



- JANUARY**
Makugihon
- FEBRUARY**
Mahigugmaon
- MARCH**
Matinabunyon
- APRIL**
Matinahuron
- MAY**
Mahapsay og Malimpyog
- JUNE**
*Maabtik og Musunod sa
Dhaklong Oras*
- JULY**
Maantigo og Maabilidad
- AUGUST**
*Maginhuhunahan
para sa Uban*
- SEPTEMBER**
Madaginton
- OCTOBER**
Matinud-unon
- NOVEMBER**
Masaligan
- DECEMBER**
Maalampon

6



SCIENCE

Quarter 3 - Module 6 Using Simple Machines



Name of Learner: _____

Grade & Section: _____

Name of School: _____

Science – Grade 6
Support Material for Independent Learning Engagement (SMILE)
Quarter 3 – Module 6: Using Simple Machines
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Using Simple Machines



What I Need to Know

In this module, you are expected to:

1. **Manipulate simple machines to describe their characteristics and uses (S6FEIIIg-i-3).**

The activities included are designed for you to achieve the following objectives;

- identify and describe the different kinds of simple machines;
- use simple machines in doing certain tasks.



What's In

In the previous lesson, you learned about the how sound, heat, light, and electricity can be transformed. Can you still recall them? Answer the activity below.

Directions: Observe the energy produced by the activity specified in each item. Indicate the energy transformation that occur on the device or object used in the activity. Write your observations in the table below. Item number one is done for you.

Activity	Energy Produced	Energy Transformation
1. turning on the flashlight powered by dry cells	light energy	chemical energy to electrical energy to light energy
2. lighting a candle with a matchstick		
3. playing music on the cellphone		
4. watching shows on the television		
5. hammering nails into wood		



What's New

Several decades ago, people had to do most of their daily activities without appliances. Those were the times when they need to exert much effort and make use of much energy from physical work just to accomplish certain tasks. But nowadays, much comfort and convenience is brought to people's lives due to the availability of different kinds of machines. The energy transformation needed to complete specific activities is done efficiently due to the different functions performed by these machines.

Machines are not only used in factories and commercial centers but also at home and in school. Many of the utensils that your mother frequently use in preparing your daily meals and some of the gardening tools and school supplies that you often use are examples of simple machines. They make our tasks easier. These simple machines are usually put together to form compound or complex machines and other devices that help much in the completion of our daily tasks.

Before discussing about the characteristics of simple machines, let us find out if you can easily distinguish whether a device or tool is a simple machine or not. Do the activity below.

Directions: Study each picture. Put (✓) if the picture shows a simple machine or (X) if it is not.



<https://examples.yourdictionary.com/simple-machine-examples-from-around-the-house.html>

1. _____



<https://examples.yourdictionary.com/simple-machine-examples-from-around-the-house.html>

2. _____



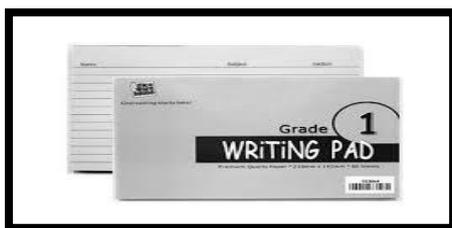
<https://examples.yourdictionary.com/simple-machine-examples-from-around-the-house.html>

3. _____



<https://examples.yourdictionary.com/simple-machine-examples-from-around-the-house.html>

4. _____



<https://www.officewarehouse.com.ph/product/023064/>

5. _____



<https://sciencing.com/types-simple-machines-found-home-6387889.htm>

6. _____



What is it

A **simple machine** is a tool used to change the size or direction of the force. There are six kinds of simple machines namely: lever, pulley, wheel and axle, inclined plane, wedge, and screw.

When you use 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. The force applied by the machine is called the **resistance force** and the effort applied to a machine is called **effort force**.

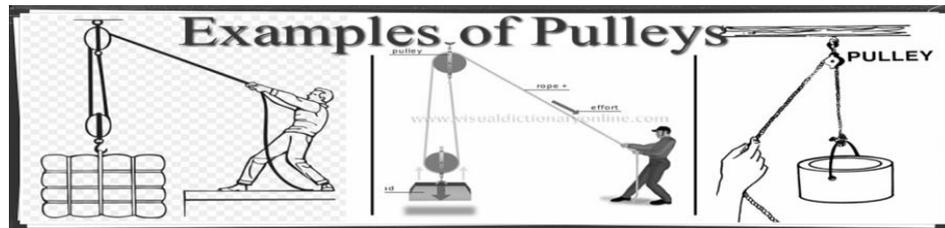
Each kind of simple machine is described below:

Lever - A bar that turns or pivots on a fixed point called fulcrum. Wheelbarrows, fishing rods, shovels, brooms, arms, legs, boat oars, crow bars, and bottle openers are all examples of levers.



https://www.google.com/search?q=example+of+lever+simple+machine&sxsrf=ALeKk00VM2uzenl1GrvYMeByJDjORu1nw:1610115282809&source=lnms&tbm=isch&sa=X&ved=2ahUKEwi5-enrwozuAhXYBogKHOC9ASOO_AUoAXoECCcOAw&biw=1137&bih

Pulley - A device consisting of a rope that passes over a grooved wheel. The pulley helps you to move the load or change the direction of force. Some examples of pulleys include cranes, flag poles, and window blinds.



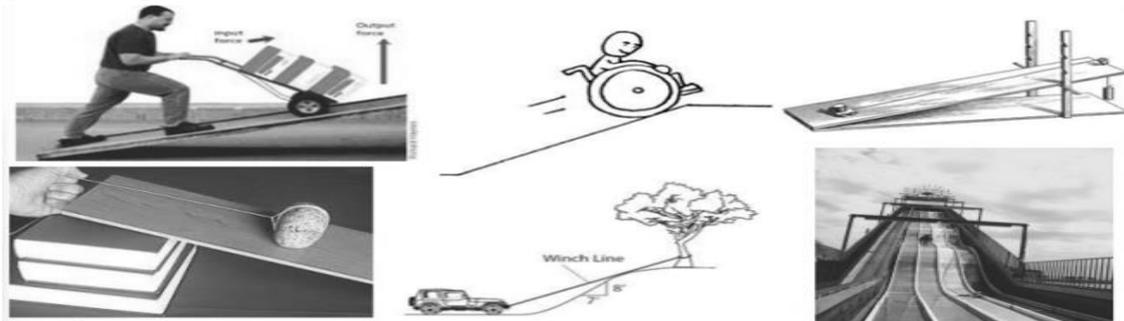
Source: <http://lynx7.weebly.com/pulley.html>

Wheel and axle - A device which is made of two circular or cylindrical objects fastened together that rotate about a common axis. Some examples of the wheel and axle include a door knob, a screwdriver, an egg beater, a water wheel, the steering wheel of an automobile, and the crank used to raise a bucket of water from a well. When the wheel in a wheel and axle machine is turned, so is the axle, and vice versa.



Source: <https://science.jrank.org/pages/4056/Machines-Simple-Wheel-axle.html#:~:text=Some%20examples%20of%20the%20wheel,the%20axle%2C%20and%20vice%20versa>
 (Source: <https://eschool.iaspaper.net/wheel-axle/>)

Inclined plane -A ramp or slope that reduces the force needed to exert in lifting something. Examples of inclined planes are ramps, sloping roads, carpenter's planes, slanted roof, ladder and slides.



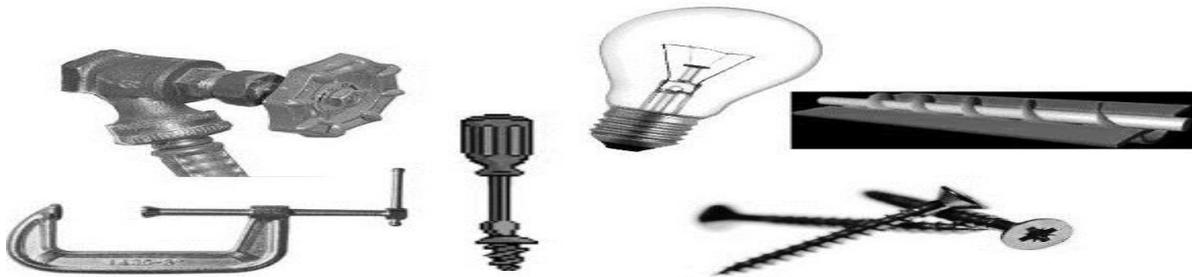
(SOURCE: https://engineering.fandom.com/wiki/Inclined_plane#:~:text=Examples%20of%20inclined%20planes%20are,to%20bridge%20a%20height%20difference)

Wedge - A device shaped like an inclined plane that uses the sharp narrow end to cut through a material. Some of wedges are axes, needles, chisels, rakes, and plows.



Source: <https://www.google.com/url?sa=i&url=https%3A%2F%2Fwww.slideshare.net%2Fmhallari%2Fsimple-machines-12173815&psig=AOvVaw1wJZhjOacP5L0arE4ABL&ust=1610256245702000&source=images&cd=vfe&ved=0CAIOjRxqFwoTCMCDm5GOju4CFOAAAAAdAAAAABAD>

Screw - An inclined plane wrapped around a cylinder to form a spiral. Screws are used to join pieces of wood together. Pieces of iron can also be joined together with screws. A jack, bulb and hooks are examples of screw.

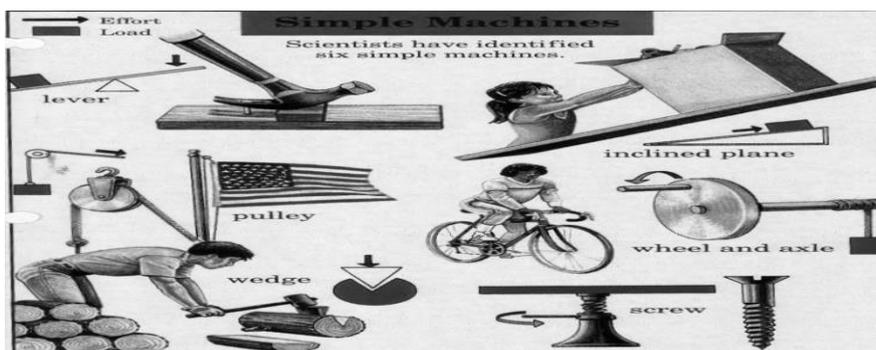


Source: <https://www.google.com/url?sa=i&url=https%3A%2F%2Fwww.pinterest.com%2Fpin%2F66357794492268877%2F&psig=AOvVaw31w3UgGqVO6.JaCxeSFEmit&ust=1610257309336000&source=images&cd=vfe&ved=0CAIOjRxqFwoTCKiWxq2Sju4CFOAAAAAdAAABAj>



What's More

Directions: Study the picture below. Identify the kind of simple machine that is needed to do each task. Write your answer on the blank before each item.



Source: http://www2.needham.k12.ma.us/broadmeadow/techcenter/modena_links/simple_machines_gr5/simple_def.html

- _____ 1. raising the flag up the pole
- _____ 2. climbing a tree using a ladder
- _____ 3. slicing a loaf of bread
- _____ 4. lifting a pail of mixed cement up the rooftop
- _____ 5. opening a can of sardines using a knife
- _____ 6. cutting the trunk of a big tree
- _____ 7. gardening in the school yard using spade and trowel
- _____ 8. cutting wire for the clothesline using pliers
- _____ 9. turning the doorknob to open doors
- _____ 10. smoothing the surface of a wood using hand plane



What I Have Learned

Directions: Identify each kind simple of simple machine and group them accordingly.

crowbar	simple pulley	a long ramp	needle
doorknob	screw driver	handle of water faucet	
ladder	knife	seesaw	

Lever	Pulley	Wheel and axle	Inclined plane	Wedge	Screw



What I Can Do

CONSTRUCTING SIMPLE MACHINES

(Perform this activity with adult supervision.)

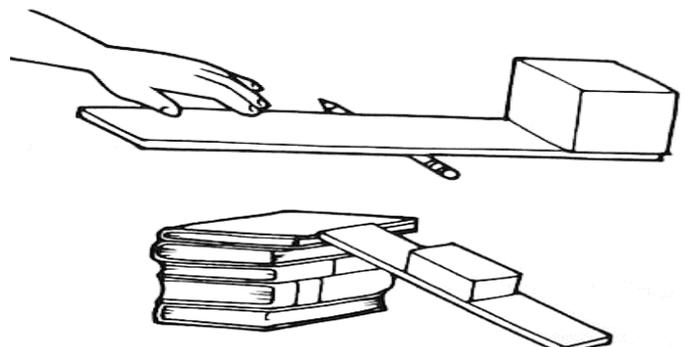
Science Skills: observing, inferring, comparing, communicating

Time Frame: 15-20 minutes

You Will Need:

Activity A

- 1-foot ruler
- pencil
- paperweight



Activity B

- hard rulers
- adhesive tape
- pile of books
- load
- chain of rubber bands

Activity C

- paper
- pencil

What to Do:

- A.**
1. Tape a pencil on your table top. Let this be the fulcrum.
 2. Let a hard 1-foot ruler rest on top of a pencil, with the 6- inch mark right on the fulcrum.
 3. Place the rectangular paperweight at the 5-inch mark.
 4. Lift the weight by pressing your finger on points at the other side of the fulcrum.
 5. Observe where it will take less effort to lift the load- at points closer to or farther away from the fulcrum.
- B.**
1. Make an inclined plane on your table using some hard rulers taped
 - a. together side by side.
 2. Use this plane to connect the table top to another slightly elevated position, like a top a pile of books.
 3. Try to move a light object up and down the inclined plane. Make the inclined plane steeper and observe the difference when moving up objects on different inclinations.
- C.**
1. Cut a piece of paper into a triangle.
 2. Wrap the paper around a pencil. See that the inclined plane “ramp” of the paper is now spiraled around the length of the pencil. You now have a paper model of a screw.
 3. Starting from the end of your pencil, trace the thread of the screw with your finger. See how your finger spirals its way up to the top of the pencil.

Questions:

1. What will happen if you used a triangle with a steeper incline?
2. What will happen if the triangle had a less steep incline?
3. How will new screws compare with the original screws?

Source: Science Beyond Borders 6 by Evelyn T. Sarte, et.al, page 163



Assessment

Direction: Encircle the letter of the correct answer.

- Which of these is a lever?
A. crowbar B. screw C. knife D. ladder
- Which of these is NOT an inclined plane?
A. ramp B. stairs C. sloping roads D. scissors
- What kind of simple machine is a jack which is used to lift a car to be repaired?
A. screw C. pulley
B. lever D. inclined plane
- What does a screw do?
A. multiplies speed and direction
B. uses a small force over a longer distance
C. doubles the effort force or strength
D. increases resistance force
- Which simple machine has a rope that passes over a grooved wheel?
A. lever B. inclined plane C. screw D. pulley
- Which of these is NOT a wheel and axle?
A. grinder C. weighing scale
B. egg beater D. doorknob
- Which of these is used to raise and lower the flag?
A. lever
B. pulley
C. inclined plane
D. screw
- Which of these describe simple machines such as the knife, nails and needles?
A. They have sharp narrow end that can cut through a material.
B. They have elevated surfaces that are used to lift something with reduced effort.
C. They have a small disk or shaft that is attached to a wheel.
D. They are inclined planes wrapped around a cylinder to form a spiral.
- Which of the following is an inclined plane that winds around a nail?
A. wedge
B. screw
C. lever
D. pulley
- Why are food tongs, hammers and shovels classified as levers?
A. They have sloping surfaces that reduces effort to lift something.
B. They have a small disk or shaft that is attached to a wheel.
C. They have parts like effort arm, resistance arm and fulcrum.
D. They have ropes that pass over a grooved wheel.



Additional Activities

Directions: Look around the surroundings. List down at least 10 simple machines that you can see. Classify them as lever, inclined plane, pulley, wedge, or wheel and axle and give some of its uses. Try to manipulate the simple machines you found to see how they work.

Simple Machine	Kind	Uses
1.		
2.		
3.		
4.		
5.		
6.		
7.		
8.		
9.		
10.		

Answer Key

What I Have Learned	
Lever	crowbar
Pulley	simple pulley
Wheel and Axle	doorknob screwdriver handle of water faucet
Inclined Plane	ladder a long ramp
Wedge	knife needle
Screw	

Assessment	
1. A	6. C
2. D	7. B
3. A	8. A
4. B	9. B
5. D	10. C

Additional Activities
(Answers may vary.)

What's In	
Energy Produced	1. -
Energy Transformation	2. light energy
-	3. sound energy
-	4. light/sound energy
-	5. sound energy

What's New	
1. ✓	5. sound energy
2. ✓	6. potential energy to mechanical energy to sound energy
3. ✓	7. electrical energy to mechanical energy to sound/light energy
4. ✓	8. electrical energy to sound energy to heat energy
5. X	9. chemical energy to light energy to heat energy
6. ✓	10. -

What's More	
1. pulley	1. pulley
2. inclined plane	2. inclined plane
3. wedge	3. wedge
4. pulley	4. pulley
5. wedge	5. wedge
6. wedge	6. wedge
7. lever	7. lever
8. lever	8. lever
9. wheel and axle	9. wheel and axle
10. wedge	10. wedge

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Jovita H. San Pablo. Rosalinda M. Cupcupin. *Real-Life Science 6*. Abiva House, Inc. Copyright 2016

Evelyn T. Sarte, et.al. *Science Beyond Borders Textbook*. Vibal Group, Inc. Copyright 2016.