Calculate the measure of each interior angle of a decagon if each interior angle is congruent. How did you calculate your answer?

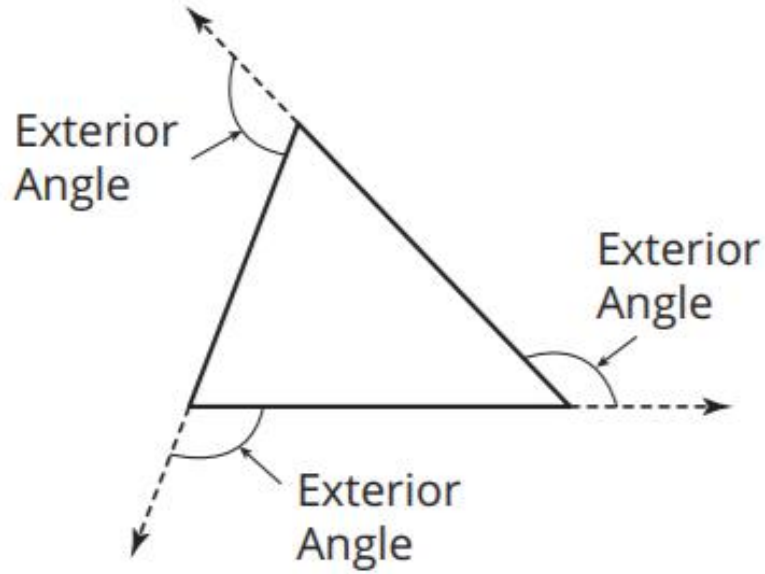
11. Complete the table.

Number of Sides of the Regular Polygon	3	4	5	6	7	8
Sum of the Measures of the Interior Angles						
Measure of Each Interior Angle						

12. If a regular polygon has n sides, write a formula to calculate the measure of each interior angle.

13. Use the formula to calculate the measure of each interior angle of a regular 100-sided polygon.

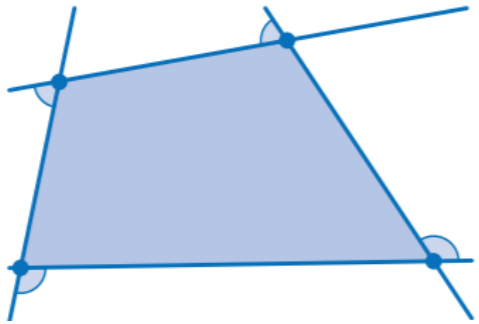
14. If the measure of each interior angle of a regular polygon is equal to 150°, determine the number of sides. How did you calculate your answer?



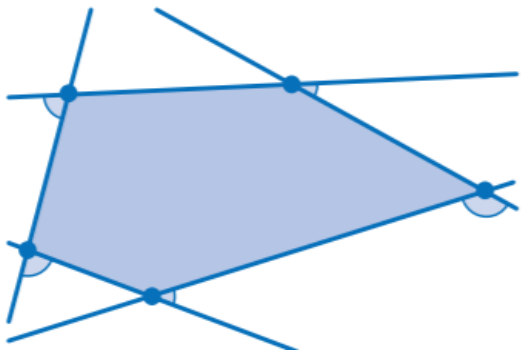
1. **Use the diagram, your formula for the sum of the measures of the interior angles of a polygon, and the Linear Pair Postulate to calculate the sum of the measures of the exterior angles of a triangle.**

2. Draw each polygon. Then calculate the sum of the measures of the exterior angles of each polygon by extending each side of the polygon to locate an exterior angle at each vertex. Complete the table for 3-, 4-, 5-, and 6-sided polygons.

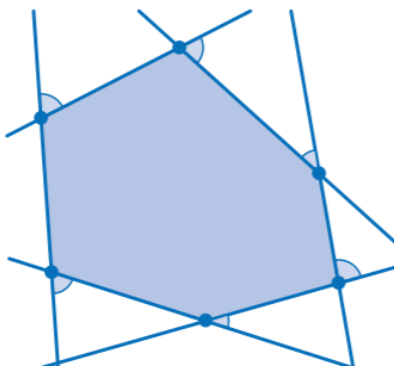
a. quadrilateral



b. pentagon



c. hexagon



Number of Sides of the Polygon	3	4	5	6	7	15
Number of Linear Pairs Formed						
Sum of the Measures of the Linear Pairs						
Sum of the Measures of the Interior Angles						
Sum of the Measures of the Exterior Angles						

3. **What patterns do you notice?**

4. **Make predictions about the sum of the measures of the exterior angles of 7- and 15-sided polygons. Complete the table in Question 2.**

5. **What is the sum of the measures of the exterior angles of an *n*-sided polygon?**

6. If the sum of the measures of the exterior angles of a polygon is 360°, how many sides does the polygon have? Explain your reasoning.

7. Calculate the measure of each angle and explain your reasoning.

   a. each exterior angle of an equilateral triangle

   b. each exterior angle of a square

   c. each exterior angle of a regular pentagon

d. each exterior angle of a regular hexagon

8. If the measure of each exterior angle of a regular polygon is 18°, how many sides does the polygon have? Explain how you calculated your answer.