

Gasparillo Hindu School
Standard Three
Comprehension: Cycle Three- Term 2

Gravity

Have you ever wondered why you land on the ground when you jump up instead of floating off into space or why things fall down when you throw them? The answer is gravity: an invisible force that pulls objects toward each other. Earth's gravity is what keeps you on the ground and what makes things fall. Gravity or gravitation is a natural occurrence by which all things with mass are brought towards one another, regardless of their size. Therefore, tiny particles, as small as a rice grain or as large as the planets and stars are under the influence of gravity. Since ancient times, many scientists have postulated theories of gravity.

In the 4th century, Aristotle suggested that heavy bodies are not attracted to the earth by an external force of gravity, but tend toward the center of the universe because of an inner *gravitas* or heaviness. In the late 17th century, Robert Hooke suggested that there is a gravitational force which depends on the distance between objects. In 1907, Albert Einstein, in what was described by him as 'the happiest thought of my life', realised that an observer who is falling from the roof of a house experiences no gravitational field. In 1915, this idea was subsequently developed into what is referred to as 'Einstein's theory of *general relativity*'. The theory was successfully proven when it was used to predict the existence of the planet, Neptune, based on the motions of Uranus.

On Earth, gravity gives weight to physical objects. It is believed that gravitational attraction is responsible for many of the large scale structures in the Universe. For example, gravity causes the earth and the other planets to orbit the sun; the moon to orbit the Earth; the formation of tides; and the formation and evolution of the Solar System, stars and galaxies. Gravity has an infinite range, although its effects become increasingly weaker on farther

30 objects. Gravity is very important for our existence on earth. The sun's gravity keeps earth in orbit around it, keeping us at a comfortable distance to enjoy the sun's light and warmth. It holds down our atmosphere and the air we need to breath. Gravity is what holds our world together.

1. Why do you think so many scientists suggested different theories about gravity? (2 mks)

2. Give a reason why Einstein's theory about gravity was considered to be correct? (2 mks)

3. Why do you think Robert Hooke's theory about gravity was not successful as Albert Einstein's? (2 mks)

4. Give one reason why the sun's gravity is important for earth. (2 mks)

5. Give TWO reasons why gravity on earth is important for our existence. (2 mks)

6. Which line in paragraph 3 shows that gravity is necessary for our existence? (2 mks)

7. What word in paragraph 2 shows that Einstein's theory was able to confirm the existence of planet Neptune? (2 mks)

8. What word in paragraph one shows that gravity cannot be seen? (2 mks)

9. Which phrase in paragraph one shows that gravity can influence things of any size?

10. What words in paragraph three show that gravity's influence can become less effective on objects that are far away? (2 mks)
