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Nowadays, Pythagoras’ Theorem is very important and useful because it is the basic learning of calculating the length of a triangle and this can help us to more flexible to make use in mathematics, so this is a ignorant learning course.

Sometimes, at first, if you cannot calculate the length of a triangle, you cannot continue to calculate the answer at last.

So Pythagoras’ Theorem is quite affect you in the mathematics question! So now we introduce Pythagoras’ Theorem in more detail.
He was a Greek philosopher responsible for important developments in mathematics, astronomy and the theory of music. He left Samos because of the tyrant who ruled there and went to southern Italy about 532 BC. He founded a philosophical and religious school in Croton that had many followers.
Hypotenuse

- it is the side opposite to the right angle

For any right-angled triangle, c is the length of the hypotenuse a and b are the length of the other 2 sides, then

\[ c^2 = a^2 + b^2 \]
To guess the relationship among the hypotenuse and the two sides

\[ a = 3 \]
\[ b = 4 \]
\[ c = 5 \]

\[ a^2 = 9 \]
\[ b^2 = 16 \]
\[ c^2 = 25 \]

So, we guess that

\[ a^2 + b^2 = c^2 \]
1. Find the value of $a$

Solution:

$$a^2 = 5^2 + 12^2$$  \[\text{(Pythagoras' Theorem)}\]

$$a = \sqrt{5^2 + 12^2}$$

$$a^2 = 169$$

$$= 13$$
Example 1. Find the length of AC

Solution:

\[ AC^2 = 12^2 + 16^2 \]
\[ AC^2 = 144 + 256 \]
\[ AC^2 = 400 \]
\[ AC = 20 \]
Example 2. Find the length of QR

Solution:

\[ 25^2 = 24^2 + QR^2 \]

\[ QR^2 = 625 - 576 \]

\[ QR^2 = 49 \]

\[ QR = 7 \]
Susan, who is 12m tall, is flying a kite at a distance of 160m from a tree. He has released a string of 200m long and the kite is vertically above the tree. Find the height of the kite above the ground.