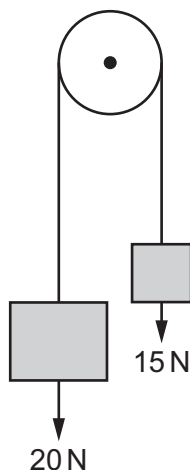


- 16** A pulley of radius 0.40 m supports weights of 20 N and 15 N by means of a thin string, as shown.



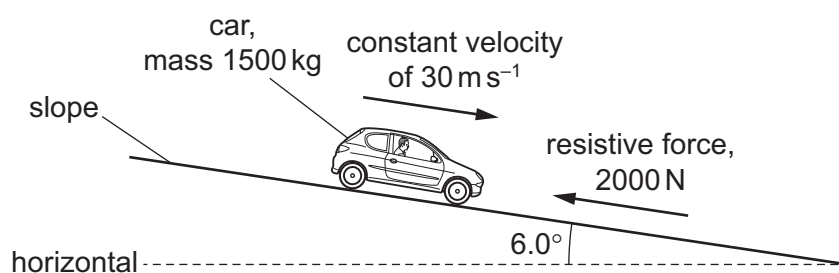
The weights are moved by slowly rotating the pulley clockwise through an angle of  $60^\circ$ .

What is the increase in the total gravitational potential energy of the weights?

- A** 0.33 J      **B** 2.0 J      **C** 2.1 J      **D** 15 J
- 17** A car of mass 1500 kg accelerates from an initial speed of  $15 \text{ ms}^{-1}$ . This acceleration causes the car to gain  $3.0 \times 10^5 \text{ J}$  of kinetic energy.

What is the change in the speed of the car?

- A**  $5.4 \text{ ms}^{-1}$       **B**  $10 \text{ ms}^{-1}$       **C**  $20 \text{ ms}^{-1}$       **D**  $25 \text{ ms}^{-1}$
- 18** A car of mass 1500 kg travels at a constant velocity of  $30 \text{ ms}^{-1}$  down a slope. The slope is at an angle of  $6.0^\circ$  to the horizontal, as shown.



The magnitude of the total resistive force acting on the car is 2000 N.

What is the power output of the car's engine?

- A** 14 kW      **B** 60 kW      **C** 110 kW      **D** 380 kW