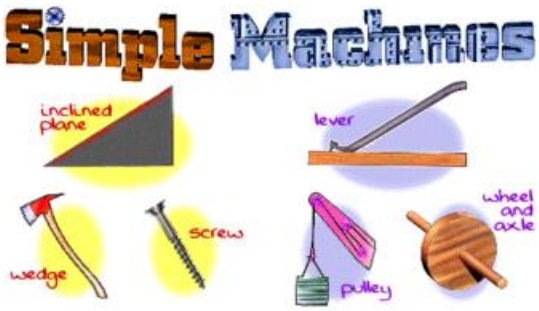
Name: _____

What Are Simple Machines?



Suppose you needed to move an object. You might use tools to help you. Machines are tools that use energy to do work. **Simple machines** are machines with a few or no moving parts. Machines make work easier. You probably have used several of the six different kinds of simple machines.

Pretend you need to lift a heavy object like a big rock. You could use a lever to help you. A **lever** is a simple machine made of a board that is used to move objects. A seesaw or teeter-totter is really a lever. The middle of the seesaw has something under it to hold it up. This is called the fulcrum. The lever moves back and forth on the fulcrum. On a seesaw, each person takes turns lifting the other person.

To lift a rock with a lever, you would need a board to be the lever and a fulcrum to hold it up. Another rock can be a fulcrum. The object being lifted is called the load. You can lift a load most easily by moving the fulcrum close to the load. You move the load by pushing down on the end of the lever.

A hammer is another kind of lever. A hammer pulls a nail out of a piece of wood. Where is the fulcrum on a hammer?

Another kind of simple machine is an inclined plane. An **inclined plane** has a flat surface that is higher on one end. A ramp is an inclined plane that helps move objects. Often you see a ramp used to load or unload a truck. You can use an inclined plane to help move an object to a higher or lower place.

You might see inclined planes in other places. A slanted road is an inclined plane. A ramp for wheelchairs helps them move more easily into and out of buildings. Your bathtub is an inclined plane. The back of the bathtub is higher than the drain. This helps all the water to run down the drain after a bath.

A **wedge** is a simple machine that is used to push two objects apart. It is also used to cut or split an object. An ax is a wedge that splits wood. The front of a boat is a wedge that splits the water so the boat can pass through it more easily. A knife is a wedge that has a sharp edge to cut as it wedges the two pieces apart.

A **screw** is another simple machine that is used to hold objects together. A screw is really an inclined plane that is wrapped around a rod. A metal screw can hold two pieces of wood or metal together. A jar lid is a large screw. The ridges inside the lid of the jar are the ridges of the screw. These ridges hold the jar and the lid together.

A **wheel and axle** is a simple machine made of a rod attached to the center of a wheel. A wheel and axle is a special kind of lever that moves or turns objects. The axle, or rod, turns when you put force on the wheel.

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You probably have seen a wheel and axle on cars, roller skates, and wagons. A doorknob also is a wheel and axle. On a bicycle, you might see gears. Gears are wheels with jagged edges like teeth. The teeth help the wheels turn each other. You can find gears in bicycles, cars, and many other machines.

A **pulley** is a simple machine made of a wheel and a rope. The rope fits around the edge of the wheel. A person pulls down on the rope to raise the load. You can use a pulley to move a load up, down, or sideways.

A pulley can move an object to a place that is hard to reach. For example, you might use a pulley to raise a flag to the top of a pole. A pulley also can help move a heavy load.

People use tools to make work easier. People have been using simple machines for at least 5,000 years. There are six kinds of simple machines. They can be used together to make different kinds of machines.

What Are Simple Machines?

Questions

1. Name the six kinds of simple machines.

   _____

   _____

_____ 2. Which kind of simple machine needs a fulcrum?

   A. lever
   B. wedge
   C. inclined plane
   D. screw

_____ 3. Which other kind of simple machine is a special kind of lever?

   A. pulley
   B. screw
   C. wheel and axle
   D. wedge

_____ 4. Which other kind of simple machine is a special kind of inclined plane?

   A. screw
   B. wedge
   C. wheel and axle
   D. pulley

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_____ 5. _____ are wheels with jagged edges like teeth.

A. simple machines
B. gears
C. wedges
D. screws

_____ 6. Suppose you needed to move a load sideways and upward. Which simple machine could you use?

A. wheel and axle
B. screw
C. wedge
D. pulley

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How many of these can you write about? Think! Write! Check all the ones you answered.

- ☐ How can levers and inclined planes help move objects?
- ☐ Make a poster of simple machines. You may cut out pictures from magazines or newspapers if your teacher allows it. Include at least two pictures of each of the six kinds of simple machines. Label the kind of simple machine used in each picture.

Don't stop writing. Use a blank piece of paper to continue.