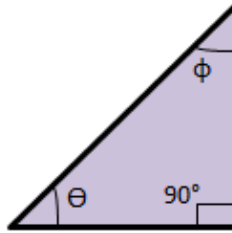


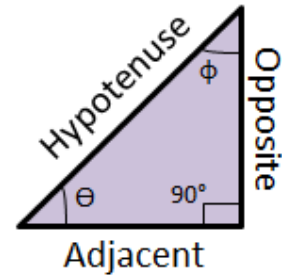
The Pythagorean Theorem and Its Converse Guide Notes

A **Right-angled triangle (named as right triangle)** is a triangle which has one of its angles equal to 90 degrees.



There are properties associated with a right triangle.

- A **hypotenuse** is the line segment opposite to the right-angle.
- An **opposite** is the line segment opposite to the angle θ .
- An **adjacent** is the line segment next to the angle θ .
- The sum of three angles is 180°
i.e. $\theta + \phi + 90^\circ = 180^\circ$



Pythagorean Theorem

In a right-triangle, the sum of the squares of the lengths of adjacent and opposite is equal to the square of the length of hypotenuse.

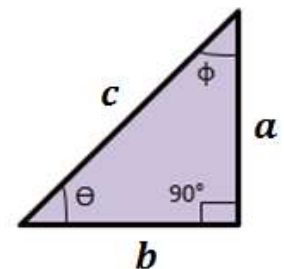
$$c^2 = a^2 + b^2$$

Where,

$c = \text{Hypotenuse}$

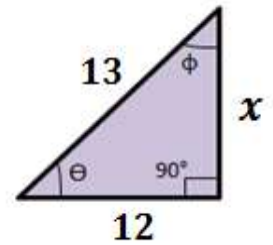
$a = \text{Opposite}$

$b = \text{Adjacent}$



The Pythagorean Theorem and Its Converse Guide Notes

Problem 1: Find the unknown length x in the right triangle shown.



Converse of Pythagorean Theorem

If the sum of the squares of the lengths of adjacent and opposite is equal to the square of the length of hypotenuse, then the triangle is a right triangle.

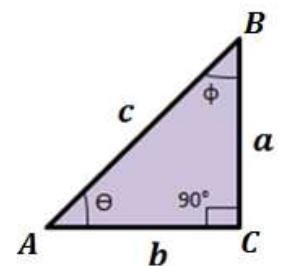


Where,

$c = \text{Hypotenuse}$

$a = \text{Opposite}$

$b = \text{Adjacent}$



The Pythagorean Theorem and Its Converse Guide Notes

Problem 2: Identify if the triangle shown is a right triangle or not.

