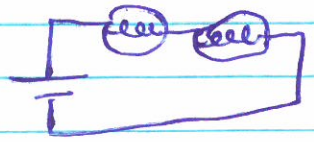
HW3 p613 mc 4, 5, 6, 7, 11 C29
p615 P 15, 16, 25
Online Kirchoff's Current Rule Rank

p613 - Multiple Choice

4) 

Two identical bulbs in series

current?

(b) Current through battery is ½ that when 1 bulb

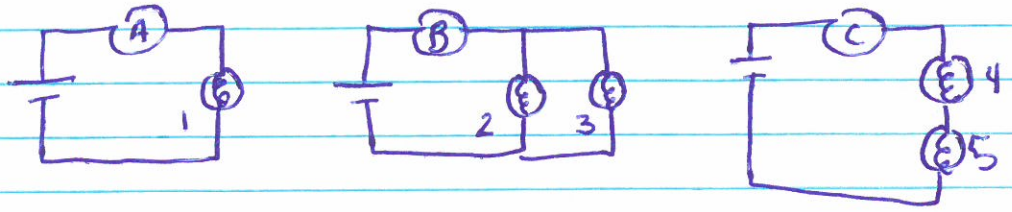
(e) Current in bulbs 1+2 identical

5) (same circuit)

potential diff?

(c) The pot diff is same across bulbs 1+2

6) Three circuits w/ identical bulbs



Rank circuits in terms of ammeter reading

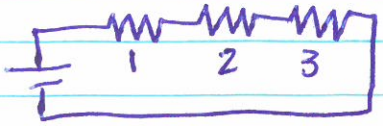
$B > A > C$ $\uparrow I \downarrow R$

$B: \frac{1}{2}R$ $A: R$ $C: 2R$

7) Rank pot diff across bulbs

$V_1 = V$ $V = V_2 = V_3$ $V = V_4 + V_5$ $V_5 = V_4 = \frac{1}{2}V$

$1 = 2 = 3 > 4 = 5$

11) 

current?

$I_1 = I_2 = I_3$

- Concept

29) A) which physical law explains Kirchoff junction?

- law of conservation of charge

B) which physical law explains Kirchoff loop?

- law of conservation of energy

p613 - Problems

15) Circuit w/ 50Ω, 100Ω, 150Ω resistors in series

A) Rank current from high to low

$I_{50} = I_{100} = I_{150}$ (series current is equal)

B) Rank the pot diff

($V = IR$ same I, $\uparrow R$ $\uparrow V$)

$V_{150} > V_{100} > V_{50}$

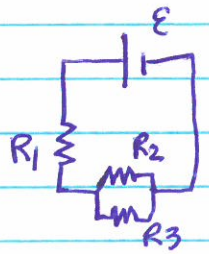
16) Circuit w/ 50Ω, 100Ω, 150Ω resistors in parallel

A) Rank current (V_{same} $I = V/R$ ↑I ↓R)

$I_{50} > I_{100} > I_{150}$

B) Rank pot diff

$V_{150} = V_{100} = V_{50}$ (∥, ΔV is equal)

23) 

$I_1 = 2.0A$ $R_1 = 4\Omega$ $R_2 = 10\Omega$ $R_3 = 40\Omega$

a) $I_2 = ?$ $I_1 = I_2 + I_3$

$\varepsilon = V_1 + V_{23}$ $V_2 = V_3$

① $R_{2,3} = \left(\frac{1}{R_2} + \frac{1}{R_3}\right)^{-1} = \left(\frac{1}{10\Omega} + \frac{1}{40\Omega}\right)^{-1}$ $R_{23} = 8\Omega$

② $V_{2,3} = I_{23} R_{23} = (2.0A)(8\Omega) = 16V$

③ $I_2 = \frac{V_{2,3}}{R_2} = \frac{16V}{10\Omega} = 1.6A$

b) $I_3 = ?$ ④ $I_3 = \frac{V_{2,3}}{R_3} = \frac{16V}{40\Omega} = .4A$

OR $I_3 = I_1 - I_2 = 2.0A - 1.6A = .4A$

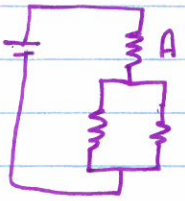
c) $\varepsilon = ?$ ① $V_T = I_1 R_1 = (2A)(4\Omega) = 8V$

② $V_T = V_1 + V_{2,3} = 8V + 16V = 24V$

OR ① $R_{eq} = R_1 + R_{2,3} = 4\Omega + 8\Omega = 12\Omega$ ② $V_T = I_T R_T = (2A)(12\Omega) = 24V$

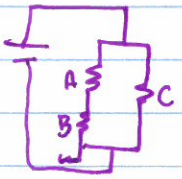
– Online

· Kirchoff Current Rule Rank

A) 

· Rank current flow large → small

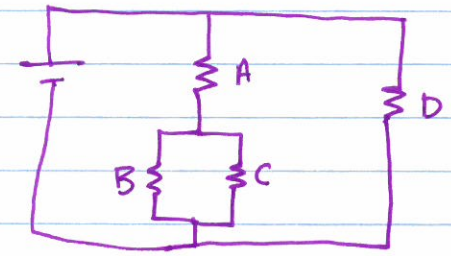
$I_A > I_B = I_C$

B) 

· Rank current flow large → small

$I_C > I_A = I_B$

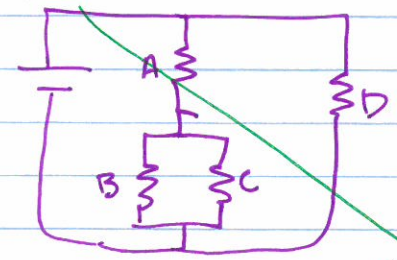
(1)

C) 

· Rank I large → small

$I_D > I_A > I_B = I_C$

· Kirchoff Loop Rule



(1)

· don't know ε or any R values

· Select expression that will equal battery where V_A = voltage of A

~~$V_A + V_B$~~
~~$V_A + V_C$~~
~~(b/c $V_B = V_C$)~~

~~V_D~~
~~(b/c in ||w/ battery)~~