**Triangle Inequality Theorem**

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

2. Determine if the given side lengths form a triangle.

a) 4, 5, 10 b) 4, 5, 9 c) 4, 5, 7

The Triangle Inequality Theorem states that the sum of the lengths of any two sides of a triangle is greater than the length of the third side. Using this theorem, answer the following questions.

3. If two sides of a triangle are 1 and 3, the third side may be:

(a) 5 (b) 2 (c) 3 (d) 4

4. If the lengths of two sides of a triangle are 5 and 7, the length of the third side may ***not*** be:

(a) 12 (b) 7 (c) 3 (d) 5

5. Which set of numbers may represent the lengths of the sides of a triangle?

(a) {2,5,9} (b) {6,6,7} (c) {6,4,2} (d) {7,8,1}

6. If the lengths of two sides of a triangle are 4 and 10, which could be the length of the third side?

(a) 6 (b) 8 (c) 14 (d) 16

7. If the lengths of two sides of a triangle measure 7 and 12, the length of the third side could measure:

(a) 16 (b) 19 (c) 3 (d) 5

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8. If the lengths of two sides of a triangle are 10 and 14, the length of the third side may be:

(a) 22 (b) 2 (c) 24 (d) 4

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