

FORMATION OF THE EARTH

The origin of our home planet, Earth, is linked to the emergence of the sun. About 5 billion years ago, a nebula of gas and dust floating in space began to coalesce, contract and spin, forming a disc in the middle. It became so dense that it led to the creation of a star, our sun. The remaining disc of dust and gas kept revolving around the newly formed star.

These specks of dust were pulled towards each other as a result of their own gravity. The specks of dust grew bigger and became small rocks. Small rocks combined to make bigger rocks and so it went for another 500 million years.

4.5 billion years ago, Earth became the size and shape that we know today but it was a very different place. It was a boiling ball of molten rock. The temperature on this lava-like surface would have been about 1000°C. There was no air and only traces of water in the form of steam.

For the next 700 million years, Earth was hit with a bombardment of debris from the solar system. During this time, another planet about the size of Mars collided with the newly formed Earth. The collision sent dust and debris into space which, over the next 1000 years, settled to form a ring that orbited Earth. 100 million years later, this debris coalesced to form a large ball of rock that we now call the moon.

This bombardment also provided the new planet with different chemicals and minerals. The meteoroids and asteroids were made of different materials and also carried very small particles of something that would be a key feature of the future planet: water. Over hundreds of millions of years, these minerals and water particles accumulated to a point where liquid water became present on the surface.

The Earth's surface began to cool which allowed a crust to form. Gases also started to accumulate and an atmosphere began to develop. 3.8 billion years ago, the bombardment of the planet eased and Earth began to look something like we know today. Oceans of water were present, with volcanic islands scattered across them.

It would be another 2 billion years before large land masses and breathable air appeared and complex organisms were living in the oceans. The first humans didn't arrive for another 1.6 billion years after that.

It seems remarkable that this planet we know today, the planet we call home, came into existence as a result of some specks of dust floating in space.



Name _____

Date _____

Formation of Earth

1. What celestial body had to be formed first before Earth could come into existence?

2. How long did it take for Earth to become roughly the size and shape it is today?

3. Research the definitions for the words below. Write the definition beside the word.

a) nebula _____

b) debris _____

c) bombardment _____

4. Create a five step summary for the formation of Earth.

i) _____

ii) _____

iii) _____

iv) _____

v) _____

Answers

1. What celestial body had to be formed first before Earth could come into existence?

The sun had to be formed first to enable Earth to come into existence.

2. How long did it take for Earth to become roughly the size and shape it is today?

It took about 500 million years for Earth to become a size and shape similar to what it is today.

3. Research the definitions for the words below. Write the definition beside the word.

a) nebula - **a giant cloud of dust and gas in space**

b) debris - **scattered remains and broken pieces**

c) bombardment - **a continuous flow of objects that can cause damage**

4. Create a five step summary for the formation of Earth.

Teacher note: Some variation can be allowed with the responses but the first step must be the formation of the sun/solar system.

i) **The sun ignites and the solar system is formed.**

ii) **Specks of dust began to collide and form bigger rocks, eventually forming Earth.**

iii) **The planet is bombarded with debris, including a small planet, whose remains became the moon.**

iv) **Meteoroids and asteroids brought new chemicals and water to the planet.**

v) **The surface began to cool, forming a crust, then leading to an atmosphere and large bodies of water.**