



Energy and Motion: Teacher Tips & Helpful Hints

N.C.S.S: 7.P.1 Understand motion, the effects of forces on motion, and the graphical representations of motion.

7.P.2 Understand forms of energy, energy transfer and transformation, and conservation in mechanical systems.

- The activity is broken up into three different parts:
 - **Part 1: Potential and Kinetic Energy** (7.P.2.1)
 - **Part 2: Motion and Graphing** (7.P.1.3, 7.P.1.4)
 - **Part 3: Simple Machines** (7.P.2.4)

Part 1: Potential and Kinetic Energy

- The measuring tape is in mm too.
- Students may need to stabilize the tube. They can hold the tube or use tape.
- There is a *Potential and Kinetic Energy: Student Activity Sheet* available.

Part 2: Motion and Graphing

- Students are to begin the time when the marble hits the start line and not when they place it in the tube.
- Assistance may be needed to begin the time vs distance graph.
- The four different Distance/Time graphs are located on the *Motion and Graphing: Student Activity Sheet*.
- There is a *Motion and Graphing: Student Activity Sheet* available.

Part 3: Simple Machines

- We have included YouTube videos that show how to disassemble and assemble the nail clippers.

N.C.S.S Clarifying Objectives

- 7.P.1.3 Illustrate the motion of an object using a graph to show a change in position over a period of time.
- 7.P.1.4 Interpret distance versus time graphs for constant speed and variable motion.
- 7.P.2.1 Explain how kinetic and potential energy contribute to the mechanical energy of an object.
- 7.P.2.4 Explain how simple machines such as inclined planes, pulleys, levers, wheels, and axles are used to create mechanical advantage and increase efficiency.