**Section 3 Questions**

1. What is power?
   1. work performed per unit coulomb
   2. resistance to change
   3. work performed per unit time
   4. how much force you can apply on an object
   5. work done over a net distance
   6. None of the above
2. Is there a relationship with units that will give us power? If so, what is it?

P = I \* V or Power = Current \* Voltage

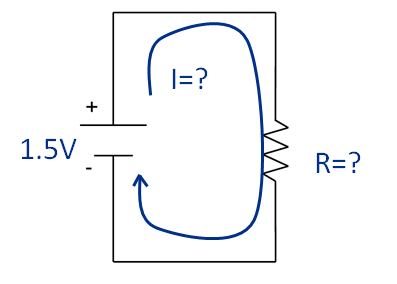
1. Arlo does 1500 J of work in climbing a set of stairs. If he does the work in 5 seconds, what is his power output?

P = W/t = 1500J / 5 seconds = 300 Watts

1. A crane lifts a load of steel, that weighs 570 N, a distance of 120 m. It takes 6 minutes to complete the task. How much work is done by the crane? How much power does the crane produce?
   1. Work = 58500 W Power = 670 J
   2. Work = 68400 W Power = 190 J
   3. Work = 48800 W Power = 400 J
   4. Work = 58500 J Power = 670 W
   5. Work = 68400 J Power = 190 W
   6. Work =48800 Power = 400 J

W = F \* d = 570N \* 120m = 68400 J

P = W / t = 68400J / 360 seconds = 190 W

1. If a D-Cell battery (1.5V) supplies 6W of power to a small bulb, find:
   1. The current through the bulb

P = I \* V => I = P / V = 6W / 1.5V = 4 A or 4 Amps

* 1. The resistance of the bulb

V = I \* R => R = V / I = 1.5V / 4A = 0.375 Ω

1. The unit of electrical current is an Amp. The basic units which define an Amp are:
   1. meter^3 /second
   2. Joule/coulomb
   3. Joule/second
   4. Electrons/meter^3
   5. Electrons/ohm
   6. Coulomb/second
   7. Electrons/bushel
2. The unit of voltage is a Volt. The basic units which define a Volt are:
   1. meter^3 /second
   2. Joule/coulomb
   3. Joule/second
   4. Electrons/meter^3
   5. Electrons/ohm
   6. Coulomb/second
   7. Electrons/bushel
3. A light bulb is powered using an AA battery (1.5 V) which has a current of 56.8 mA. The battery lasts for 150 hours before the light bulb ceases to emit light. What is the resistance of the light bulb?
   1. 0. 1129Ω
   2. 8.124Ω
   3. 17.687Ω
   4. 220Ω
   5. 56.97Ω
   6. 26.408Ω

V = I \* R => R = V / I = 1.5V / .0568A = 26.408 Ω

1. Rewrite the power equation to have R instead of V.

V = I \* R P= I \* V = I^2 \* R

1. Write the Power equation without the use of current.

V = I \* R => I = V / R P = I \* V = V^2 / R

1. Ohm's law is the relationship between voltage, current, and resistance in an electrical circuit.
   1. True
   2. False
2. Ohm’s law is represented by V = I \* R.
   1. True
   2. False
3. Ohm’s law is represented by V = I^2 \* R.
   1. True
   2. False
4. Ohm’s law is the relationship between voltage and resistance in an electrical circuit.
   1. True
   2. False
5. A toaster oven is plugged into an outlet that provides 150 V. What power does the oven use if the current is 25A?
   1. 2500 W
   2. 2580 W
   3. 3000 W
   4. 3460 W
   5. 3730 W
   6. 4000 W

P = I \* V = 25A \* 150V = 3750 W

1. Charlett’s laptop consumes 47 Watts of electricity. How much voltage is used, if the current is 22A?
   1. 0.245 V
   2. 0.788 V
   3. 1.567 V
   4. 2.136 V
   5. 2.789 V
   6. 3.241 V

P = I \* V => V = P / I = 47W / 22A = 2.136 V

1. A calculator uses a 7V battery and draws 0.1A current. How much power does it use?
   1. .7W
   2. .8W
   3. 1.76W
   4. 2.57W
   5. 2.77W
   6. 3.14W

P = I \* V = 0.1A \* 7V = .7 W