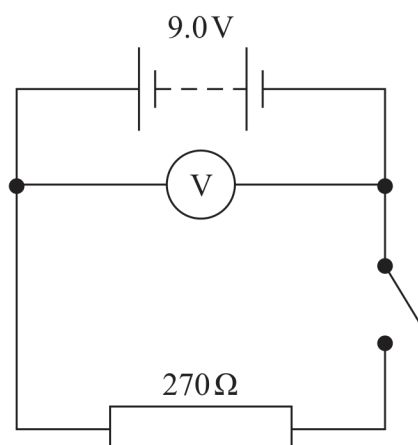


- 12 The circuit diagram shows a resistor of resistance $270\ \Omega$ connected to a battery of e.m.f. $9.0\ \text{V}$. The battery has an internal resistance of $15\ \Omega$.



- (a) Explain why the reading on the voltmeter is less than $9.0\ \text{V}$ when the switch is closed.

(3)

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

(3)

Reading on voltmeter =



(c) The switch remains closed and 12 C of charge flows through the battery.

Calculate the decrease in the chemical energy store of the battery.

(2)

.....

.....

.....

Decrease in chemical energy store =

(Total for Question 12 = 8 marks)