

Gravity

Forces and Motion Lesson

This lesson is suitable for 4th-6th grade

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EDU 343

Try jumping up and down! What do you notice about where you landed?

Use your 2-column notes worksheet to write down your thoughts. Write your ideas/experiences/thoughts in the left hand side labeled “What I Think.”

Learning Target:

5-PS2-1 : I can support an argument that the gravitational force exerted by Earth on objects is directed down.

Video

https://www.youtube.com/watch?v=ljRIB6TuMOU&ab_channel=CrashCourseKids



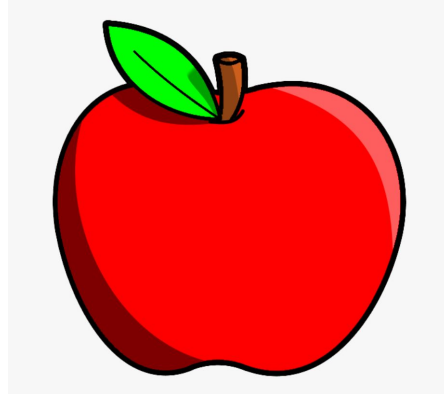
Before watching the video, write down on the left side of your 2 column notes, what you already know.

Discussion

What does the phrase “You can’t see it, but it’s always there.” mean in terms of gravity?

Materials

- Make sure to ask your parents for permission and help.
- 1 Feather (Teacher demonstration)
- 1 Tennis ball (Teacher demonstration)
- 1 Whole apple for each pair of students
- 1 half apple for each pair of students
- Knife
- Worksheet



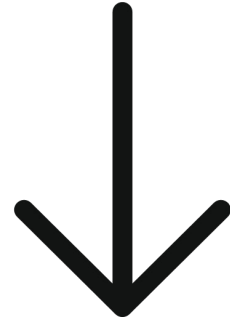
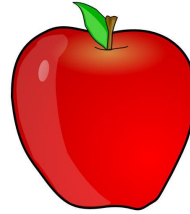
Teacher Demonstration

- 1) Teacher will hold the feather in one hand and the tennis ball in the other.
- 2) Ask students for their prediction on what would happen when dropped at the same time.
- 3) Drop both objects from the same height at the same time.
- 4) Have students observe what happened and discuss what they observed.



For the students..

- Need 2 apples
- 1) Cut one of the apples in half. (Please ask parents for permission.)
 - 2) Write down prediction on what would happen when a whole apple and half an apple were dropped from the same height at the same time.
 - 3) With a partner, have one of you drop the two apples at the same time from the same height. The other will observe what happens.
 - 4) Write down observations.
 - 5) Repeat 3 times for accuracy.



Concepts Explained

Vocabulary

Gravity: The natural pull of objects toward each other

- Isaac Newton's "What goes up, must come down."
 - Think about jumping up and down! Your body goes up to the sky on your jump but eventually drops back down to the ground.

Force: A push or pull acting against an object. It can cause an object to move or change direction.



**What happens if you
throw something in
front of you? To the left?
To the right?**

Conclusion:

All things come “down”
because of gravitational force.

The gravitational force of Earth
acting on an object near
Earth’s surface pulls that object
toward the planet’s center.

Additional Activities & Discussions

Galileo on the Moon

Watch NASA astronaut, David Scott demonstrate that heavy objects fall quicker than light objects.

Discussion:

Why did the hammer and feather fall at the same rate on the Moon but not on Earth?

What role does air resistance (the force that opposes any object moving through air) play in the rate at which the objects fall?



Virtual Simulation

<https://ksps.pbslearningmedia.org/resource/phy03.sci.phys.mfw.galileoexp/galileo-his-experiments/>

- Click the link!
- This is an interactive activity from NOVA which allows users to conduct some of Galileo's most important experiments.

Additional Discussion Questions

- What will happen when two balls of the same mass but different volumes are dropped at the same time from the top of a tall ladder? Which will hit the floor first? Why?
- What will happen when two balls of different masses but same volume are dropped at the same time from the top of a tall ladder? Which will hit the floor first? Why?