

- 20** The Young modulus of a metal may be determined from the ratio  $\frac{\text{stress}}{\text{strain}}$  when the metal is stretched elastically. This can be done by making measurements when loads are added to a wire.

Which measurements are needed to calculate the stress and strain of the wire in such an experiment?

	stress		strain	
<b>A</b>	wire diameter	initial and final positions of load	wire's original length	mass added
<b>B</b>	wire diameter	mass added	wire's original length	initial and final positions of load
<b>C</b>	wire's original length	initial and final positions of load	wire diameter	mass added
<b>D</b>	wire's original length	mass added	wire diameter	initial and final positions of load

- 21** A copper wire of length 3.6 m and diameter 1.22 mm is stretched elastically by a force of 37 N. The Young modulus of copper is  $1.17 \times 10^{11}$  Pa.

Which extension is caused by this force?

- A** 0.24 mm      **B** 0.76 mm      **C** 0.97 mm      **D** 3.1 mm

- 22** When all the other features of a wave are constant, which relationship is correct?

- A** Amplitude is directly proportional to velocity.  
**B** Intensity is directly proportional to amplitude.  
**C** Velocity is directly proportional to wavelength.  
**D** Wavelength is directly proportional to frequency.