

Case Details

Case Title:

Walkin' on the Moon

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Grade Level(s):

Middle School

Subject(s):

Physical Science

Summary:

Did astronauts really land on the moon? An urgent letter arrives in the mail for you and those in your group. David Smith, the CEO of a company developing resorts and hotels on the moon, desperately needs your help. Several members of Congress are planning to cut all future funding to his company because they believe the 1969 moon landing was a hoax and see recreational travel to the moon as unfeasible. As prominent physical scientists, you must testify before a Congressional Committee to help David Smith convince Congress to continue funding his company's efforts to make lunar tourism a reality.

Adapted from:

Thompson, A., & Beam, M. (2004). Was the moon landing a hoax?

Suggested Citation:

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http://www.cse.emory.edu/cases/casedisplay.cfm?case_id=168

Learning Objectives:

1. Describe Newton's first (inertia), second (force = mass x acceleration) and third (action & reaction) Laws and the differences between them
2. Differentiate between unbalanced versus balanced forces, weight versus mass and gravity
3. Explain the differences in gravity and the different conditions on the surface of the moon relative to the earth.
4. Explain how Newton's Laws relate to gravity on earth and on the moon
5. Discuss the historical context of the landmark 1969 moon landing, the astronauts involved and some subsequent advances in space exploration, and common hoax theories regarding the moon landing.
6. Critically evaluate different information sources.
7. Craft an effective scientific argument in the form of congressional testimony.

National/State Standards:

Georgia Performance Standards

SCSh1. Students will evaluate the importance of curiosity, honesty, openness, and skepticism in science. (NSES Content Standard A)

S8CS7. Students will question scientific claims and arguments effectively. (NSES Content Standard A)

- a. Question claims based on vague attributions (such as "Leading doctors say") or on statements made by people outside the area of their particular expertise.
- b. Identify the flaws of reasoning in arguments that are based on poorly designed research (e.g., facts intermingled with opinion, conclusions based on insufficient evidence).

S8P3. Students will investigate relationships between force, mass, and the motion of objects. (NSES Content Standard B)

- a. Determine the relationship between velocity and acceleration.
- b. Demonstrate the effect of balanced and unbalanced forces on an object in terms of gravity, inertia, and friction.

S8P5. Students will recognize characteristics of gravity, electricity, and magnetism as major kinds of forces acting in nature.

- a. Recognize that every object exerts gravitational force on every other object and that the force exerted depends on how much mass the objects have and how far apart they are.