

LESSON 1: EXTERIOR ANGLE INEQUALITY THEOREM



I. OBJECTIVES

The learner illustrates theorems on triangle inequalities (**Exterior Angle Inequality Theorem**, **Triangle Inequality Theorem**, **Hinge Theorem**). **M8GE-IVa-1**



II. LESSON

Interior angles of a triangle are the angles inside it.

Interior Angles: $\angle 1$ or $\angle A$, $\angle 2$ or $\angle B$ and $\angle 3$ or $\angle ACB$

An **exterior angle** of a triangle is an angle which is adjacent and supplementary to one of the interior angles of a triangle.

Exterior Angle: $\angle 4$ or $\angle ACD$

Adjacent interior angle is the interior angle that forms a linear pair with the exterior angle.

Adjacent Interior Angle: $\angle 3$ or $\angle ACB$

Remote interior angles (non-adjacent interior angles) of a triangle are the angles not adjacent to the given exterior angle.

Remote Interior Angles: $\angle 1$ or $\angle A$ and $\angle 2$ or $\angle B$

Exterior Angle Theorem states that the measure of each exterior angle of a triangle equals the sum of the measures of its two remote interior angles.

$$m\angle 4 = m\angle 1 + m\angle 2$$

$$125^\circ = 65^\circ + 60^\circ$$

$$125^\circ = 125^\circ$$

The **exterior angle of a triangle** is always greater than any of its two remote interior angles or non-adjacent interior angles.

$$\angle 4 > \angle 1$$

$$125^\circ > 65^\circ$$

$$\angle 4 > \angle 2$$

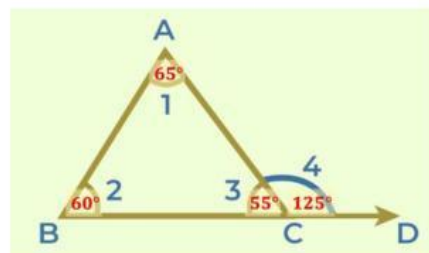
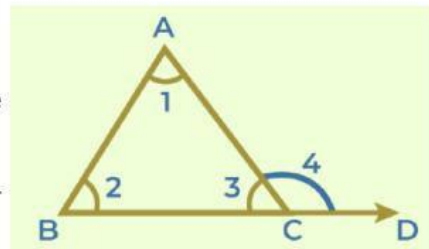
$$125^\circ > 60^\circ$$

Exterior Angle Inequality Theorem states that the measure of each exterior angle of a triangle is greater than the measure of either of its remote interior angles.

The **exterior angle of a triangle** is linear pair with its adjacent interior angle. This means that the exterior angle of a triangle and its adjacent interior angle are supplementary.

$$\angle 4 + \angle 3 = 180^\circ$$

$$125^\circ + 55^\circ = 180^\circ$$



III. ACTIVITY

I. Given the $\triangle ENI$, answer the following questions.

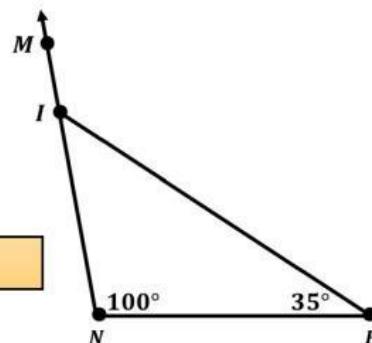
1. Name the exterior angle.

2. Name the adjacent interior angle.

3. Name the two remote interior angles.

4. What is the $m\angle MIE$?

5. What is the $m\angle NIE$?



II. Given the $\triangle ENI$, use $>$, $<$ or $=$ to compare the measures of angles.

$m\angle N$		$m\angle E$
$m\angle E$		$m\angle N$
$m\angle N + m\angle E$		$m\angle MIE$
$m\angle MIE$		$m\angle N$
$m\angle E$		$m\angle MIE$

HOW DO YOU FEEL ABOUT
TODAY'S LESSON?



I NEED MORE HELP!

I'M GETTING IT!

I GOT IT!



-MTSC-