

Bellwork

What is the difference
between price and
unit price?

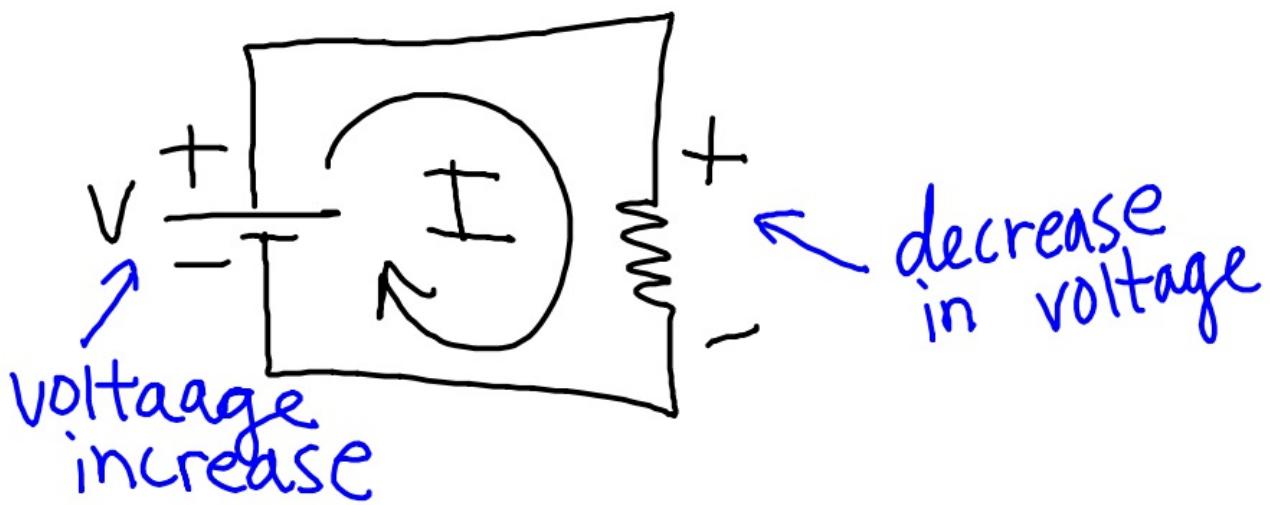
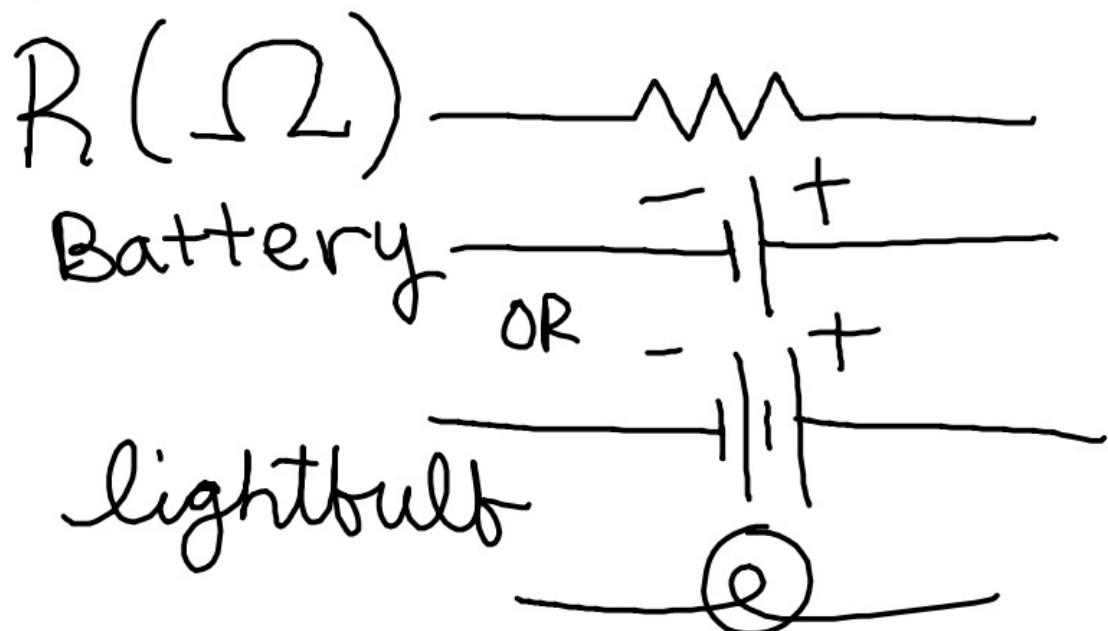
① 3C of electrons are pushed through a circuit by a battery. These moving electrons transfer 20J of energy into the circuit. What is the battery's voltage?

$$V = \frac{U}{Q} = \frac{20\text{J}}{3\text{C}} = 6.67\text{V}$$

② How much current in a lightning strike that transfers 10^{20} electrons in 30×10^{-6} microseconds?

$$I = \frac{q}{\Delta t} = \frac{1.602 \times 10^{-19} C \times 10^{20}}{30 \times 10^{-6} s}$$
$$\approx 534,000 A$$

Resistor an item used in a circuit to slow down (reduce) the current.

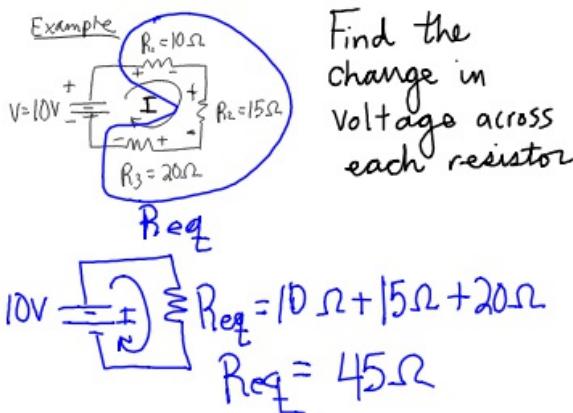


Ohm's Law $V = IR$

Voltage across a resistor
is directly proportional
to the current through
it.

Series Circuit

- ↳ only 1 path for current
- ↳ everything is "in line"
- ↳ Same current flows through everything, but voltages may be different
- ↳ Add series resistors to get an equivalent resistance



$$V = IR$$
$$10V = I(45\Omega) \Rightarrow I = 0.222A$$

↑
same as
original
current

Use Ohm's law on each resistor

$$R_1: V = (0.222A)(10\Omega)$$
$$V = 2.22V$$

$$R_2: V = (0.222A)(15\Omega)$$
$$V = 3.33V$$

$$R_3: V = (0.222A)(20\Omega)$$
$$V = 4.44V$$