

SPECIAL ED

SIMPLE MACHINES

BOOK

ACTIVITIES

EXPERIMENTS

ASSESSMENT



INCLUDES GOOGLE SLIDES

This unit was created with this guy in mind. He has autism and an intellectual disability. He is a non-reader, has a very short attention span, and has a few foundational math skills. With some support, he is able to do this unit and enjoys the challenge. He is my tester!!

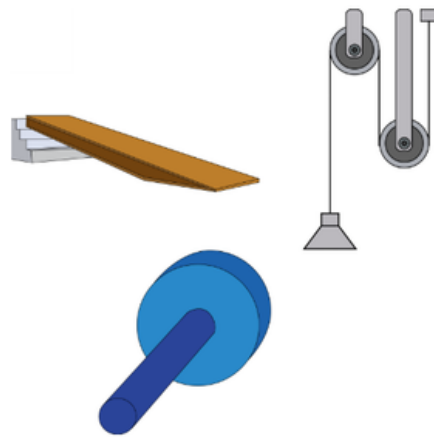


Simple Machines Unit

By

Christa Joy

Special Needs for Special Kids



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Also included in this resource as separate files:

- Lesson plans
- Links and directions to digital activities
- PowerPoint (**this is the book in the lesson plan**)
- Voice recorded PowerPoint
- Activities in black and white

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This unit contains over a month of material in both print and digital formats.

The unit is separated into 2 files, one in color and one in black and white.

Simple Machines Lesson Plan

Preparation

- Print out a vocabulary board for each student to use throughout unit
 - Laminate or place in page protector
- Book
 - Print out, laminate, and bind
 - OR your students can listen to the pre-recorded version
- Vocabulary cards
 - Print out a set of cards onto cardstock and laminate
 - Make one set for each student and also one for the teacher to use in I Spy games
- Flashcards
 - Print out a set of cards onto
 - Make a set of the category 1 machine); print and laminat

Preassessment (do day 1 before starting le:

- Choose the form of the assessment
- Give the assessment to assess what
- I cannot emphasize enough how in growth, this preassessment is so im

Teaching Tips

- **Color Coding:** this is a really easy activity. Outline or color in an em the corresponding picture symbols task.
 - For more info, read more h <https://specialneedsforspecia differentiation/>
 - I also have a blog post on d <https://specialneedsforspecia 3-ways-easily-and-effectively>
- *Make you own copies of the activi* yesterday. For that reason:

Quick Look

Day	Activity	Day	Activity	Day	Activity
1	<ul style="list-style-type: none"> • Book • Vocab cards activity • Circle map 	9	<ul style="list-style-type: none"> • Book • Vocab cards activity • Sorting activity 	17	<ul style="list-style-type: none"> • Book • Vocabulary cut and paste
2	<ul style="list-style-type: none"> • Book • Vocab cards activity • Circle map 	10	<ul style="list-style-type: none"> • Book • Experiment #1 	18	<ul style="list-style-type: none"> • Book • Vocab activity • Close worksheet #1
3	<ul style="list-style-type: none"> • Book • Vocab cards activity 	11	<ul style="list-style-type: none"> • Book • Experiment #2 	19	<ul style="list-style-type: none"> • Book • Vocab activity • Close worksheet #2

Day 2

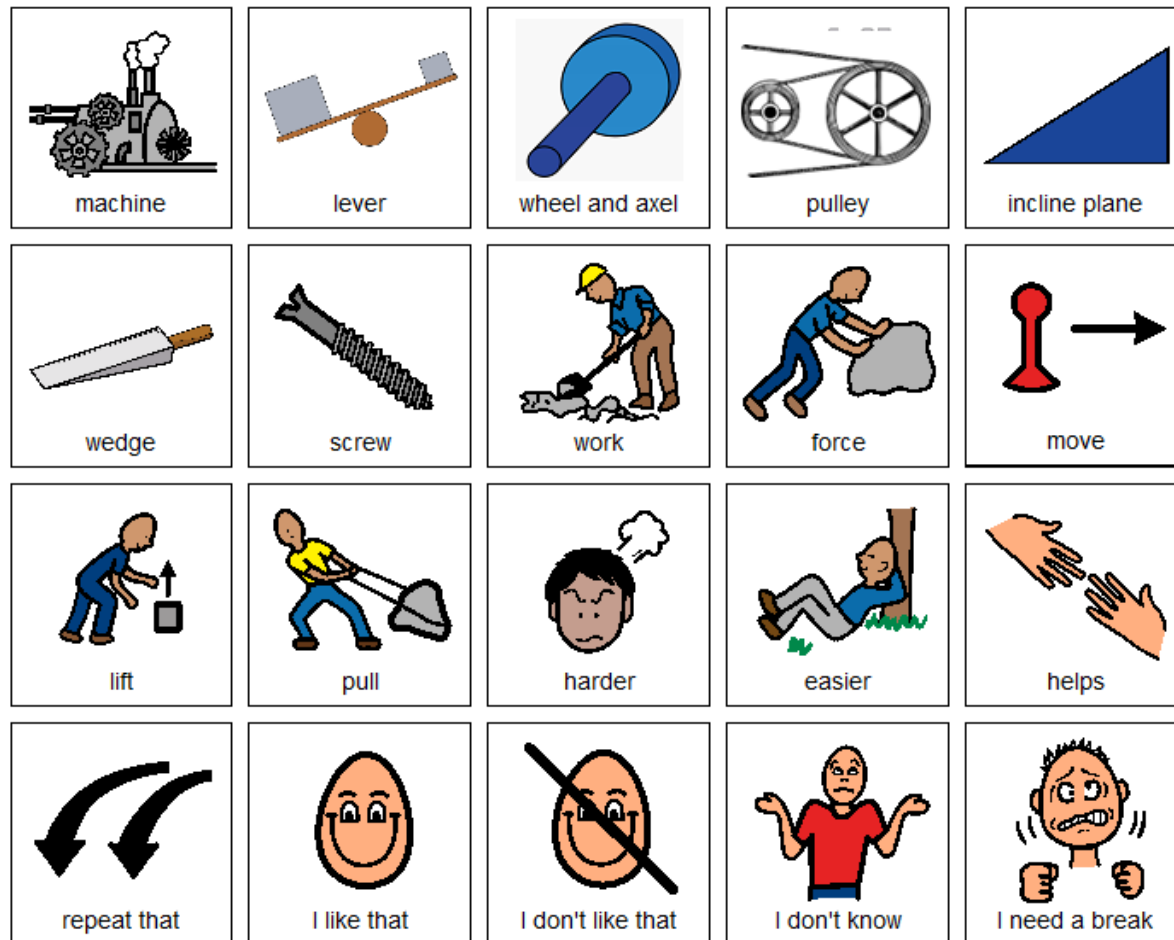
Activity	Notes	Materials
Read or listen to a recording of the book (15 minutes)	<ul style="list-style-type: none"> • Read through the story, asking lots of questions <ul style="list-style-type: none"> ◦ Therefore it usually takes me a little longer to read each day. I can ask more questions as they get more familiar with the material. ◦ You don't want to ask so many questions you lose the flow of the story, but enough to make sure your students are truly engaged • Continue to make connections between book and vocabulary board 	<ul style="list-style-type: none"> • Book • Vocabulary board
Vocabulary cards I Spy Game (10 minutes)	<ul style="list-style-type: none"> • I play this game, or variations of it the first few days <ul style="list-style-type: none"> ◦ Determine how many cards your students can handle in front of them. This can vary, some students may be able to have all the cards, so may only be able to handle a field of 3-5 • Since this is the first time playing this game, I make it easy. Hold up a card, and have students find the matching one and hold it up • Discuss relevant points on the card <ul style="list-style-type: none"> ◦ You can also play this game in this manner having them find the symbol on their vocabulary board 	<ul style="list-style-type: none"> • Vocabulary cards (student set and teacher set) • Vocabulary board
Circle map review (5 minutes)	<ul style="list-style-type: none"> • Review the circle map completed yesterday 	<ul style="list-style-type: none"> • Circle map completed yesterday
Circle Map #2 (10 minutes)	<ul style="list-style-type: none"> • Do the next circle map • Choose the best version (errorless or not) depending on the learning level of your students • Students cut out symbols and place in circle map • Make connections to the book as necessary 	<ul style="list-style-type: none"> • Circle map • Scissors • Glue
Sharing (10 minutes)	<ul style="list-style-type: none"> • Each student shares their circle map with the group using the communication method of their choice 	<ul style="list-style-type: none"> • Completed circle maps • Communication devices

24 days

The lesson plans contain:

- Overall tips for teaching students with significant needs
- A quick look at what you will do each day
- Detailed instructions on how that day's lesson should run





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This unit comes with a vocabulary board.

Vocabulary boards are great for ALL students to assist with participation and engagement in group discussions.

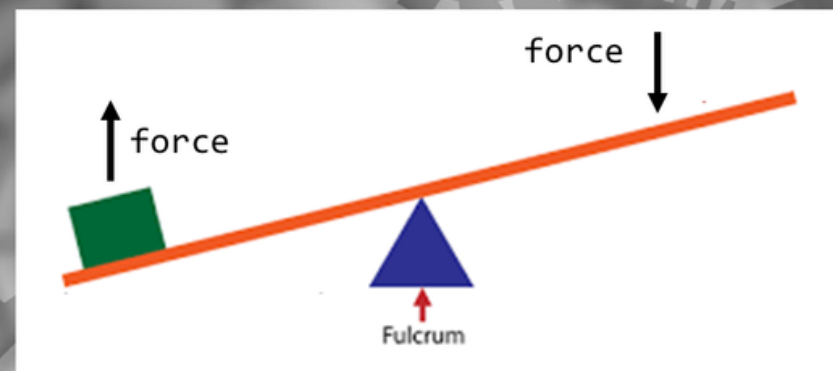
Tips on how to use in the unit!!

A simple **machine** is a machine with very few or no moving parts.



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The **fulcrum** is the **pivot point** or the point along the lever where the downward force is turned into an upward force.



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There is a book with this unit using simple text and photos. It is 82 pages and is an overview of the 6 main simple machines (levers, wheels and axles, pulleys, inclined planes, wedges, and screws).

Both come in pdf versions as well as a voice-recorded PowerPoints (so you don't have to print it out.)

machine

Something that helps make work easier.



simple machine

A machine with no or very few moving parts.



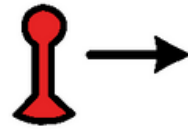
force

Amount of energy applied to an object.



work

Amount of energy it takes to move an object.



gear

Special wheel with teeth that fits into and turns other wheels to make the work easier.



thread

Teeth on a gear.



pulley

Simple machine made up of a wheel with a groove and a rope or chain that fits in the groove.



block and tackle

Several pulleys that work together used to lift very heavy loads.



There are vocabulary cards students will use every day for a group activity. There is also a cut and paste activity.

inclined plane



slope



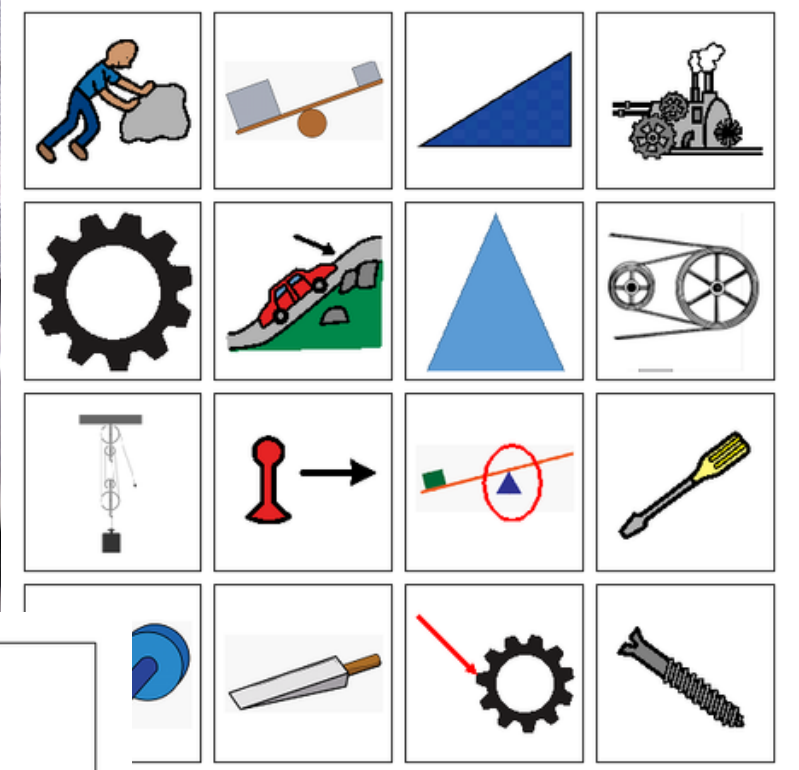
wedge



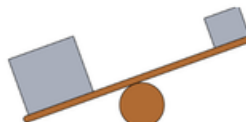

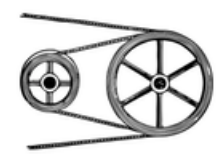

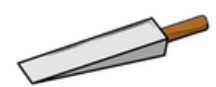

screw



Point along the lever where the downward force is turned into an upward force.	Teeth on a gear.
Amount of energy applied to an object.	Simple machine made of a flat surface where one end is higher than the other.
How steep a ramp, hill, or inclined plane is.	Simple machine made of a pole and uses a fulcrum to lift a heavy object.



Simple machines category or label cards

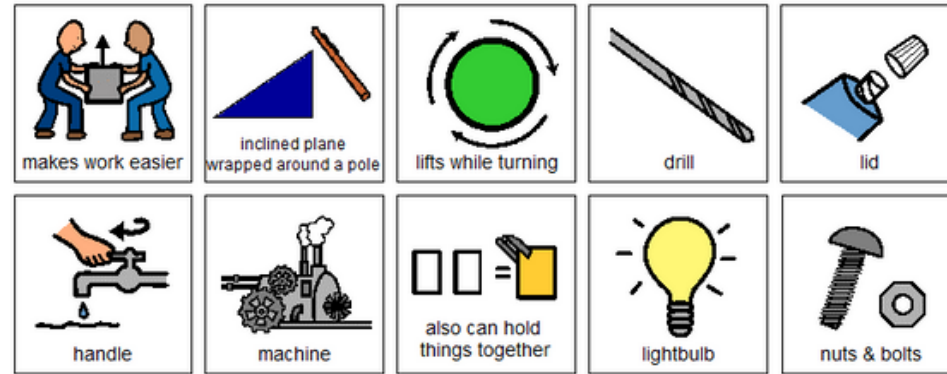
<p>Lever</p> 	<p>Wheel and Axle</p> 
<p>Pulley</p> 	<p>Inclined Plane</p> 
<p>Wedge</p> 	<p>Screw</p> 



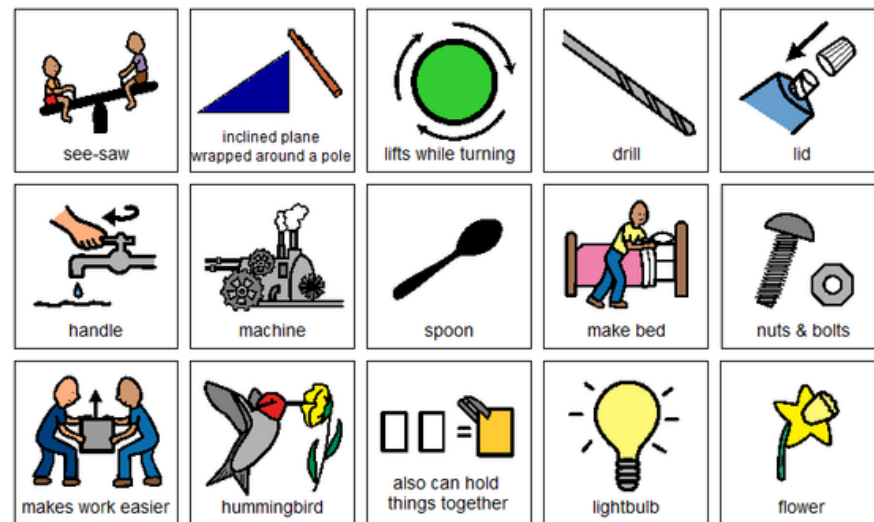
There is a set of flash cards. There are 36 photos and 6 category labels. Students will identify the simple machine in each photo.



Cut apart pictures and place in circle map about screws.



Cut apart pictures and place in circle map **ONLY IF** they are things that relate to screws.

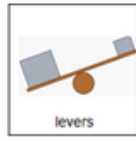


There are 6 circle maps, one for each simple machine.

Circle maps are a great way for students to see the concept at a glance.

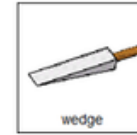
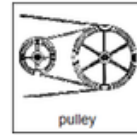
There are 2 versions:

- One is errorless
- One has wrong answers mixed in students will have to set aside



see-saw	skateboard	bike	crowbar	motorcycle
police car	scissors	clock	fan	remove a nail
hockey stick	merry-go-round	pizza cutter	pliers	switch
bottle opener	steering wheel	baseball bat	roller skates	tweezers

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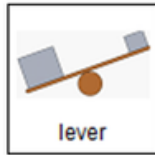


elevator	axe	oil well	chisel	blind
knife	shovel	needle	raise a flag	staple
stage curtains	pins	crane	nail	sails
saw	sewing machine	doorstop	wishing well	

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Students will sort different types of simple machines. There are 3 different sorts. There are photos and picture symbols included. Suggestions for differentiation is included.

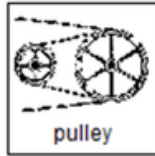
Draw a line to match



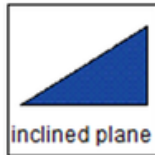
lever



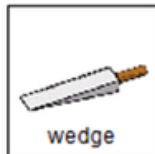
wheel & axle



pulley



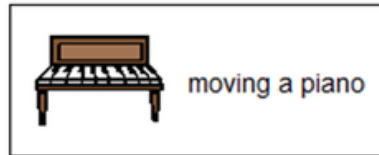
inclined plane



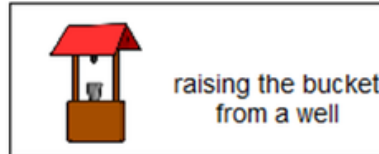
wedge



screw



moving a piano



raising the bucket from a well



traveling miles on a road



Getting under a heavy boulder



closing a jar lid

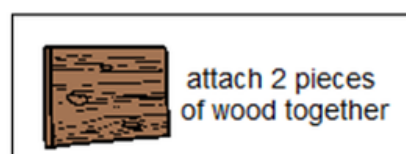


chopping wood

Draw a line to match



raise the flag



attach 2 pieces of wood together



slice vegetables



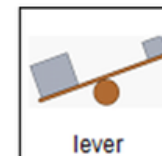
cool down with a fan



open soda with bottle opener



make a wheelchair ramp



lever



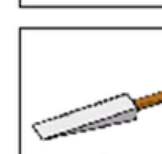
wheel & axle



pulley



inclined plane



wedge



screw

Students will match the best simple machine for each job. Suggestions for differentiation is included.

Finding the Best Wedge

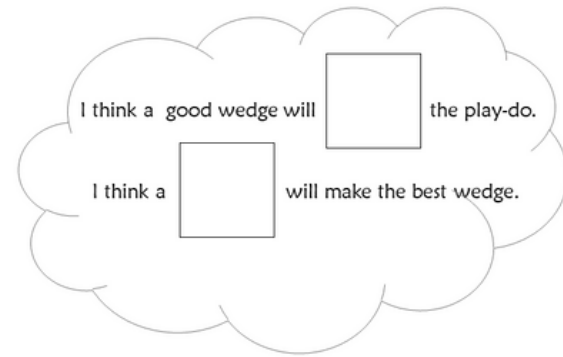
People on my team: _____

Materials needed:



Finding the Best Wedge

My hypothesis



Finding the Best Wedge

The Experiment:

1. Roll the play-do into a ball or other shape like a snake.
2. Record (draw) what the play-do looks like before you start.
3. Choose an object to use as a wedge.
4. Record (draw) the object you choose.
5. Using the object (block) push down on the play-do.
6. Record what the end result looks like.
 - Students can put a check or X in the columns noting if cut in half or squished

There are 2 experiments that walk students through the scientific method step by step using pictures.

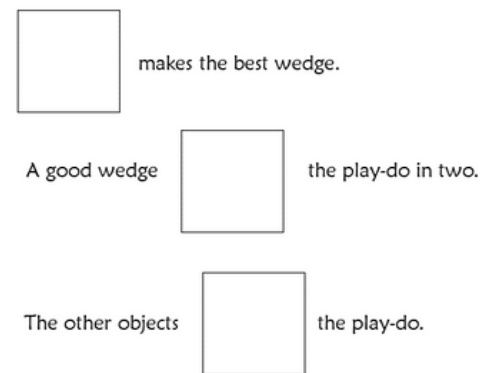
Finding the Best Wedge

Data Collection

Object used	Cut in half	Squished	What it looked like

Finding the Best Wedge

What I learned





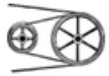













Pictures to use (if needed)

For what I learned



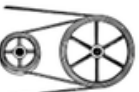
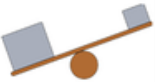







Simple Machines





















	 Wheel & axle				
 wedge					
 inclined plane	 wedge	 pulley		 Wheel & axle	
 screw	 lever	 Wheel & axle			 wedge
	 pulley		 Wheel & axle	 inclined plane	 screw
 Wheel & axle				 wedge	

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Simple Machines

 screw			 lever
 pulley	 lever		 wedge
	 pulley	 wedge	
 wedge			 pulley

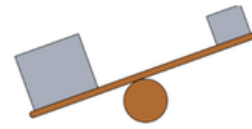
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 lever	 lever	 lever	 lever	 lever
 wheel and axle	 pulley	 pulley	 pulley	 pulley
 inclined plane	 inclined plane	 inclined plane	 inclined plane	 wedge
 wedge	 screws	 screws	 screws	 screws

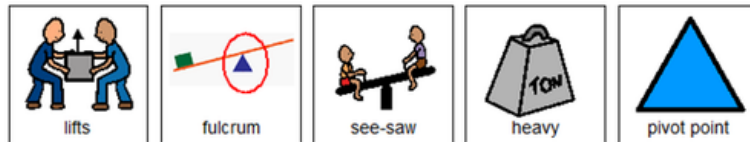
There are 2 Sudoku puzzles that give students more practice with the vocabulary. One is 6x6 and one is 4x4.

Answer key included.

Lever



1. A lever uses a long pole and a .
2. The fulcrum is the .
3. As you push down on one end, it the other end.
4. This is a great way to lift objects that are really .
5. is an example of a lever.

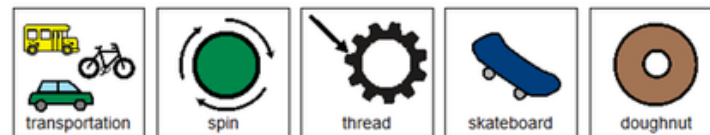


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Wheel and Axle



1. The axle is attached to the of the wheel.
2. As the axle turns, it causes the wheel to in a balanced circle.
3. Gears are special wheels that have .
4. Most forms of use a wheel and axle.
5. is an example of something that uses a wheel and axle.



There are 6 close worksheets that are a great informal assessment. There is one worksheet for each simple machine.

Answer key included.

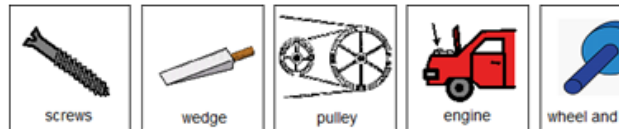
1. A machine allows you to do work with less:



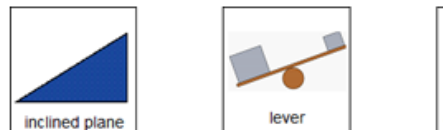
2. A simple machine has no or very few:



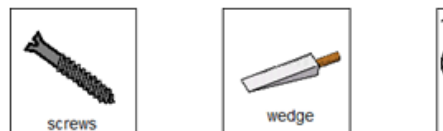
3. Circle all the examples of simple machines:



4. This simple machine is used in most forms of transportation:



5. This simple machine forces two things apart:

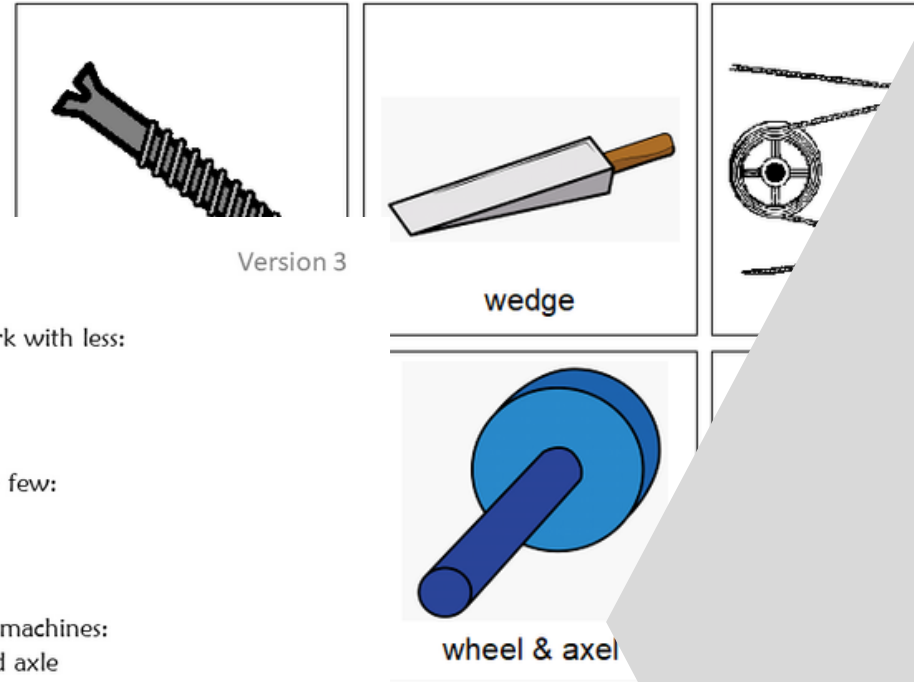


- A machine allows you to do work with less:
 - Food
 - Force
 - Noise
- A simple machine has no or very few:
 - Moving parts
 - Feathers
 - Screw
- Circle all the examples of simple machines:

A. Screws	E. Wheel and axle
B. Wedge	F. Lever
C. Pulley	G. Inclined plane
D. Engine	
- This simple machine is used in most forms of transportation:
 - Inclined plane
 - Lever
 - Wheel and axle
- This simple machine forces two things apart:
 - Screw
 - Wedge
 - Pulley
- A lever is made up of a long pole and a:
 - Fulcrum
 - Wheel
 - Nail

Print onto cardstock or mount on index cards. Cut pictures apart and show student answer choices for each question.

Q 3



FINALLY the assessment!! There are 3 versions. This version has 10 questions with 3 picture choices for each question.

Answer key included.

There are special wheels called **gears**. Gears have teeth, called **threads**, located on the outside of the wheel.

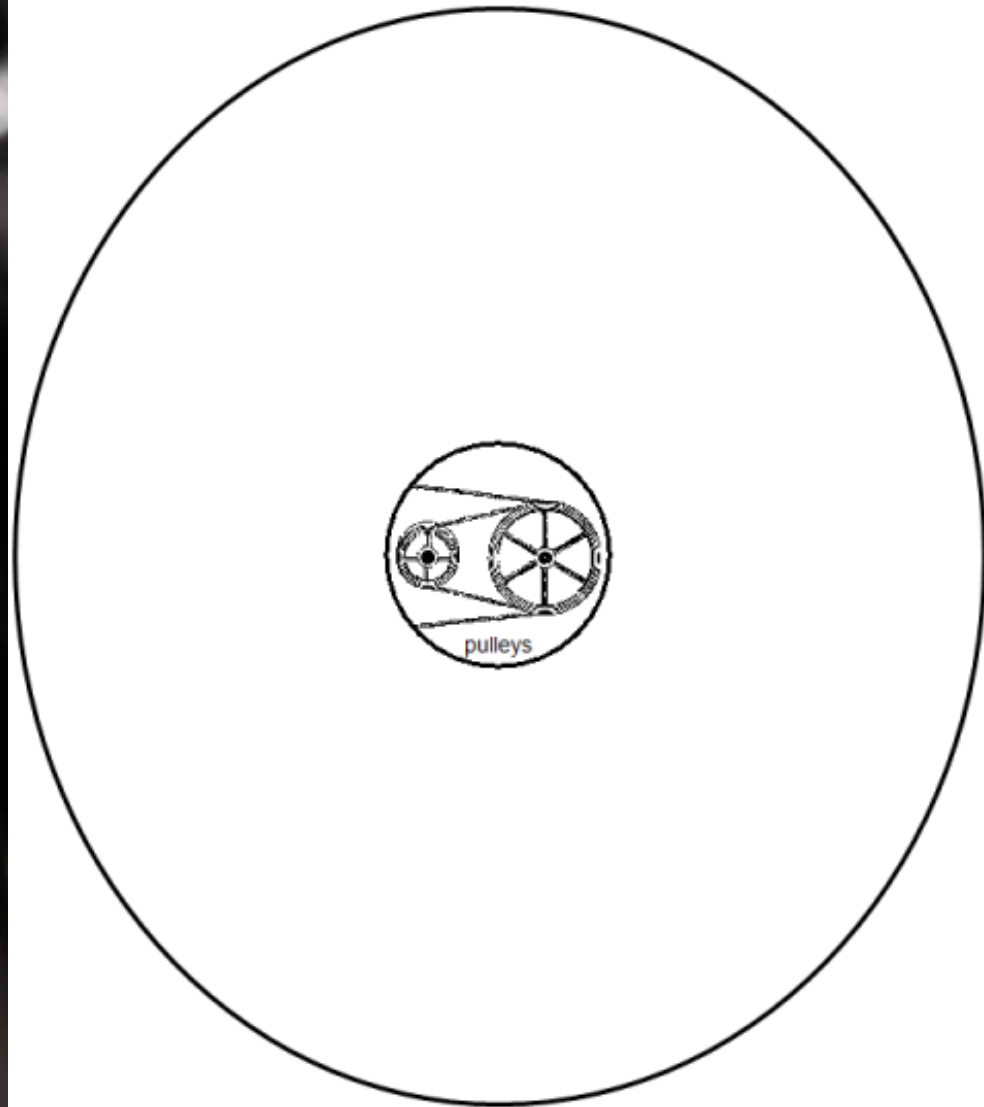


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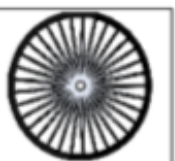


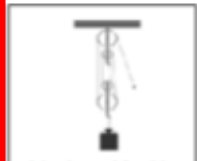




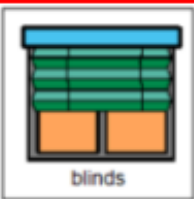

Watch the video on Simple Machines

This unit also has digital activities. There is a movie version of the books students can listen to read aloud.

great for review









Place the pictures in the circle map about pulleys.

 wheel with groove	 rope	 make work easier	 block and tackle
 flagpole	 crane	 elevator	 machine
 blinds	 chain		

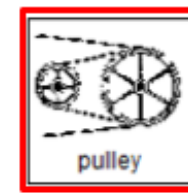
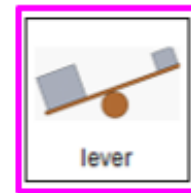
The digital activities have students click and drag their answers.

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perfect for every learning level

 raise the flag	→	<input type="text"/>
 attach 2 pieces of wood together	→	<input type="text"/>
 slice vegetables	→	<input type="text"/>
 cool down with a fan	→	<input type="text"/>
 open soda with bottle opener	→	<input type="text"/>
 make a wheelchair ramp	→	<input type="text"/>

What simple machine be best for each job?



There are 2 sets of slides. One set has color-coding for more support.

Making a Using a Lever

My hypothesis

I think using a lever will make the can to lift.

Moving the fulcrum closer to the can will make it to lift .

Moving the fulcrum away from the can will make it to lift.

Choose from the pictures below to complete your hypothesis.



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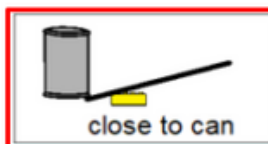
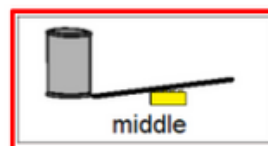
There is also a set of slides that leads students through both experiments.

Making a Using a Lever

Results:

	Position of fulcrum	difficulty
1		
2		
3		

Record the results of your experiment.



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