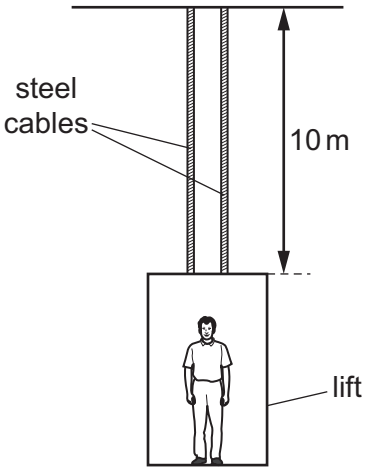
**3** A lift is supported by two steel cables, each of length 10 m and diameter 0.5 cm.




NOT TO
SCALE

The cables extend by 1 mm when a man of mass 80 kg steps into the lift.

What is the best estimate of the value of the Young modulus of the steel?

**A** $2 \times 10^{10}\,\text{N m}^{-2}$

**B** $4 \times 10^{10}\,\text{N m}^{-2}$

**C** $2 \times 10^{11}\,\text{N m}^{-2}$

**D** $4 \times 10^{11}\,\text{N m}^{-2}$

**4** When performing an experiment, a student should minimise the uncertainty of any measurement.

In which case is the student reducing the systematic error in a measurement?

**A** adjusting a voltmeter needle pointer to the zero position before using it to measure a potential difference

**B** measuring the diameter of a wire at several points and orientations

**C** measuring the mass of 100 paperclips to determine the mass of one paperclip

**D** timing 20 oscillations of a mass on a spring to determine the period of one oscillation