NAME: _____ SECTION: _____

LESSON 3: TRIANGLE INEQUALITY THEOREM

I. OBJECTIVES

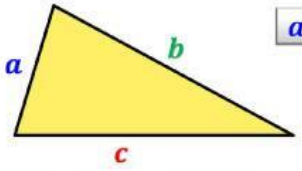
The learner illustrates theorems on triangle inequalities (Exterior Angle Inequality Theorem, Triangle Inequality Theorem, Hinge Theorem). ***M8GE-IVa-1***

- The learner investigates the relationship between the sum of any two sides and the remaining sides in a triangle.

II. LESSON

TRIANGLE INEQUALITY THEOREM

The sum of the lengths of any two sides of a triangle is greater than the length of the third side.

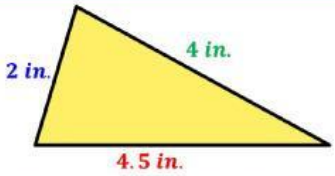


$a + b > c$

$a + c > b$

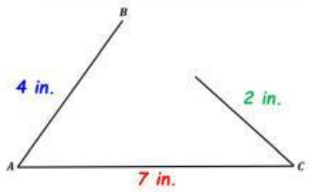
$b + c > a$

Remember: To form a triangle, make sure that the sum of the lengths of any two sides of a triangle is greater than the length of the third side.



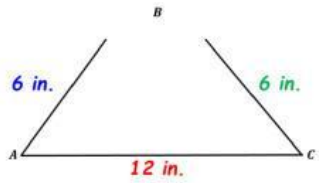
$a + b > c$	$a + c > b$	$b + c > a$
$2 + 4 > 4.5$	$2 + 4.5 > 4$	$4 + 4.5 > 2$
$6 > 4.5$ ✓	$6.5 > 4$ ✓	$8 > 2$ ✓

Remember: If the sum of the lengths of the two shorter side is less than the length of the longest side, then you will not form a triangle.



$AB + BC > AC$	$4 + 2 > 7$	$6 > 7$ ✗
$AB + AC > BC$	$4 + 7 > 2$	$11 > 2$ ✓
$BC + AC > AB$	$2 + 7 > 4$	$9 > 4$ ✓

Remember: If the sum of the lengths of the two shorter side is less than the length of the longest side, then you will not form a triangle.



$AB + BC > AC$	$6 + 6 > 12$	$12 > 12$ ✗
$AB + AC > BC$	$6 + 12 > 6$	$18 > 6$ ✓
$BC + AC > AB$	$6 + 12 > 6$	$18 > 6$ ✓

III. ACTIVITY

I. Which of the following measures could be the lengths of the sides of a triangle? Select YES if it will form a triangle and NO if it will not form a triangle.

1. $8\ in., 8\ in., 8\ in.$ ☐
2. $5\ in., 3\ in., 2\ in.$ ☐
3. $7\ in., 4\ in., 6\ in.$ ☐
4. $11\ cm., 15\ cm., 5\ cm.$ ☐
5. $7\ cm., 12\ cm., 17\ cm.$ ☐

II. Which of the following measures could be the length of the third side (x) of the triangle? Select $(/)$ if it could be the measure of the third side and (X) if not.

Given: $12\ cm, 8\ cm, x$

1. $3\ cm$ ☐
2. $4\ cm$ ☐
3. $6\ cm$ ☐
4. $7\ cm$ ☐
5. $10\ cm$ ☐



LIVEWORKSHEETS