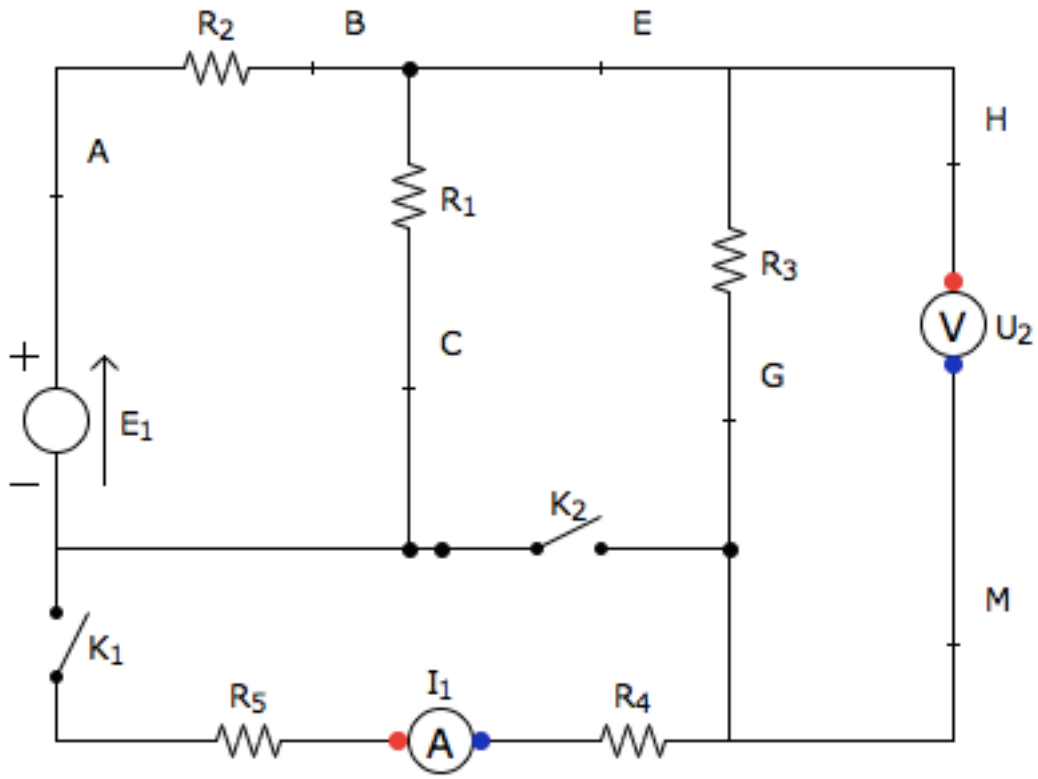
HW #11: A Steady Circuit

Physics 204, John Jay College, the CUNY, Daniel A. Martens Yaverbaum



In the circuit depicted above, E_1 is a battery. According to the manufacturer, it is a '12-Volt' battery, guaranteed to last at least as long as this problem. Similarly:…

E_1: Battery, 12 Volts.

K_1, K_2: Switches, "Normally Open".

(Note: N/O and N/C switches provide two among countless means by which we manage flow around the circuit.)

R_1 through R_5: Resistors, with strengths as follows:

$R_1 = 40\Omega$

$R_2 = 28\Omega$

$R_3 = 60\Omega$

$R_4 = 20\Omega$

$R_5 = 80\ \Omega$

A : An ammeter; designed to measure current at a circuit location.

V : A Voltmeter; designed to measure potential difference between two locations.

Given all the above for this steady circuit (HW #11),

Assume BOTH switches REMAIN OPEN AT t = 0.

Assume, furthermore, that 0 is always an acceptable answer to these questions of electrical measurement. It's not always correct, but it's almost always reasonable to consider.

Determine the electrical current and the potential drop for all of the following points in space and time.

Do all work and present on paper. But place your final answers -- without scratch nor adornment into the grid below.

	Both Switches Open	Current	Ammeter Reading	Potential Drop*	Voltmeter Reading	K2 Closed, K1 Open	K1 Closed, K2 Open	Both Switches Open			
R1											
R2											
R3											
R4											
R5											
R6											
R7											
R8											
R9											
A											
B											
C											
E											
G											
H											
M											

*Potential Drop for a given *letter-label* means: The potential difference between that location and the negative terminal of the battery for this circuit, i.e.: 'ground'.