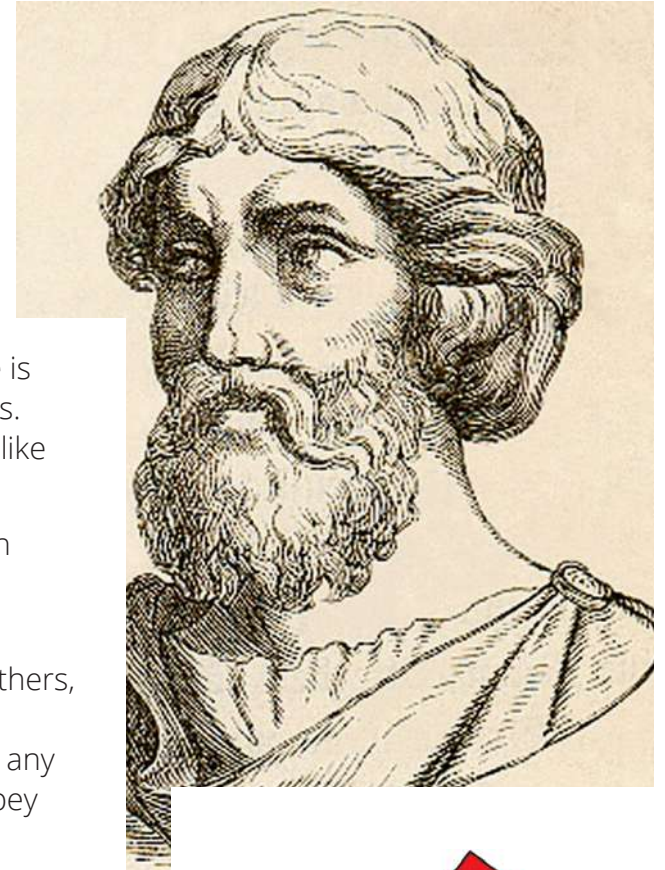




Pythagoras



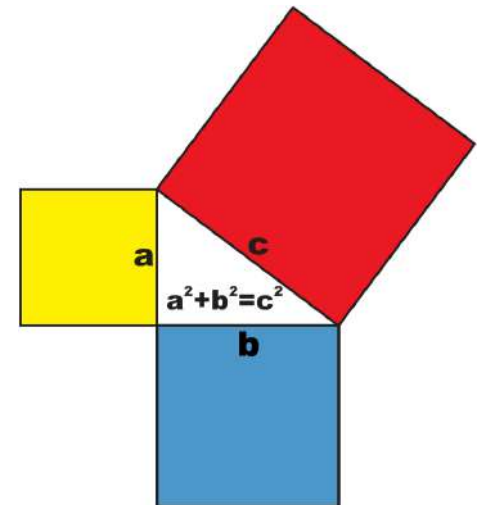
Pythagoras of Samos was a famous Greek mathematician and philosopher (c. 570 – c. 495 BC). He is known best for the proof of the important Pythagorean theorem, which is about right angle triangles. He started a group of mathematicians, called the Pythagoreans, who worshiped numbers and lived like monks. He had an influence on Plato.

He had a great impact on mathematics, theory of music and astronomy. His theories are still used in mathematics today. He was one of the greatest thinkers of his time.

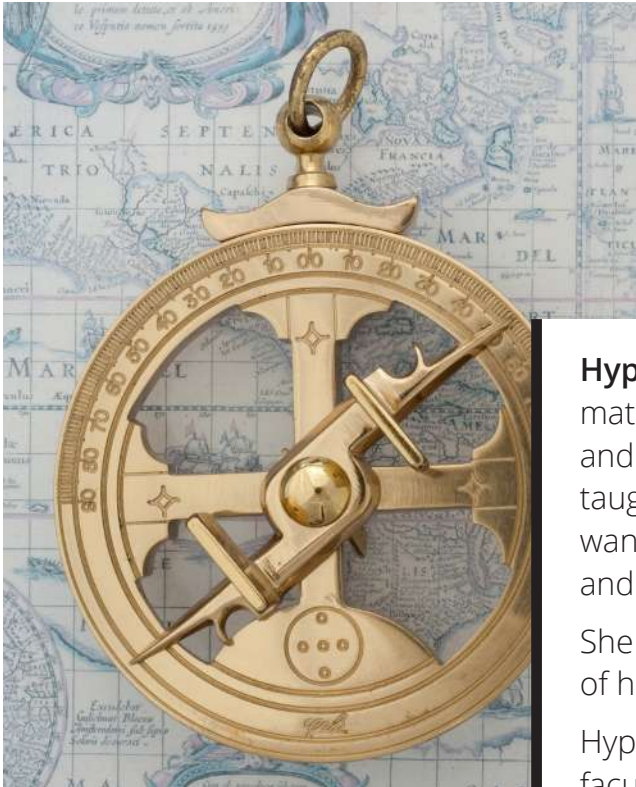
Pythagoras was born in Samos, a little island off the western coast of Asia Minor. There is not much information about his life. It is said that he had a good childhood. Growing up with two or three brothers, he was well educated. He did not agree with the government and their schooling, so he moved to Croton and set up his own cult (little society) of followers under his rule. His followers did not have any personal possessions, and they were all vegetarians. Pythagoras taught them all, and they had to obey strict rules.

Answers:

1. Samos, Greece.
2. 75 years old.
3. Two or three brothers.
4. $a^2 + b^2 = c^2$
5. C stands for the longest side.
6. a and b are the shorter two sides.
7. Music and astronomy.
8. A cult is a group of people held together by a shared commitment to a leader or ideology.
9. They lived a very simple life, and devoted themselves to Pythagoras and his teaching. Vegetarian means that they didn't eat any meat.
10. Before Christ.



Hypatia



Hypatia was a fortunate child, raised by her father, Theon of Alexandria, who was a teacher of mathematics at the Museum of Alexandria and a keeper of the library in Egypt. He was her tutor and teacher; he trained Hypatia in the fields of arts, literature, science and philosophy. She was also taught to work on her speech, which gave her the gift of being a great speaker. Hypatia's father also wanted to make sure she was physically fit and her physical education consisted of rowing, swimming and horseback riding.

She studied for some time in Athens where her talent for mathematics was proved; she excelled in all of her studies and became the greatest philosopher of her time.

Hypatia became a brilliant public speaker and scholar, and she followed her father on the library's faculty. There she wrote on mathematics and astronomy. She did work on algebraic equations and conic sections. She invented the astrolabe for ship navigation and devices for measuring the density of fluids.

Answers:

1. Her father, Theo of Alexandria.
2. He taught her Maths as well as the arts, literature, science and philosophy.
3. Alexandria is a Mediterranean port city in Egypt.
4. Rowing, swimming and horseback-riding.
5. Athens is the capital of Greece.
6. Being a scholar and public speaking.
7. Maths and astronomy.
8. Conic sections.
9. The astrolabe for ship navigation and devices for measuring density of fluids.
10. Density is a measure of mass per volume. I.e. how much mass does a 1 cm^3 of something have. Lead and silver are both dense metals.





Cardano

Gerolamo Cardano 24 September 1501 – 21 September 1576 was an Italian polymath, whose interests and proficiencies ranged through those of mathematician, physician, biologist, physicist, chemist, astrologer, astronomer, philosopher, writer, and gambler. He was one of the most influential mathematicians of the Renaissance, and was one of the key figures in the foundation of probability and the earliest introducer of the binomial coefficients and the binomial theorem in the Western world. He wrote more than 200 works on science.

Cardano partially invented and described several mechanical devices including the combination lock, the gimbal consisting of three concentric rings allowing a supported compass or gyroscope to rotate freely, and the Cardan shaft with universal joints, which allows the transmission of rotary motion at various angles and is used in vehicles to this day. He made significant contributions to hypocycloids, published in *De proportionibus*, in 1570. The generating circles of these hypocycloids were later named Cardano circles or cardanic circles and were used for the construction of the first high-speed printing presses.

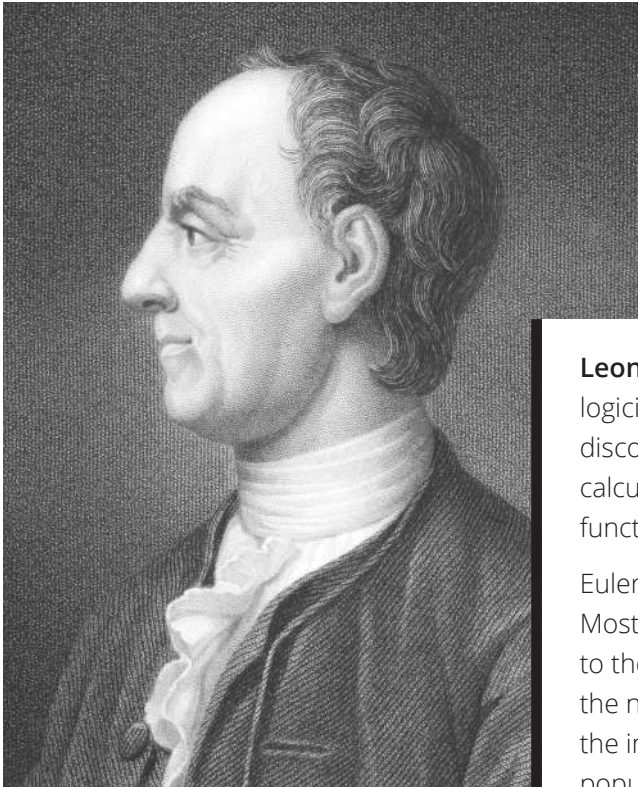


Answers:

1. 74 years old.
2. Proficient means competent or skilled.
3. Renaissance means a revival or a new interest in something. It translates as 're-born' in French.
4. Probability is the area of maths that looks into how likely it is that an event happens.
5. 1 or 100%
6. Combination locks are used to lock gates and secure bicycles, amongst many other uses.
7. Concentric means circles of different sizes that share the same centre.
8. Rotary motion is the motion of an object that is spinning on an axis of its own.
9. To turn the wheels.
10. High speed printing presses allowed for fast accurate spreading of information via newspapers and journals.



Euler



Leonhard Euler (15 April 1707 – 18 September 1783) was a Swiss mathematician, physicist, astronomer, geographer, logician and engineer who founded the study of graph theory and topology and made pioneering and influential discoveries in many other branches of mathematics such as analytic number theory, complex analysis, and infinitesimal calculus. He introduced much of modern mathematical terminology and notation, including the notion of a mathematical function.

Euler introduced and popularised several notational conventions through his numerous and widely circulated textbooks. Most notably, he introduced the concept of a function and was the first to write $f(x)$ to denote the function f applied to the argument x . He also introduced the modern notation for the trigonometric functions, the letter e for the base of the natural logarithm (now also known as Euler's number), the Greek letter Σ for summations and the letter i to denote the imaginary unit. The use of the Greek letter π to denote the ratio of a circle's circumference to its diameter was also popularised by Euler, although it originated with Welsh mathematician William Jones, Euler also revolutionised the field of physics by reformulating Newton's classic laws of physics into new laws that could explain the motion of rigid bodies more easily, and made significant contributions to the study of elastic deformations of solid objects. He also came up with Euler's formula, which links the number of faces, edges and vertices in a 3D shape. It is written $F + V = E + 2$.

Answers:

- 76 years old.
- Switzerland.
- A function is an expression that defines a relationship between one variable (the independent variable) and another one (the dependent variable).
- Sine, cosine and tangent.
- Σ is used for summations, i.e. the answer when a set of numbers is added.
- Correct diagrams.
- $C = \pi d$
- First law: an object will not change its motion unless a force acts on it.
Second law: $F = ma$
Third law: When objects interact they exert an equal force upon each other.
- $F + V = E + 2$
- Face, Vertices and Edges.

