33 The number density of free electrons in copper is $8.0 \times 10^{28}\,\text{m}^{-3}$.

A copper wire has diameter 0.42 mm.

What is the average drift speed of the free electrons in the wire when the current in the wire is 0.57 A?

A $8.0 \times 10^{-11}\,\text{m s}^{-1}$

B $3.2 \times 10^{-10}\,\text{m s}^{-1}$

C $8.0 \times 10^{-5}\,\text{m s}^{-1}$

D $3.2 \times 10^{-4}\,\text{m s}^{-1}$