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Recommended for: 6 to 8 year olds

Themes: Gravity, Sir Isaac Newton, science, physics, information and humour.

Applicable to learning areas: English language, literacy and literature; Science

Summary

Isaac Newton was sitting under an apple tree when he got hit on the head by an apple.

People might tell you this is the moment gravity was first discovered, but the truth is people had been discovering gravity long before Isaac.

You might have even discovered it yourself ... Ouch!

Have you ever wondered how gravity works? Or what life would be like without gravity? Find out in this fun introduction to the idea that what goes up must come down!

About the Author

Kate Simpson is a picture book author, podcast host and bookworm who loves facts and fiction in equal measure. She is also a chemical engineer who believes that curiosity can change the world.

About the Illustrator

Andy Hardiman is an English-born creative living in Sydney, Australia. He has used his creative skills to design wallpaper, create gift cards, work in multiple advertising agencies and now illustrate his first picture book. He has a Masters of Art from the Royal College of Art, London.

Suggestions for Classroom Discussion and Application

Before reading

- Write the sentence, *Science is magic but real* on your classroom whiteboard.
- Now introduce the topic of gravity by proclaiming to your class that you are going to perform a magic trick to make a pen stick to a book without any glue or adhesive tape.
Pick up a random pen and book and ask students how you might do this. Once all suggestions have been made, turn the book horizontally and place the pen on top of it so that it 'sticks'.
- Follow up with the question, 'And can I make this pen stick to a desk or the floor, too?' and proceed to show the class precisely that by placing it on each. Explain that you were joking when you said that this was a magic trick because you used something that is very real – an invisible force called *gravity*.
- Ask students what they already know about *gravity* and explain that the book you are about to read, *Ouch: Tales of Gravity*, is going to explain a lot more about this force.

On the cover

- Show your class the book's front cover and read its title out loud. Ask questions such as:
 - What is happening in the cover illustration?
 - What visual clues help you guess what is happening here? Look very closely at the lines.
 - How does this idea relate to the book's title, *Ouch*?
 - What is the punctuation mark at the end of the word *Ouch* called?
 - What does this punctuation mark symbolise when you see it on a page or cover of a book?
 - What visual clue on the girl's face matches the word *Ouch*?
 - How might the image relate to the word *gravity*?
 - What famous story includes a falling apple and gravity?

Read through

- After reading the book through once, ask the following comprehension questions:
 - What do Isaac Newton, a pterodactyl egg, a broken Greek column, a cowboy falling off a horse, a rock and trebuchet, and a jar full of biscuits have in common in this book?
 - Why did each of these objects get pulled towards Earth?
 - Why doesn't a pyramid's gravity pull things towards it?
 - If our sun is more than a million times bigger than the Earth, what effect does it have on our planet?
 - Name a place where people live without the effect of gravity?

- What would happen if you tried to have a bath, jump on your bed or eat cornflakes there?
- Name two methods of travel where humans have succeeded in defying gravity?

Visual literacy

- Remind students of the lines on the book's front cover that helped us 'read' the direction the apple was travelling, and that there are other lines inside the book that show objects moving in ways other than down. Ask students to find examples where lines show an object is:
 - bouncing (Answer: where the apple is hitting Isaac Newton on the head)
 - travelling in an arc (Answer: the image featuring the rock and trebuchet)
 - moving horizontally (Answer: image of small objects being pulled towards each other)
 - spinning (Answer: image of Earth)
 - orbiting (Answer: the International Space Station travelling around the Earth)

Explain that just as the lines show us movement, the size and colour of a word on a page can tell us a lot more than just its meaning. Turn to the page showing four images of objects falling and ask students how the change in colour and size of the word *Ouch!* shows us that the rock catapulted from the trebuchet caused more damage than the dinosaur egg.

- Ask your class to find other examples in the book of where a change in a word's size or colour adds emphasis to its meaning and highlights a point that the book's creators want to make.
- Explain that jokes can be told with *or* without words. Show the class the double-page spread featuring the image of Isaac Newton throwing the apple at the girl at the end of the book and ask them to explain if they think this is a humorous way to finish a story about gravity, and why they think that.

Further study

- Research Isaac Newton here <https://www.nationalgeographic.org/article/isaac-newton-who-he-was-why-apples-are-falling/4th-grade/>
- Research Albert Einstein here <https://www.abc.net.au/btn/classroom/einstein/10525452>
- Find out more about another person who helped us understand gravity, Galileo Galilei, here <https://www.youtube.com/watch?v=REUdIA44vuY>
- Watch the video of David Scott's feather vs hammer experiment on the moon here <https://www.youtube.com/watch?v=oYEqdZ3iEKA>
- Find out more about life on board the International Space Station here <https://www.youtube.com/watch?v=-GEVcgGxgQo>
- Make a list of everything you do in the morning to get ready for school and imagine how each of these tasks might change without gravity.

In the Author's Own Words

'I have always had a strong love of science. My dream job in primary school was to be a virologist (I guess 2020–2021 would have been a career highlight if I'd followed that path). Instead, I took a slightly different route, training to be a chemical engineer, and moving into a career in the water and wastewater treatment industry. When I started writing kids' books, my first attempts were all fiction, but my young son's love of non-fiction books encouraged me to start trying to combine my love of science with my passion for nonfiction picture books. The idea of a book about gravity was the suggestion of my friend and podcast co-host Nat Amooore. I wasn't particularly inspired when she first suggested it, but it must have stayed with me, because a few months later I was drifting off to sleep when the concept of *Ouch!* sprang into my mind almost fully formed.'



– Kate Simpson

