



Discussion Guide for

MOTION: NEWTON'S THREE LAWS

OBJECTIVES

After viewing this program, students will be able to:

- Define motion.
- Discuss how the motion of an object is relative to an observer's frame of reference.
- Explain Newton's First, Second and Third Laws.
- Contrast speed, velocity and acceleration.
- Determine the acceleration of an object due to gravity.
- Explain how wind resistance affects the acceleration of an object due to gravity.
- Describe centripetal force and its effects on objects moving along a curve.
- Specify the forces acting on projectiles.
- Account for the set position of geosynchronous satellites above the Earth.

This program is part of the AIMS Interactive Science Essentials Series. This twenty-four part series covers four subject areas - Earth Science, Biology, Physics, and Chemistry. There are six programs in each subject area. The individual programs are divided into randomly accessible sections. A glossary provides written definitions of terms used in the program, and in most cases will run a section of the video where the word is used in context.

A script of the narration is accessible, as well as a bulletin board containing a general introduction to the subject. A quiz allows the student to test their knowledge and the results are recorded for you. In the teacher's section you can view each student's test responses and edit or create your own quiz and test questions.

OVERVIEW

Motion: Newton's Three Laws is part four of the Physics Essentials series which examines modern day physics. Newton revolutionized physics by developing the Three Laws of Motion. This program revolutionizes the study of Newton's three laws of motion with exciting footage of top fuel dragsters, fighter jets, sky divers, and rockets. These examples are used to explain the motion of falling bodies and projectiles, circular motion, and how the motion of an object is relative to the observer's frame of reference. Concepts critical to understanding Newton's three laws of motion - acceleration, speed, velocity, and force also explained.

TEACHER'S PREPARATION

- Before the student uses the program set up the computer so that they can easily reach the mouse and the keyboard.
- Load the CD-ROM into the computer so that it is ready for the student to begin using.

- While students are able to work at their own pace, some students may benefit from using the program more than once.

SUGGESTED DISCUSSION QUESTIONS

1. Define motion.
2. Discuss how the motion of an object is relative to an observer's frame of reference.
3. State Newton's First Law (The Law of Inertia) in your own words.
4. Contrast speed, velocity and acceleration.
5. State Newton's Third Law in your own words and apply it to a common situation.
6. True or False? - The speed at which an object falls due to gravity is proportional to its mass. (Heavier objects fall faster.) Explain your answer.
7. What causes objects to reach a terminal velocity?
8. In terms of centripetal force, describe what keeps a speed skater on the ice as he/she skates around the curves.
9. Specify what two forces act on projectiles.
10. Account for the set position of geosynchronous satellites above the Earth.

VOCABULARY

Acceleration	Aristotle
Centripetal force	Force
Frame of reference	Galileo
Gravity	Horsepower
Inertia	Mass
Motion	MPH
Newton	Pressure
Reaction	Resistance
Speed	Velocity
weight	

PROGRAMS DETAILS

LENGTH:

21 minutes

SUBJECT AREAS:

Physics

AUDIENCE LEVELS:

Junior/Senior High

ORDER NUMBER:

1-9096SG

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