

SIMPLE MACHINE SCAVENGER HUNT

SCIENCE TEKS OBJECTIVES

§112.18	8. Force, motion, and energy. The student knows force and motion are related to potential and kinetic energy. The student is expected to: (E) investigate how inclined planes and pulleys can be used to change the amount force to move an object.
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CAREER EXPLORATION AND PORTALS TEKS OBJECTIVES

§127.3 c	2. The student analyzes personal interests and aptitudes regarding education and career planning. The student is expected to: (C) develop and analyze tables, charts, and graphs related to career interests; and (D) determine the impact of technology on careers of personal interest. 4. The student evaluates skills for personal success. The student is expected to: (C) use a problem-solving model and critical-thinking skills to make informed decisions; and (F) identify skills that can be transferable among a variety of careers.
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Instructional Directions This activity is designed to take 30–45 minutes as presented below.

1. Students review simple machines. Teachers review just simple machines that apply to their curriculum.
2. Students are given pictures of Workforce Solutions high-skill, high-growth jobs and challenged to hunt for simple machines found in these pictures. (You may use pictures from **Blackline Masters S1a and S1d** or any of your choosing.) This activity should be timed. This could be done in pairs or in a larger group depending on the number of copies of pictures you have. Students list simple machines found in each pic.
3. Students are then challenged to use Workforce Solutions' High-Skill, High-Growth Jobs List to hypothesize which picture fits with which job.

Learning Outcome(s) The students will be able to identify simple machines at work in jobs pictures. Students will become more aware of the types of jobs available in the Gulf Coast region.

Related Industries/Occupations All those found in Workforce Solutions' High-Skill, High-Growth Jobs List

Deliverables This could be a paperless activity for discussion or students could complete the Simple Machines Scavenger Hunt Activity. (**Blackline Master S4**)

- Resources Needed**
- Same photos from Blackline Master S1a & S1d
 - Blackline Master S4
 - Workforce Solutions' High-Skill, High-Growth Jobs List

- Vocabulary or Concepts (New and/or Challenging)**
- | | | |
|-------------------|------------------|------------------|
| • Scavenger hunt | • Inclined plane | • Wheel and axle |
| • Strategy | • Pulley | • Wedge |
| • Simple machines | • Lever | • Screw |

MODIFICATIONS & EXTENSIONS

Teacher could make up a scavenger hunt for his/her own school building by writing clues to discover specific simple machines found on his/her campus. (For example, one item to find might be "locate the simple machine found to the left of the entrance to the gym.")

Adapted from: Simple Machine Scavenger Hunt developed by N. Stewart



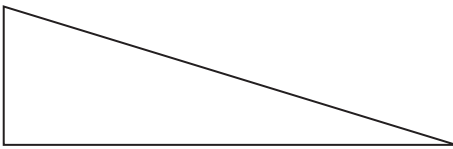
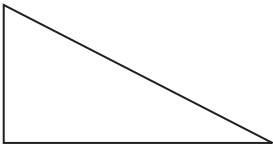
Name _____

Period _____

Date _____

SIMPLE MACHINES

INCLINED PLANE



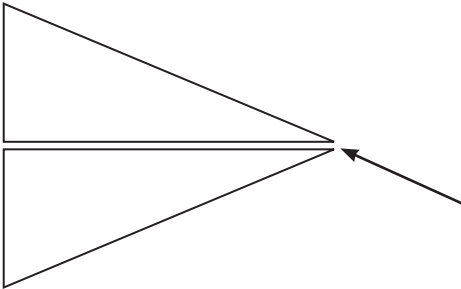
More distance, less force

DESCRIPTION

(Which job is using or might use this machine? What does it look like, what does it do, how does it work? Give an example.)

- Increase the distance over which you exert force to decrease the size of the force
- No moving parts
- Mechanical advantage of an inclined plane increases as slant of plane decreases

WEDGE



DESCRIPTION

(Which job is using or might use this machine? What does it look like, what does it do, how does it work? Give an example.)

- Moving incline plane
- Greater distance, less force (longer thinner wedge, less effort)
- 2 wedges put together – knife, ax
- Lock, key – series of wedges, zipper

SCREW



DESCRIPTION

(Which job is using or might use this machine? What does it look like, what does it do, how does it work? Give an example.)

- Inclined plane wrapped around a central bar, or cylinder to form a spiral
- Multiplies effort force by acting through a longer distance
- Closer threads – more distance, less force

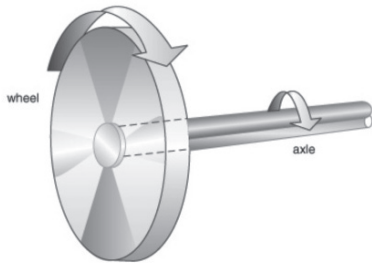
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SIMPLE MACHINES CONTINUED...

WHEEL AND AXLE



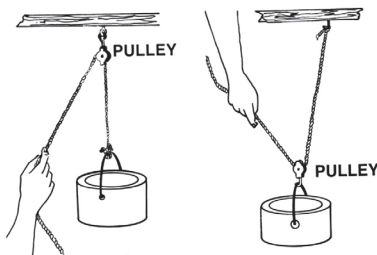
THE WHEEL AND AXLE IS A WHEEL CONNECTED TO A RIGID POLE.

DESCRIPTION

(Which job is using or might use this machine? What does it look like, what does it do, how does it work? Give an example.)

- Two circular objects of different sizes working together
- Wheel moves greater distance than axle
- The greater the difference in size between the wheel and axle, the greater the mechanical advantage

PULLEY

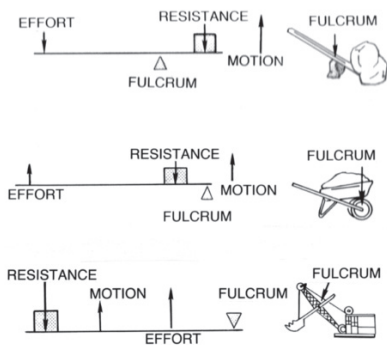


DESCRIPTION

(Which job is using or might use this machine? What does it look like, what does it do, how does it work? Give an example.)

- Rope, belt, chain around grooved wheel
- Mechanical advantage: Changes direction or amount of force
- Increase mechanical advantage, by adding another pulley to create a pulley system

LEVER



DESCRIPTION

(Which job is using or might use this machine? What does it look like, what does it do, how does it work? Give an example.)

- Rigid bar, free to move around a fixed point (fulcrum)
- Decrease distance, changes direction of force
- Divided into three classes depending on location of fulcrum and forces (effort force and resistance force)