

- 7 Fig. 7.1 shows a circuit that contains a battery, a switch, a voltmeter and three $40\ \Omega$ resistors, R_1 , R_2 and R_3 .

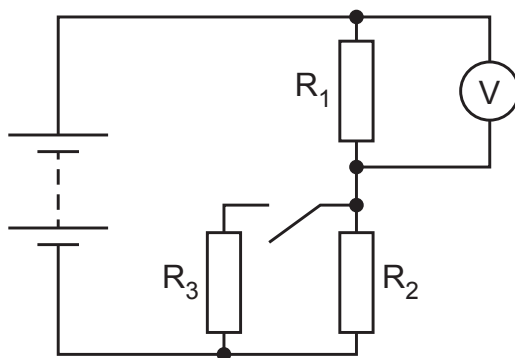


Fig. 7.1

The switch is open and resistors R_1 and R_2 form a potential divider.

- (a) Describe what is meant by a potential divider.

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 [2]

- (b) The reading on the voltmeter is 7.5V.

- (i) Calculate the electromotive force (e.m.f.) of the battery.

e.m.f. = [1]

- (ii) The switch is closed.

Calculate the resistance of the complete circuit.

resistance = [3]

- (c) Calculate the reading on the voltmeter when the switch is closed.

reading = [2]