

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

Class: \_\_\_\_\_

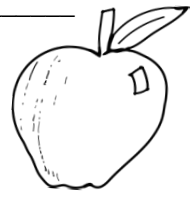
Date: \_\_\_\_\_

# ENERGY FORMS & TRANSFORMATIONS


**ESSENTIAL QUESTION:** How do things in the universe and \_\_\_\_\_ ?

VO  
CA  
B

100 grams



How much there is in something.

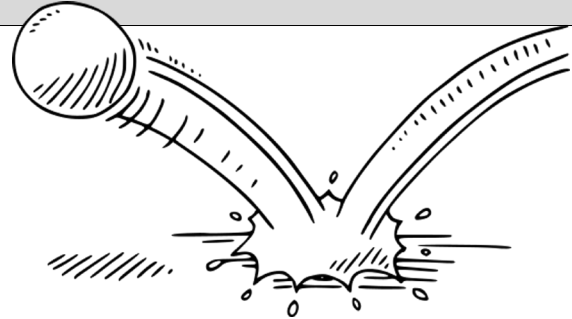


Where an object is relative to a point of \_\_\_\_\_.

TOPIC QUESTIONS:

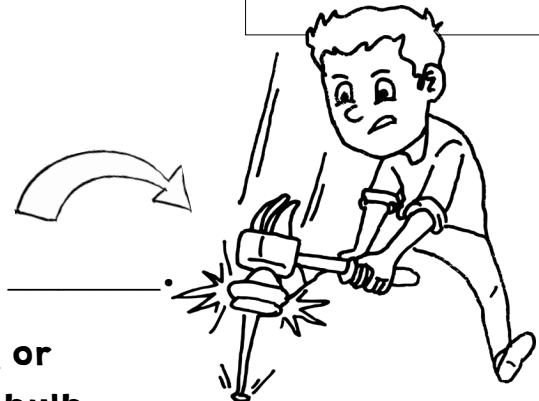
# 1

What is \_\_\_\_\_ and how is it \_\_\_\_\_ ?



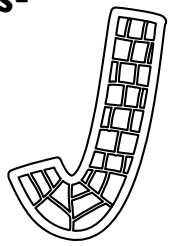
Energy is the \_\_\_\_\_ to do \_\_\_\_\_.

Energy cannot be \_\_\_\_\_ or \_\_\_\_\_, but every time a bulb is lit, music is played, a fan spins, or food is cooked, energy made it happen.



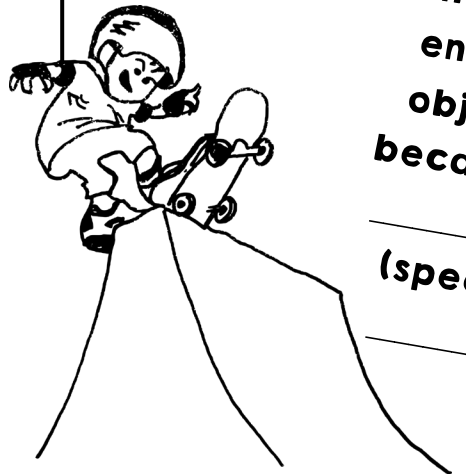
Work happens when a \_\_\_\_\_ is used to move an object through a \_\_\_\_\_.

Energy is measured in the unit of \_\_\_\_\_ (J).  
1 J = 1 kg\*m<sup>2</sup>/s<sup>2</sup>



# 2

What is \_\_\_\_\_ energy?



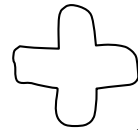
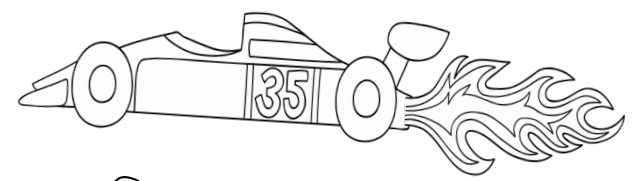
MECHANICAL ENERGY is the \_\_\_\_\_ =

energy an object has because of its \_\_\_\_\_ (speed) and \_\_\_\_\_.



POTENTIAL ENERGY

is \_\_\_\_\_ energy that depends on an object's \_\_\_\_\_ and \_\_\_\_\_ or \_\_\_\_\_.



KINETIC ENERGY

is energy of \_\_\_\_\_ that depends on an object's \_\_\_\_\_ and \_\_\_\_\_.

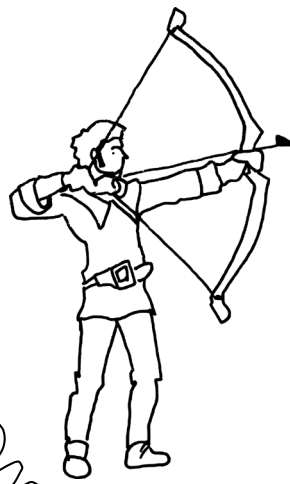
TOPIC QUESTIONS:

3

What are some types of \_\_\_\_\_ energy ( \_\_\_\_\_ )?

GRAVITATIONAL POTENTIAL

Dependent on \_\_\_\_\_ and  
Examples: at the top of a rollercoaster and \_\_\_\_\_

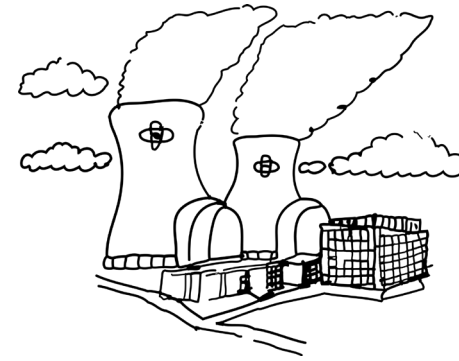


ELASTIC POTENTIAL

Stored due to being \_\_\_\_\_ or \_\_\_\_\_.  
Examples: \_\_\_\_\_ and rubber bands

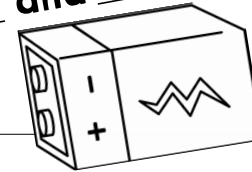
NUCLEAR POTENTIAL

Stored in the \_\_\_\_\_ of an \_\_\_\_\_.  
Most \_\_\_\_\_ form of energy.



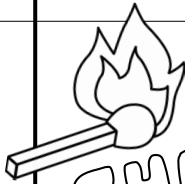
CHEMICAL POTENTIAL

Stored in \_\_\_\_\_ between \_\_\_\_\_ and \_\_\_\_\_.  
Examples: \_\_\_\_\_



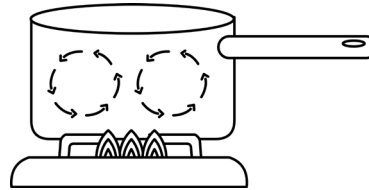
4

What are some types of \_\_\_\_\_ energy ( \_\_\_\_\_ )?

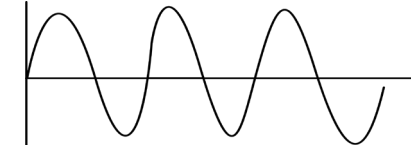
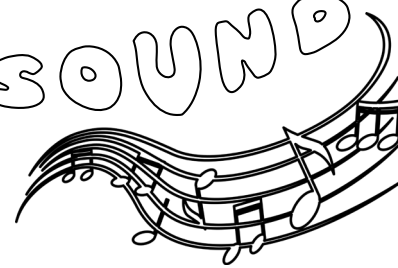


THERMAL

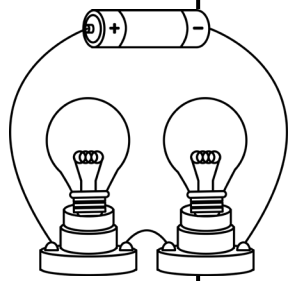
\_\_\_\_\_ and movement of molecules, also known as \_\_\_\_\_.



SOUND



Vibrational \_\_\_\_\_ through substances in \_\_\_\_\_.



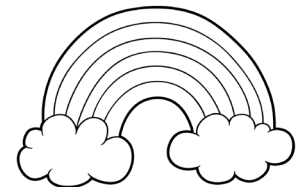
ELECTRICAL

The movement of \_\_\_\_\_ and  
Examples: \_\_\_\_\_ in appliances

RADIANT



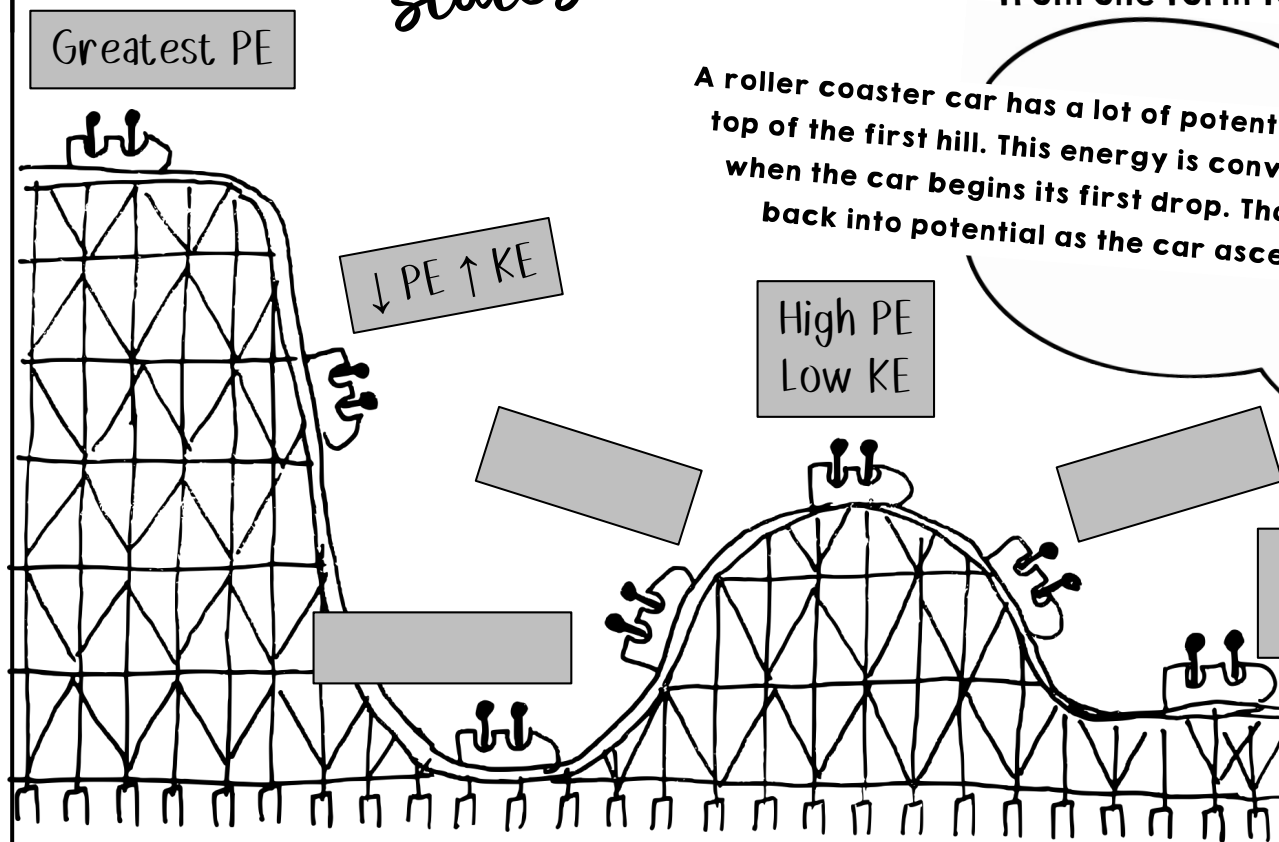
Electromagnetic \_\_\_\_\_.  
Examples: visible \_\_\_\_\_, X-rays, \_\_\_\_\_



# the LAW OF CONSERVATION OF ENERGY states that...

Energy can \_\_\_\_\_ forms but it is never \_\_\_\_\_. This law means that energy can neither be \_\_\_\_\_ nor \_\_\_\_\_; rather, it can only be \_\_\_\_\_ or transferred from one form to another.

What is the Law of \_\_\_\_\_ of \_\_\_\_\_?



A roller coaster car has a lot of potential energy as it sits at the top of the first hill. This energy is converted to kinetic energy when the car begins its first drop. That kinetic is converted back into potential as the car ascends the second hill.



**QUICK WATCH:** Kinetic and Potential Energy in a Roller Coaster <https://bit.ly/2XrS7rL>



Label the empty boxes along the roller coaster track where potential energy (PE) and kinetic energy (KE) are increasing and decreasing.

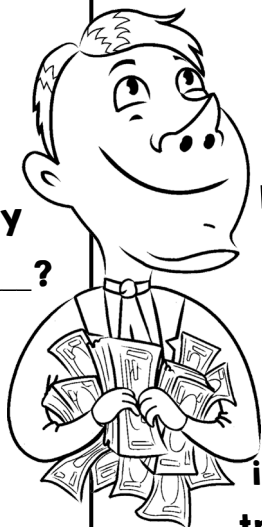


Eventually the roller coaster car will not be able to rise up another hill ... Why is this? What happens to the energy of the car?

Empty rectangular box for student response.

6

What is energy?



# ENERGY

is a strange property of objects that is sometimes \_\_\_\_\_ to see, and sometimes it is \_\_\_\_\_.

But other times that wealth is just being \_\_\_\_\_

It is a little bit like \_\_\_\_\_. Sometimes you can tell that somebody is \_\_\_\_\_ wealthy because they have a lot of things or do exciting things.



\_\_\_\_\_ somewhere, the way money is stored in a \_\_\_\_\_.

# ENERGY TRANSFORMATION

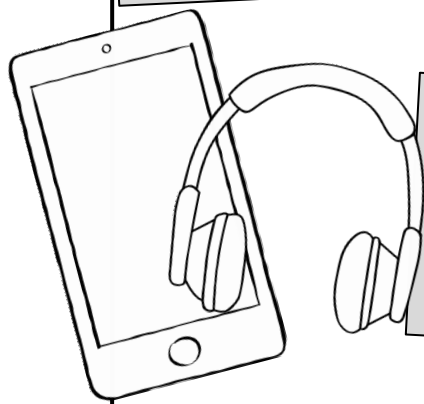
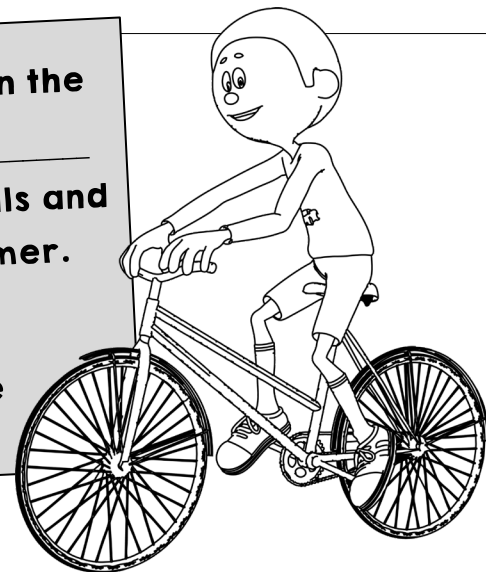
is the process of energy \_\_\_\_\_ from one \_\_\_\_\_ to another. This transformation is often able to be seen because it produces a \_\_\_\_\_ in the object's \_\_\_\_\_, position, \_\_\_\_\_, or appearance.

7

What are some \_\_\_\_\_ of energy transformations?

*Riding a bike:* The \_\_\_\_\_ potential energy stored in the food that the boy ate this morning is transferred to \_\_\_\_\_ energy as he applies \_\_\_\_\_ (does work) to the bike's pedals and to \_\_\_\_\_ energy (heat) as his body begins to get warmer.

The bike itself then has \_\_\_\_\_ energy. The force of \_\_\_\_\_ between the tires and the ground \_\_\_\_\_ the motion into \_\_\_\_\_ energy (heat) and into \_\_\_\_\_ energy.



**Do**

Fill in the missing types of energy in the description of energy transformation below.

*Listening to a Podcast:* The \_\_\_\_\_ energy stored in the battery is transferred to \_\_\_\_\_ energy when the device is used. This energy is transferred to \_\_\_\_\_ energy as you hear the recording play and to \_\_\_\_\_ energy as the device gets warm.

# ENERGY FORMS & TRANSFORMATIONS: SUM IT UP!

1. Match each word with its correct definition by writing the letter on the line.

- |                |   |
|----------------|---|
| _____ energy   | A. the standard unit for measuring the amount of energy something has |
| _____ work     | B. how much matter there is in something                              |
| _____ joule    | C. where an object is relative to a point of reference                |
| _____ position | D. when a force is used to move an object through a distance          |
| _____ mass     | E. the ability to do work   |

2. Write "PE" next to the types of potential energy and "KE" next to the types of kinetic energy.

- |                     |                  |
|---------------------|------------------|
| _____ gravitational | _____ sound      |
| _____ chemical      | _____ nuclear    |
| _____ radiant       | _____ thermal    |
| _____ elastic       | _____ electrical |

3. Write MECHANICAL, POTENTIAL, or KINETIC on the line next to each description below:

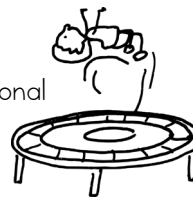
- \_\_\_\_\_ : depends on an object's mass and position (height)
- \_\_\_\_\_ : depends on an object's motion (speed) and position (height)
- \_\_\_\_\_ : depends on an object's mass and speed

4. Complete each sentence below by circling the correct word.

- If two objects of different masses are about to be dropped from the same height, the heavier one has ( GREATER / LESS ) gravitational potential energy.
- If two marbles are rolled down a ramp from the same height toward a container, the ( LIGHTER / HEAVIER ) marble will move the container farther because it has more ( POTENTIAL / KINETIC ) energy as it reaches the bottom of the ramp.
- If one water balloon is held 1 meter above the ground and another water balloon of the same size is held 3 meters above the ground, the ( HIGHER / LOWER ) balloon has the greater amount of gravitational potential energy. When the balloons are dropped, the ( HIGHER / LOWER ) balloon will hit the ground with more force because it will have ( MORE / LESS ) kinetic energy.

5. Choose the correct energy transformation sequence from the word bank for the action happening in each example below. Write the letter on the line.

- A. Gravitational Potential → Sound → Thermal
- B. Chemical Potential → Mechanical → Elastic Potential → Gravitational
- C. Electrical → Sound → Thermal → Radiant
- D. Chemical Potential → Radiant → Thermal



How are you feeling about the basics of Energy Forms and Transformations? Circle one:

