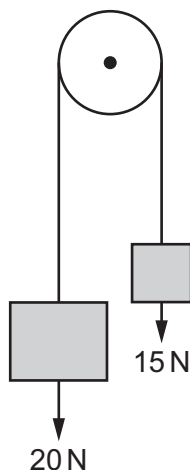


- 16 A pulley of radius 0.40 m supports weights of 20 N and 15 N by means of a thin string, as shown.



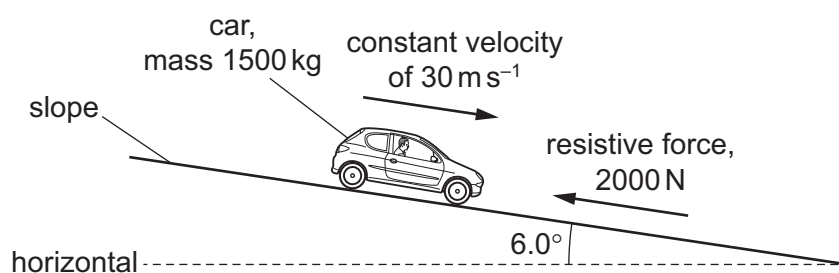
The weights are moved by slowly rotating the pulley clockwise through an angle of 60° .

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 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 ms^{-1} **B** 10 ms^{-1} **C** 20 ms^{-1} **D** 25 ms^{-1}
- 18 A car of mass 1500 kg travels at a constant velocity of 30 ms^{-1} down a slope. The slope is at an angle of 6.0° 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