

Potential and Kinetic Energy

With Digital Activities

**For
Special
Ed**

Special Needs for Special Kids





This unit was created with this guy in mind. He has autism and an intellectual disability. He is a non-reader, loves to rip any worksheet that comes his way AND he is able to do this unit. He is my tester!!

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This unit contains over 175 pages of material, but don't worry I have detailed lesson plans to show you how to make this last 14 days or more.

Everything highlighted in yellow comes with a digital version of the activity.

Potential and Kinetic Energy 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

Preassessment (do day 1 before starting lesson)

- Choose the form of the assessment that best fits the learning level of your students
- Give the assessment to assess what your students may already know
- I cannot emphasize enough how important this step is. If you want to see growth, this preassessment is so important!!

Teaching Tips

1. *Color Coding:* this is a really easy way to add more structure to a matching activity. Outline or color in an empty box or sorting label. Outline or color in the corresponding picture symbols the same colors. Becomes a color matching task.
 - a. For more info, read more here:
<https://specialneedsforspecialkids.org/2015/09/05/using-color-coding-for-differentiation/>
 - b. I also have a blog post on differentiating one activity 3 ways:
<https://specialneedsforspecialkids.org/2018/10/22/differentiating-1-activity-3-ways-easily-and-effectively/>
2. *Make your own copies of the activities:* Every day I review the activity we did yesterday. For that reason:
 - a. I often complete the activity myself and often laminated it for easy review that I could use year after year.
 - b. My copies were also helpful as either a model for students who needed more support or as a way for more advanced students to self-check their

The lesson plans contain:

Overall tips for teaching
students with significant
needs

Quick Look

Day	Activity	Day	Activity
1	<ul style="list-style-type: none">• Book• Vocab cards activity• Circle map	8	<ul style="list-style-type: none">• Book• Vocab cards activity• Circle one with more
2	<ul style="list-style-type: none">• Book• Vocab cards activity• Circle map	9	<ul style="list-style-type: none">• Book• Vocab cards activity• Circle one with more
3	<ul style="list-style-type: none">• Book• Vocab cards activity• Sorting activity	10	<ul style="list-style-type: none">• Book• Experiment #1
4	<ul style="list-style-type: none">• Book• Vocab cards activity• Sorting activity	11	<ul style="list-style-type: none">• Book• Experiment #2
5	<ul style="list-style-type: none">• Book• Vocab cards activity• Sorting activity	12	<ul style="list-style-type: none">• Book• Vocab cards activity• Close worksheet
6	<ul style="list-style-type: none">• Book• Vocab cards activity• Flash card activity	13	<ul style="list-style-type: none">• Book• Vocab cards activity• Close worksheet
7	<ul style="list-style-type: none">• Book• Vocab cards activity• Flash card activity	14	<ul style="list-style-type: none">• Assessment

The lesson plans contain:

A quick look at what you will do each day.

Day 5

Activity	Notes	Materials
Read or listen to a recording of the book (10 minutes)	<ul style="list-style-type: none">• Read through the story, asking lots of questions• Continue to make connections between book and vocabulary board	<ul style="list-style-type: none">• Book• Vocabulary board
Vocabulary cards speed game (15 minutes)	<ul style="list-style-type: none">• Place the finished vocabulary cards in the middle of the table• Either hold up or describe a card and the student who can find it first wins and keeps the card• The student with the most cards at the end is the winner	<ul style="list-style-type: none">• Vocabulary cards• Vocabulary board
Review (5 minutes)	<ul style="list-style-type: none">• Review the sorting activity from yesterday	<ul style="list-style-type: none">• Finished activity
Sorting Activity (10 minutes)	<ul style="list-style-type: none">• Complete the translational vs rotational kinetic energy sorting activity using the photos, symbols or both• Use color coding as needed	<ul style="list-style-type: none">• Sorting activity• Scissors• Glue
Sharing (10 minutes)	<ul style="list-style-type: none">• Each student shares their finished sorting activity	<ul style="list-style-type: none">• Completed activity• Communication devices

The lesson plans contain:

Detailed instructions on how that day's lesson should run.

Every single object that moves has kinetic energy.



Unlike kinetic energy, potential energy is the energy an object has that is NOT moving. It is stored energy.

Christa Joy, Special Needs for Special Kids

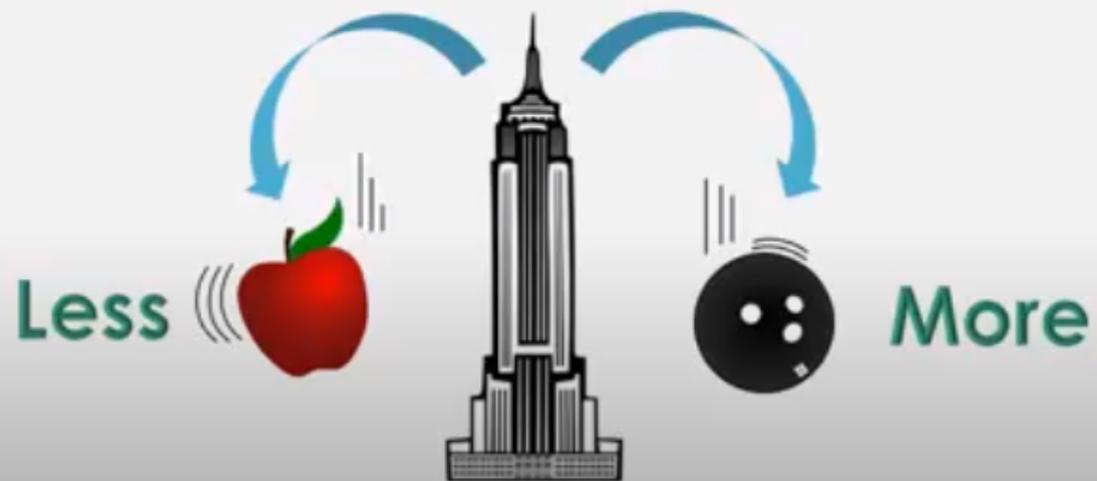


Christa Joy, Special Needs for Special Kids

This unit contains a 60 page book. It has simple text and engaging photos. I encourage teachers to start **EVERY** lesson with this book.

It comes in a pdf and a voice recorded version so you don't have to print it out.

The heavier the moving object is, the more kinetic energy it has. If you drop a bowling ball and an apple from the top of a building, the bowling ball will have more kinetic energy.



Play (k)



4:10 / 11:16 Special Needs for Special Kids

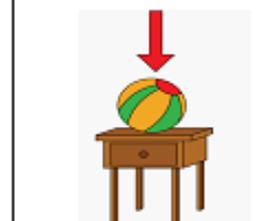
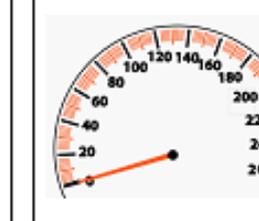
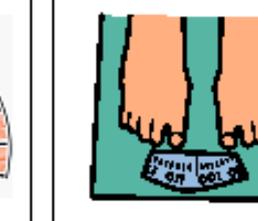
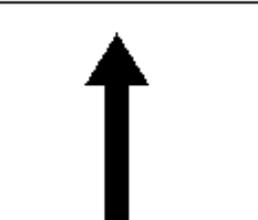
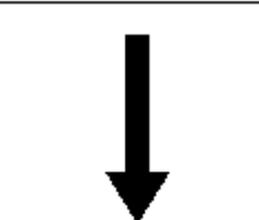
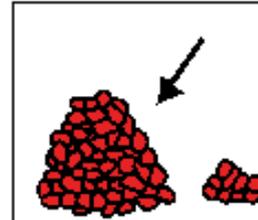
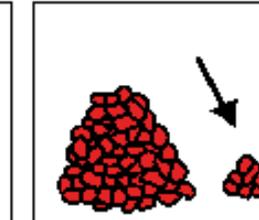
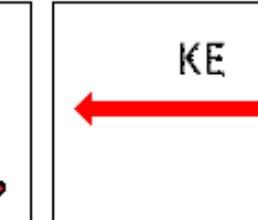
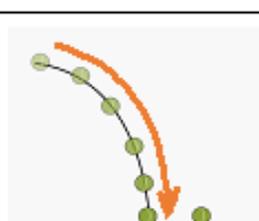
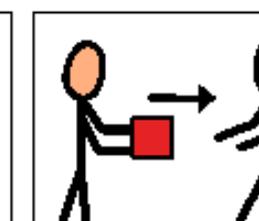
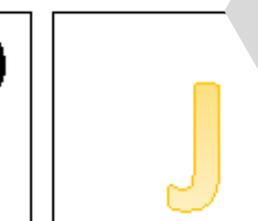
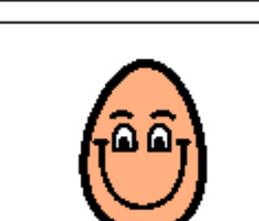
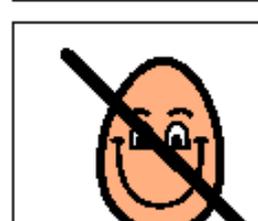
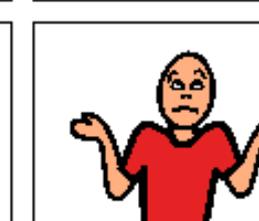
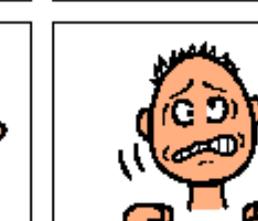


There is an mp4 version of the book which you can play in google or assign for students to watch and listen to in google classroom.

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!!

 energy	 kinetic energy	 potential energy	 speed	 mass
 increases	 decreases	 more	 less	 translation
 rotational	 gravitational	 elastic	 transfers	 joules
 repeat that	 I like that	 I don't like that	 I don't know	 I need a break



There are large cards in the printable version that depict various examples of potential and kinetic energy. There are suggestions for how to use these as group activities.

energy

Ability to do work.



Law of Conservation of Energy

Energy cannot be created or destroyed. It can only change.



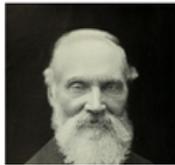
kinetic energy

Energy of things in motion.



Lord Kelvin

First scientist to use the term kinetic energy in 1849.



joules

Unit of measurement for energy.



speed

How fast an object



mass

How much an object weighs.



Translational kinetic energy

Movement through space from one point to another.

KE



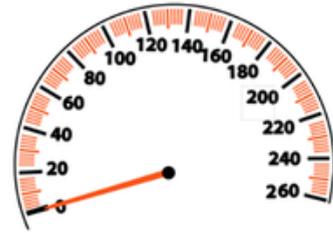
This unit comes with 14 vocabulary cards.

Every day students will do a group activity using these cards to get more familiar with words that are likely new to them.

joules



speed

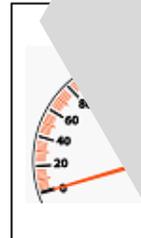


mass



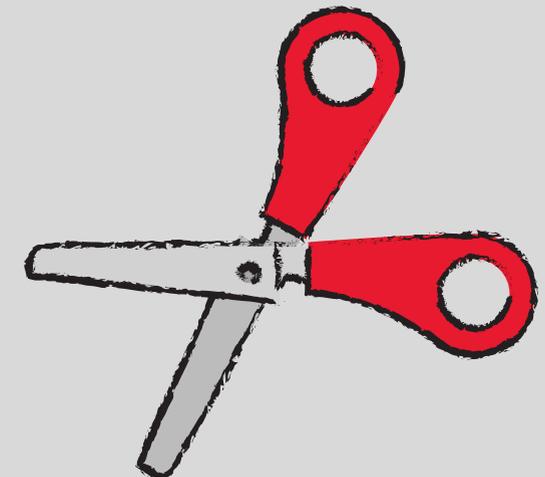
Translational kinetic energy

KE



Students will also test their knowledge of these new words and symbols with a cut and paste activity on days 8&9.

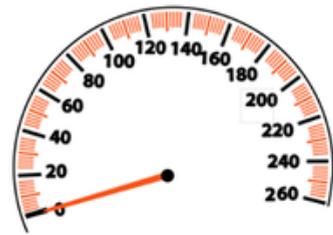
		KE 	



joules

J

speed



mass



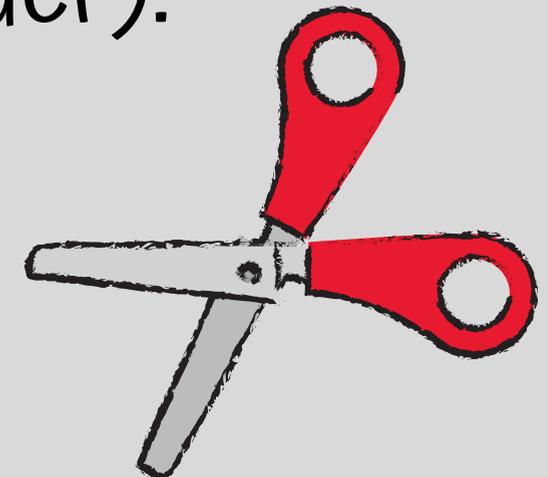
Translational kinetic energy

KE



You have 2 choices:

1. Students match the picture to the definition (easier).
2. Students match the definition to the picture (harder).



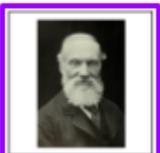
Unit of measurement for energy.	Spinning movement around an axis.	Energy cannot be created or destroyed. It can only change.
Stored energy in a stretch object like a rubber band or spring.	First scientist to use the term potential energy in 1800's.	Stored energy.
Ability to do work.	How fast an object is moving.	Stored energy that comes from the pull of Earth's gravity. The higher an object is, the more gravitational energy it has.
Movement through space from one point to another.	Imaginary line that goes through the center of the Earth from top to bottom.	Energy of things in motion.

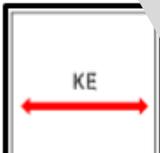
<p>energy</p> <p>Ability to do work.</p> 	<p>Law of Conservation of Energy</p> <p>Energy cannot be created or destroyed. It can only change.</p> 	<p>joules</p> <p>Unit of measurement for energy.</p> 	<p>speed</p> <p>How fast an object is moving.</p> 
<p>kinetic energy</p> <p>Energy of things in motion.</p> 	<p>Lord Kelvin</p> <p>First scientist to use the term kinetic energy in 1849.</p> 	<p>mass</p> <p>How much an object weighs.</p> 	<p>Translational kinetic energy</p> <p>Movement through space from one point to another.</p> 

Match the picture to the definition.







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There are digital versions of the vocabulary matching activities. Both versions (matching the pictures and matching the definitions) are included.

<p>energy</p> 	<p>Law of Conservation of Energy</p> 	<p>joules</p> 	<p>speed</p> 
<p>kinetic energy</p> 	<p>Lord Kelvin</p> 	<p>mass</p> 	<p>Translational kinetic energy</p> 

Day 9

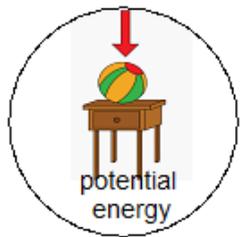
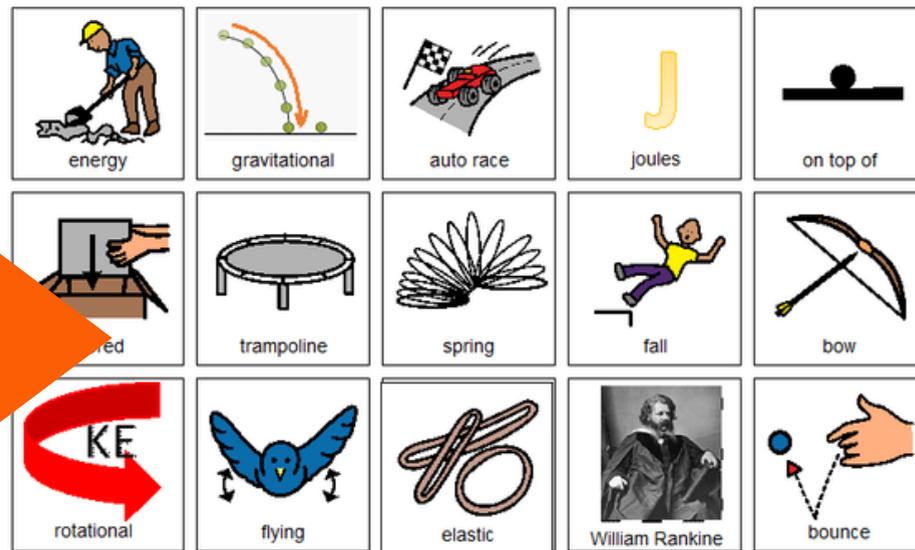
Match the definition with the picture.

- | | | | |
|--|---|-------------------------------|---|
| Energy cannot be created or destroyed. It can only be changed. | Energy of things in motion. | How fast an object is moving. | First scientist to use the term kinetic energy in 1849. |
| Unit of measurement for energy. | Movement through space from one point to another. | How much an object weighs. | Ability to do work. |

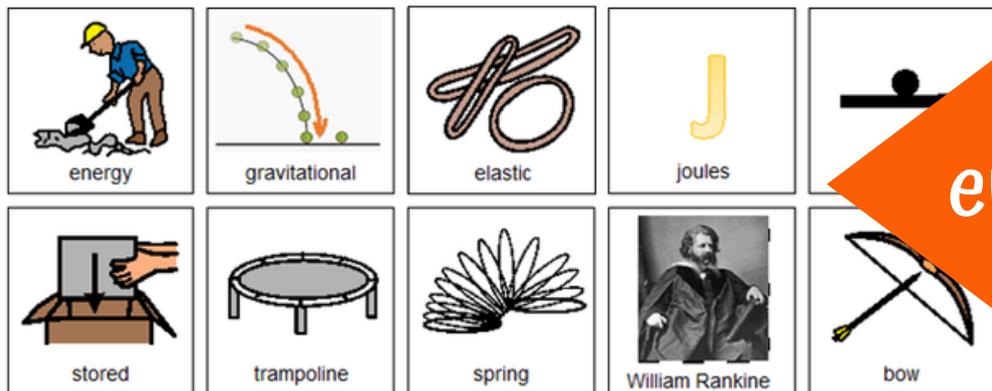
The differentiated versions include color coding so more students can complete these worksheets independently.

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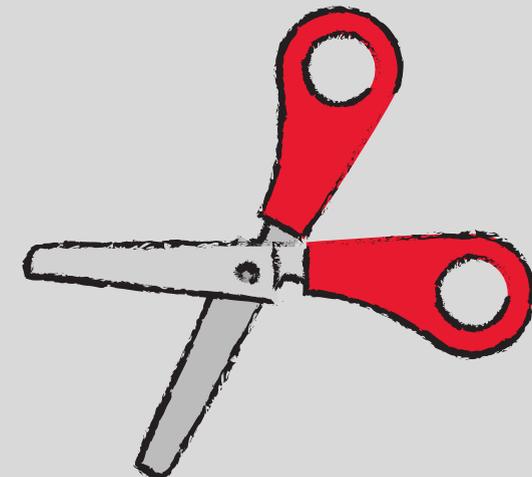
wrong answers
mixed in



errorless



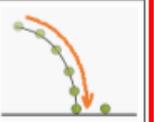
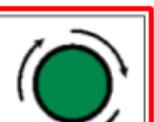
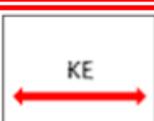
There are 2 circle maps in this unit. Each has a version that is errorless and one that has wrong answers mixed in that students will set aside.



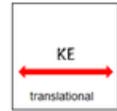
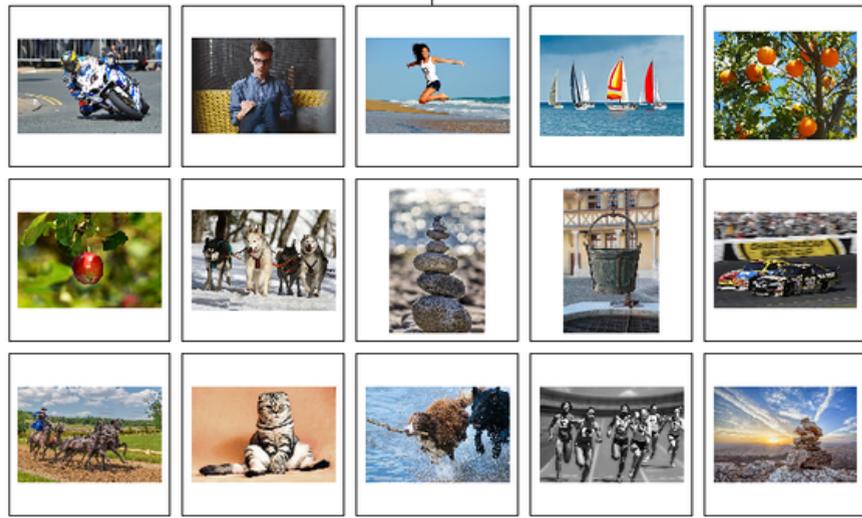
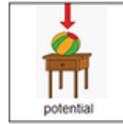
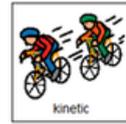
Day 2

Place pictures in circle map **ONLY IF** they are about kinetic energy.



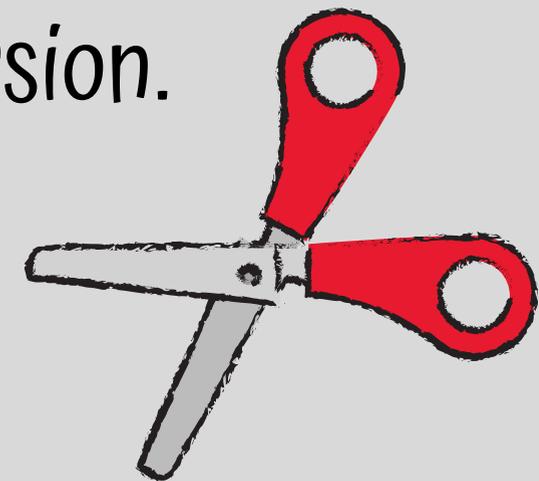
 energy	 gravitational	 flying	 joules
 stored	 spin	 jump rope	 kick
 throw	 turn	 laying down	 elastic
 translational	 rotational	 sit in lap	<small>© All Rights Reserved Tobii Dynavox</small>

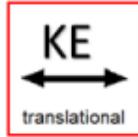
There is a drag and drop version of the circle maps in this unit. The differentiated versions contains only correct answers.



There are 3 sorting activities included. They include photos and pictures symbols.

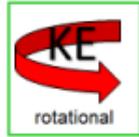
You can easily add color coding if needed to quickly differentiate these. This is done for you in the digital version.





KE

translational

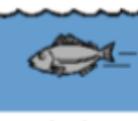
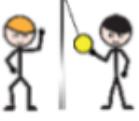
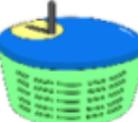
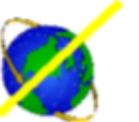


KE

rotational

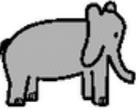
Day 4
differentiated

Sort the pictures into the correct column. If you are not sure, place it on the middle line.

 earth spins	 swimming	 tetherball
 running	 spin	 rocket
 throw	 wiggle	 flying
 hopping	 salad spinner	 axis

The sorting activities are included as a digital activity. It comes in a regular and differentiated form using color coding.

Objects that move faster (have more speed) have more kinetic energy. Circle the one that has **MORE** kinetic energy in each box. Assume each object is in motion.

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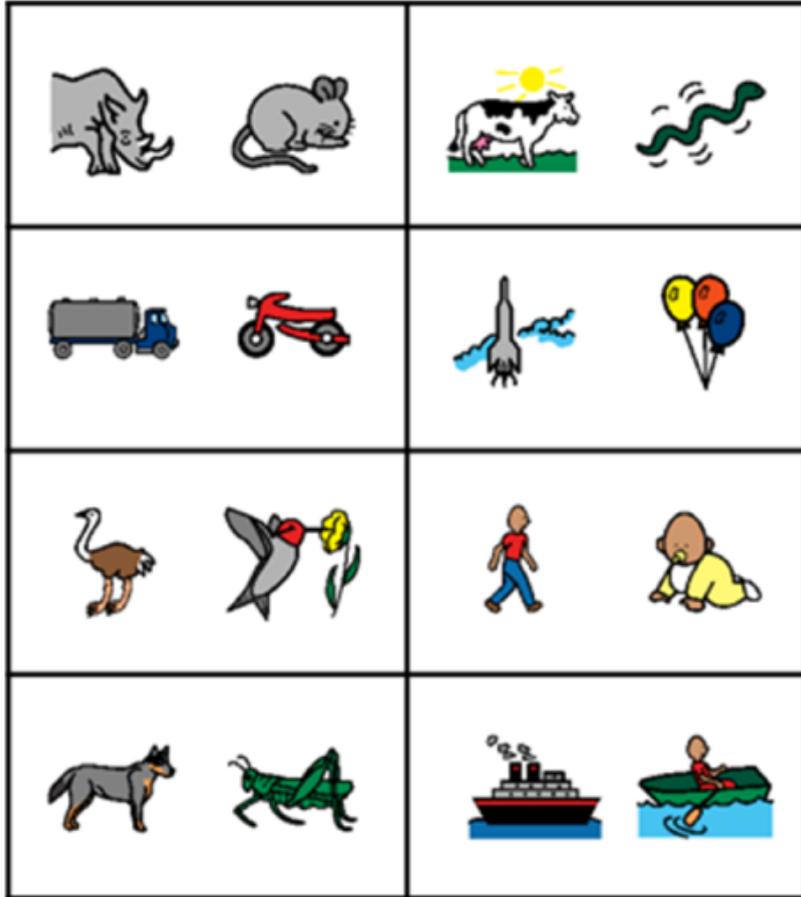


Objects with less height have less potential energy. Circle the one that has **LESS** potential energy in each box. Assume each object is **NOT** in motion.

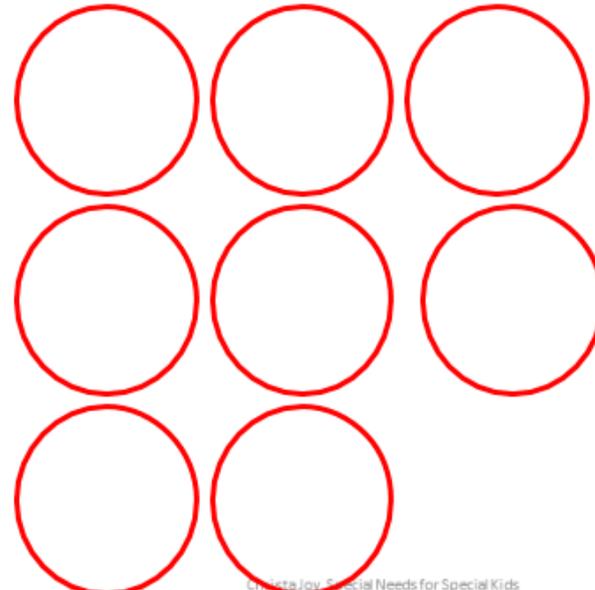
			
			
			
			

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There several different worksheets where students will determine which object has more or less potential/kinetic energy.



Objects with more mass have more kinetic energy. Circle the one that has **MORE** kinetic energy in each box. Assume each object is in motion and they are going the same speed.



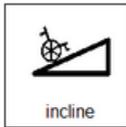
All of the more or less activities come in digital versions. The differentiated set has dashed circles around the correct answers.

Potential Energy Experiment #1

The Incline Roll

People on my team: _____

Materials needed:

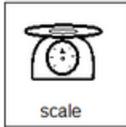


incline



1

object



scale

Potential Energy Experiment

The Incline Roll

Place the objects in order from lightest to heaviest



My hypothesis

I think will get to the bottom first
because it is .

Potential Energy Experiment #1

The Incline Roll

What I learned

The something weighs, the it goes.

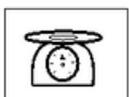
The something weighs, the it

Potential Energy Experiment #2

Transferring Kinetic Energy

People on my team: _____

Materials needed:

 <input type="checkbox"/>	1 <input type="checkbox"/>
incline	object
 <input type="checkbox"/>	2 <input type="checkbox"/>
scale	object
 <input type="checkbox"/>	3 <input type="checkbox"/>
ruler	object
 <input type="checkbox"/>	
empty milk carton	

Potential Energy Experiment #2

Transferring Kinetic Energy

What I learned

The something weighs, the it moves the carton.
The something weighs, the it moves the

Potential Energy Experiment #2

Transferring Kinetic Energy

Place the objects in order from lightest to heaviest

My hypothesis

I think will move the carton the farthest
because it is .

This experiment looks at how energy is transferred from an object that is moving to one that is still. It goes through the same steps as the incline roll experiment. There are picture choices provided of common objects students are likely to choose from.

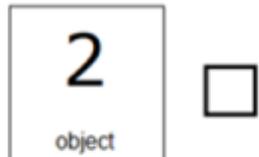
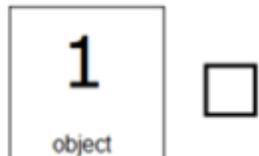
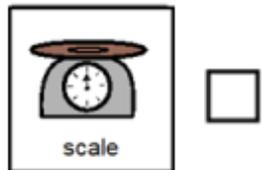
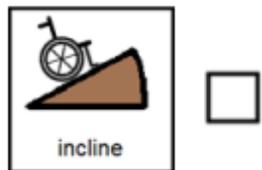
The Incline Roll

Day 10

People on my team:

<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>

Materials needed:



Type in the names of the people on your team. Move the checks to the empty boxes once you have the supplies you need.



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Both experiments have digital versions of the worksheets for students to fill out and record their results.

The Incline Roll

Day 10

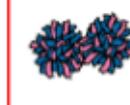
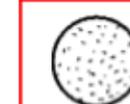
Place the objects in order from lightest to heaviest

My hypothesis

I think will get to the bottom first
because it is .

1. Place the objects you used in order from lightest to heaviest.
2. Use the pictures to finish the hypothesis.

 marbles	 tennis ball	 pom-poms	 ball	 koc
 baseball	 ping pong ball	 cotton ball	 golf ball	
 heavier	 lighter			

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The experiments use objects that should be easily found at home.

Potential Energy

1. Potential energy is also called energy.

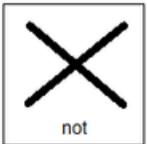
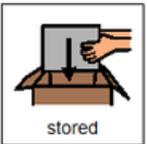
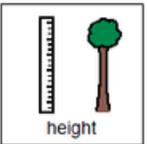
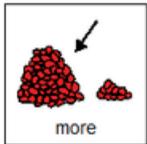
2. Gravitational energy is determined by the object's

3. Elastic energy is determined by how far something is

4. Something that has potential energy is moving.

5. An apple at the top of the tree has potential energy

than one at the bottom.



Kinetic Energy

1. Kinetic energy is energy in .

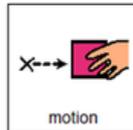
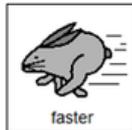
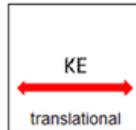
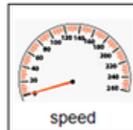
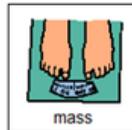
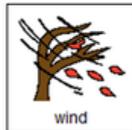
2. The more something has the more kinetic energy it has.

3. The in a tornado has a lot of kinetic energy.

4. A train has more kinetic energy than a bike because it goes

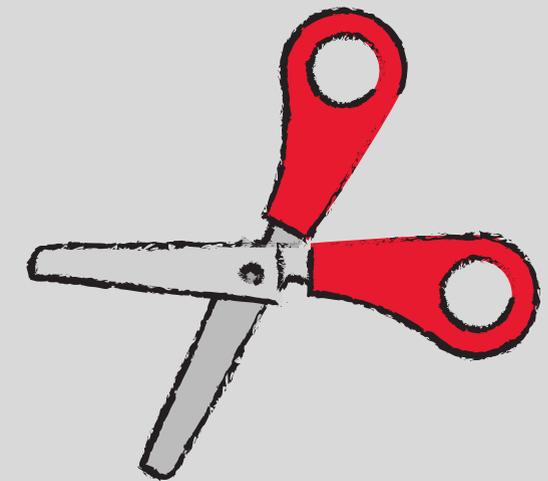
and has more .

5. Objects that move through space have energy.



There are 4 close worksheets included for a review. 2 cover potential energy and 2 cover kinetic energy.

Answer key included.



Transferring Kinetic Energy

What I learned

The something weighs, the it moves the carton.

The something weighs, the it moves the carton.

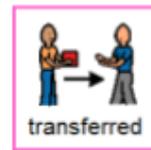
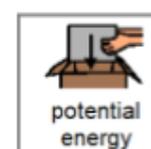
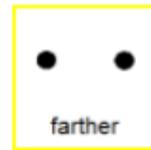
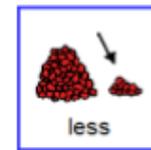
The rolling object has .

The milk carton has .

When the rolling object hits the milk carton, the is to the milk carton.

Day 11
differentiated

Use the pictures to finish the sentences about what you learned.

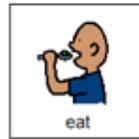
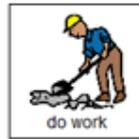


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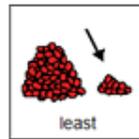
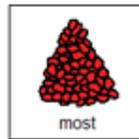
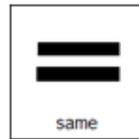
These fill in the blank worksheets also come in digital forms.

The differentiated versions use color coding.

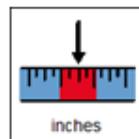
1. The definition of energy is the ability to:



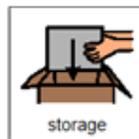
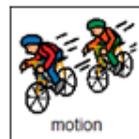
2. The Law of Conservation of Energy says the amount of energy an object has is always the:



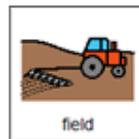
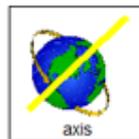
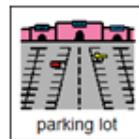
3. Energy (kinetic and potential) is measured in:



4. Kinetic energy is energy that is in:



5. Rotational energy measures movement around an:

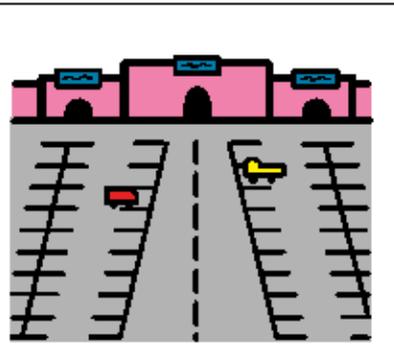


FINALLY the assessment!! There are 3 versions. This version has 10 questions with 3 picture choices for each question.

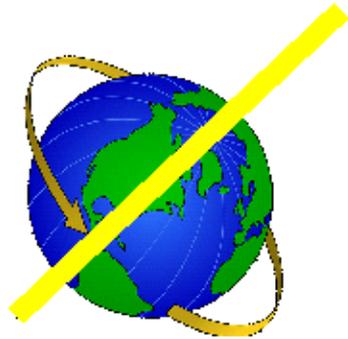
Answer key included.

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

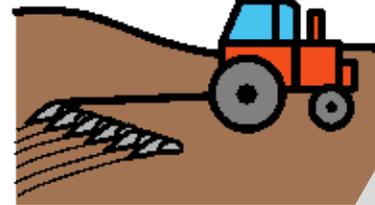
Q 5



parking lot

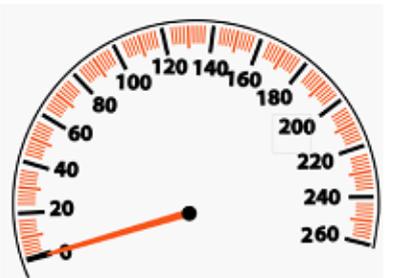


axis

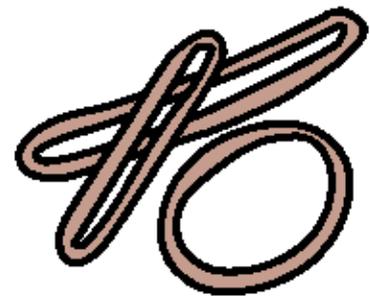


field

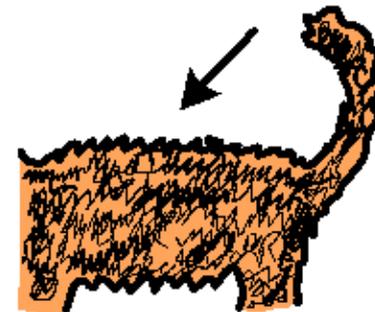
Q 6



speed



elastic



fur

With this version, you cut out the answer choices and glue them on index cards. Ask the student the question, and they point to the correct answer.

1. The definition of energy is the ability to:
 - A. Sleep
 - B. Do work
 - C. Eat
2. The Law of Conservation of Energy says the amount of energy an object has is always the:
 - A. Same
 - B. Most
 - C. Least
3. Energy (kinetic and potential) is measured in:
 - A. Inches
 - B. Pounds
 - C. Joules
4. Kinetic energy is energy that is in:
 - A. Motion
 - B. Storage
 - C. time
5. Rotational energy measures movement around an:
 - A. Parking lot
 - B. Axis
 - C. Field
6. If two moving objects weigh the same, the one with more _____ has more kinetic energy.
 - A. Speed
 - B. Elastic
 - C. fur

There is also a traditional multiple choice version. You can also use this to record student answers if using the version with index cards.

1. The definition of energy is the ability to:



2. The Law of Conservation of Energy says the amount of energy an object has is always the:



3. Energy (kinetic and potential) is measured in:



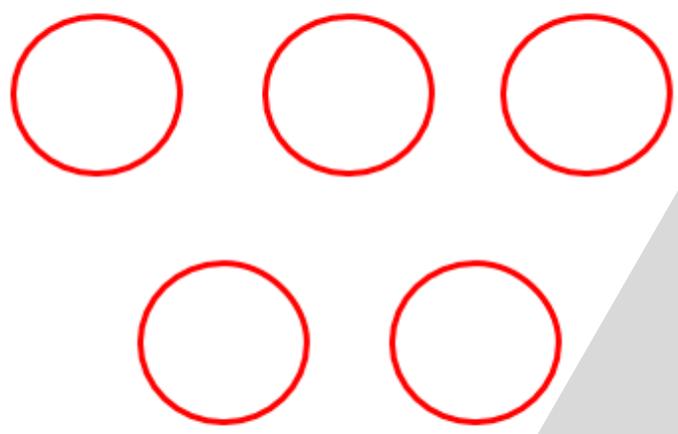
4. Kinetic energy is energy that is in:



5. Rotational energy measures movement around an:



Place a circle on the correct answer.



The digital version of the assessment looks like this. There is a differentiated version where the correct answers are already circled with a dashed line.



I realize there will be some students out there unable to do cutting activities. I have a blog post with ways to complete activities without a pair of scissors!!

[Click Here to read more!!](#)