Math Notes

Pythagoras' Theorem

Right-angled Triangles and their sides

- The longest side is called the hypotenuse.
- The hypotenuse is labelled c.
- The other sides are the base and height.
- Label the other sides a and b. Whichever side is labelled a or b does not matter.

Pythagoras' Theorem

- It can only be applied to right-angled triangles.
- It will refer to the sides, a, b and c
- It can be used to find a side of the triangle given two other sides of the triangle.
- Values may not necessarily be integer values.
- $a^2 + b^2 = c^2$
- Example #1) Finding Hypotenuse
  By Pythagoras' theorem,
  $a^2 + b^2 = c^2$
  $5^2 + 12^2 = c^2$
  $25 + 144 = c^2$
  $c^2 = 169$
  $c = \pm 13$
  Since length cannot be negative, $c = 13$.
- Example #2) Finding Side
  By Pythagoras' theorem,
  $a^2 + b^2 = c^2$
  $a^2 + 4^2 = 5^2$
  $a^2 = 5^2 - 4^2$
  $a^2 = 25 - 16$
  $a^2 = 9$
  $a = \pm 3$
  Since length cannot be negative, $a = 3$