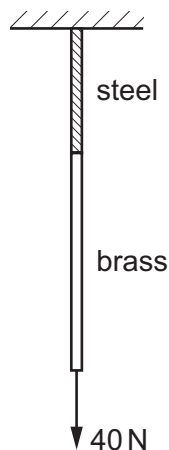


- 22 Which statement about elastic and plastic deformation is correct?
- A Elastic deformation and plastic deformation are proportional to the applied force.
 - B Elastic deformation and plastic deformation cause no change in volume.
 - C Elastic deformation causes heating of the material but plastic deformation does not.
 - D Elastic deformation is reversible but plastic deformation is not.
- 23 What is meant by the *ultimate tensile stress* of a ductile metal?
- A It is the maximum stress at which the material deforms elastically.
 - B It is the maximum stress at which the material obeys Hooke's law.
 - C It is the maximum stress that the material can support without breaking.
 - D It is the Young modulus multiplied by the maximum possible strain of a material.
- 24 A 0.80 m length of steel wire and a 1.4 m length of brass wire are joined together. The combined wires are suspended from a fixed support and a force of 40 N is applied, as shown.



The Young modulus of steel is 2.0×10^{11} Pa.

The Young modulus of brass is 1.0×10^{11} Pa.

Each wire has a cross-sectional area of $2.4 \times 10^{-6} \text{ m}^2$.

The wires extend without reaching their elastic limits.

What is the total extension? Ignore the weights of the wires.

- A $1.7 \times 10^{-4} \text{ m}$ B $3.0 \times 10^{-4} \text{ m}$ C $3.9 \times 10^{-4} \text{ m}$ D $9.0 \times 10^{-4} \text{ m}$