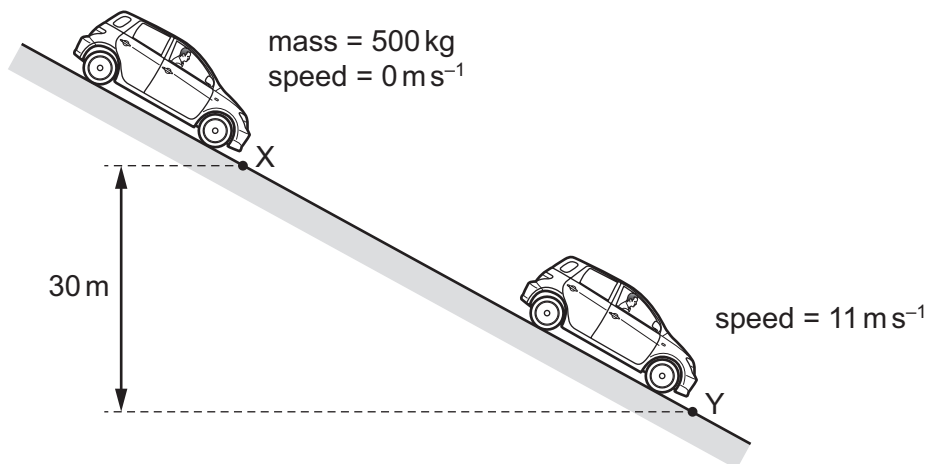


- 18 A car of mass 500 kg is at rest at point X on a slope, as shown.

The car's brakes are released and the car rolls down the slope with its engine switched off. At point Y the car has moved through a vertical height of 30 m and has a speed of  $11 \text{ m s}^{-1}$ .



What is the energy dissipated by frictional forces when the car moves from X to Y?

- A  $3.0 \times 10^4 \text{ J}$     B  $1.2 \times 10^5 \text{ J}$     C  $1.5 \times 10^5 \text{ J}$     D  $1.8 \times 10^5 \text{ J}$
- 19 Which expression **cannot** be used to calculate power?

- A  $\frac{(\text{force} \times \text{displacement})}{\text{time}}$
- B force  $\times$  velocity
- C  $\frac{\text{work done}}{\text{time}}$
- D work done  $\times$  velocity

- 20 The stress  $\sigma$  in a material is given by the equation shown.

$$\sigma = \frac{F}{A}$$

The strain  $\varepsilon$  in the same material is given by the equation shown.

$$\varepsilon = \frac{x}{L}$$

Which expression gives the Young modulus of the material?

- A  $\frac{\varepsilon}{\sigma}$     B  $\frac{Fx}{AL}$     C  $\frac{\sigma x}{L}$     D  $\frac{F}{A\varepsilon}$