

## 1. What is Gravity

We're all familiar with gravity as the reason objects fall, but there's much, much more to gravity than that. Gravity is a long-range attractive force between all objects with mass. It's what keeps us from falling off the Earth, it's what keeps the Earth in orbit around the Sun, and it's what caused the Sun itself to form four and a half billion years ago.

It's amazing to think that every mass of object attracts every other in the universe. That means that your dog, the Earth, and a black hole in the Andromeda galaxy 2.5 million light-years away are all gravitationally attracted to you and you to them.

In the 17th century, Isaac Newton discovered that the strength of the gravitational force decreases by the square of the distance between two objects. So if you're twice as far away, gravity is only one-fourth as strong. He also discovered that the strength of gravity is proportional to the mass of the objects in question. The more massive an object, the stronger the gravitational force.

That's why we can all feel the Earth pulling on us, but don't really notice the pull of the moon. It's smaller and farther away. The moon's gravity is strong enough to cause the tides though. And when I said earlier that gravity is an attraction between objects with mass, I lied. I meant objects with energy, because in addition to massive objects, gravity also attracts light and other massless but energetic particles, so that a photon of light can be bent slightly passing the Sun or trapped completely by a black hole.

### Activity 1 – Global understanding

Read the text quickly and choose the correct answer.

**The main purpose of the text is to :**

- a) explain a mathematical formula
- b) describe Newton's life
- c) explain what gravity is and how it works
- d) compare gravity with other forces

### Activity 2 – Detailed understanding

Complete the table using information from the text.

Aspect of gravity	Information from the text
Definition of gravity	
Role of mass	

Aspect of gravity	Information from the text
Role of distance	
Scientist mentioned	
One example of gravity	

### Activity 3 – True or False (justify)

Decide whether the statements are **True** or **False**. Justify your answers using the text.

1. Gravity only affects objects on Earth.
2. Gravity becomes weaker when the distance increases.
3. The Moon's gravity has no effect on Earth.
4. Light can be influenced by gravity.

### Activity 4. Sentence Gap Fill : sea/tides, gravity, Sun, bent, 17th, fall

1. Gravity makes things \_\_\_\_\_.
2. The Earth goes around the \_\_\_\_\_.
3. The Moon's gravity makes the \_\_\_\_\_ move.
4. Newton discovered gravity in the \_\_\_\_\_ century.
5. A big object has strong \_\_\_\_\_.
6. Light can be \_\_\_\_\_ by gravity.

**Activity 5. Reorder the Words** These are scrambled sentences (A2 level) your can reorder:

1. **fall / makes / things / Gravity**  
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2. **the / around / Earth / the / goes / Sun**  
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3. **the / discovered / Newton / force / gravity**  
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4. **causes / Moon / the / tides / the**  
☞
5. **a / object / gravity / more / has / big**  
☞
6. **light / by / can / gravity / bent / be**  
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