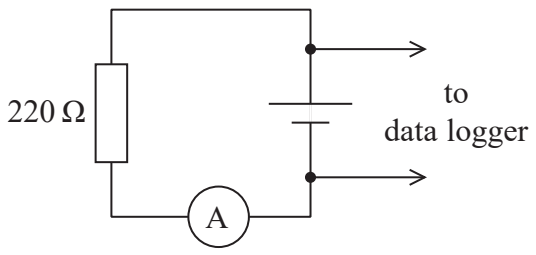
2 A student is investigating how the internal resistance of a dry cell varies over time. She sets up the circuit shown to draw current from the cell.

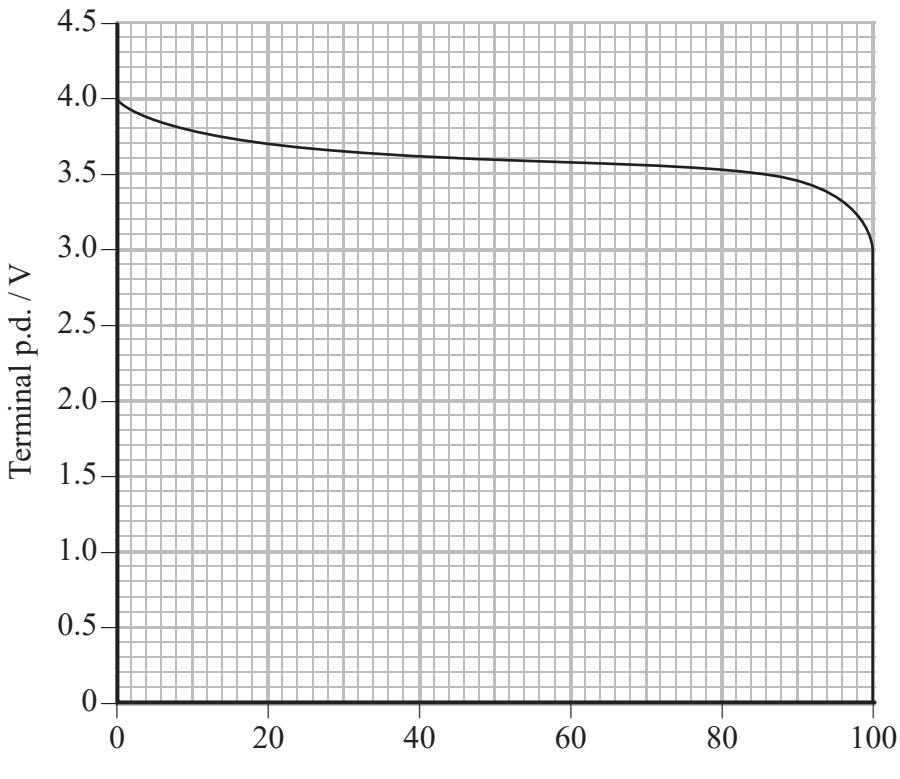


The student proposes to use a data logger to monitor the terminal potential difference (p.d.) of the cell over a period of time.

(a) State why a data logger would be suitable to collect data in this investigation.

(1)

(b) The graph shows how the terminal p.d. varies as the chemical energy store in the cell is depleted.



(i) Explain, using the graph, why the current drawn from the cell decreases as the chemical energy store in the cell is depleted.

(2)

(ii) Determine the internal resistance of the cell when its chemical energy store is 80% depleted. Assume that the e.m.f. of the cell remains constant at 4.0 V.

(3)

Internal resistance = ...

(Total for Question 2 = 6 marks)