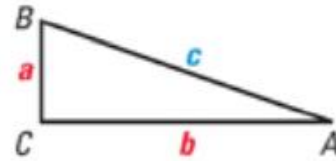# 7.2 Use the Converse of the Pythagorean Theorem

THEOREM 7.2 Converse of the Pythagorean Theorem

If the square of the length of the longest side
of a triangle is equal to the sum of the squares
of the lengths of the other two sides, then the
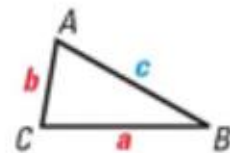triangle is a right triangle.

If $c^2 = a^2 + b^2$, then $\triangle ABC$ is a right triangle.

THEOREM 7.3

If the square of the length of the longest side of a triangle
is less than the sum of the squares of the lengths of the
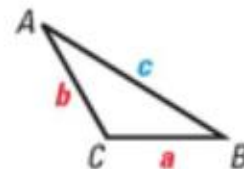other two sides, then the triangle is an acute triangle.

If $c^2 < a^2 + b^2$, then the triangle is acute.
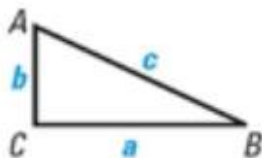
THEOREM 7.4

If the square of the length of the longest side of a
triangle is greater than the sum of the squares of the
lengths of the other two sides, then the triangle is
an obtuse triangle.
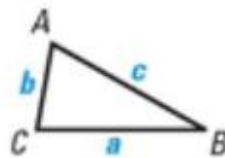
If $c^2 > a^2 + b^2$, then triangle ABC is obtuse.

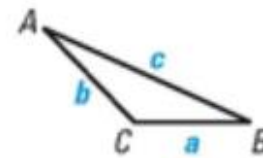## Methods for Classifying a Triangle by Angles Using its Side Lengths

Theorem 7.2	Theorem 7.3	Theorem 7.4
If $c^2 = a^2 + b^2$, then $m\angle C = 90°$ and $\triangle ABC$ is a right triangle.	If $c^2 < a^2 + b^2$, then $m\angle C < 90°$ and $\triangle ABC$ is an acute triangle.	If $c^2 > a^2 + b^2$, then $m\angle C > 90°$ and $\triangle ABC$ is an obtuse triangle.