**6.2 – Energy Notes** Name\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

 Date\_\_\_\_\_\_\_\_ hour\_\_\_\_\_\_\_\_\_

* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is the **ability** to **do work** or **cause change**.
* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is done when a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ moves an object through a distance. Work is the ***transfer of*** \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. (The object that work is being done on gains energy.)
* Both \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ are measured in ***joules*** (J).
* Example: The wind moving a leaf causes change, therefore, the wind has \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
* There are **2 kinds** of **energy**: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

***Kinetic Energy:***

* The amount of **kinetic energy** an object has depends on its \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
* **Velocity** is how \_\_\_\_\_\_\_\_\_\_\_\_\_ an object moves.
* The more **work** you do to get an object **moving**, the more \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ you give that object.
* A bowling ball would have more \_\_\_\_\_\_\_\_\_\_\_\_\_ **energy** than a golf ball when traveling at the same \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, because you would have to do ***more work*** to get the ball moving.
* Kinetic energy \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ when velocity \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

***Potential Energy:***

* This type of energy has the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ to do work.
* There are 2 types: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ potential energy is associated with objects that can be \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ or \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (squeezed together).
* An archer gives **potential energy** to a bow by pulling it back. This \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ ***energy*** can send an arrow whistling to its target.
* **Gravitational potential energy** depends on the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_of an object and is equal to the ***work done to lift it.***
* The ***greater the*** \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of the object or the ***greater the*** \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ it is lifted, the greater its gravitational potential energy.

**Different Forms of Energy**

* There are 6 different **forms** of **energy**: ➀ **Mechanical** Energy, ➁ **Thermal** Energy, ➂ **Chemical** Energy, ➃ **Electrical** Energy, ➄ **Electromagnetic** Energy, and ➅ **Nuclear** Energy.

➀ **Mechanical Energy:** Energy associated with the \_\_\_\_\_\_\_\_\_\_\_\_\_\_ or ***position*** of an object.

* Can occur as **potential** or **kinetic** energy.
* Examples are frog leaping through the air or school bus you ride in.

➁ **Thermal Energy:** Is the measure of the ***energy of the*** \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_in an object (atoms and molecules which make up all \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_).

* These particles have **both kinetic and potential** energy due to their **arrangement** and **motion**.
* When ***thermal energy*** \_\_\_\_\_\_\_\_\_\_\_\_\_, its particles ***move*** \_\_\_\_\_\_\_\_\_\_\_\_\_\_making it feel \_\_\_\_\_\_\_\_\_\_\_\_\_\_ to the touch. (Ice cream melts when thermal energy increases.)

➂ **Chemical Energy:** Some chemical \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ such as chocolate, wood and wax ***store chemical energy***. Chemical energy is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ stored in ***chemical bonds*** that hold chemical compounds together.

* Chemical energy is stored in the ***foods*** you eat, the ***match*** you use to light a candle and in the ***cells of your body***

➃ **Electrical Energy**:When you receive a *shock* from a metal doorknob you experience ***electrical*** ***energy***.

* ***Moving*** *electric charges* produce *electricity* and carry electrical energy.
* We rely on \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ *and* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ to run electrical devices such as radios, lights and computers.

➄ **Electromagnetic Energy**: *\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ energy* is the energy that travels in ***waves****.* These waves have *\_\_\_\_\_\_\_\_\_\_\_\_\_\_* properties and *\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_* properties.

* Examples: light we see each day, ultraviolet radiation, microwaves and infrared radiation.

➅ **Nuclear** Energy: A type of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ energy.

* Stored in the \_\_\_\_\_\_\_\_\_\_\_\_\_ of an atom and released during ***nuclear reactions***.
* Nuclear power plants use \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ reactions to produce electricity, which occurs when the ***nucleus splits apart***. The sun and other stars create energy through nuclear \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, which occurs when the ***nucleus joins together***.