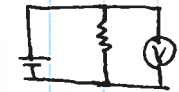


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 office hrs: Thursday 5:30-6:30 PM

{ Ammeter: place in series  
 { Voltmeter: place in parallel



## Lab 4 DC circuits

① Ohm's law:  $V = IR$

• Ohmic: resistance is constant!



② Power:  $P = IV$   $\propto$  brightness

$R_1$   $R_2$   
 $\text{---} \text{---} \text{---}$   
 $R_{eq} > R_1, R_2$

$$\left\{ \begin{array}{l} R_{eq} = R_1 + R_2 \\ I = I_1 = I_2 \\ V = V_1 + V_2 \end{array} \right.$$

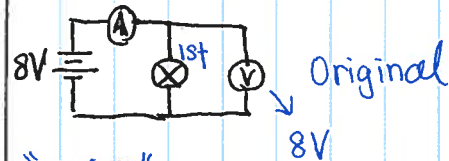
$R_1$   $I_1$   
 $\text{---} \text{---} \text{---}$   
 $R_2$   $I_2$   
 $R_{eq} < R_1, R_2$

$$\left\{ \begin{array}{l} \frac{1}{R_{eq}} = \frac{1}{R_1} + \frac{1}{R_2} \\ I = I_1 + I_2 \\ V = V_1 = V_2 \end{array} \right.$$

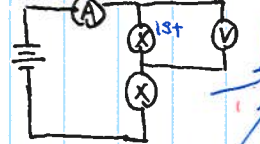
Exp1 Measure resistance.   resistor bulb

Exp2 Ohm's law: Set to 8V  
 Check ohmic

## Exp3 Adding resistance



"series"



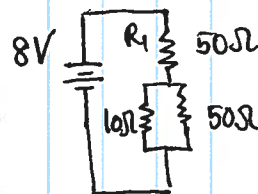
"parallel"



① Check total current and voltage and brightness

② Check the power on first bulb and compare the single bulb configuration

## Exp4 Kirchhoff's Rules



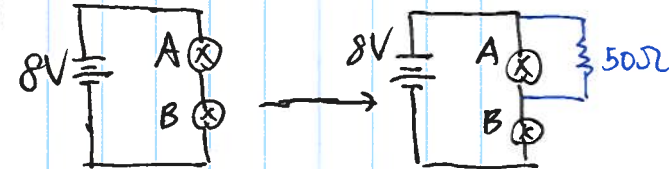
Tips: calculation

- ① find total I first
- ② Find I on resistors
- ③ Voltage =  $I \times R$

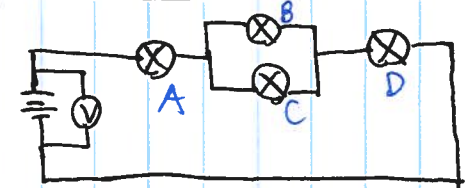
$$R_{eq} = R_1 + \frac{1}{\frac{1}{R_2} + \frac{1}{R_3}}$$

$$V = I_{total} \times R_{eq}$$

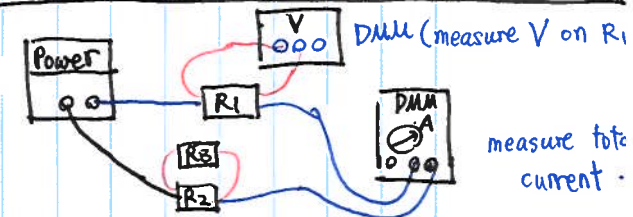
## Exp5 Circuit analysis



## Exp6 Short and open



① Check short and open



Tips: ① Better to note which is your first bulb