**30** A metal wire is connected between the terminals of a cell so that there is a current in the wire.

Which statement is correct?

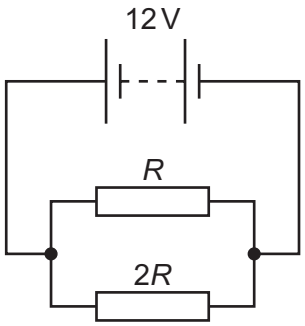
**A** Negatively charged electrons in the wire move from the negative terminal to the positive terminal.

**B** Negatively charged nuclei in the wire move from the negative terminal to the positive terminal.

**C** Positively charged electrons in the wire move from the positive terminal to the negative terminal.

**D** Positively charged nuclei in the wire move from the positive terminal to the negative terminal.

**31** Two resistors of resistances $R$ and $2R$ are connected in parallel with a battery of electromotive force (e.m.f.) 12 V and negligible internal resistance.




The total power dissipated by the two resistors is 36 W.

What is the value of $R$?

**A** 0.50 Ω **B** 2.7 Ω **C** 4.0 Ω **D** 6.0 Ω

**32** A wire has a length of 3.0 m and is made of metal of resistivity $4.9 \times 10^{-7}\,\Omega\,\text{m}$.

A potential difference (p.d.) of 12 V is applied across the wire so that it has a current of 1.4 A.

What is the cross-sectional area of the wire?

**A** $1.2 \times 10^{-7}\,\text{m}^2$

**B** $1.7 \times 10^{-7}\,\text{m}^2$

**C** $1.1 \times 10^{-6}\,\text{m}^2$

**D** $1.3 \times 10^{-5}\,\text{m}^2$