

Since $\angle 8$ and $\angle 6$ are supplementary angles, the sum of their measures is 180° .
 $180 - 98 = 82$. So, $m\angle 6 = 82^\circ$.