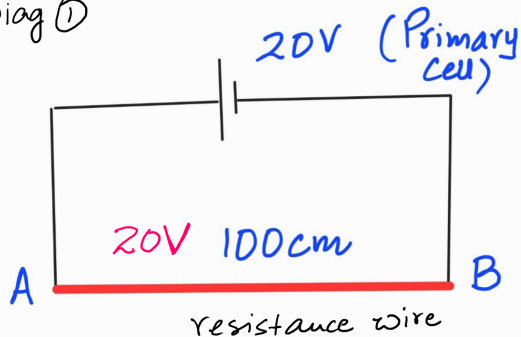
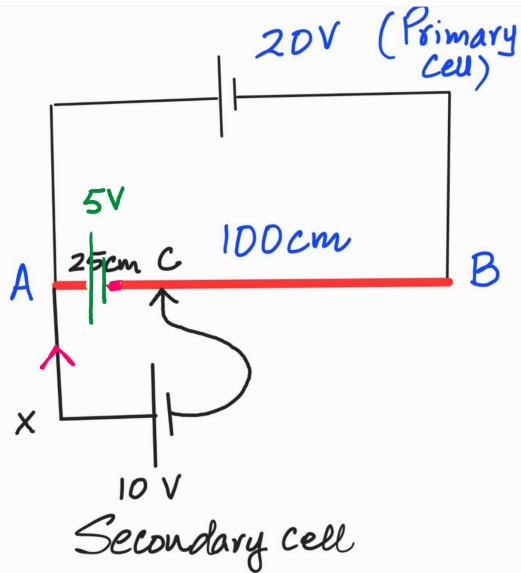


Diag ①

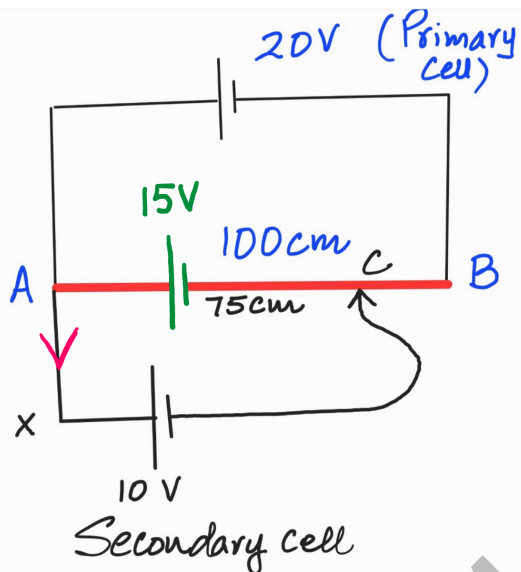


* Diag ① shows a resistance wire AB which is connected to a 20V battery (Primary cell). Length of wire AB = 100cm. Connecting wires have Zero Resistance.
 Q: How much Voltage will be available for this resistance wire AB?
 Ans = 20V (the entire voltage)



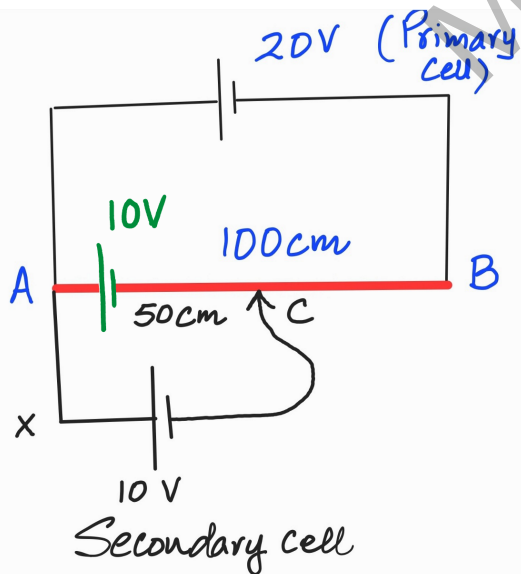
Q: How much Voltage is available for wire AC?
 AC $\frac{1}{4}$ th of AB so
 Voltage across AC = 5V

Q: for the shaded portion of the diagram suggest with a reason, should the Current flow from A to X or X to A?
 Ans: Current flows from a higher potential to a lower potential \therefore it flows from X to A



Q: How much voltage is available across wire of length AC where AC = 75cm?
 $AC = \frac{3}{4} AB \therefore$ Voltage across AC = 15V

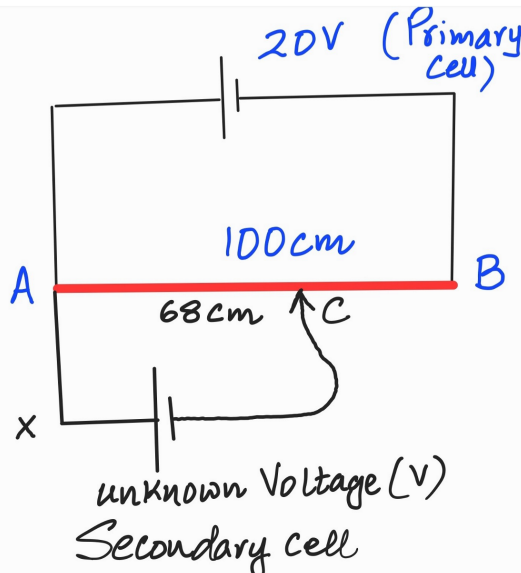
Hence determine the direction of Current in the branch AX?
 direction of Current A to X



Q: What voltage is available for length AC of the wire?
 $AC = \frac{1}{2} AB$ hence Voltage across AC = 10V

Hence determine the direction of Current in the branch AX.
 Ans: Null deflection / Zero deflection / Zero Current / Current won't flow.
 Why: Voltage across AC is equal to the voltage of the Secondary cell.

Conclusion: For Zero current / Null deflection to be observed, the voltage across length AC of the wire = Voltage of the Secondary cell.



Q: Given that a null deflection / Zero Current / Balance pt is achieved for length AC = 68cm. Use this info. to calculate the unknown Voltage (V) of the Secondary cell.

$$V = \frac{68}{100} \times 20 = 13.6V$$

General formula

$$V = \frac{l_{AC}}{l_{AB}} \times V_{P.C} \quad \text{or} \quad V = \frac{R_{AC}}{R_{AB}} \times V_{P.C}$$

P.C = Primary Cell