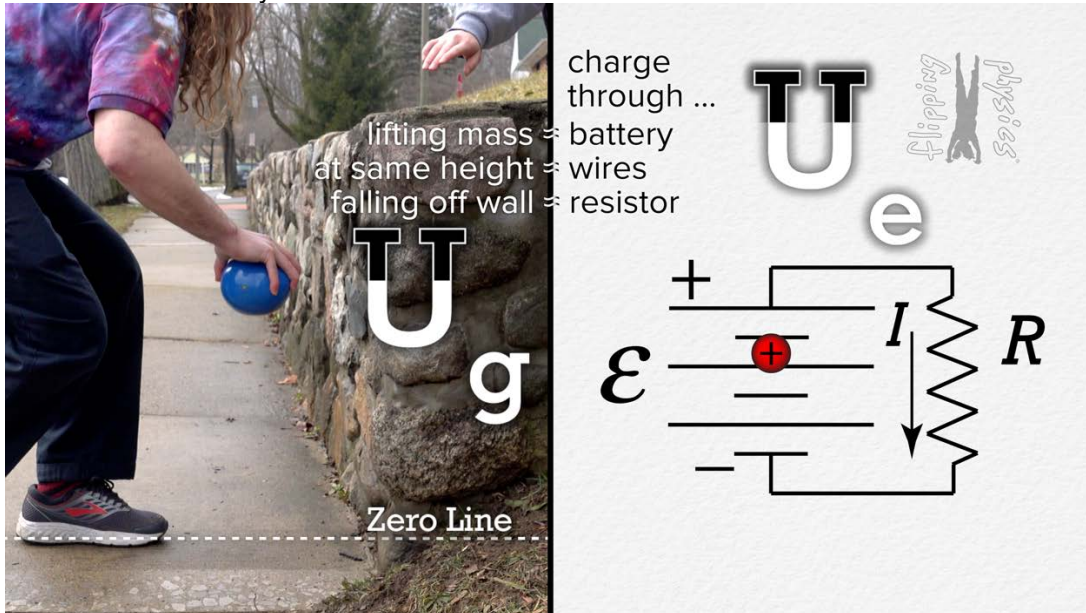


The Basics of Electric Circuits:

- An electric circuit is typically composed of electrical loops which can include wires, batteries, resistors, light bulbs, capacitors, switches, ammeters, voltmeters, and inductors.
- Typical symbols for elements in electric circuits are:

<p>Single Cell Battery</p>	<p>Double Cell Battery</p>	<p>Resistor</p>
<p>Light Bulb</p>	<p>Capacitor</p>	<p>Switch</p>
<p>Ammeter</p>	<p>Voltmeter</p>	<p>Inductor</p>

A simple circuit with a battery and a resistor:



- The long line of the battery is the positive terminal, and the short line is the negative terminal.
- *Electromotive force*, emf, ϵ , is the ideal electric potential difference, or voltage, across the terminals of the battery.
 - Yes, the symbol, lowercase Greek letter epsilon, is the same as electric permittivity. 😊
 - Yes, electromotive force is not a force. The term is another misnomer. 😊

- According to the law of charges, positive charges are repelled from the positive terminal and attracted to the negative terminal; therefore, current is clockwise in this circuit.
- A battery adds electric potential energy to electric charges.
 - Like lifting a mass adds gravitational potential energy to masses.
 - A battery is essentially an electric potential energy pump.
- A resistor converts electric potential energy to heat energy. (And maybe light sound energy)
 - Like a mass falling off a wall converts gravitational potential energy to kinetic energy.
- Unless otherwise stated, wires are considered to be ideal and have zero resistance; therefore, there is no change in electric potential energy of charges as they move along a wire.
 - Like a mass at rest maintaining a constant height and therefore a constant gravitational potential energy at either the top or bottom of the wall.

