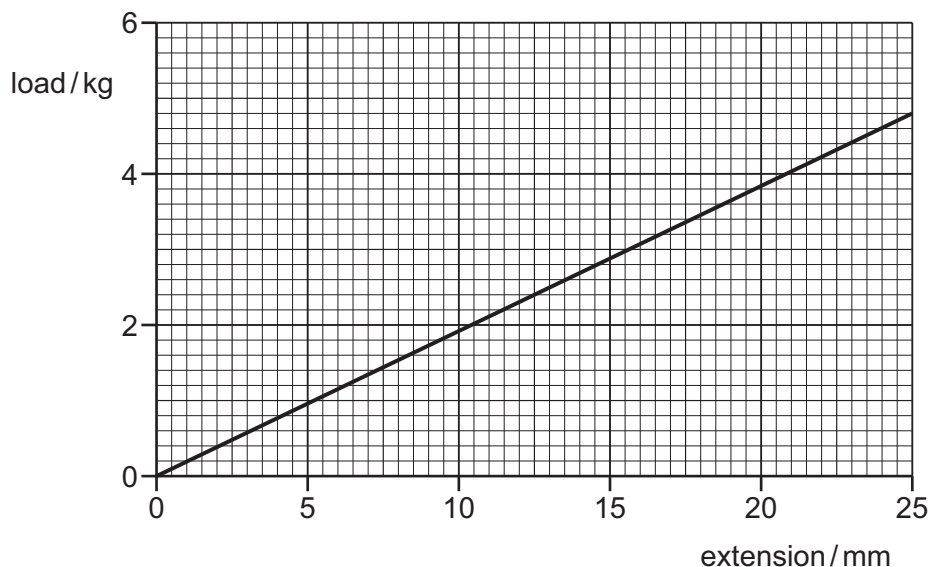


**21** The graph is a load-extension graph for a wire undergoing elastic deformation.



How much work is done on the wire to increase the extension from 10 mm to 20 mm?

- A** 0.028 J      **B** 0.184 J      **C** 0.28 J      **D** 0.37 J

**22** Which statement about longitudinal waves is correct?

- A** Longitudinal waves include radio waves travelling through air.  
**B** Particles in a longitudinal wave vibrate at right-angles to the direction of transfer of wave energy.  
**C** Some types of longitudinal wave can be polarised.  
**D** Stationary waves can be produced by the superposition of longitudinal waves.

**23** The order of magnitude of the frequency of the longest-wavelength ultraviolet waves can be expressed as  $10^x$  Hz.

What is the value of  $x$ ?

- A** 13      **B** 15      **C** 17      **D** 19

**Space for working**