

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**

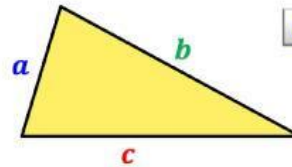
- The learner investigates the relationship between the sum of any two sides and the remaining sides in a triangle.



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.

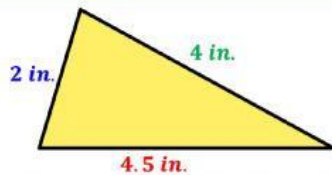


$$a + b > c$$

$$a + c > b$$

$$b + c > a$$

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.



$$a + b > c$$

$$2 + 4 > 4.5$$

$$6 > 4.5 \quad \checkmark$$

$$a + c > b$$

$$2 + 4.5 > 4$$

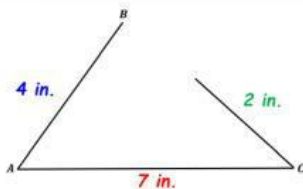
$$6.5 > 4 \quad \checkmark$$

$$b + c > a$$

$$4 + 4.5 > 2$$

$$8 > 2 \quad \checkmark$$

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.



$$AB + BC > AC$$

$$4 + 2 > 7$$

$$6 > 7 \quad \times$$

$$AB + AC > BC$$

$$4 + 7 > 2$$

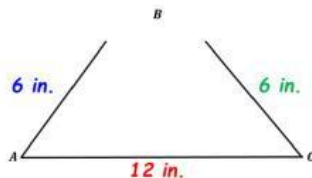
$$11 > 2 \quad \checkmark$$

$$BC + AC > AB$$

$$2 + 7 > 4$$

$$9 > 4 \quad \checkmark$$

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.



$$AB + BC > AC$$

$$6 + 6 > 12$$

$$12 > 12 \quad \times$$

$$AB + AC > BC$$

$$6 + 12 > 6$$

$$18 > 6 \quad \checkmark$$

$$BC + AC > AB$$

$$6 + 12 > 6$$

$$18 > 6 \quad \checkmark$$



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.

4. 11 cm., 15 cm., 5 cm.

2. 5 in., 3 in., 2 in.

5. 7 cm., 12 cm., 17 cm.

3. 7 in., 4 in., 6 in.

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

4. 7 cm

2. 4 cm

5. 10 cm

3. 6 cm



I NEED MORE HELP!

I'M GETTING IT!

I GOT IT!



-MTSC-