27 The electric current through a cylinder of semiconductor material is supplied by copper wires, as shown.

The charge carriers in the semiconductor material are electrons. The semiconductor material and the copper have the same cross-sectional area.

The table gives details of the number of free electrons per cubic metre in each material.

	copper wire	semiconductor
number of free electrons per cubic metre	8.6×10^{28}	4.3×10^{21}

The mean speed of electrons through the copper wire is $0.58\,\text{mm}\,\text{s}^{-1}$.

What is the mean speed of electrons through the semiconductor material?

A $2.9 \times 10^{-6}\,\text{m}\,\text{s}^{-1}$

B $2.9 \times 10^{-3}\,\text{m}\,\text{s}^{-1}$

C $1.16 \times 10^{4}\,\text{m}\,\text{s}^{-1}$

D $1.16 \times 10^{7}\,\text{m}\,\text{s}^{-1}$