

Energy Grade 6 Lab Practical

Teacher's Answer Key

This is your chance to see how well your students have picked up on important key concepts, and if there are any holes. Your students also will be working on their homework assignment as you do this test individually with the students.

Materials:

- Weight (like a rock)
- Dowel or yardstick
- Tape (to keep the rock on the yardstick)
- Something that weighs 100 grams (like an apple)
- A meter stick
- A calculator
- Scale

Lab Practical: Ask the student *Note: Answers given in italics!*

1. You will make a simple machine out of only these materials. Pretend the boulder weights four times your weight. How can you move the boulder with only a long plank of wood (the yardstick) and you?
The student will place the boulder on the end of the yardstick, and put a fulcrum, like their hand, close to the boulder. They will then push down on the other end of the yardstick and the rock moves up one fourth the distance that their hand pushes down on the yardstick end.
2. Give three examples of simple machines you use every day. *Scissors, screws, jam jar lids, ramps, a wedge in the door to hold it open, pliers, pulleys, and more!*

You will demonstrate that you know how energy is measured and how work is done using the materials.

3. In your own words describe what work is. *Work happens when something moves a distance against a force. Do you ever climb stairs, walk, ride a bicycle, or lift a fork to your mouth to eat? Of course you do. Each one of those things requires you to move something a distance against a force.*
4. Measure the weight of the object in grams. Record your measurement here: *Answers vary.*
5. Move the object one meter 5 times. How much work did you do? Record your data here: *Answers vary, but here's a sample:*

$$\text{Mass} = 100 \text{ g} = 0.1 \text{ kg, so Weight} = \text{mass} \times \text{gravity} = 0.1 \text{ kg} \times 9.81 \text{ m/s}^2 = 0.981 \text{ N}$$

$$\text{Work} = \text{Force} \times \text{Distance} = 0.981 \text{ N} \times 1 \text{ meter} \times 5 = \underline{4.9 \text{ Joules}}$$

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Student Worksheet

This is your chance to show how much you have picked up on important key concepts, and if there are any holes. You also will be working on a homework assignment as you do this test individually with a teacher.

Materials:

- Weight (like a rock)
- Dowel or yardstick
- Tape (to keep the rock on the yardstick)
- Something that weighs 100 grams (like an apple)
- A meter stick
- A calculator
- Scale

Lab Practical:

1. You will make a simple machine out of only these materials. Pretend the boulder weighs four times your weight. How can you move the boulder with only a long plank of wood (the yardstick) and you?

2. Give three examples of simple machines you use every day.

You will demonstrate that you know how energy is measured and how work is done using the materials.

3. In your own words describe what work is.

4. Measure the weight of the object in grams. Record your measurement here:

Move the object one meter 5 times. How much work did you do? Record your data on the reverse side.