

- 18** A spring has an unstretched length of 4.50 cm. The spring is fixed at one end and a force of 35.0 N is applied to the other end so that the spring extends.

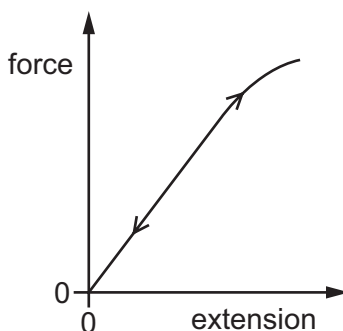
The spring obeys Hooke's law and has a spring constant of  $420 \text{ N m}^{-1}$ .

What is the strain of the extended spring?

- A** 0.019                      **B** 0.083                      **C** 1.85                      **D** 2.67

- 19** A wire is fixed at one end and extended by a force that is applied to the other end. The force is slowly increased from zero and then slowly decreased back to zero.

The force–extension graph for the wire is shown.



The graph line for the wire being loaded is the same as the graph line for the wire being unloaded.

Which statement describes the deformation of the wire?

- A** It is both elastic and plastic.  
**B** It is elastic only.  
**C** It is neither elastic nor plastic.  
**D** It is plastic only.