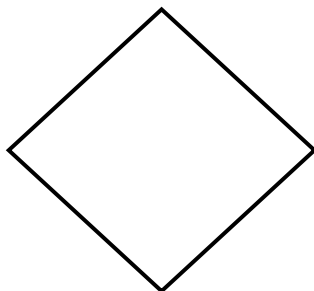# Notes: **EXTERIOR ANGLES OF POLYGONS**

> **Content Objective**: *I will be able to apply formulas for calculating both the measures of the exterior angles and their sum.*
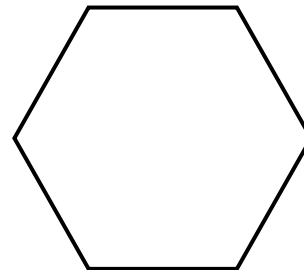
| TERM | DESCRIPTION | EXAMPLE |
|---|---|---|
| **EXTERIOR ANGLES** | Angles formed by a side of a polygon and the extension of an adjacent side. | |

**EXAMPLE 1:** *For each of the following polygons, draw an exterior angle from each vertex.*

a.

b.

How does the number of exterior angles compare to the number of sides of the polygon?

_____

- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -

> **The sum of the measures of the EXTERIOR angles of a convex polygon with n sides is:**
>
> $$m\angle 1 + m\angle 2 + ... + m\angle n \ = \ \text{_____}^{\circ}$$

**EXAMPLE 2:** *Find the SUM of the measures of the EXTERIOR angles of an undecagon.*

Sum of exterior angles = _____ °

> **The measure of EACH exterior angle of a regular polygon with n sides is:**

**EXAMPLE 3:** *Find the measure of ONE EXTERIOR ANGLE of a regular undecagon.*

Measure of exterior angle = _____ °

**EXAMPLE 4:** *Determine the angle measures of regular polygons.*

|  |  | Interior Angles | | Exterior Angles | |
|---|---|---|---|---|---|
|  |  | *Sum of the interior angles* | *Measure of each interior angle* | *Sum of the exterior angles* | *Measure of each exterior angle* |
| *a.* | Nonagon |  |  |  |  |
| *b.* | Decagon |  |  |  |  |
| *c.* | Dodecagon |  |  |  |  |

**EXAMPLE 5:** The measure of an exterior angle of a regular polygon is 30°.
Find the number of sides.

Number of sides = _____