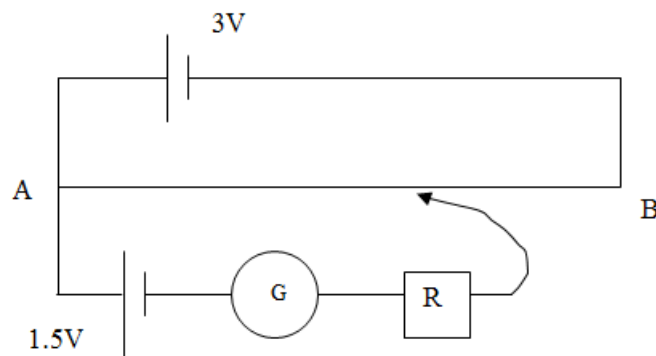**Problems for test:**

A potentiometer wire AB of length 1 m is connected to a driver cell of emf 3 V as shown in the figure,
When a cell of 1.5V emf is used in the secondary circuit, the balance point is found to be 60 cm, on replacing this cell and using a cell of unknown emf, the balance point shifts to 80 cm.

Potentiometer

Watch the video uploaded along with the problems for test and give answers to the following questions.
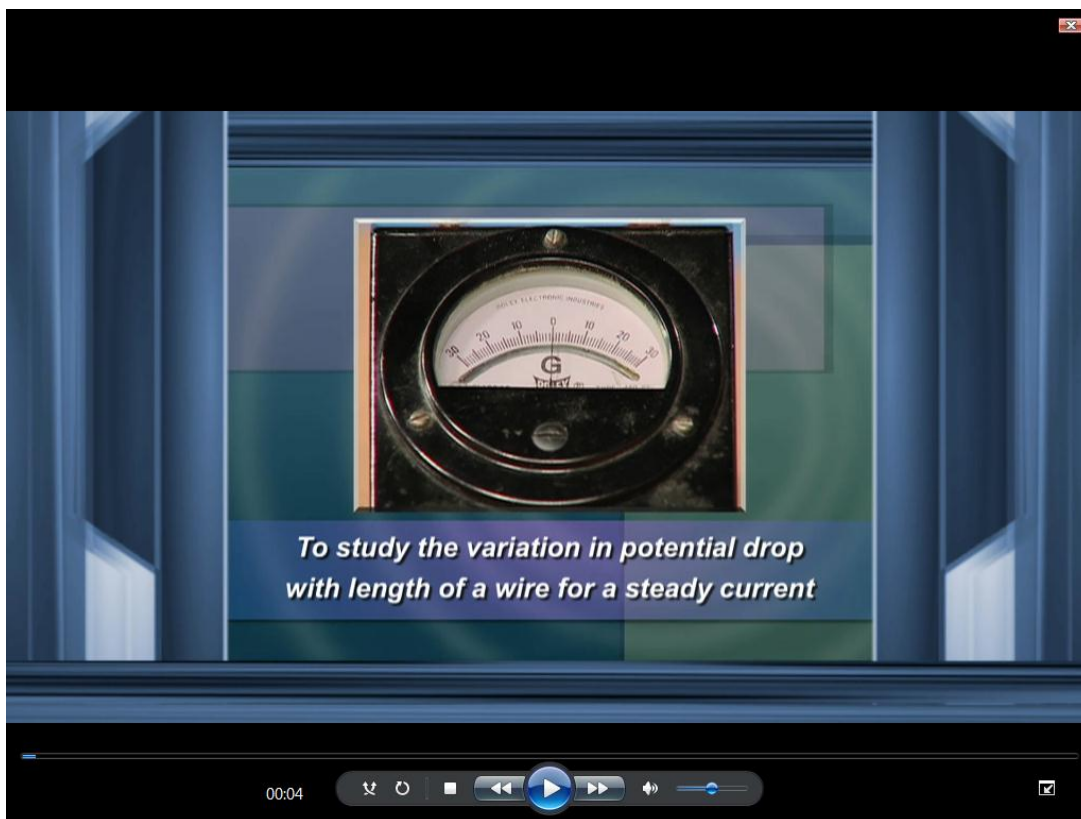
a) What should be the properties of wire AB?

b) Can the wire AB be of any length?

c) What is the potential difference across wire AB?

d) What is meant by potential gradient?

e) Will the potential gradient always be constant?

f) Under what condition would the value of potential gradient be

    i)   Variable

    ii)   increase

    iii)   decrease

g) Distinguish between driver cell and a cell?

h) What will be the resistance of a cell while measuring the emf of a cell?

i) Calculate the potential gradient.

j) What will be unit of potential gradient?

k) Will the potential gradient change if the positive of driver cell is connected to B?

l) Does current flow in wire AB? Can I calculate this current?

m) Why should the positive terminals of driver and the secondary cell be connected to A?

n) What difference, if any, would be there if

    i)   The negative terminals of both cells are connected to A?

    ii)   The negative terminals of both cells is connected to connected to B

    iii)   Positive of driver to A and positive of secondary cell to B

o) Give the principle of working of a potentiometer. What is meant by null point?

p) What is the function of the galvanometer?

q) What do you expect the emf of the cell of unknown emf will be greater or lesser than 3V?

r) What do you expect the emf of the cell of unknown emf will be greater or lesser than 1.5V?

s) Write the formula you would use to calculate the unknown emf

t) Why does your formula not include the value of resistance R ?

u) Calculate unknown emf of the cell

v) Explain with reason why the circuit would not work if the driver cell is replaced by a cell of 1V emf

w) Why is a high resistance R used in the secondary circuit?

x) Use Kirchhoff's rules to show the direction of current in the two loops

y) If current in the two loops suggest same direction flow of current due to both cells how do we get the null point?

z) Does the high resistance R, used in the secondary circuit affect the balance point? Justify your answer.