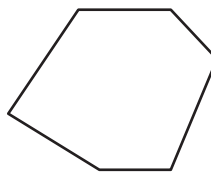


**Reteaching with Practice**

For use with pages 416–423

**GOAL** Find the measures of interior and exterior angles of polygons.**VOCABULARY****Theorem 8.1 Polygon Interior Angles Theorem**The sum of the measures of the interior angles of a convex polygon with  $n$  sides is  $(n - 2) \cdot 180^\circ$ .**Theorem 8.2 Polygon Exterior Angles Theorem**The sum of the measures of the exterior angles of a convex polygon, one angle at each vertex, is  $360^\circ$ .**EXAMPLE 1** *Use Polygon Interior Angles Theorem*

Find the sum of the measures of the interior angles of the polygon.

**SOLUTION**The polygon has six sides (hexagon). Use the Polygon Interior Angles Theorem and substitute 6 for  $n$ .

$$\begin{aligned} (n - 2) \cdot 180^\circ &= (6 - 2) \cdot 180^\circ && \text{Substitute 6 for } n. \\ &= 4 \cdot 180^\circ && \text{Simplify.} \\ &= 720^\circ && \text{Multiply.} \end{aligned}$$

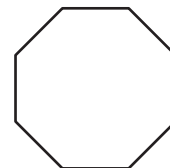
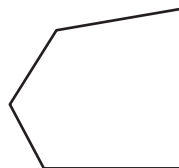
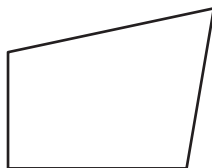
**Exercises for Example 1**

Find the sum of the measures of the interior angles of the polygon.

1. quadrilateral

2. pentagon

3. octagon



# Reteaching with Practice

For use with pages 416–423

## EXAMPLE 2 Find the Measure of an Interior Angle

Find the measure of  $\angle A$  in the diagram.

### SOLUTION

The polygon has five sides, so the sum of the measures of the interior angles is

$$(n - 2) \cdot 180^\circ = (5 - 2) \cdot 180^\circ = 3 \cdot 180^\circ = 540^\circ.$$

Add the measures of the interior angles and set the sum equal to  $540^\circ$ .

$$90^\circ + 135^\circ + 83^\circ + 96^\circ + m\angle A = 540^\circ$$

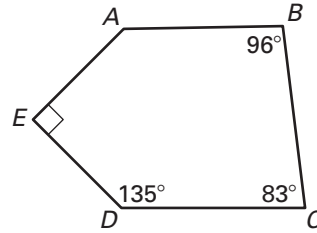
$$404^\circ + m\angle A = 540^\circ$$

$$m\angle A = 136^\circ$$

The sum is  $540^\circ$ .

Simplify.

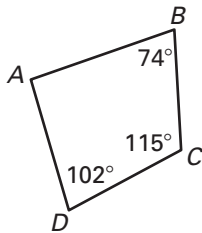
Subtract  $404^\circ$  from each side.



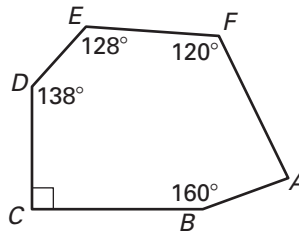
### Exercises for Example 2

Find the measure of  $\angle A$ .

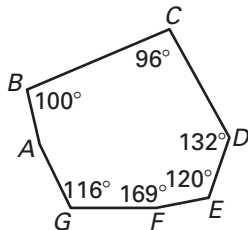
4.



5.



6.

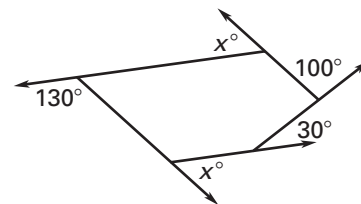


## Reteaching with Practice

For use with pages 416–423

### EXAMPLE 3 Find the Measure of an Exterior Angle

Find the value of  $x$ .



#### SOLUTION

Using the Polygon Exterior Angles Theorem, set the sum of the exterior angles equal to  $360^\circ$ .

$$130^\circ + x^\circ + 100^\circ + 30^\circ + x^\circ = 360^\circ$$

$$260 + 2x = 360$$

$$2x = 100$$

$$x = 50$$

Polygon Exterior Angles Theorem

Add like terms.

Subtract 260 from each side.

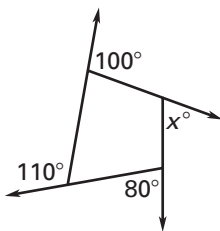
Divide each side by 2.

*Answer:* The value of  $x$  is 50.

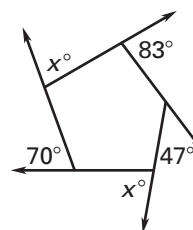
#### Exercises for Example 3

Find the value of  $x$ .

7.



8.



9.

