

Science

Quarter 3 – Module 3: Characteristics and Uses of Simple Machines



Science – Grade 6
Alternative Delivery Mode
Quarter 3 – Module 3: Characteristics and Uses of Simple Machines
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Quarter 3 – Module 3: Characteristics and Uses of Simple Machines

Introductory Message

This Self-Learning Module (SLM) is prepared so that you, our dear learners, can continue your studies and learn while at home. Activities, questions, directions, exercises, and discussions are carefully stated for you to understand each lesson.

Each SLM is composed of different parts. Each part shall guide you step-by-step as you discover and understand the lesson prepared for you.

Pre-tests are provided to measure your prior knowledge on lessons in each SLM. This will tell you if you need to proceed on completing this module or if you need to ask your facilitator or your teacher's assistance for better understanding of the lesson.

At the end of each module, you need to answer the post-test to self-check your learning. Answer keys are provided for each activity and test. We trust that you will be honest in using these.

In addition to the material in the main text, Notes to the Teacher are also provided to our facilitators and parents for strategies and reminders on how they can best help you on your home-based learning.

Please use this module with care. Do not put unnecessary marks on any part of this SLM. Use a separate sheet of paper in answering the exercises and test and read the instructions carefully before performing each task.

If you have any questions in using this SLM or any difficulty in answering the tasks in this module, do not hesitate to consult your teacher or facilitator.

Thank you.



What I Need to Know

This module was designed and written with you in mind. It is here to help you manipulate simple machines to describe their characteristics and uses (**S6FE-IIIg-i-3**). The scope of this module permits it to be used in many different learning situations. The language used recognizes the diverse vocabulary level of students. The lessons are arranged to follow the standard sequence of the course. But the order in which you read them can be changed to correspond with the textbook you are now using.

The module has only one lesson:

- **Lesson 1** – Characteristics and Uses of Simple Machines

After going through this module, you are expected to:

1. describe the characteristics and uses of simple machines;
2. manipulate the different simple machines; and
3. show appreciation on the importance of simple machines to daily life.



What I Know

Directions: Read carefully each question or situation then answer based on your experience in manipulating simple machines. Write the letter of your answer on a separate sheet of paper.

1. Which of the following helps people do work which requires less effort?
 - A. device
 - B. equipment
 - C. gears
 - D. simple machines

2. During the flag ceremony, Karl is in charge of raising the flag. The simple machine Karl uses to raise the flag is called _____.
 - A. lever
 - B. pulley
 - C. inclined plane
 - D. wedge

3. Cindy uses a can opener to open the can of tomatoes. A can opener is an example of a _____.
 - A. lever
 - B. pulley
 - C. inclined plane
 - D. wheel and axle

4. To close a bottle of jam, Trixie uses a lid cover. Which kind of simple machine is lid cover?
 - A. lever
 - B. pulley
 - C. screw
 - D. wedge

5. Allan uses the ramp to help his sick friend on a wheelchair to move up the building. A ramp is an example of a/an _____.
 - A. inclined plane
 - B. pulley
 - C. screw
 - D. wheel and axle

6. Eva helps her mother to slice the vegetables using a knife. A knife is an example of a _____.
- A. lever
 - B. pulley
 - C. screw
 - D. wedge
7. Errol wants to hang the picture frame on the wall. Which simple machine will Errol use?
- A. lever
 - B. pulley
 - A. inclined plane
 - C. screw
8. Gemma is trying to open the doorknob. Which type of simple machine is a doorknob?
- A. inclined plane
 - B. lever
 - C. pulley
 - D. wheel and axle
9. Which type of simple machine consists of a rope that passes over a grooved wheel?
- A. inclined plane
 - B. lever
 - C. pulley
 - D. wedge
10. Which type of simple machine has bars that turn or pivot on a fixed point?
- A. inclined plane
 - B. lever
 - C. screw
 - D. wheel and axle

Lesson

1

Characteristics and Uses of Simple Machines

Hundreds of years ago, when churches, houses, and many structures were built in many places in the Philippines and all over the world, no sophisticated machineries were used. These structures were built only with the help of **simple machines**. Simple machines served as practical solutions to our ancestor's daily struggles before. These were not meant to replace or eliminate work; instead, they were made to make work easier and faster. For example, moving a heavy object a long time ago was a burden to our ancestors; thus, men thought of ways on how to lessen this difficulty. With the help of machines, tasks are done faster and with ease.

In the field of Physics, a **simple machine** is any of several devices with no moving parts that are used to modify motion and force in order to perform work. There are six basic types of simple machines, lever, wheel and axle, inclined plane, pulley, wedge and screw. Simple machines help people do their work easier and faster. It multiplies force and speed and changes the direction of the force applied.



What's In

Directions: Match the tools needed to do the task in **Column A** with the objects in **Column B**. Write your answer on a separate sheet of paper.

Column A

_____ 1.



scissors

_____ 2.



knife

_____ 3.



broom

_____ 4.



nail cutter

_____ 5.



wheelbarrow

Column B



slicing an apple



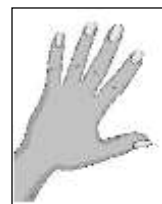
sweeping of waste



roll of cloth



collecting of garbage



cutting nails

Illustrated by Raymond Michael A. Gayatin and Francis A. Gonzales






What's New

Activity 1: Simple Machines in Action

Simple machines are tools that we use every day in school, at the park, and at home. These tools make our work easier and faster. In this activity, you will learn how to use these simple machines and be able to identify their characteristics and uses.

Instructions:

1. Look for any of the following materials available at your home such as tweezers, scissors, stairs, doorknob, knife, bolt, pulley, broom, nail cutter, and faucet.
2. Manipulate each tool. Caution: Be careful with sharp objects. Have your parents supervise you when performing this task. Observe and analyze their characteristics and uses.
3. Answer the following by choosing the correct characteristic and use of each simple machine. Write the letter of your answer on a separate sheet of paper.

Simple Machines	Characteristics	Uses
1. tweezers 	a. spiral b. rounded shape c. with handle	d. to pull out e. to cut f. to move
2. stairs 	a. flat and inclined b. long and sharp c. round with groove	d. to connect a lower to higher level e. to carry objects f. to fasten things
3. knife 	a. round b. sharp c. spiral	d. to cut e. to pull out f. to move

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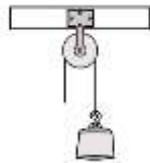
4. bolt



- a. spiral
- b. round
- c. long

- d. to open
- e. to fasten
- f. to move load

5. pulley



- a. round shape with rope
- b. long and sharp
- c. round and spiral

- d. to move objects
- e. to cut objects
- f. to raise a load







Illustrated by Raymond Michael A. Gayatin and Francis A. Gonzales




What is It







Read and Learn More.

Below are the six types of simple machines, its examples, characteristics, and uses.

Type	Characteristics	Tool	Use/s
Inclined Plane	A flat surface raised at an angle (sloping or slanting) surface, looks like a ramp.	Stairs, slide, and wood ramp 	Lift or raise a heavy object by moving up a slope.
Wedge	Objects with two inclined planes positioned back to back that tapers to a thin edge.	Nails, axes, pins, and knives 	Cutting or splitting certain materials apart.
Wheel and axle	Made up of a circular frame (wheel) that revolves on a shaft or rod (axle).	Rolling pin, doorknob, and steering wheel. 	Raising weights and carrying or transport loads over land and travel a long distance.
Pulley	A wheel carries a flexible rope, cord, cable, chain, or belt on its rim.	Flagpole, ropes on a sailboat, and movable clothesline 	Lifting or raising and lowering a load easier.
Screw	A long inclined plane wrapped around a shaft. *A circular cylindrical thing with a continuous winding or spiral rib.	Jar lid, bolt, and bottom end of a bulb 	Fastens or hold fastened things and used to hold lifted objects.
Lever	A long beam or bar that rests or turns or lifts on support (fulcrum). The lever has three parts: fulcrum, load, and effort.	can opener, tweezers and wheelbarrow 	Lifting, removing, or pulling out objects easily.

Illustrated by Raymond Michael A. Gayatin and Francis A. Gonzales

			
	<ul style="list-style-type: none"> • Fulcrum is the supporting point of the lever. • Effort is the force used to cause movement. • Load is the weight being move or lifted. <p>There are three classes of lever based on the positions of the effort, load, and fulcrum.</p>		

Classes of Lever	Description	Tools
First Class Lever 	Fulcrum is located between the load and effort.	Scissors, crowbar, seesaw 
Second Class Lever 	Load is located between the fulcrum and effort.	wagon, bottle opener, nutcracker 
Third Class Lever 	Effort is located between the fulcrum and load.	broom, stapler, fishing rod 

Illustrated by Raymond Michael A. Gayatin and Francis A. Gonzales



What's More

Activity 2: Describing Simple Machine

Directions: Match the simple machines in Column A with its characteristics and uses in Column B. Write your answer on a separate piece of paper.

Column A

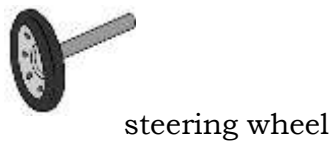
_____ 1.



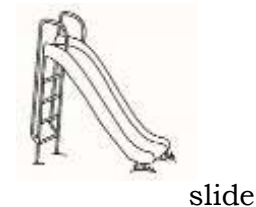
_____ 2.



_____ 3.



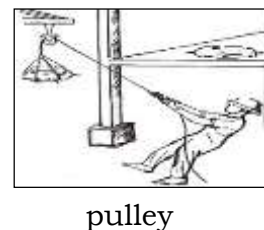
_____ 4.



_____ 5.



_____ 6.



Column B

A. It is a round frame revolving on a shaft or rod and used to transport loads over land.

B. It has a sharp edge and used for cutting and slicing.

C. It is an inclined plane with a spiral rib used to hold or fasten lifted objects.

D. It is long with a handle and is used to remove dirt.

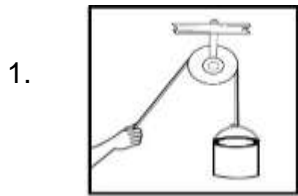
E. It is round with a rope and is used to raise and lower loads easier.

F. It is flat and has a sloping surface and is used to connect a lower level to a higher level.

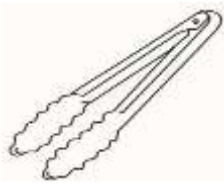
Illustrated by Raymond Michael A. Gayatin and Francis A. Gonzales

Activity 3: Identifying Simple Machine

Directions: Identify the type of simple machine shown on each illustration. Write LEVER, PULLEY, WEDGE, INCLINED PLANE, SCREW, or WHEEL AND AXLE. The first number is done for you.



PULLEY



2.



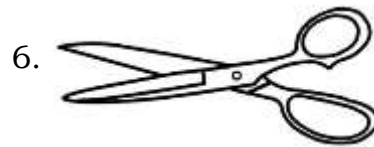
3.



4.



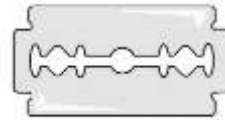
5.



6.



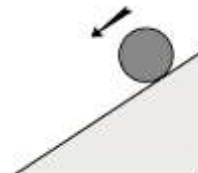
7.



8.



9.



10.

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What I Have Learned

Directions: Fill in the blanks to complete the sentences below by choosing the appropriate word/s found in the box.

simple machines	pulley	lever	wedge
wheel and axle	inclined plane	screw	

I have learned that:

1. _____ help makes work easier and faster.
2. _____ is a bar that turns or lifts against a “fulcrum” or support.
3. _____ is a sloping surface used to raise heavy objects from a lower level to a higher level.
4. _____ is made up of a circular or round frame that revolves on a shaft or rod.
5. _____ is made up of two inclined planes placed back to back.
6. _____ is an inclined plane wrapped in a cylindrical post.
7. _____ uses wheels and a rope to raise, lower, or move a load easier.



What I Can Do

Directions: Cite at least five (5) activities at home using simple machines. Identify the simple machine/s used. Write your answers on a separate sheet of paper.

Activities	Simple machine/s used



Assessment

Directions: Analyze carefully the following questions. Write the letter of your answer on a separate sheet of paper.

1. When Mary cooks fried chicken, she uses tongs to remove the chicken from the pan. Which of the following simple machines do tongs belong?
 - A. inclined plane
 - B. lever
 - C. pulley
 - D. wheel and axle
2. Which simple machine should you use to slice the cake?
 - A. ax
 - B. blade
 - C. knife
 - D. scissors
3. The carpenter will put the hinges of the door. Which type of simple machine will the carpenter use?
 - A. lever
 - B. pulley
 - C. inclined plane
 - D. screw
4. Jamie uses a wheelbarrow to move the pile of garbage. Which type of simple machine is a wheelbarrow?
 - A. inclined plane
 - B. lever
 - C. pulley
 - D. wheel and axle
5. Which type of simple machine is an inclined plane with a spiral rib?
 - A. lever
 - B. pulley
 - C. screw
 - D. wheel and axle
6. Mark wanted to go sailing. Which of the following simple machines will be used in raising a sail of a boat?
 - A. lever
 - B. pulley
 - C. wedge
 - D. wheel and axle

7. The bottom part of a bulb is spiral. Which type of simple machine is it?
 - A. inclined plane
 - B. screw
 - C. wedge
 - D. wheel and axle

8. To control a car, one should use a wheel and axle. Which of the following is the right tool to use?
 - A. breaks
 - B. rolling pin
 - C. steering wheel
 - D. shift gear

9. Virgel wanted to load heavy boxes at the back of his truck. Which simple machine should Virgel use?
 - A. pulley
 - B. inclined plane
 - C. stairs
 - D. wheelbarrow

10. Which simple machine is a double inclined plane and has a sharp edge?
 - A. pulley
 - B. lever
 - C. screw
 - D. wedge



Additional Activities

Directions: Classify the following simple machines listed inside the box according to its type.

bolt	bottle opener	broom	bulb
doorknob	flagpole	ladder	
knife	ax	steering wheel	

Lever	Inclined Plane	Wedge	Screw	Pulley	Wheel and Axle



Answer Key

Lesson 1: Characteristics and Uses of Simple Machines

<p>What I Can Do Possible Answers: 1. Sweeping – broom (lever) 2. slicing vegetables – knife (wedge)</p> <p>Assessment 1. B 2. C 3. D 4. B 5. C 6. B 7. B 8. C 9. B 10. D</p> <p>Additional Activities Lever (bottle opener, broom) Inclined Plane (ladder) Wedge (ax, knife) Screw (bolt, bulb) Pulley (flagpole) Wheel and axle (steering wheel, doorknob)</p>	<p>What's More Activity 1.1 Describing Simple Machine 1. B 2. D 3. A 4. F 5. C 6. E</p> <p>Activity 1.2 Identify Simple Machines 1. pulley 2. lever 3. inclined plane 4. wedge 5. wheel and axle 6. lever 7. screw 8. wedge 9. wedge 10. inclined plane</p> <p>What I Have Learned 1. Simple machines 2. Lever 3. Inclined plane 4. Wheel and axle 5. Wedge 6. Screw 7. Pulley</p>	<p>What I Know 1. D 2. B 3. A 4. C 5. A 6. D 7. D 8. D 9. C 10. B</p> <p>What's In 1. roll of cloth 2. slicing an apple 3. sweeping of waste 4. cutting of nails 5. collecting of garbage</p> <p>What's New Activity 1: Simple Machines in Action 1. with handle; to pull out 2. flat and inclined; to connect a lower to higher level 3. sharp; to cut spiral; to fasten round shape with rope; to raise load</p>
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References

Book:

Belina, Natalia. (2005) Science and Health (Workbook) Grade 5. Mandaluyong City: Jedigar Enterprises. Page 111.

Tan, C. T. (2012) Science for Daily Use 5. Marikina City: JICA Enterprises. Pages 202-203.

Electronic Sources:

DepEd Learning Portal, (2011). Living with Simple Machines ID Number 1506.

DepEd Learning Portal, (2014). Simple Machines ID Number 6373. Beam 5 Unit 5 DLP40.

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