**4** A sample of material has cross-sectional area $A$ and length $L$. The temperatures at the two sides of the sample are $T_1$ and $T_2$. Thermal energy $Q$ is transferred through the sample in time $t$.

These quantities are related by

$$\frac{Q}{t} = \frac{k \times A \times (T_1 - T_2)}{L}$$

where $k$ is a constant.

What are the SI base units of $k$?

**A** $\text{kg m s}^{-3} \,^{\circ}\text{C}^{-1}$ **B** $\text{kg m s}^{-3} \text{K}^{-1}$ **C** $\text{kg m s}^{-1} \,^{\circ}\text{C}^{-1}$ **D** $\text{kg m s}^{-1} \text{K}^{-1}$