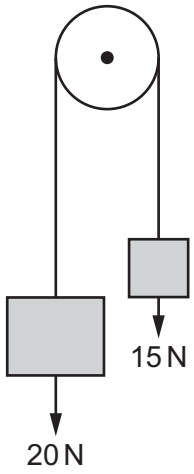
16 A pulley of radius 0.40 m supports weights of 20 N and 15 N by means of a thin string, as shown.



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?

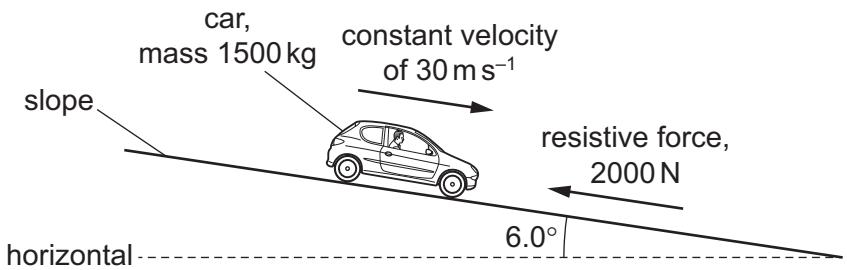
A 0.33 J **B** 2.0 J **C** 2.1 J **D** 15 J

17 A car of mass 1500 kg accelerates from an initial speed of 15 m s^{-1}. This acceleration causes the car to gain 3.0×10^5 J of kinetic energy.

What is the change in the speed of the car?

A 5.4 m s^{-1} **B** 10 m s^{-1} **C** 20 m s^{-1} **D** 25 m s^{-1}

18 A car of mass 1500 kg travels at a constant velocity of 30 m s^{-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