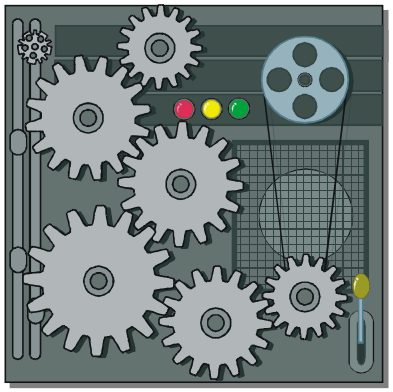

# #8900

# SIMPLE MACHINES

Grade Levels: 4-8
16 minutes
AIMS MULTIMEDIA 1999

## DESCRIPTION

Real-life examples demonstrate the function and purpose of the six simple machines: the inclined plane, the wedge, the screw, the lever, the wheel and axle, and the pulley. Includes a brief explanation of work and force.

## ACADEMIC STANDARDS

### Subject Area: Physical Sciences

- Standard: Understands forces and motion
  - Benchmark: Knows the relationship between the strength of a force and its effect on an object (e.g., the greater the force, the greater the change in motion; the more massive the object, the smaller the effect of a given force)

## INSTRUCTIONAL GOALS

1. To identify simple machines within the community.
2. To illustrate the use of each of the six simple machines: inclined plane, wedge, screw, lever, wheel and axle, and pulley.
3. To stimulate the appropriate use of selected vocabulary.

## VOCABULARY

1. fulcrum
2. gears
3. inclined plane
4. lever
5. machine
6. pulley
7. screw
8. simple machine
9. wedge
10. wheel and axle

## BEFORE SHOWING

1. What types of tools and machines do you use every day to help you get work done? How does the tool or machine help you?


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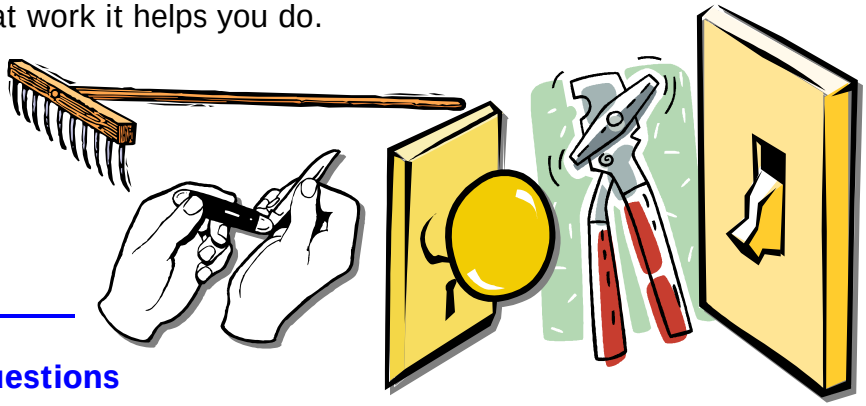
2. How were some of the same tasks you do today done many years ago, before the tools and machines were invented to make work easier?
3. Can you think of other tasks that are done that could be made easier if a machine or tool was invented?
4. What is the purpose of a machine?
5. Next to each word below, write if you think it is a machine or not. If you do believe it's a machine, write what work it helps you do.
   a. can opener
   b. doorknob
   c. light switch
   d. rake
   e. knife



## AFTER SHOWING

### Discussion Items and Questions

1. How is a simple machine different from a more complex machine? (A simple machine has few or no moving parts.)
2. What is the purpose of a machine? (A machine helps to get work done and makes work easier.)
3. What is needed to get work done? How does it happen? (A force needs to be applied to an object to get work done; work happens when a force moves or changes the shape of an object.)
4. How is force related to distance? What is the formula used to determine the amount of work done? (If the amount of force applied to an object changes, the distance the object moves will change; Work = force x distance.)
5. Define *force*. (The push or pull applied to an object.)
6. Name the six simple machines. (Inclined plane, wedge, screw, lever, pulley, wheel and axle.)
7. Which simple machine is used to change the direction of a force? (Pulley.)
8. A seesaw, wheelbarrow and rake are examples of what type of simple machine? (Lever.)
9. Explain how a screw is really an adapted incline plane. (The incline plane curves around a shaft and is used to open and close, clamp, drill, or hold things together.)
10. Which simple machine is used to raise or split objects? (Wedge.)
11. Give an example of a time when you might use an inclined plane. (Answers will vary.)
12. Give an example of a wheel and axle. (Answers will vary.)

### Applications and Activities

1. Give students the vocabulary words plus some familiar words that are related to those on the vocabulary list. Have them choose one new word and one familiar word to make a possible sentence.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2. Have students use graph paper to create a crossword puzzle using the vocabulary words.
3. Take students on a tool and machine hunt. Have students make a list of all the tools and machines they see and use in the classroom. Compare and consolidate lists.
4. Have each student prepare a note sheet for each type of simple machine. Headings such as "Use," "Example," and "Description" would be helpful for organization.

## RELATED RESOURCES

### Captioned Media Program

- Simple Machines: Inclined Plane, Wedge and Screw #3657
- Simple Machines: Lever, Wheel, Axle, Pulley #3658

### World Wide Web


The following Web sites complement the contents of this guide; they were selected by professionals who have experience in teaching deaf and hard of hearing students. Every effort was made to select accurate, educationally relevant, and "kid-safe" sites. However, teachers should preview them before use. The U.S. Department of Education, the National Association of the Deaf, and the Captioned Media Program do not endorse the sites and are not responsible for their content.

- **SIMPLE MACHINES**

http://sln.fi.edu/qa97/spotlight3/spotlight3.html

From the Franklin Institute Online, gives a clear and concise definition and common examples of each simple machine. A link is also provided for additional information about each.

- **SIMPLE MACHINES**

http://library.thinkquest.org/j002079f/sub3.htm

A ThinkQuest site, explains each simple machine. Find simple machines around your house and neighborhood and send this site a picture for a possible display!