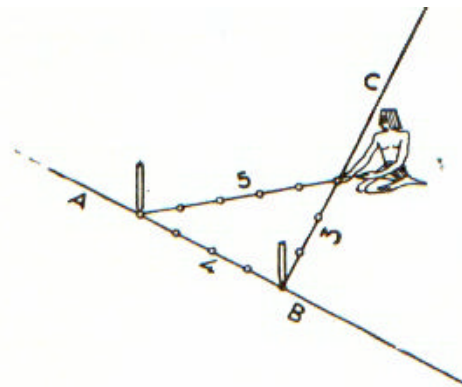


## A CURIOUS DEMONSTRATION

**Pythagorean triples** are sets of three natural numbers that verify the **Pythagorean Theorem**. One of the most well-known is the one formed by the numbers **3, 4 and 5**. Indeed, it is fulfilled that:

$$3^2 + 4^2 = 5^2$$

Surely that this result is familiar to you and probably you have also heard sometimes saying that **the Old Egyptians** already knew, many years before Pythagoras, that **a triangle of sides 3, 4 and 5 units was a rectangle**. It is possible to be verified by analyzing the method used by their surveyors to draw up perpendiculars, when they had to reconstruct the limits of their lands after the annual flooding of the Nile. With a rope with knots, arranged as it is indicated in the figure, they knew that in the resulting triangle, of sides 3, 4 and 5 units, the angle formed by the sides of length 3 and 4, was rectangle:



How interesting it is the triple 3, 4, 5! Let us continue investigating. What would happen if we now take four numbers in a row, **3, 4, 5 and 6**? What a surprise! Look what I have noticed:

$$3^3 + 4^3 + 5^3 = 6^3$$

✍ **Check**, using the calculator, the previous relation.

**P** We can provide a geometric interpretation to this relation: the sum of the volumes of three cubes of respective edges 3, 4 and 5 units is equal to the volume of a cube of edge 6 units.; **use** the small cubes to verify this geometric relation.