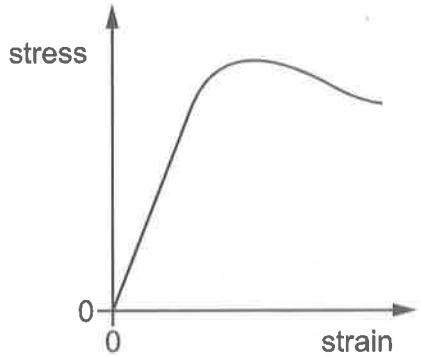
3 When a metal wire is stretched, the elastic potential energy stored in the wire increases. A quantity called stress can be calculated by dividing the stretching force by the cross-sectional area of the wire. A quantity called strain can be calculated by dividing the extension of the wire by the original length of the wire.

A graph of stress–strain for a metal wire is shown.



What is the unit of the quantity that represents the area under the stress–strain graph?

A J **B** $J m^{-1}$ **C** $J m^{-2}$ **D** $J m^{-3}$