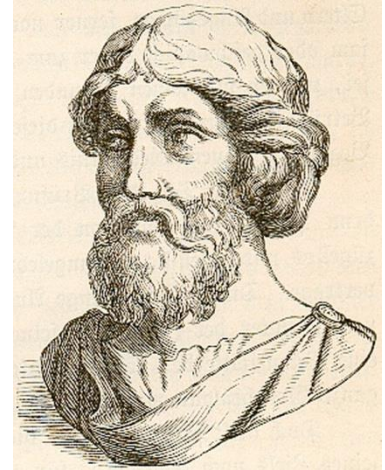


Student name: \_\_\_\_\_

**Pythagoras** was born on the island of Samos (Greece) in 569 BC. His father, Mnesarchus, was a merchant and his mother Pythais, was a native of Samos. Young Pythagoras spent most of his early years in Samos but travelled to many places with his father. He was intelligent and well-educated. Pythagoras was also fond of poetry.

Pythagoras also made important discoveries in music, astronomy and medicine, and created the Pythagorean Academy, but he is remembered today for his famous theorem in geometry, the '**Pythagoras Theorem**'.

Pythagoras married Theano.



**Theano** was the first female mathematician in history. She was born in Crotona (Greece in c.VI BC). Her father was Midon, a very rich man who sent Theano to study with Pythagoras.

Theano wrote about Mathematics, Physics and Medicine, but her most important contribution was the theorem about the **Golden Proportion**, that you will study next course.

When Pythagoras died due to a rebellion that destroyed the Academy, Theano and her daughters spread the mathematical knowledge of the Academy throughout Greece and Egypt.

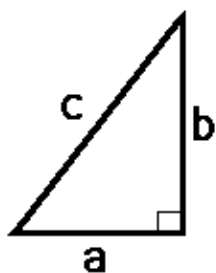
- Answer the following questions:

1. Pythagoras died in 495 BC, at what age did he die?
2. What were the Pythagoras' interests?
3. At that time it was not usual for a woman to study maths, why do you think Theano was able to get a good education?
4. How did Pythagoras die?

Pythagoras' Theorem:

This Theorem can only be used when we have a right angled triangle (a triangle with a 90°)

angle).



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

The two sides that form the right angle ( **a** and **b** ) are the catheti ( cathetus the singular, catetos en castellano), and the side opposite the right angle is the hypotenuse (hipotenusa en castellano).

**The square of the hypotenuse is equal to the sum of the squares of the catheti.**

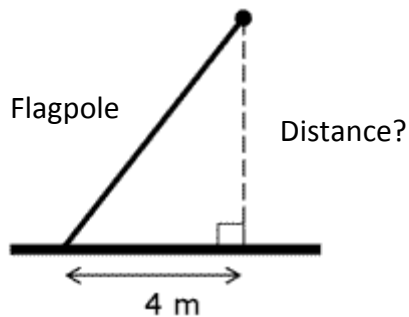
Why is the theorem so important? Because if we know the lengths of **two sides** of a right angled triangle, we can find the length of the **third side**.

Let's see:

	$c^2 = 12^2 + 5^2$ $c^2 = 144 + 25$ $c^2 = 169$ $c = \sqrt{169} = 13$
	<p>Find the length of the hypotenuse:</p>
<p>Now, we can find the length of a leg:</p>	$15^2 = 9^2 + b^2$ $225 = 81 + b^2$ $b^2 = 225 - 81$ $b^2 = 81$ $b = \sqrt{81} = 9$
	<p>Calculate the leg a:</p>

**Pythagoras' theorem is also useful to solve some problems:**

1. A storm bends the flagpole of the school, which is 6 m long. What is the distance between the top of the flagpole and the ground?



2. A rectangular field is 15 cm by 20 cm. What is the distance if a person walks diagonally across the field? Draw a diagram.

3. A ship leaves port and sails 12 km west and then 19 km north. How far is the ship from the port? Draw a diagram.

4. A ladder is standing on horizontal ground and rests against a vertical wall. The ladder is 5.5 m long and its foot is 3 m from the wall. Calculate how far up the wall the ladder will reach. Draw a diagram.