

2.10.20

Electricity: Ohm's Law



Today's Objectives:

- Tell static electricity and circuits apart
- Identify voltage, current, resistance
- Know Ohm's Law
- Learn how much electricity is fatal

Electricity: Ohm's Law

How is a circuit different from static electricity?

Circuit
Constant flow
of charge

Static electricity
Build up &
1-time
release of
charge
(Lightning)

Circuit Diagrams

battery 

wires

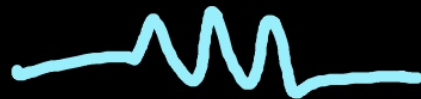


(Straight Line)

switch

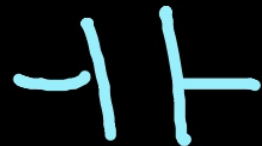


resistor



(Appliance)

capacitor



(Stores
Electric Energy)

Voltage

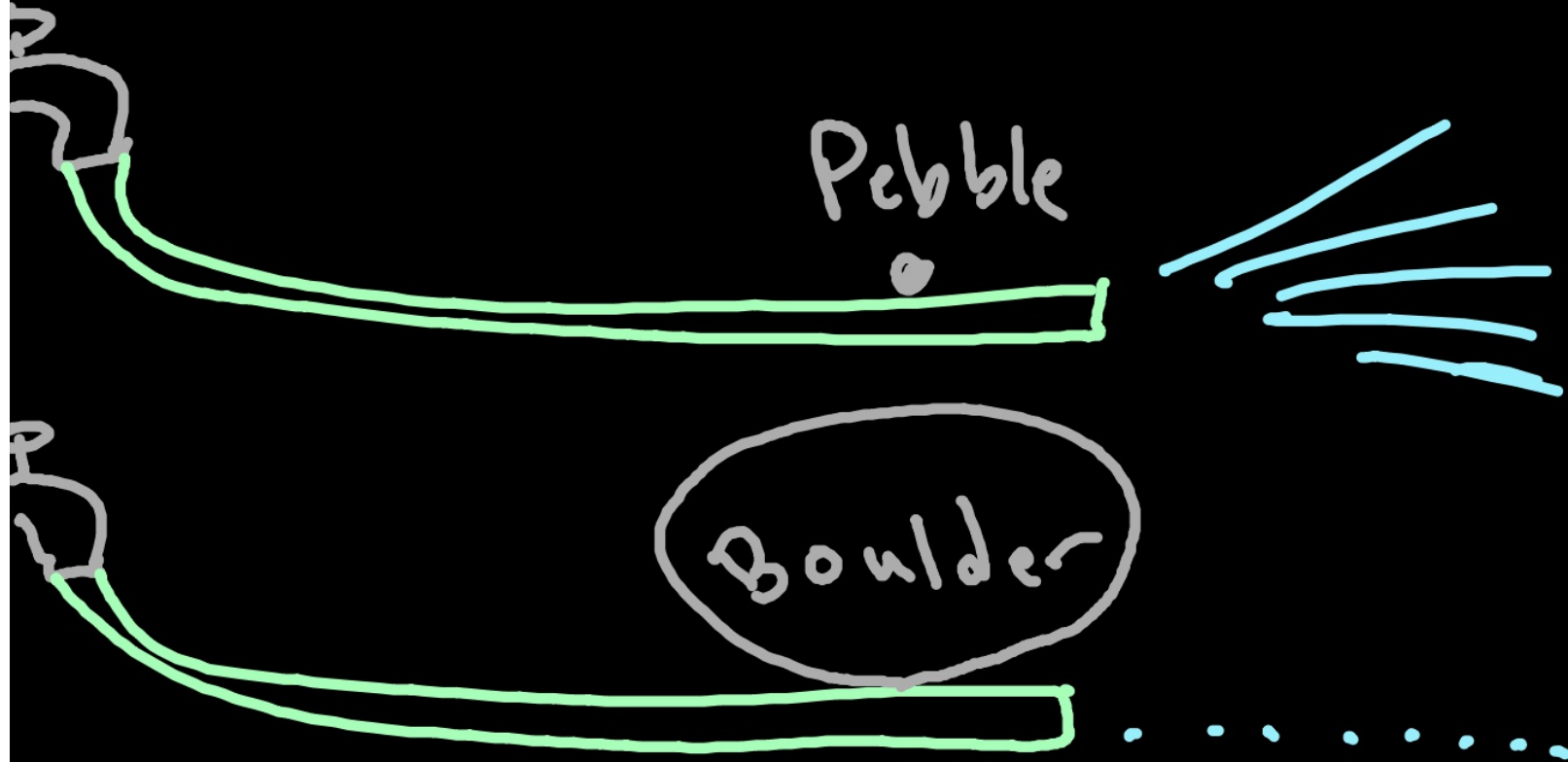
Electrical
Pressure

Resistance

Fight against
electric flow

Current

Flow rate
of electricity



Ohm's Law:

$$I = \frac{V}{R}$$

$$V = IR$$



I: Current (Amps)

V: Voltage (Volts)

R: Resistance (Ohms, Ω)

Voltage - electrical pressure

Outlets: (USA) 120 Volts, Alternating Current (AC)

Batteries:

Direct Current (DC)

AAA | AA | C | D : 1.5v
: 9v

Car : 12.6v

A 2.0 amp pencil sharpener is hooked up to a 120 volt outlet.
What is its resistance?

$$I = 2$$

$$V = 120$$

$$R = ?$$

$$I = \frac{V}{R}$$

$$V = IR$$

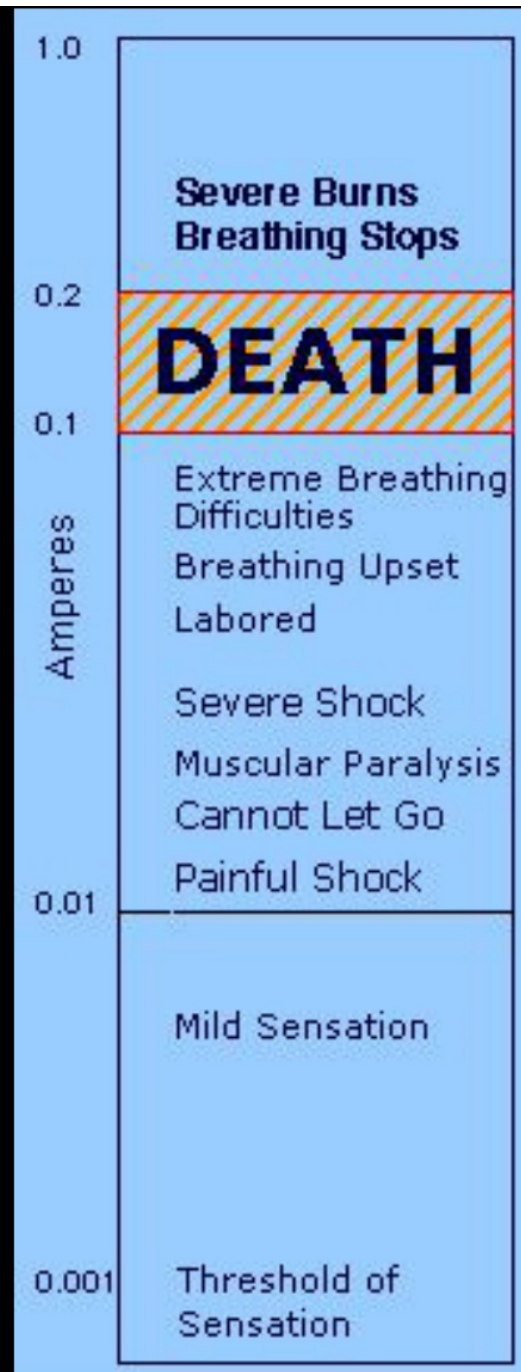
$$V = IR$$

$$120 = 2 \cdot R$$

$$R = 60 \Omega$$

Electrocution - how much is fatal?

It's not volts that kill,
it's the amps.



Make a Simple Circuit (1 Bulb)

- **1 Battery Holder**
- **2 Battery Clips**
- **1 D Battery**
- **1 Lightbulb Holder**
- **1 Lightbulb**
- **Wires**

