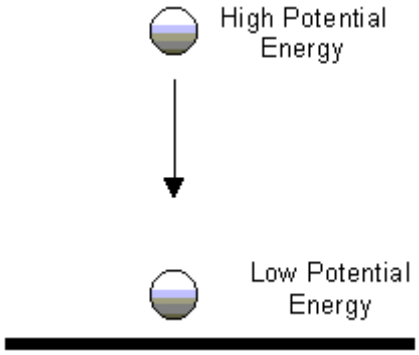
Pre-Note Meditation: Potential Difference

It might sound weird, but to actually understand potential difference it is best to first review gravitational potential energy and figure out similarities between them. So, here's your special review of gravitational potential energy… please read this. I'm going to use a certain explanation that will link wonderfully with potential difference. It really will help.

Gravitational Potential Energy

According to Newton's 2nd Law, if a force acts on an object it will accelerate.

- If you drop an object, the force due to gravity will cause it to accelerate down.



If you want to move an object from a position of low to high potential energy, you must do work on the object against gravity.

- You would calculate it using…

$$W = Fd \leftarrow F = ma$$
$$W = mad \leftarrow a = g \text{ and } d = h$$
$$W = mgh$$

So the change in gravitational potential energy is…

$$E_p = mgh$$

Gravitational Potential Energy depends on…

1. **Mass of the object ($E_p \propto m$)**
2. **Gravitational field strength ($E_p \propto g$)**
3. **Height the object moved ($E_p \propto h$)**

When the object falls, the gravitational energy becomes kinetic energy.

- This follows the law of Conservation of Energy.

I would strongly recommend you print out this page, or keep it open in another browser window while looking at the first bit of notes in this section. You will see similarities…