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	
A	wire diameter	initial and final positions of load	wire's original length	mass added
B	wire diameter	mass added	wire's original length	initial and final positions of load
C	wire's original length	initial and final positions of load	wire diameter	mass added
D	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 1.17×10^{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.