Current & Voltage Calculations Worksheet (Front and Back Pages)

current = $\dfrac{\text{charge moving past a point}}{\text{time}}$	$I = \dfrac{Q}{t}$	Units: I is A (amperes) Q is C (coulombs) t is s (seconds)

$1C = 6.24 \times 10^{18}$ electrons

1. Find the unknown quantity, by rearranging the current formula above. Include Units!!

a) I = 0.4A
    Q =
    t = 20 s
	b) I = ?
	    Q = 240 C
	    t = 300 s
		c) I = 2 A
		    Q = 400 C
		    t = ?

WORD PROBLEMS. Please Use GRASP (Given, Required, Analyse and Solve, Paraphrase)

1. How much current must there be in a circuit if 100 coulombs flow past a point in the circuit in 4 seconds?

2. How much time is required for 10 coulombs of charge to flow past a point if the rate of flow (current) is 2 amperes?

Potential Difference

$$\frac{E}{V \, Q}$$ (triangle)

potential difference = $\dfrac{\text{energy}}{\text{charge}}$	$V = \dfrac{E}{Q}$	Units: V is V (volts) Q is C (coulombs) E is J (joules)

1. Find the unknown quantity by rearranging the "magic triangle" above. Include units!

a) V = ?
    E = 45 J
    Q = 15 C
	b) V = 9 V
	    E = ?
	    Q = 150 C
		c) V = 1.5 V
		    E = 225 J
		    Q = ?

WORD PROBLEMS. Please Use GRASP (Given, Required, Analyse and Solve, Paraphrase)

1. Ten joules of energy are required to move 2 coulombs of charge from one point in the circuit (A) to another point (B). What is the difference in potential energy (V) between these two points?

2. It requires 600 joules of energy to transfer a quantity of charge between points A and B of a circuit, which have a potential difference of 30 volts. How much charge is transferred?