

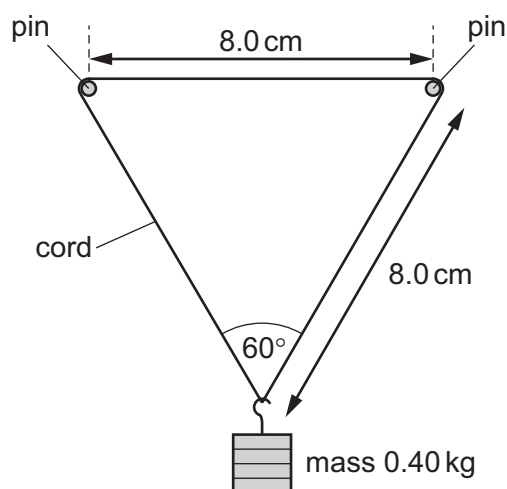
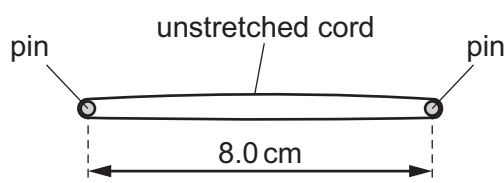
- 17 An escalator in an underground station has 25 people standing on it and is moving with a speed of  $4.3 \text{ m s}^{-1}$ . The average mass of a person is 78 kg and the angle of the escalator to the horizontal is  $40^\circ$ .

What is the minimum power required to lift these people?

- A** 5.4 kW      **B** 6.4 kW      **C** 53 kW      **D** 63 kW

- 18 An elastic cord of unstretched total length 16.0 cm and cross-sectional area  $2.0 \times 10^{-6} \text{ m}^2$  is held horizontally by two smooth pins a distance 8.0 cm apart.

The cord obeys Hooke's law. A load of mass 0.40 kg is suspended centrally on the cord. The angle between the two sides of the cord supporting the load is  $60^\circ$ .



What is the Young modulus of the cord material?

- A**  $5.7 \times 10^5 \text{ Pa}$       **B**  $1.1 \times 10^6 \text{ Pa}$       **C**  $2.3 \times 10^6 \text{ Pa}$       **D**  $3.9 \times 10^6 \text{ Pa}$