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Interior and Exterior Angles are a linear pair (they add to 180/are supplementary).

\[ \text{Interior Angle} + \text{Exterior Angle} = 180^\circ \]

**Example**

\[ \begin{align*}
180^\circ - 70^\circ &= 110^\circ \\
\angle LKM &= 60^\circ \\
m\angle LKN &= 120^\circ
\end{align*} \]
Example

Is $\angle y$ an interior or exterior angle? \underline{Exterior}

Is $\angle j$ an interior or exterior angle? \underline{Interior}

$m\angle y = \frac{125}{120}$

$m\angle j = \frac{125}{120}$
**YOU HAVE TO MEMORIZE THIS!**

**SUM of Interior Angles:**

\[ = (n - 2) \cdot 180^\circ \]

\( n = \text{number of sides} \)

1. What is the sum of the interior angles of an octagon?

\[(8-2) \times 180 = 1080\]

2. What is the sum of the interior angles of a 30-gon?

\[(30-2) \times 180 = 5040\]
3. What is the measure of the missing angle?

\[(6-2) \times 180 = 720\]
\[x + 99 + 141 + 105 + 156 + 80 = 720\]
\[x = 139\]

4. What is the measure of the missing angle in the polygon shown?

\[(5-2) \times 180 = 540\]
\[x + 92 + 105 + 93 + 102 = 540\]
\[x = 148\]

A. 172°  B. 78°  C. 108°  D. 148°
5. What is the value of $x$?

\[(\text{angles}) + (\text{angles}) + (\text{angles}) = 360°\]

\[127° + 5x + 3° + 88° + 10x + 7° = 360°\]

\[x = 9\]

6. Solve for $x$. Then find the measure of $\angle F$.

\[\text{Inner angles of hexagon} + (7-2)\times180 = 900°\]

\[S(25\cdot 126) - 6 = 124°\]

\[x = 26\]

$m\angle F = 124°$
ONE Interior Angle in a REGULAR polygon:

all sides/angles are congruent

\[ = \frac{(n-2) \cdot 180}{n} \]

Example:
7. What is the measure of an interior angle in a regular hexagon?
A. 135°  B. 120°  C. 720°  D. 60°

\[ 120 = \frac{(6-2) \cdot 180}{6} \]
8. The polygon shown is regular.

\[
\frac{(8-2) \times 180}{8} = \frac{1080}{8} = 135^\circ
\]

What is the measure of one of its interior angles?

A. 135°  
B. 1080°  
C. 80°  
D. 140°

9. Solve for \( x \).

\[
10x + 8x - 16 + 12x - 8 + 7x + 2 + 9x + 4 + 6x + 10 = 720
\]

\[
x = 14
\]
10. ABCDE is a regular pentagon. 

\[
\frac{(5-2) \times 180}{5} = 108
\]

What is \( m\angle ABC \) ?
A. 540°  B. 108°  C. 120°  D. 324°

11. Find \( m\angle B \).

\[
X + 130 + 130 + 90 + 90 = 540
\]

\[
X = 100
\]

A. 130°  B. 108°  C. 100°  D. 230°
**YOU HAVE TO MEMORIZE THIS!**

**SUM of EXTERIOR Angles:**

\[ = 360^\circ \]

*The number of sides does NOT matter!!*

Example:

1. Find the sum of the exterior angles of an icosagon.  
   \[ \text{20-gon} \]
   \[ 360 \]
2. Find the sum of the exterior angles of the polygon shown below.

\[
\text{Sum} = 360
\]

3. Find value of x.

\[
\begin{align*}
180 - 105 &= 75 \\
180 - 70 &= 110 \\
360 - 110 - 90 - 75 &= 85 \\
180 - 85 &= 95 = x
\end{align*}
\]

\[x = 95\]

4. Find value of x.

\[
\begin{align*}
65 + 115 + 92 + 101 &= 373 \\
79 + 100 + 132 + 48 &= 361 \\
(5 - 2) \times 180 &= 540 \\
180 - 79 &= 101 \\
180 - 65 &= 115 \\
540 - 92 - 115 - 101 - 132 &= 102 \\
180 - 100 &= 80 \\
x &= 80
\end{align*}
\]
5. What is the value of $x$?

\[ 180 - 55 = 125 \]
\[(8 - 2) \times 180 = 1080 \]

A. 1080°  B. 105°  C. 135°  D. 175°

6. Find $m \angle D$.

\[(5 - 2) \times 180 = 540° \]
\[2x + 76 + 90 + 90 = 540 \]
\[x = 142° \]

A. 108°  B. 142°  C. 284°  D. 540°