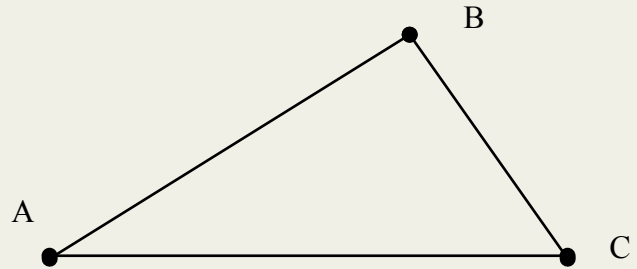# 5.5 Triangle Inequality

G.T.6 Triangle Inequality

Triangle Inequality Theorem: The sum of the lengths of any two sides of a triangle must be greater than the length of the third side.

$$\overline{AB} + \overline{BC} > \overline{AC}$$

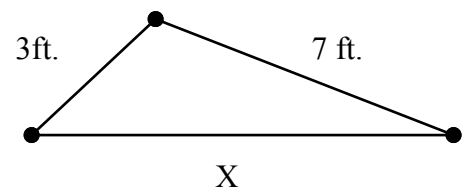$$\overline{BC} + \overline{AC} > \overline{AB}$$

$$\overline{AC} + \overline{AB} > \overline{BC}$$

Example 1 Is it possible to form a triangle with the given lengths?   Explain.

   a. 8, 9, 12

   b. 6, 8, 14

   c. 6.5 cm, 6.5 cm, 14.5 cm

Example 2: If the measures of two sides of a triangle are 3 feet and 7 feet, which is the least possible whole number measure for the third side?

3ft.   7 ft.

X

Example 3: Find the range for the measures of the third side of a triangle given the measures of two sides.

   a.   5ft., 9 ft.
   b.   8m, 13m
   c.   15 km, 27 km