

Simple Machines Unit

Wheels and Axles

Describe how this simple machine works.

our real-life examples of wheels and axles.

Pulley

A pulley is a simple machine that is made out of a wheel and a rope. It helps lift heavy things by pulling on the rope. One everyday example is a flagpole. Pulleys make lifting easier by changing the direction you pull or use force. The rope or belt can be pulled to move something. A pulley system is often used for lifting heavy objects or moving something to a place that is hard to reach. A pulley reduces the amount of force needed to move something. A flagpole uses one pulley at the top and one at the bottom. But some pulleys are part of bigger machines! Other examples of pulleys in your everyday life are elevators, large cranes, and a long clothesline.



1. What is a pulley?

2. How does someone get a pulley to move?

3. Identify three examples of pulleys.

©Jessica Tobin, Elementary Nest

Machines in Everyday Life

Name the six simple machines.



Describe a situation involving two simple machines.



What do simple machines do?



©Jessica Tobin, Elementary Nest

Topics Covered

This Simple Machines unit is intended to be used as supplemental resources for your science unit.

Topics Covered:

- What Are Simple Machines
- How They Help
- Types of Simple Machines
- Making Your Own Simple Machines
- Simple Machines in Daily Life

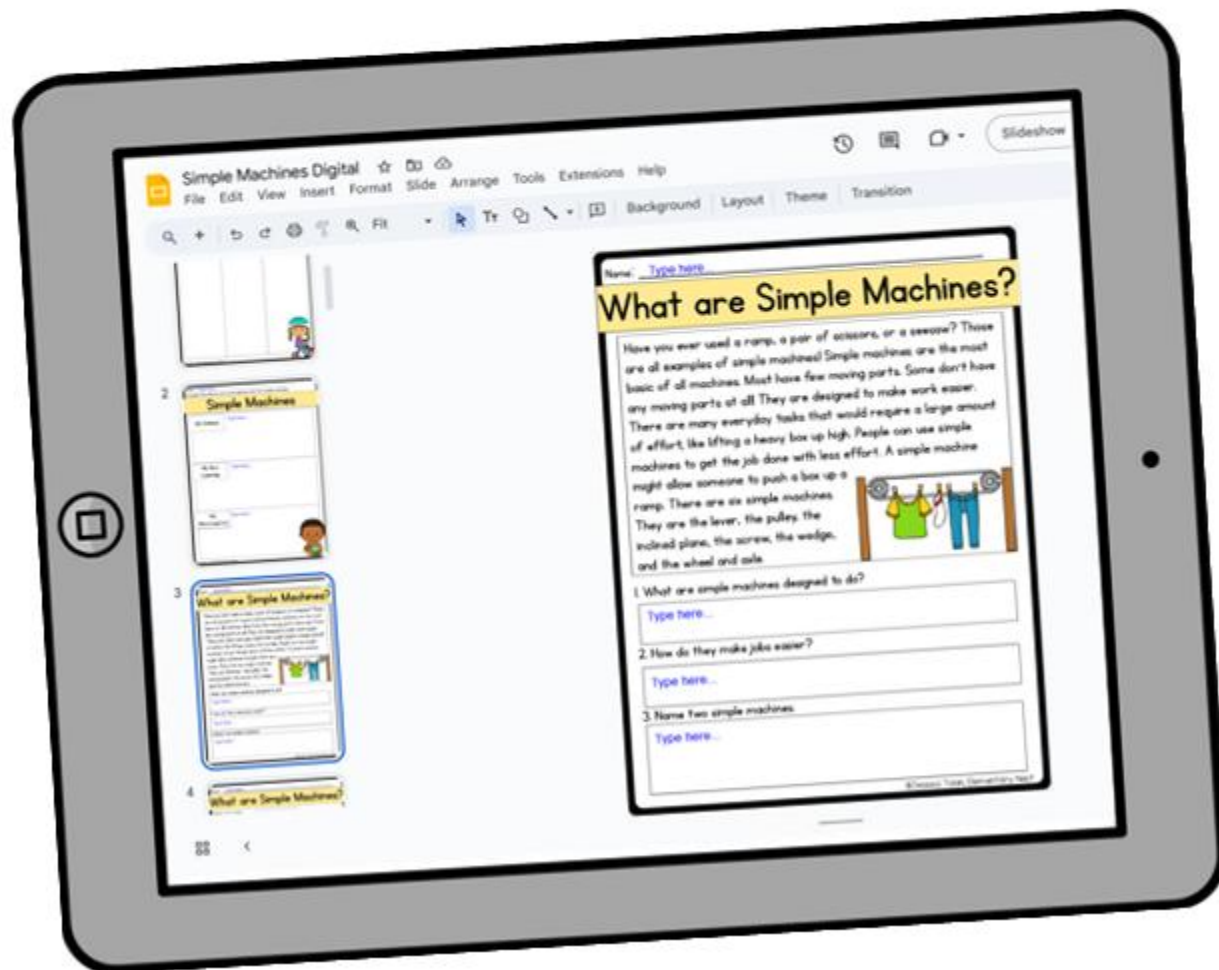
Types of Resources Included:

- KWL Charts
- Passages
- Comprehension worksheets
- Fact writing worksheets
- Mini books & questions



Digital Conversion

The passages and worksheets have been digitally converted to Google Slides.



All About Simple Machines

Name: _____

Simple Machines

What I Know	What I Want to Know	What I Learned

Name: _____

Complete the schema and misconceptions chart for simple machines.

Simple Machines

My Schema	My New Learning

Name: _____

What are Simple Machines?

Have you ever used a ramp, a pair of scissors, or a seesaw? These are all examples of simple machines! Simple machines are the basic of all machines. Most have few moving parts. Some have no moving parts at all! They are designed to make work easier. There are many everyday tasks that would require a large amount of effort, like lifting a heavy box up high. People can use simple machines to get the job done with less effort. A simple machine might allow someone to push a box up a ramp. There are six simple machines. They are the lever, the pulley, the inclined plane, the screw, the wedge, and the wheel and axle.



1. What are simple machines designed to do?

Name: _____

What are Simple Machines?

Explain your answer.



Name: _____

How Machines Help

Machines help people by making work easier. Each of the six types of simple machines helps people in a different way. One example is the wheel and axle, which helps something to roll with the wheel and axle. Other machines, like the pulley, make lifting things easier. Some machines can move objects farther distances. The same amount of work is being done, but since it is spread out, it feels much easier. Simple machines produce more force than the amount of force the human puts into them. They have few or no moving parts, which is why they are called "simple". These types of machines are used by just about every person, everyday. Have you used a simple machine yet today?



1. How much work is being done when using a simple machine?

2. What do simple machines do?

3. Why are they called "simple"?

©Jessica Tobin, Elementary Nest

Name: _____

How Machines Help



One Way They Help	One Way They Help	One Way They Help
Explain it...	Explain it...	Explain it...

©Jessica Tobin, Elementary Nest

Name: _____

Machines in Everyday Life

You see and use many simple machines in everyday life. Simple machines are considered the building blocks of more complicated machines. Each of them have only one to two parts, yet they are able to produce more force than what is put into them. The car played with after school is based on a wheel and axle. The shovel used in the sandbox on a weekend is a wedge. The slide at the park is an inclined plane. Everywhere you look, you are surrounded by simple machines. There is probably a simple machine in the room with you right now! Look around you. What simple machine is near that you can pick out?



1. How many parts do simple machines have?

2. What are simple machines able to produce?

3. Name three examples of simple machines.

©Jessica Tobin, Elementary Nest

Name: _____

Machines in Everyday Life

Name the six simple machines.

Describe a situation involving two simple machines.




What do simple machines do?



©Jessica Tobin, Elementary Nest

Types of Simple Machines

Levers

A lever is a simple machine that helps us lift. Levers are a rod or a board that is supported in the middle. This point is called the fulcrum. Think of the park! Humans press down on one side and the lever rises. The fulcrum is the point where the lever is supported. With the seesaw, each person can if it can put more. Other common examples of levers include a nutcracker, a bottle opener, and boat oars. Each of these examples have a flat board or rod, plus a fulcrum in the middle. Humans use force on one end, and the lever helps to make the work easier.

1. Describe a lever.

2. What is the fulcrum?

3. Name three examples of levers.

Pulley

A pulley is a simple machine that is made out of a wheel and a rope. It helps lift heavy things by pulling on the rope. One everyday example is a flagpole. Pulleys make lifting easier by changing the direction you pull or use force. The rope or belt can move something. A pulley system is often used for lifting objects or moving something to a place that is hard to reach. A pulley reduces the amount of force needed to move something. A flagpole uses one pulley at the top and one at the bottom. But some pulleys are part of bigger machines! Other examples of pulleys in your everyday life are elevators, large cranes, and a long clothesline.



1. What is a pulley?
2. How does someone get a pulley to move?
3. Identify three examples of pulleys.

Pulleys

Describe how this system works.



Draw four real-life examples of

Wheels and Axles

The wheel and axle might be the most common kind of machine. It helps things roll. There is a good chance you used it today! Think about a wagon, car, or bike. The axle wheel is attached to a bar in the middle, which is called the axle. When the wheel spins or rolls, the axle also turns. These wheels to be attached to items and roll freely. The wheel is often regarded as one of the greatest inventions ever. It forever changed both travel and hard work. The wheels you see on cars are a great example of the wheel and axle system. The axle runs through the frame of the car and allows the car to roll.

1. Where is the axle attached to the wheel?
2. What happens when the wheel rotates?
3. What is the wheel regarded as?

Wheels and Axles

Describe how this simple machine works.



Draw four real-life examples of wheels and axles.

Inclined Plane

An inclined plane is a ramp. It is a machine that that is slanted. This means that from the side, a triangle. Inclined planes are great for helping go higher places without lifting them. Imagine a box is easier to push this box along an inclined plane than carry it up stairs. It is also much safer to move inclined plane than to just drop it. You probably see examples of inclined planes everyday. One is a wheelchair ramp that you may find outside stores. Another example is a slide at the park. You move up the slide's stairs which can be hard to do. Then, you go fast down the inclined plane.

1. What does an inclined plane look like?

2. What are inclined planes mainly used for?

3. Name two examples of inclined planes.

Wedges

A wedge is a simple machine that is wide at one end and pointy at the other. It can be used to move things apart.

The wedge has a thicker side but narrows away from it.

A wedge is often attached to a handle to make it easier to use. A common example of a wedge is an axe.

When using the force applied to it and moving it in a different direction. The force on the axe is downward swing. This is why the wood splits when it is struck.

Another example is a door stop.

This wedge holds a door open by sliding under the bottom of the door. Since it is wider on one side the door stops where it gets wider.

Name: _____



1. Describe the look of a wedge.
2. How does a wedge work?
3. Name two examples of wedges.

Wedges

Describe how this simple machine works.



Draw four real-life examples of wedges.

Screws

A screw is a simple machine shaped like a cylinder with ridges that wrap around it. Those edges are called threads. This simple machine is great for helping to hold things in place. It uses force from

1. What does a screw look like?

2. What are threads?

3. Why are screws used?

Screws

Describe how this simple machine works.



Draw four real-life examples of screws.

Making Simple Machines

Name: _____

Making Your Own Lever

Why don't you try to make your own lever? To start, get a ruler and two erasers. Place an eraser so that the long and skinny side is up in the air. Now put the ruler on top with the same amount of ruler on both sides. Your ruler might even balance on top. Now, place another eraser on one end of the ruler. Press down on the other end of the ruler and pay attention to what happens to the eraser. It will move upward easily. Next, move the ruler so that there is just a little space on the side with the eraser. Press down and pay

Name: _____

Making a Wheel and Axle

Record your notes on your wheel and axle experiment.

Name: _____

Making Your Own Lever

Record your notes on your lever experiment.

Name: _____

Making a Wheel and Axle

Let's have some fun by making our own cars to demonstrate wheels and axles. First, gather the following materials: a clothespin, a plastic straw, string or thin yard, masking tape, and four identical buttons. Cut two sections of straw that are two inches in length. Thread the string through one of the buttons and tie it off. Then put it through the straw and tie off another button. Make sure the button is held firmly against the straw. Repeat until each of the buttonholes is tied off. Next, do the same for the other piece of

Name: _____

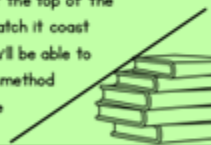
Making an Inclined Plane

Record your notes on your inclined plan experiment.

Name:

Making an Inclined Plane

It's very easy to make your own inclined plane. You can do this to get an idea of how this simple machine works. First gather some books and a piece of large cardboard or something else that is firm and smooth. Then, stack the books and lay the piece of cardboard on top of them with one end on the floor. Now, get a ball or you could even get the wheel and axle car from earlier. Hold the ball or car against the cardboard at the top of the inclined plane. Let go and you can watch it coast toward the bottom of the ramp. You'll be able to see how much easier and safer this method is than dropping the object from the same height.



1. What materials are needed to make your own inclined plane?

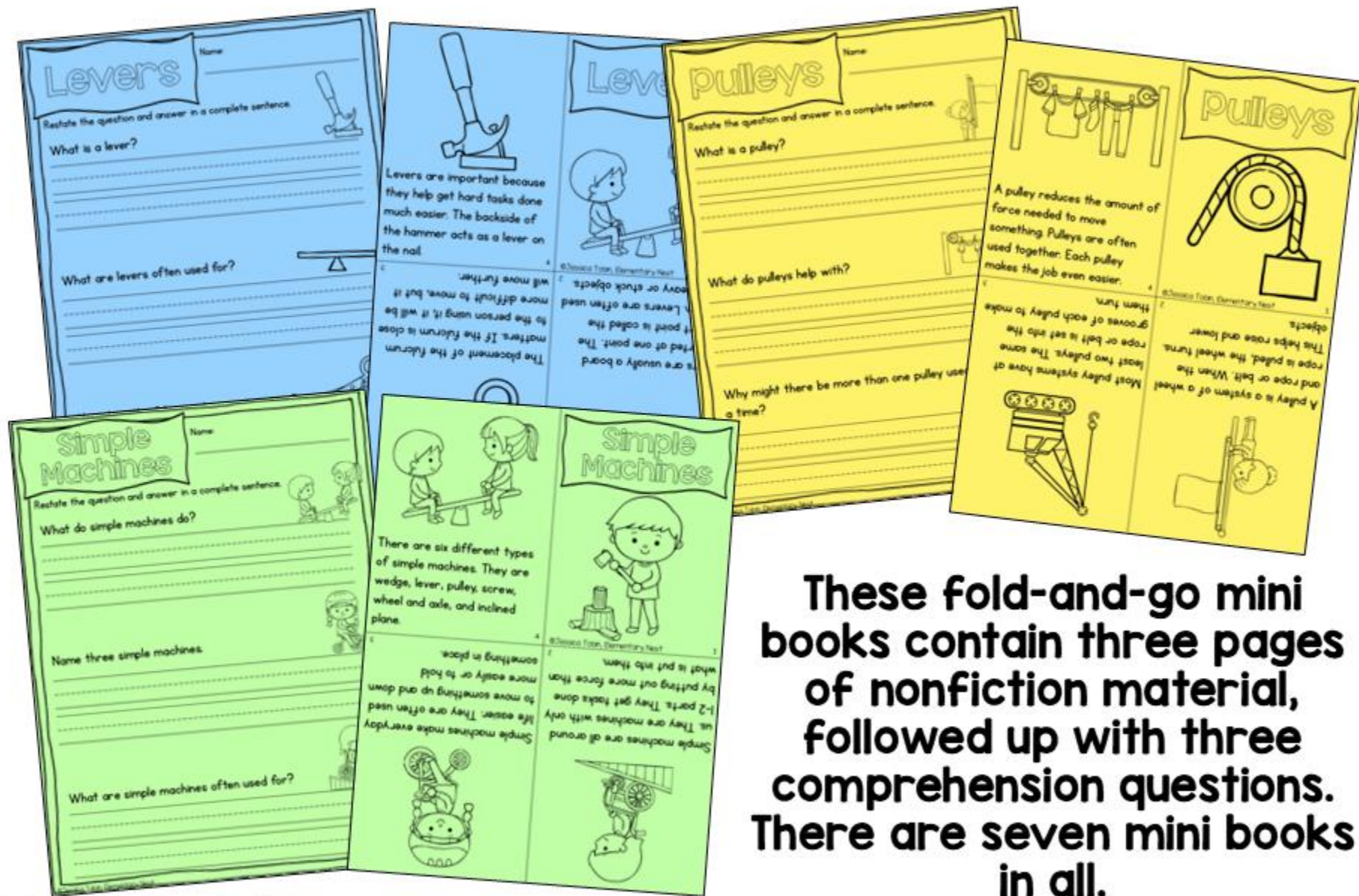
2. What should you hold the ball against?

3. What will you be able to see by the end?

©Jessica Tobin, Elementary Nest

©Tessera, Tobin, Elementary Nest

Mini Books



These fold-and-go mini books contain three pages of nonfiction material, followed up with three comprehension questions. There are seven mini books in all.