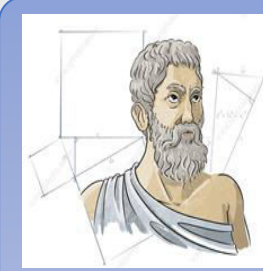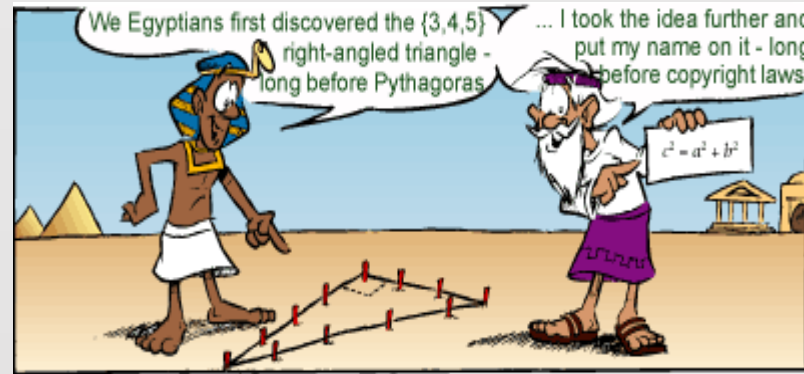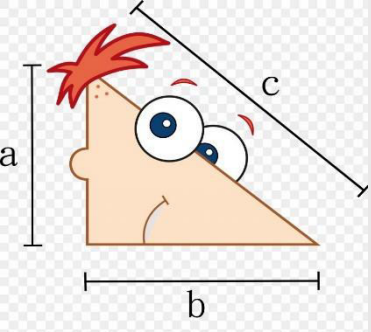# PYTHAGORAS THEOREM

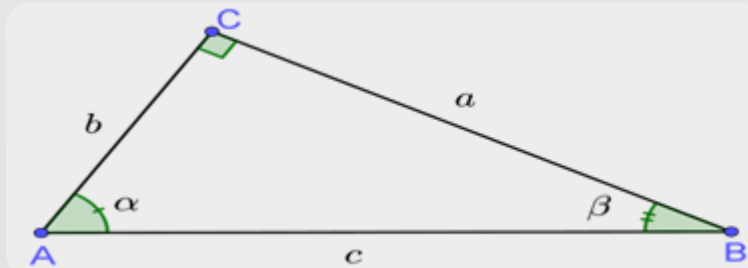"*In a right-angled triangle, the square of the hypotenuse side is equal to the sum of squares of the other two sides*".

We Egyptians first discovered the {3,4,5} right-angled triangle - long before Pythagoras

... I took the idea further and put my name on it - long before copyright laws!

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

Using Trigonometry

Pythagoras With Fun

In Triangle ABC

$\text{Cos}(\alpha) = \dfrac{b}{c}$ and $\text{Sin}(\alpha) = \dfrac{a}{c}$

Now,

$$cos^2(\alpha) + sin^2(\alpha) = 1$$

$$\left(\dfrac{b}{c}\right)^2 + \left(\dfrac{a}{c}\right)^2 = 1$$

$$\dfrac{b^2}{c^2} + \dfrac{a^2}{c^2} = 1$$

$$\dfrac{b^2 + a^2}{c^2} = 1$$

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

M.Sc Part -1
Mathematics
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