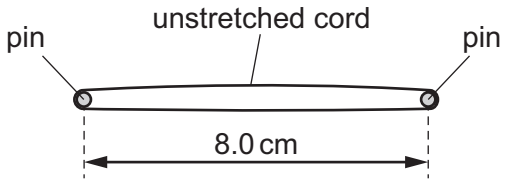
**17** An escalator in an underground station has 25 people standing on it and is moving with a speed of $4.3\,m\,s^{-1}$. The average mass of a person is 78 kg and the angle of the escalator to the horizontal is 40°.

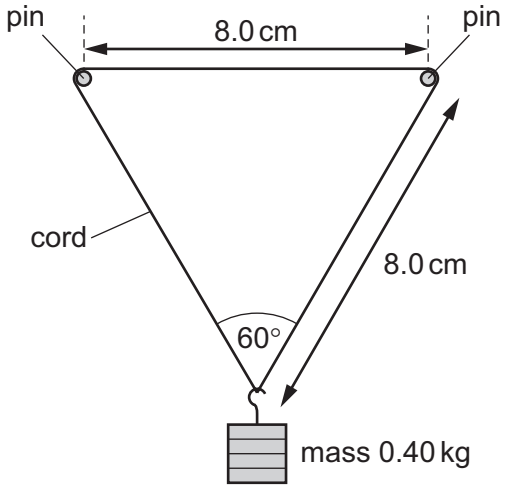
What is the minimum power required to lift these people?

**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 $2.0 \times 10^{-6}\,m^2$ 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°.




What is the Young modulus of the cord material?

**A** $5.7 \times 10^5\,Pa$ **B** $1.1 \times 10^6\,Pa$ **C** $2.3 \times 10^6\,Pa$ **D** $3.9 \times 10^6\,Pa$