

Forces, Motion and Energy Grade 8 Evaluation

Teacher Section

Overview: Kids will demonstrate how well they understand important key concepts from this section.

Suggested Time: 45-60 minutes

Objectives: Students will be tested on the key concepts:

- Understand concepts of force, motion, energy, position, velocity, acceleration, momentum and impulse.
- Design experiments that demonstrate Newton's Three Laws of Motion and Maxwell's Four Equations.
- Know the nature of different forces, fields, and how they work in the real world.

Students will also demonstrate these principles:

1. Collecting and interpreting data from an experiment
2. Making valid observations based on their actions in lab

Materials (one set for entire class)

- | | |
|-------------------------------|--|
| • Balloon | • Sandpaper |
| • Ping pong ball | • 12V DV motor |
| • Hammer | • Bi-polar LED |
| • Paper clips (small) | • D-cell battery |
| • Small compass | • Thick magnet (not to be broken) |
| • Confetti | • Magnet that can be broken easily in half (one per student) |
| • Nail wrapped in magnet wire | |

Lab Preparation

1. Print out copies of the student worksheets, lab practical, and quiz.
2. Have a tub of the materials in front of you at your desk. Kids will come up when called and demonstrate their knowledge using these materials.

Lesson

The students are taking two tests today: the quiz and the lab practical. The quiz takes about 20 minutes, and you'll find the answer key to make it easy to grade.

Forces, Motion & Energy Grade 8 Evaluation

Student Worksheet

Overview: Today you're going to take two different tests: the quiz and the lab practical. You're going to take the written quiz first, and the lab practical at the end of this lab. The lab practical isn't a paper test – it's where you get to show your teacher that you know how to do something.

Lab Test & Homework

1. Your teacher will call you up so you can share how much you understand about forces, motion and energy. Since science is so much more than just reading a book or circling the right answer, this is an important part of the test to find out what you really understand.
2. While you are waiting for your turn to show your teacher how much of this stuff you already know, you get to get started on your homework assignment. The assignment is due next week, and half the credit is for creativity and the other half is for content, so really let your imagination fly as you work through it. Choose one:
 - a. Write a short story or skit about velocity, acceleration, force and energy from the perspective of being on a roller coaster. You'll read this aloud to your class.
 - b. Make a poster that teaches the main concepts of Newton's Three Laws of Motion. When you're finished, you'll use it to teach to a class in the younger grades and demonstrate each of the principles that you've learned.
 - c. Write and perform a poem or song about one (or all) of the different types of magnets. This will be performed for your class.