8 An electric heater has a constant resistance and is rated as 1.20 kW, 230 V.

The heater is connected to a 230 V supply by means of a cable that is 9.20 m long, as illustrated in Fig. 8.1.

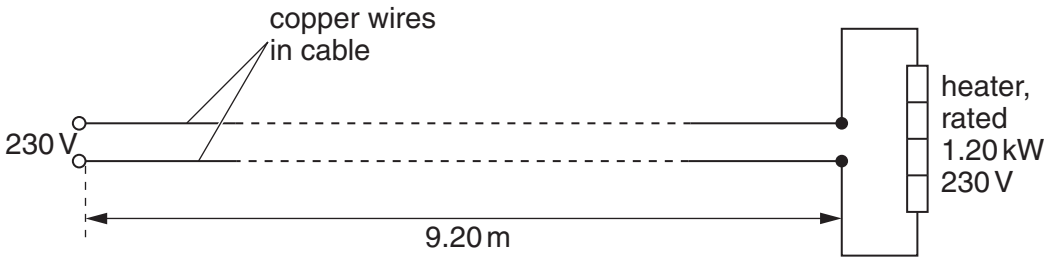

Fig. 8.1

The two copper wires that make up the cable each have a circular cross-section of diameter 0.900 mm. The resistivity of copper is $1.70 \times 10^{-8}\,\Omega\,\text{m}$.

(a) Show that

(i) the resistance of the heater is 44.1 Ω,

[2]

(ii) the total resistance of the cable is 0.492 Ω.

[2]