NAME: _____ SECTION: _____

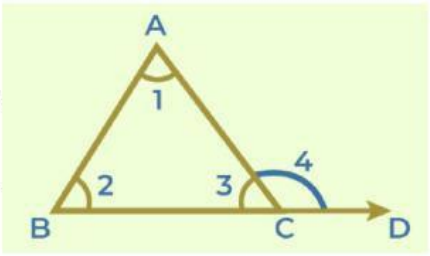
LESSON 1: EXTERIOR ANGLE INEQUALITY THEOREM

I. OBJECTIVES

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

II. LESSON

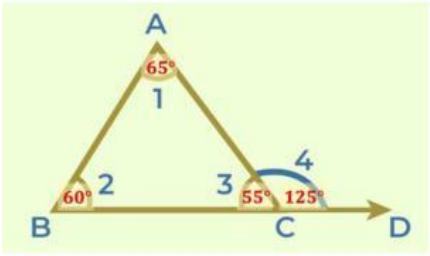
Interior angles of a triangle are the angles inside it.
Interior Angles: $\angle 1$ or $\angle A$, $\angle 2$ or $\angle B$ and $\angle 3$ or $\angle ACB$



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.

$$m\angle 4 = m\angle 1 + m\angle 2$$
$$125° = 65° + 60°$$
$$125° = 125°$$

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

$$\angle 4 > \angle 1 \qquad \angle 4 > \angle 2$$
$$125° > 65° \qquad 125° > 60°$$

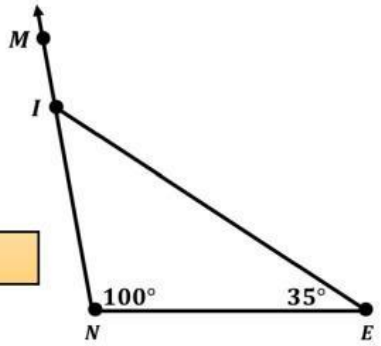
Exterior Angle Inequality Theorem states that the measure of each exterior angle of a triangle is greater than the measure of either of its remote interior angles.

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.

$$\angle 4 + \angle 3 = 180°$$
$$125° + 55° = 180°$$

III. ACTIVITY

I. Given the ΔENI, 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 ΔENI, use $>$, $<$ or $=$ to compare the measures of angles.

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