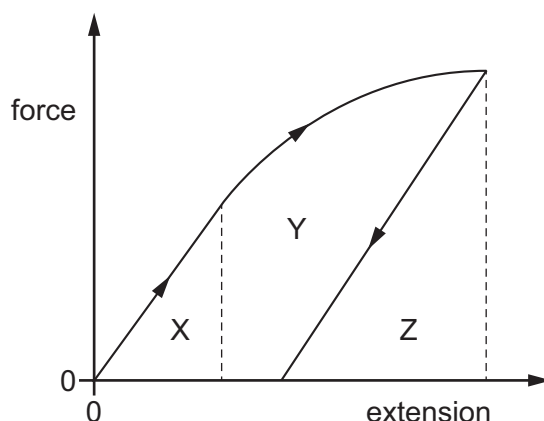


- 20 A sample of material is stretched by a tensile force to a point beyond its elastic limit. The tensile force is then reduced to zero. The force–extension graph is shown.



Which area represents the net work done on the sample?

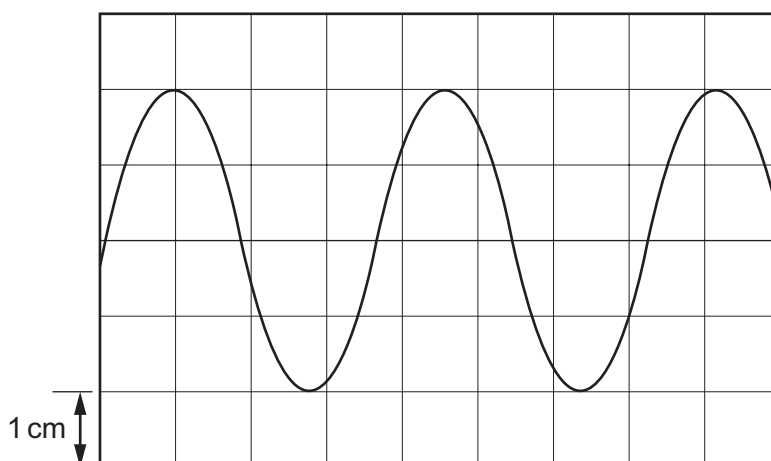
- A** X                      **B** X + Y                      **C** Y + Z                      **D** Z
- 21 A wire is fixed at one end and is extended by a force  $F_1$  acting on the other end. This causes the wire to have an elastic potential energy of 0.15 J.

The force applied to the wire is now changed to a force  $F_2$ . This causes the wire to have a new elastic potential energy of 0.60 J.

The wire obeys Hooke's law.

What is the relationship between  $F_1$  and  $F_2$ ?

- A**  $F_1 = 2F_2$                       **B**  $F_1 = 4F_2$                       **C**  $2F_1 = F_2$                       **D**  $4F_1 = F_2$
- 22 The diagram shows a representation of a wave on the screen of an oscilloscope.



The y-gain is set to  $3.5 \text{ mV cm}^{-1}$ .

What is the amplitude of the wave?

- A** 0.57 mV                      **B** 3.5 mV                      **C** 7.0 mV                      **D** 14 mV