



# What do you notice in the world around you?

**01** Look all around you for 30 seconds. In the space below, note down everything that you saw. Compare your ideas with a classmate.



**02** Read "The Apple Doesn't Fall Far From the Tree." Complete the sentences with the correct words from the text.

1. An \_\_\_\_\_ did not fall skywards.
2. \_\_\_\_\_ pondered the movement of the apple and thereby created the law of universal gravitation.
3. Thanks to the gravitational pull of the Earth, \_\_\_\_\_ doesn't float into space.
4. A formula was created by further \_\_\_\_\_ allowing them to calculate gravitational force.



## The Apple Doesn't Fall Far From the Tree

Legend has it that in 1665, Sir Isaac Newton saw an apple fall from a tree in his garden and hit the ground. Although an everyday occurrence, it **dawned** on him that the apple fell toward Earth, not **skywards** or sideways, and he began to **ponder** why.



Newton discovered this was due to the law of universal gravitation, which states that there is a force of attraction that acts on all matter, and that, the larger the body, the larger the force. This was why the apple was pulled toward the Earth, and not any other direction.

This force has significant implications for life on Earth and how we interact with our environment. Without a **gravitational** pull, we would not exist, for all matter would be floating in space, disconnected from other forms. Thanks to gravity, like Newton's apple, all surrounding matter is **drawn** towards our massive planet, and we can survive.

Further scientists created a formula to calculate this gravitational force. They determined that the force between two objects equals the multiplication of the two masses and a universal constant divided by the square of the distance between them. By **harnessing** this formula, we can better understand how the elements of our world interact with one another and build the fantastic places we call home.

**03** Read the text again. Match the words to their definitions.

- |                  |  |
|------------------|--|
| 1. dawn (on)     | a. related to the force of gravity, which pulls objects together |
| 2. skywards      | b. to begin to be understood                                     |
| 3. ponder        | c. directed toward the sky                                       |
| 4. gravitational | d. to consider something deeply                                  |
| 5. drawn         | e. attracted to  |
| 6. harnessing    | f. gaining control over  |

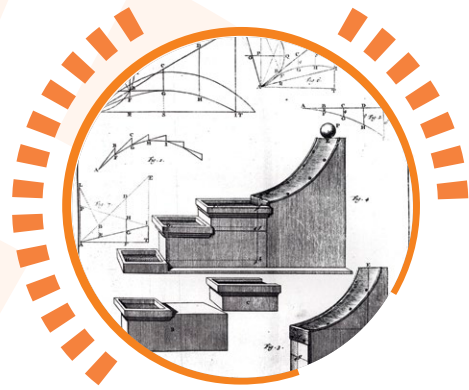
**04** Using the words in bold from the text, write a brief description in your notebook of the law of universal gravitation and Newton's role in its discovery.

**05** Read the sentences below. Decide if they describe the past "PA," present "PE," or future "F."

- ☐ 1. Newton might not have discovered the gravitational law if the apple hadn't fallen.
- ☐ 2. I may need to go to the laboratory later to finish calculating my results.
- ☐ 3. You could have told me that we needed to know how to calculate the gravitational force for the test!
- ☐ 4. I think that I may finally be ready to do my physics homework.
- ☐ 5. Although I might not like it, I must admit that I use math a lot daily.
- ☐ 6. The astronaut can't be ready for space yet. He still needs to take the final training module.

**06** Complete the gaps in the sentences using the given word and a modal verb.

1. Copernicus \_\_\_\_\_ (know) Newton because he died 100 years before Newton was born.
2. Newton \_\_\_\_\_ (influence) by Copernicus's ideas.
3. Cynthia \_\_\_\_\_ (pass) her test if she joins the study group.
4. Even if I \_\_\_\_\_ (not / understand) the concept of gravity fully, I know that it still impacts my life.
5. I \_\_\_\_\_ (kill) had that weight fallen on my head!
6. Harry \_\_\_\_\_ astronomy like his grandfather did when he grows up. (study)



**07** In space, the gravitational pull is much different and affects astronauts differently than when they're on Earth. Write a blog post explaining life on a space station as if you were an astronaut.

**08** Discuss and write things you can do with a classmate thanks to the law of universal gravitation. Debate which ones are the most relevant to modern life.

