

All About The Transfer Of Energy

Investigation Data Sheet



Transfer Of Potential Energy To Kinetic Energy

Energy is what it takes to do work, and work means moving something or making something happen. Active energy is called kinetic energy — it is energy in motion. Stored energy is called potential energy — it is energy waiting to be used. Whenever something moves, stored energy is changed into moving energy. It changes from potential to kinetic. This change is called a transfer of energy.

Objective

Observe the transfer of energy as a marble is held up and then dropped onto a target.

Materials

- a large handful of soft modeling clay
- a rolling pin
- a large marble
- a tape measure
- a ladder
- an adult helper

Safety Notice: All applicable laboratory safety rules must be followed. Students should not perform any experimental activity without the teacher's supervision and express permission. Students must follow safety guidelines and wear appropriate protective gear.

Procedure

1. Use the rolling pin to roll out the clay into a slab about 3 cm thick. This will serve as your target for the investigation. When you raise a marble, you are storing energy. This energy is released when you drop the marble. When the marble hits the clay, it makes a dent. Test whether there is a deeper dent in the clay if you drop the marble from a greater height.
2. Hold the marble about 1 meter over the clay target and drop it. The energy you stored in the marble by lifting it changes to moving energy as it falls. The depth of the mark in the clay is a measure of the work done. Record the depth of the mark and any observations in the table below.

Height of Marble	Depth of Dent in Clay	Observations
1 meter		
2 meters		
3 meters		

3. Hold the marble about 2 meters over the clay target and drop it. Record the depth of the mark and any observations in the table below.
4. With the help of a ladder and an adult helper, hold the marble about 3 meters over the clay target and drop it. Record the depth of the mark and any observations in the table below.

How does the dent compare to the other two that were made?

Conclusions

- What was the relationship between the height of the marble and the depth of the dent in the clay? Explain.

- During which attempt was the amount of potential energy the greatest? Explain.

- Use what you know about the transfer of energy to explain how a roller coaster works. Why is the first drop of a roller coaster always the steepest?
