Science and Health

SIMPLE MACHINES

A DepEd-BEAM Distance Learning Program supported by the Australian Agency for International Development
Hello kids!
Are you ready for the next module?

A tool is any advice that helps you do work. You may not think of scissors, pliers, nails and fork as machines, but they are. Anything that helps you do work with less effort is a machine.

What would life be without machines? A machine helps people do work faster, using less force.

There are two types of machines. The simple and the compound machine. All machines need energy in order to function. Energy maybe obtained from different sources. Today, the majority of machines are powered by electricity.

People will use and make machines to make life convenient.

In this module, you will know the different kinds of simple machines and its main parts.
Let’s Try This

Match column A with B write the letter of the correct answer on the space provided.

<table>
<thead>
<tr>
<th>A</th>
<th>B</th>
</tr>
</thead>
<tbody>
<tr>
<td>_____1. An inclined plane wound around a post.</td>
<td>a. Wheel and axle</td>
</tr>
<tr>
<td>_____2. Bar that turns or pivots</td>
<td>b. Inclined plane</td>
</tr>
<tr>
<td>on a fixed point called fulcrum.</td>
<td></td>
</tr>
<tr>
<td>_____3. Inclined plane with a thick base and</td>
<td>c. Wedge</td>
</tr>
<tr>
<td>sharp edge.</td>
<td></td>
</tr>
<tr>
<td>_____4. A ramp or a slope that reduces</td>
<td>d. Screw</td>
</tr>
<tr>
<td>the forces you need to exert in</td>
<td>e. Pulley</td>
</tr>
<tr>
<td>in lifting something.</td>
<td></td>
</tr>
<tr>
<td>_____5. A device in which a small wheel</td>
<td>f. Lever</td>
</tr>
<tr>
<td>Is attached at the center of a larger</td>
<td></td>
</tr>
<tr>
<td>wheel.</td>
<td></td>
</tr>
</tbody>
</table>

Score: [ ]

Let’s Study This

A machine is a tool that makes work require less of your efforts. For example, it is easier to raise a heavy rock using a crowbar than lifting it. Likewise, it is easier to raise and lower the flag using a pulley than going up and down the flagpole. Can you imagine using these activities without the help of machines?

A crowbar and a pulley are two examples of simple machines. A simple machine is a tool used to change the size or the direction of the force. There are six kinds of simple machines namely the lever, the pulley the wheel and axel, the inclined plane, the wedge and the screw.
1. Lever – bar that turns or pivots on a fixed point called fulcrum. Examples are hammer, broom, opener, shovels, crowbars and fishing poles.

2. Pulley – a device consisting of a rope that passes over a grooved Wheel.
   a. Simple fixed pulley
   b. Movable pulley

3. Wheel and axle – a device in which a small wheel is attached at the center of a larger wheel. Examples are doorknob, eggbeater, sharpener and grinder.

4. Inclined plane – a ramp or a slope that reduce the forces you need to exert in lifting something. Example is the stairway.

5. Wedge – inclined plane with a thick base and a sharp edge. An inclined plane uses the sharp narrow end to out – through a material. Examples are ax, knife, teeth and chisel.

6. Screw – an inclined plane wound around a post. Examples are jack, bulb, screw driver.

When you use the simple machines to do work, two kinds of forces are involved the force applied to the machine and the force applied by the machine to act against another force like friction and gravity. The force applied to a machine is a force called the resistance force.

The main parts of a simple machine are the : effort arm resistance arm and fulcrum. In a wheel and axle, the parts are the wheel and axle.

Let’s Do This

ACTIVITY 1.

Identifying the simple machines.

You need:
Scissors    Eggbeater
Slide       Nail
Pulley      Screw
Do these:

1. Examine each machine and look for its observable characteristics.
2. Identify what kind of machine is each tool.
3. Enter your observation in a table like this:

<table>
<thead>
<tr>
<th>Tool</th>
<th>Observable Characteristics</th>
<th>Kind of Machine</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scissors</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Slide</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pulley</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Eggbeater</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nail</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Screw</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Answer These:

a. Does each tool do a particular kind of task?
b. How many tasks can each tool multiply your effort?
c. Which tool can be called machine? Why or why not?
d. Should these tools be called machine? Why or why not?
e. Will these tools do work by themselves? Explain.

Activity 2

Identifying the main parts of the simple machines

You need:
Pictures of the six simple machines

Do these:

1. Study the pictures of each simple machine.
2. Identify the parts of these machines.
3. Do answer these
   a. Do simple machines have similar or different parts?
   b. What are the parts common to them.
Let’s Do More

Group the following examples of simple machine. Write them in the box under its proper heading.

Jack, ax, door knob, eggbeater, hammer, fishing poles, sharpener, grinder, bulb, knife, broom, screw driver, lath, chisel, crowbars, stair.

<table>
<thead>
<tr>
<th>Pulley</th>
<th>Lever</th>
<th>Wedge</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wheel and Axle</td>
<td>Inclined Plane</td>
<td></td>
</tr>
</tbody>
</table>

Score:  

80
Machines are mechanical devices that help us do work more easily and faster.

SCIENCE FACT FILE

Machine are of great help to us. Do not use them to harm others or to take advantage of others.
Answer Key

Let’s Try This

1. D  
2. F  
3. C  
4. B  
5. E  
6. A

Let’s Do More

<table>
<thead>
<tr>
<th>Inclined plane</th>
<th>Lever</th>
<th>Wedge</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stairs</td>
<td>Hammer, broom, Opener, shovels, Crowbars, Fishing poles</td>
<td>Ax, Knife, Tat, chisel</td>
</tr>
<tr>
<td>Wheel and Axle</td>
<td>Screw</td>
<td>Jack, bulb</td>
</tr>
<tr>
<td>Door knob, eggbeater, Sharpener, grinder</td>
<td>Screw driver</td>
<td></td>
</tr>
</tbody>
</table>