

# WHEELS, LEVERS and PULLEYS

**Grade Level: 1 – 4**

**Lab Time: 1 1/2 hours**

## **DESCRIPTION**

Students get “geared up” for an uplifting and very active experience as they explore ways to make work easier. Using specially-designed hands-on equipment, they discover the mechanics of simple machines and the impact of friction.

## **OBJECTIVES**

Through individual exploration of the activity stations and group discussion, students will:

- Describe a force as a push or a pull
- Experiment with the concept of  $Work = Force \times Distance$ , and the trade-off between force and distance
- Discuss friction as a force that is neither good nor bad
- Describe how machines make our work either faster or easier
- Experiment with:
  - A wheel to reduce friction and observe how it reduces surface area of contact
  - A pulley to aid in lifting heavy loads and discover the trade-off between effort and distance
  - A gear to change direction or speed at which something turns
  - An inclined plane and discover how the slope affects the effort needed to move an object, increasing distance to decrease effort
  - A wedge to cut and separate
  - A screw and how it moves an object up or down a shaft
  - A lever to aid in lifting heavy loads, demonstrate how the placement of the fulcrum is important to the effort needed, and describe the three classes of levers and how they differ in form and function

**“Wheels, Levers & Pulleys” supports many elementary school curricula on the subject of simple machines.**

