

Pythagoras of Samos

Pythagoras was born around 569 BCE and died around 475 BCE. The exact dates of his birth and death are not known. He was a philosopher, mathematician, mystic, and scientist. He also founded a religious movement called Pythagoreanism.

Pythagoras was born on Samos, a Greek island. He traveled to Italy and Egypt. He settled in Croton in Italy and founded the Pythagorean school. The followers of Pythagoras were called the Pythagoreans. Both men and women were permitted to join the society and were regarded equally. The Pythagoreans were divided into two groups. The inner circle, also known as the 'mathematikoi' (mathematicians), observed stricter rules, lived permanently within the Society, and had no personal possessions. They were taught by Pythagoras himself and learned detailed knowledge. The outer circle, also referred to as the 'akousmatics' (listeners), lived in their own houses, only coming to the Society during the day. They were allowed their own possessions, and they did not have to follow the same strict rules as the inner circle. They did not learn knowledge in detail, but listened to the lectures, which were a kind of summary of the teachings and knowledge of Pythagoras.

The Pythagoreans led a very structured life that involved religious teaching, common meals, exercise, reading, and philosophical study. They focused on the morality of society and how to pursue ethical lives. Their ethical principles relied on honesty, unselfishness, and mutual friendship. Then, they shifted their focus and devoted their time and studies to the mathematics of nature and music. They believed that mathematics and music were two ways to make order out of the chaos, because music is how we make sense of noise and mathematics helps us make rules to explain how everything functions and will function.

The Pythagoreans believed that everything was related to mathematics and that mathematics and numbers were the building blocks of reality. Since all things were numbers, they thought that they could predict events, relations, patterns, and cycles.

Pythagoras and his followers worked on translating musical notes into mathematical equations. They made great contributions to the mathematical theory of music.

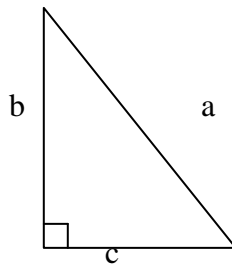
They believed that numbers are the basis for 'harmony.' Numbers represent the divine principle that governs the structure of the whole world. Pythagoras and his followers thought that planets and stars move according to mathematical equations that correspond to musical notes. The movement of the planets and stars produce a symphony. This concept is known as the 'harmony of the spheres.'

For Pythagoreans, numbers had different personalities. They could be masculine or feminine, beautiful or ugly, perfect or incomplete. They considered 10 as perfect because if you add the first four numbers (1+2+3+4) they would equal 10. The first four numbers symbolized the harmony of the spheres, as well as represented the four elements (earth, air, fire, and water).

Pythagoras of Samos (Cont'd)

The number 10 could also make a figure of a perfect triangle, or what is known as a tetractys or decad. This is an arrangement of 10 points in the form of a triangle with 1 point in the first row, two in the second, three in the third, and four in the fourth. This figure was the sacred symbol for the Pythagoreans.

Pythagoras is best known for his theorem, which states that for any right-angled triangle, the square of the length of the hypotenuse (being the longest side, opposite the right angle) equals the sum of the squares of the lengths of the other two sides.



Pythagoras Theorem can be expressed as the following rule: $a^2 = b^2 + c^2$

If $b = 4$, $c = 3$, then we can solve for a .

$$\begin{aligned} a^2 &= 4^2 + 3^2 \\ &= 16 + 9 \\ &= 25 \end{aligned}$$

$$a = \sqrt{25} = 5$$

Pythagoras of Samos Questions

Multiple Choice:

1. Pythagoras of Samos is:
 - a. Philosopher
 - b. Scientist
 - c. Mathematician
 - d. All of the above

2. Pythagoreans believed that everything was related to:
 - a. Science
 - b. Mathematics
 - c. History
 - d. Chemistry

3. The number the Pythagoreans considered perfect is:
 - a. 2
 - b. 5
 - c. 8
 - d. 10

Matching:

- | | |
|--------------------------------|--|
| _____4. Harmony of the spheres | a. Are the outer circle of Pythagoreans that listen to non-detailed lectures and do not live within the Pythagorean society. |
| _____5. Mathematikoi | b. Are the inner circle of the Pythagoreans and study subjects in detail and obey stricter rules. |
| _____6. Akousmatics | c. Concept that planets and stars move according to mathematical equations that correspond to musical notes and this movement produces a symphony. |

True or False:

- _____7. Pythagoras and Pythagoreans worked on translating musical notes into mathematical equations.
- _____8. Pythagoreans were not interested in studying mathematics or music.

Pythagoras of Samos Answers

Multiple Choice:

1. Pythagoras of Samos is:
 - a. Philosopher
 - b. Scientist
 - c. Mathematician
 - d. All of the above
2. Pythagoreans believed that everything was related to:
 - a. Science
 - b. Mathematics
 - c. History
 - d. Chemistry
3. The number the Pythagoreans considered perfect is:
 - a. 2
 - b. 5
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Matching:

- | | |
|------------------------------------|--|
| <u>c</u> 4. Harmony of the spheres | a. Are the outer circle of Pythagoreans that listened to non-detailed lectures and did not live within the Pythagorean society. |
| <u>b</u> 5. Matematikoi | b. Are the inner circle of the Pythagoreans that studied subjects in detail and obeyed stricter rules. |
| <u>a</u> 6. Akousmatics | c. Concept that planets and stars move according to mathematical equations that correspond to musical notes and this movement produces a symphony. |

True or False:

- T 7. Pythagoras and Pythagoreans worked on translating musical notes into mathematical equations.
- F 8. Pythagoreans were not interested in studying mathematics or music.