

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° .
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° , and the sum of the measures of the interior angles of a quadrilateral is equal to 360° .

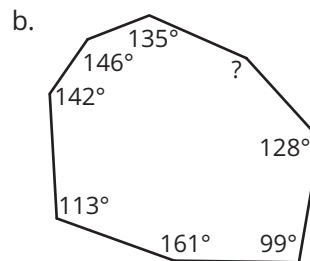
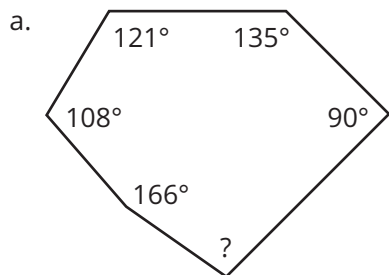
For a polygon with n sides, the sum of the measures of the interior angles is equal to $180(n - 2)$ degrees, and the sum of the measures of the exterior angles is equal to 360° .

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.



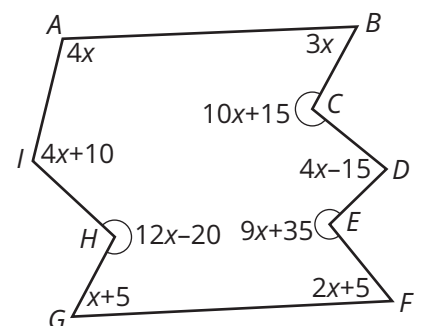
3. If a regular polygon has 30 sides, what is the measure of each exterior angle? Explain your reasoning.

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

Stretch

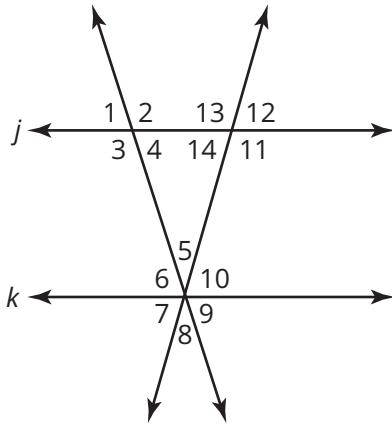
1. Consider the nonagon shown.

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

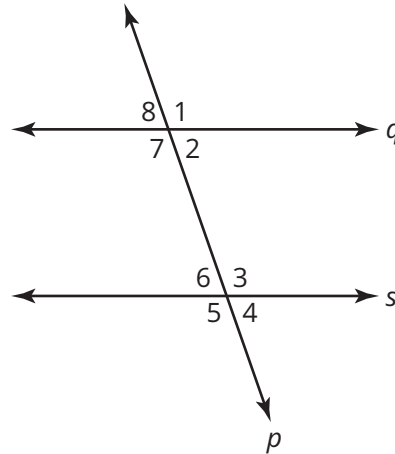


Review

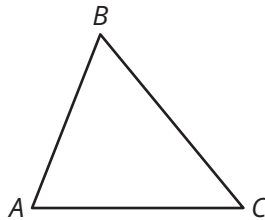
1. Given: $\angle 12 \cong \angle 7$, $m\angle 12 = 65^\circ$, $m\angle 8 = 50^\circ$
Using the diagram in conjunction with postulates and theorems, determine the measures of the unknown angles.



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.

