ENERGY GUIDED NOTES:

What do you already know about energy?

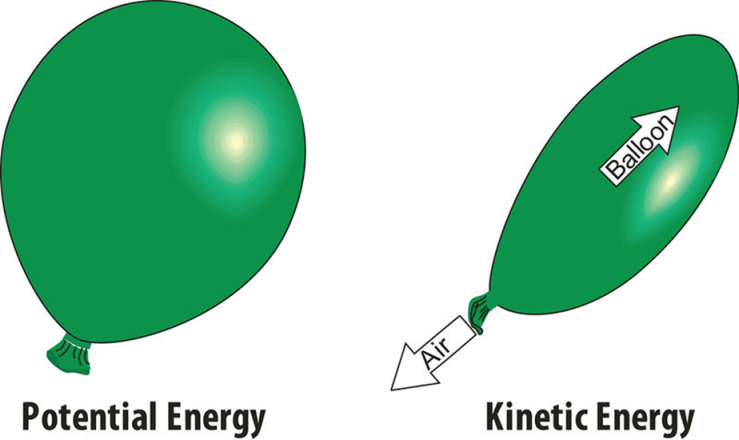
WHAT IS ENERGY?

* Energy is an abstract concept like love or freedom and is difficult to define…
* Energy: Scientists define energy as the ability to exert a \_\_\_\_\_\_\_\_\_\_, do \_\_\_\_\_\_\_\_\_\_\_ or cause change. (The ability to make things happen!)

WORK IS ENERGY IN ACTION

* Work= force x distance
* W = fd
* When you exert a force and move an object over a distance, you have done work
* Work is measured in **Nm or joules**

THE TWO MAIN CATEGORIES OF ENERGY (all other energy forms can be sorted into these two groups)

* Kinetic Energy: energy of \_\_\_\_\_\_\_\_\_\_\_\_
* Potential Energy: ­­­­\_\_\_\_\_\_\_\_\_\_\_\_\_ energy

KINETIC ENERGY

* This is energy of motion.
* Kinetic energy is the motion of :
  + ANYTHING including
  + Waves
  + Electrons ( negatively charged particles in \_\_\_\_\_\_\_\_\_\_\_)
  + Atoms (the smallest component of an element having the chemical properties of the element )
  + Molecules (The smallest unit of a substance that has all of the physical and chemical properties of the substance )
  + Eureka – Kinetic Energy
  + <https://www.youtube.com/watch?v=39ga-TGXOwM&index=6&list=PL07249EFA9038FDC1>

POTENTIAL ENERGY

* This is \_\_\_\_\_\_\_\_\_\_\_ energy that is capable of producing motion.
* Examples: draw and explain!!!

1. Meter stick + ball
2. Newton’s Cradle

3 Other Examples discussed in class:

1. 2. 3.

CALCULATING PE

* You can calculate potential energy by calculating the \_\_\_\_\_\_\_\_\_\_\_ you did raising the object up against gravity – or you can use the equation

**Potential energy = mass x gravity x height**

or

* **PE = mgh**
* Remember: g = 9.81 m/s2

EXAMPLE CALCULATIONS IN CLASS:

PE =

PE =

PE =

LAW OF CONSERVATION OF ENERGY

* Energy cannot be created or destroyed, it only changes form.
* Within a closed system, the total amount of energy is constant.
  + Closed system: nothing gets in or out
  + Ex. sealed chamber
    - Universe
* Is the Earth a closed system?
* Newton’s Cradle