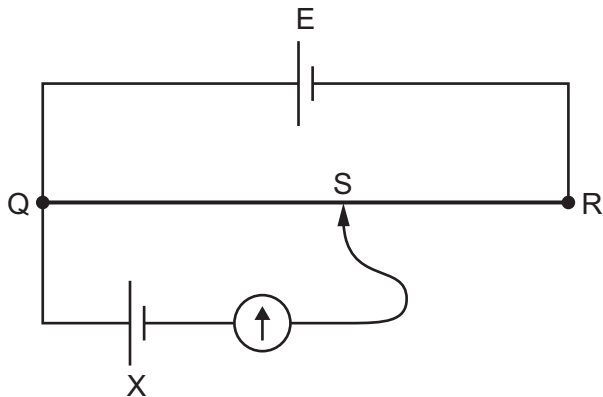


**38** A potentiometer circuit is used to determine the unknown electromotive force (e.m.f.) of a cell X.

In the circuit shown, E is a cell with an e.m.f. that is known accurately. QR is the potentiometer wire, which has a movable contact S. Contact S is connected to a galvanometer and to cell X.



What is **not** a necessary requirement to determine the e.m.f. of X from the circuit?

- A** The e.m.f. of cell X must be lower than the e.m.f. of cell E.
- B** The internal resistance of cell X must be known.
- C** The lengths QS and QR must be determined accurately.
- D** The resistance of the wire QR must be proportional to its length.