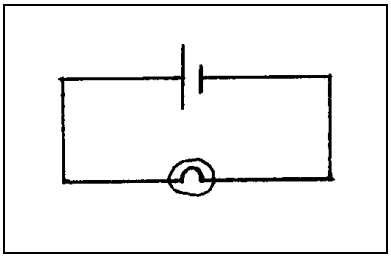
Baptist Lui Ming Choi Secondary School
F.3 Physics
Circuit Worksheet 1

Finish the following tasks with the aid of **Electronics Workbench Demo**.
Consult the handout **Electronics Workbench Demo reference** when required.
All cells are of **1.5V**. All bulbs are of **6V, 2.5W**.

Task 1 Voltage across a cell and current in a circuit

Measure the voltage across the cell and the current passing through the bulb in the following circuit. Draw the required circuit diagram in the space provided and fill in the blanks. Mark the positive and negative terminals of the meters in the diagram.



Voltage across the cell = _____ V

Current in the circuit = _____ mA

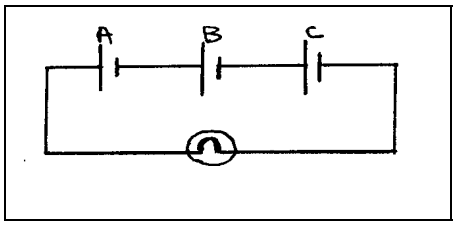
A voltmeter should be connected in _____ to a component in order to measure the voltage across the component. (series/parallel)

An ammeter should be connected in _____ to a component in order to measure the current passing through the component. (series/parallel)

Task 2 More than one cell in series

Measure the voltage across the cells A and B (V_{ab}), across the cells B and C (V_{bc}). Then measure the voltage across the cells A, B and C (V_{abc}).

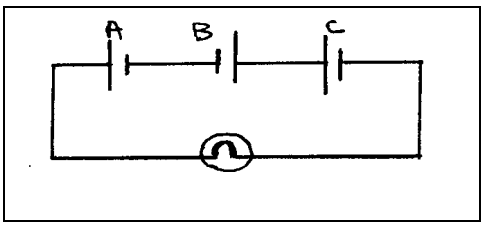
(1) All cells are in the same direction



V_{ab} = _____V, V_{bc} = _____ V

V_{abc} = _____ V

(2) Cell B is in the opposite direction



V_{ab} = _____ V, V_{bc} = _____ V,

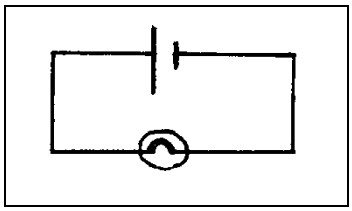
V_{abc} = _____ V

When all cells are in the same direction, $V_{abc} = V_a$ _____ V_b _____ V_c (+/-)

When cell B is in the opposite direction, $V_{abc} = V_a$ _____ V_b _____ V_c (+/-)

Task 3 Current in a circuit when the voltage increases

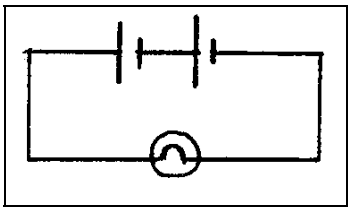
Measure the voltage across the bulb and the current in the circuit A, B and C.



Circuit A

V_a = _____ V

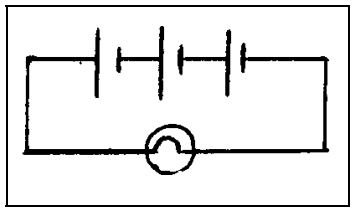
I_a = _____ mA



circuit B

V_b = _____ V

I_b = _____ mA



circuit C

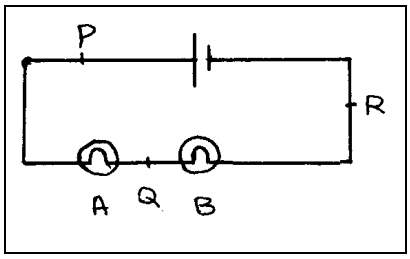
V_c = _____ V

I_c = _____ mA

The current in a circuit _____ as the voltage increases.
(increases/decreases)

Task 4 Current and voltage in a simple series circuit

Measure the current at position P, Q, and R. Measure the voltage across the bulb A and B.



current at P = _____ mA, current at Q = _____ mA

current at R = _____ mA,

voltage across A = _____ V

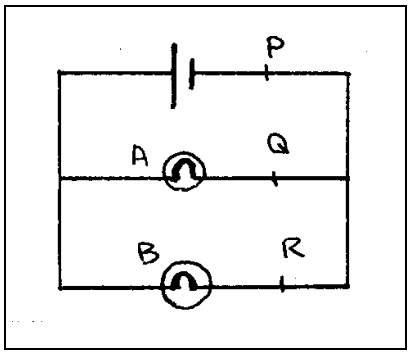
voltage across B = _____ V

voltage across the cell = _____ V

The current is _____ at different positions of a simple series circuit. (the same/ different)
The voltage of a battery is the _____ of the voltage across all the other components in a simple series circuit. (sum/ difference)

Task 5 Current and voltage in a simple parallel circuit

Measure the current at position P, Q and R. Measure the voltage across the bulb A and B.



current at P = _____ mA, current at Q = _____ mA

current at R = _____ mA,

voltage across A = _____ V

voltage across B = _____ V

voltage across the cell = _____ V

The voltage is _____ in different branches of a simple parallel circuit. (the same/ different)
The total current in a circuit is the _____ of the currents in all the branches in a simple parallel circuit. (sum/ difference)

END OF WORKSHEET