

**Lesson Topic:** Simple Machines

**Objective:**

Students will be able to:

1. Identify all 6 simple machines
2. Identify simple machines within everyday items.
3. Create an invention utilizing one or multiple simple machines.

**Time Required:** 75 minutes

**Materials Needed:**

- Teacher computer with internet access
- Projector/Smartboard
- 1 computer/laptop/iPad per student with internet access
- Simple Machines handout (attached)
- Simple Machines Video: <https://www.youtube.com/watch?v=iQu3GY509ZM&t=50s>
- Coloring utensils
- Prepare stations around the room where students get to try and use simple machines that are everyday items.
  - Number each station so that the students can follow along in their handout.
  - Possible examples:
    - Lever - tweezers, door hinge
    - Wheel and axle - wagon, doorknobs, can opener
    - Pulley = miniblinds, flag pole
    - Wedge - axe head, point of nail, doorstop, scissors
    - Screw - screw, car jack, piano stool
    - Inclined plane - ramp

**Teacher Preparation:**

- Assign a Legends of Learning Content Review [Quick Play](#) playlist for the day(s) you will be teaching the lesson.
  - Content Review - Middle School - Simple Machines
- Make copies of Simple Machines Worksheet (1 per student)
- Gather an example of each type of simple machine.

**Engage (5 minutes):**

1. Tell students “Today we will be watching a video about simple machines. As you watch, I want you to write down each simple machine that they mention in your notebook.”
2. Show students the [Simple Machines Video](#).
3. Ask students “What are some simple machines that were talked about in the video?”
  - a. Answers: wheel and axle, pulley, inclined plane, wedge, screw, lever

**Explore (15 minutes):**

1. Pass out the Simple Machines handout.
2. Tell students “Around the room you will see many different stations. They are

numbered to go along with the handout.”

- a. If you do not have real life examples of all the simple machines in your classroom, you can use an image and tape it to the wall.
3. Tell students “Your job is to visit each station and try out each simple machine. In your handout, write down the name of the object and which type of simple machine you think it is.”
4. Give students time to visit each station.

**Explain (15 minutes):**

1. Tell students “Let’s write down some vocabulary in your handout” (write them on the board):
  - a. Lever - a bar that turns around a fixed point (the fulcrum)
  - b. Wheel and axle - circular rotating wheel that rotates around a shaft (axle)
  - c. Pulley - grooved wheel that spins on a fixed axis that has a rope that moves over the wheel
  - d. Inclined plane - tilted flat surface used to move objects upward
  - e. Wedge - two inclined planes back to back, used to move objects apart
  - f. Screw - inclined plane wound around a post, used to lift things
2. Bring the class together and go through the correct answers for each station.
  - a. Ask students “So, which types of simple machines did you see around the room?”
    - i. Answers will vary based on the stations specific to your classroom.
3. Ask students “We’ve seen lots of different examples of simple machines today, but what do they all have in common?” (simple machines are all trying to make it easier for us to do work, and to complete tasks with less effort).

**Elaborate (30 minutes):**

1. Ask students “Life is full of things that are hard to do and full of things we just don’t want to do: doing chores, taking out the garbage, sharing a room with a sibling, etc). What are some things that are hard for you to do, or some things you just don’t like doing?”
  - a. Make a list on the board.
2. Tell students “Now, what if we could make things easier using simple machines?! You need to think of a task or something in your life that is difficult to do, or you just don’t want to do. Use the list from the board if you are struggling for an idea. Then, think up an invention using a simple machine that could make it easier!”
  - a. This invention does not have to be real, and students do not have to actually make it, but they will need to design it on paper to show how they used the simple machine.
3. Tell students “Think about the person that invented the can opener, or the person that invented the car jack, or tweezers! All of these inventions were created in hopes of making life easier.”
4. Tell students “Your task is to design an invention on your handout that uses a simple machine or multiple simple machines to make a task easier. It doesn’t have to be real, but it does need to be feasible.”
5. Give students time to ask questions and then begin designing on their handout.
6. Allow students to use coloring utensils.

7. When all students are finished, let them share out.

**Evaluate (10 minutes):**

1. Have your students [sign in to Legends of Learning](#). Instruct students to complete the Content Review playlist.
2. [Analyze student results](#) to determine what concepts need to be a focus for reteaching.

**Additional Lesson Strategies:**

- To use Legends for additional instruction, create a [custom playlist](#) with an [instructional game](#) and pre and post [assessment](#).
- To use Legends for a quick formative assessment, create a 5-question [assessment](#) in a [playlist](#).
- To use Legends for a student-directed experience, create a [targeted freeplay](#) playlist.
- Encourage students to play on their own at home in [Legends of Learning: Awakening](#) for a student-driven experience including avatars, battling, and quests all centered around topics they are covering in class.

Name: \_\_\_\_\_

# Simple Machines



**Lever**



**Inclined Plane**



**Wedge**



**Pulley**



**Wheel and Axle**



**Screw**

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## Stations

Look around the classroom and try out each simple machine. Then, write the type of simple machine used at each station below.

- 1.
- 2.
- 3.
- 4.
- 5.
- 6.
- 7.
- 8.
- 9.
- 10.

## Vocabulary

Lever -

Wheel and axle -

Pulley -

Inclined plane -

Wedge -

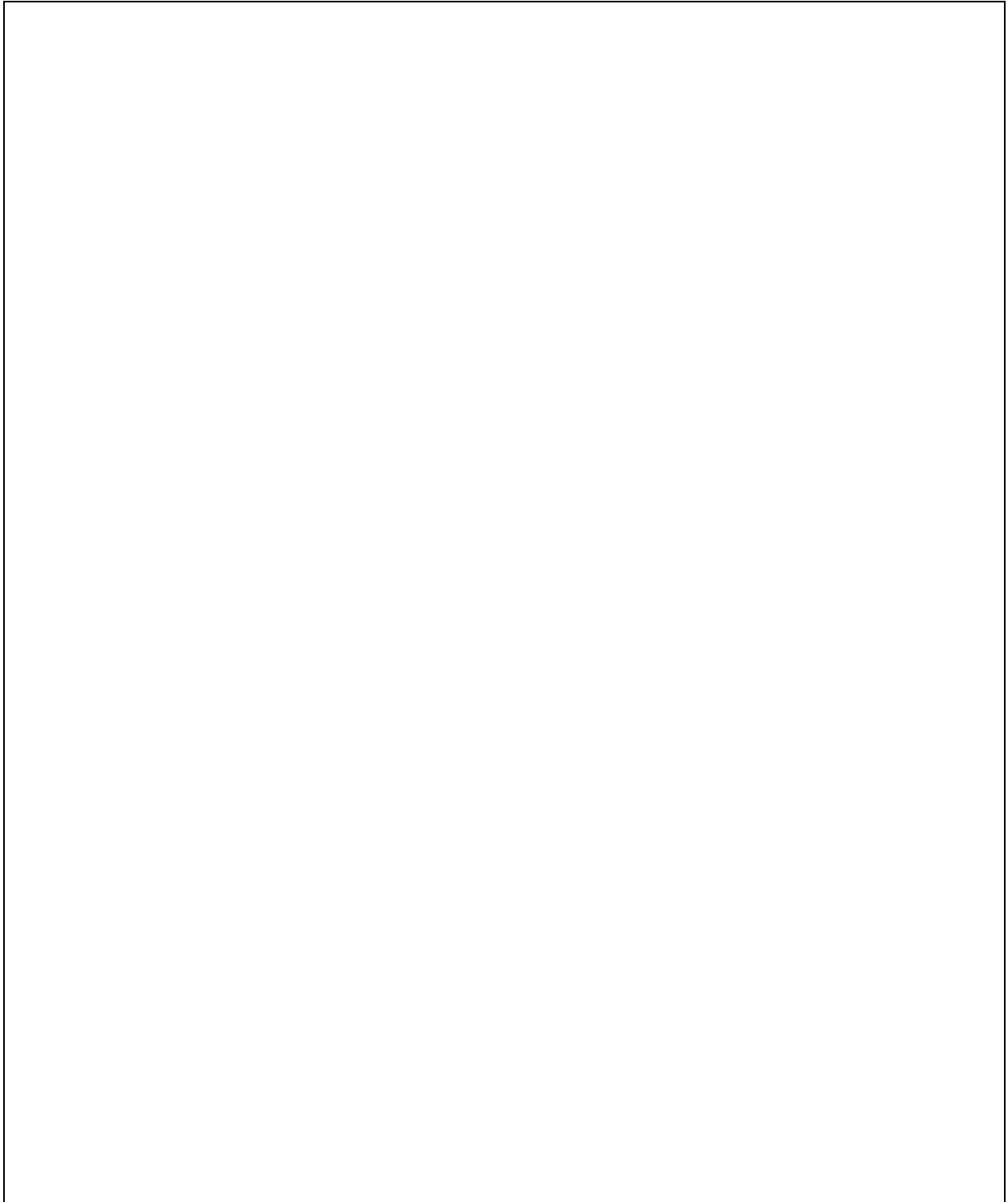
Screw -

What do all simple machines have in common?

## Simple Machine Invention

1. What is the name of your invention?
2. What will your invention do?
3. What simple machine(s) will your invention use?

Draw the design of your invention in the box below.





## **KEY**

Lever - **a bar that turns around a fixed point (the fulcrum)**

Wheel and axle - **circular rotating wheel that rotates around a shaft (axle)**

Pulley - **grooved wheel that spins on a fixed axis that has a rope that moves over the wheel**

Inclined plane - **tilted flat surface used to move objects upward**

Wedge - **two inclined planes back to back, used to move objects apart**

Screw - **inclined plane wound around a post, used to lift things**

What do all simple machines have in common? **Simple machines are all trying to make it easier for us to do work, and to complete tasks with less effort**