

# Assignment

## Write

Complete each statement with the correct term.

1. The \_\_\_\_\_ states that the sum of the measures of the exterior angles of a triangle is equal to  $180^\circ$ .
2. The sum of the measures of the \_\_\_\_\_ of a triangle is equal to the corresponding exterior angle.
3. A(n) \_\_\_\_\_ is a line drawn to help complete a proof.

## Remember

The sum of the measures of the interior angles of a triangle is equal to  $180^\circ$ , and the sum of the measures of the interior angles of a quadrilateral is equal to  $360^\circ$ .

For a polygon with  $n$  sides, the sum of the measures of the interior angles is equal to  $180(n - 2)$  degrees, and the sum of the measures of the exterior angles is equal to  $360^\circ$ .

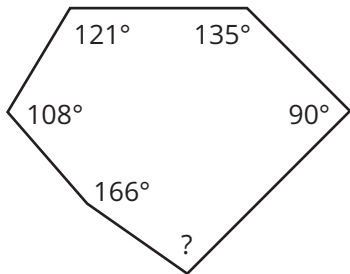
## Practice

1. Determine the measure of an interior angle of the given regular polygon.

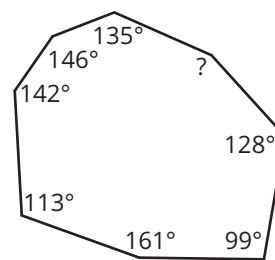
- |                    |                   |
|--------------------|-------------------|
| a. regular nonagon | b. regular 15-gon |
| c. regular decagon | d. regular 47-gon |

2. Determine the measure of the unknown angle in each figure.

a.



b.



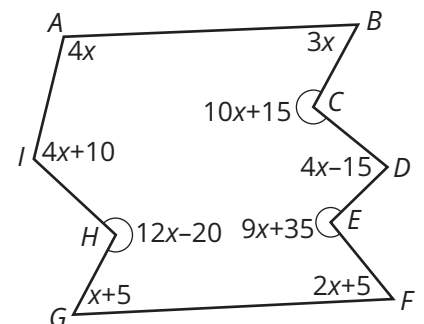
3. If a regular polygon has 30 sides, what is the measure of each exterior angle? Explain your reasoning.

4. The degree measure of each exterior angle of a regular octagon is represented by the expression  $7x - 4$ . Solve for  $x$ .

## Stretch

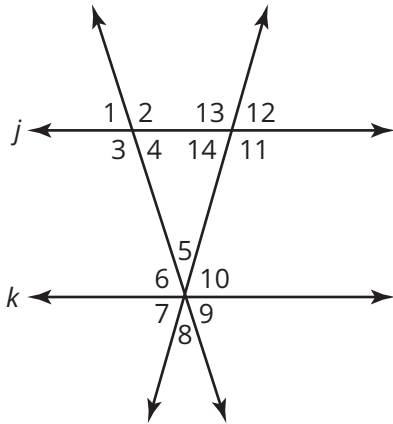
1. Consider the nonagon shown.

- a. Determine the value of  $x$ .
- b. Determine the value of all the interior angles of the nonagon.

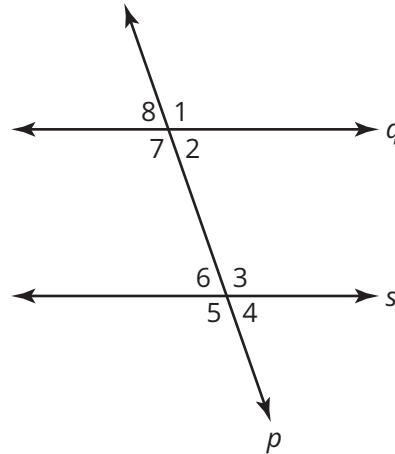


## Review

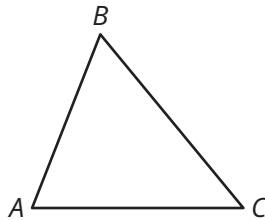
1. Given:  $\angle 12 \cong \angle 7$ ,  $m\angle 12 = 65^\circ$ ,  $m\angle 8 = 50^\circ$   
Using the diagram in conjunction with postulates and theorems, determine the measures of the unknown angles.



2. If  $\angle 1$  and  $\angle 4$  are supplementary, which theorem leads to the conclusion that  $q \parallel s$ ?



3. Write a conjecture about the angle measures of an equilateral triangle. Then, write the converse of the conjecture.
4. Use a compass and straightedge to construct the orthocenter of  $\triangle ABC$ .



5. Determine whether each pair of triangles is congruent. If so, state whether they are congruent by SSS, SAS, or ASA. If not, explain why.

