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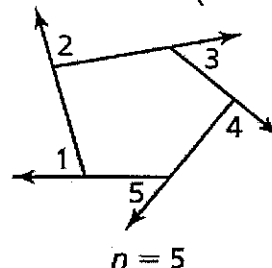
Period: 6

Exterior Angle Measures of Polygons

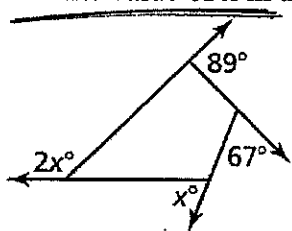
Lesson Objective INBAT derive and use formulas to find measures of exterior $\angle$ s of convex polygons.

Polygon Exterior Angles Theorem

The sum of the measures of the exterior angles of a convex polygon (one angle at each vertex), is 360° .

**Example:**

1. Find the value of x in the diagram.



$$x + 2x + 89 + 67 = 360$$

$$3x = 204$$

$$x = 68$$

Think About It... How could you find the measure of ONE exterior angle in a REGULAR polygon?

$$\frac{(n)(\text{ext. } \angle)}{n} = \frac{360}{n}$$

$$\text{ext. } \angle = \frac{360^\circ}{n}$$

Examples:

2. A trampoline shown is shaped like a regular dodecagon. $n = 12$

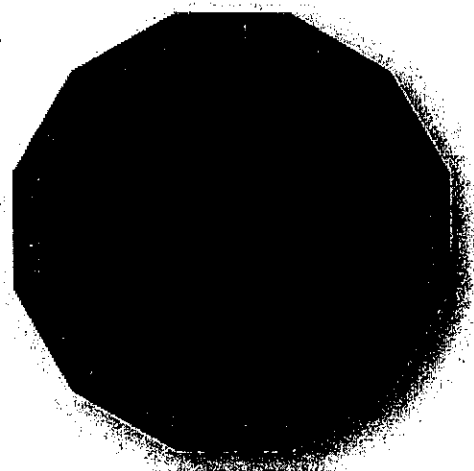
- a. Find the measure of each interior angle.



$$180 - 30 = 150^\circ$$

- b. Find the measure of each exterior angle.

$$\frac{360}{12} = 30^\circ$$



3. A convex hexagon has exterior angles with measures 34° , 49° , 58° , 67° , and 75° . What is the measure of an exterior angle at the sixth vertex?

6 angles

$$34^\circ + 49^\circ + 58^\circ + 67^\circ + 75^\circ + x = 360$$

$$x = 77^\circ$$

$$x = 77$$