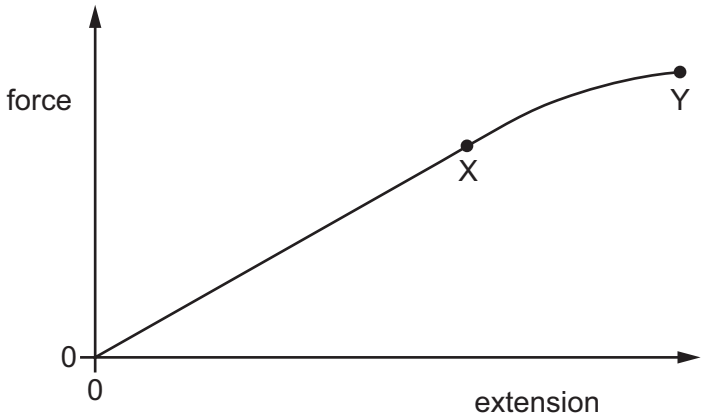
18 A sample of metal is subjected to a force which increases to a maximum value and then decreases back to zero. A force–extension graph for the sample is shown.



When the sample contracts, it follows the same force–extension curve as when it was being stretched.

What is the behaviour of the metal between X and Y?

A both elastic and plastic

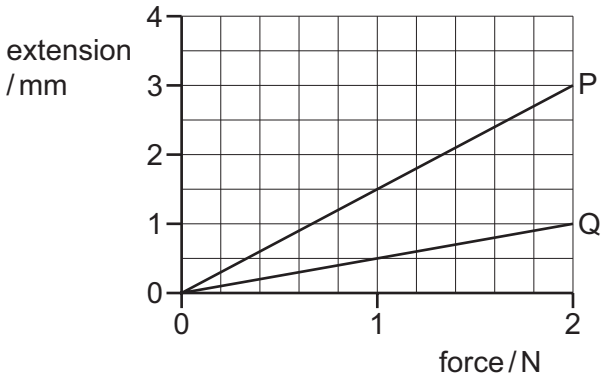
B **not** elastic and **not** plastic

C elastic but **not** plastic

D plastic but **not** elastic

19 Two wires, P and Q, made of the same material, are stretched with an increasing force.

A graph is plotted of the variation with force of the extension of each wire.



The wires have the same original length but different diameters.

What is the ratio $\frac{\text{diameter of wire Q}}{\text{diameter of wire P}}$?

A $\frac{1}{3}$ **B** $\frac{1}{\sqrt{3}}$ **C** $\sqrt{3}$ **D** 3