

Energy 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:

- Demonstrate their knowledge of potential and kinetic energy
- Show they can identify work, power, and force in a system
- Explain their understanding of thermal energy, heat, and the laws of thermodynamics

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 Set 1 (one set for entire class for the lab practical)

- string
- scissors
- tape
- pencil
- pulley with 6 feet of rope
- yardstick
- wood block
- tennis ball
- large washer or hexnut

Material Set 2 (one set for each student)

- 2 marshmallows
- 3 index cards
- 2 paper drinking cups
- roll of masking tape
- 5 drinking straws
- 6 rubber bands
- 10 feet of string
- 2 paper clips
- 7 popsicle sticks
- 3 marbles
- 1 toilet paper tube

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.

Energy Grade 7 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 energy and how it works. 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 TODAY, 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. You will have 20 minutes to complete one of the following challenges. You may use any or all of the materials provided:

- 2 marshmallows
- 3 index cards
- 2 paper drinking cups
- roll of masking tape
- 5 drinking straws
- 6 rubber bands
- 10 feet of string
- 2 paper clips
- 7 popsicle sticks
- 3 marbles
- 1 toilet paper tube

Choose one:

- a. Marshmallow Launcher Invent a device that launches a marshmallow into the air at least 6 feet high and 4 feet away from starting position.
- b. Water Shift Move a cup of water across a 6 ft. by 10 ft. area without spilling any water. (You may not carry it – the water in the cup must make it across the distance on its own.)
- c. Marble Run Create a free standing marble run where the marble must travel at least 10 feet and end in a cup.