16 A car of total mass 1560 kg is travelling with a constant speed of 32 m s^{-1}. The driving force provided by the car is 680 N. The kinetic energy of the car is 800 kJ and its momentum is 50 000 N s.

Which two items of data could be used to calculate the useful power output of the car?

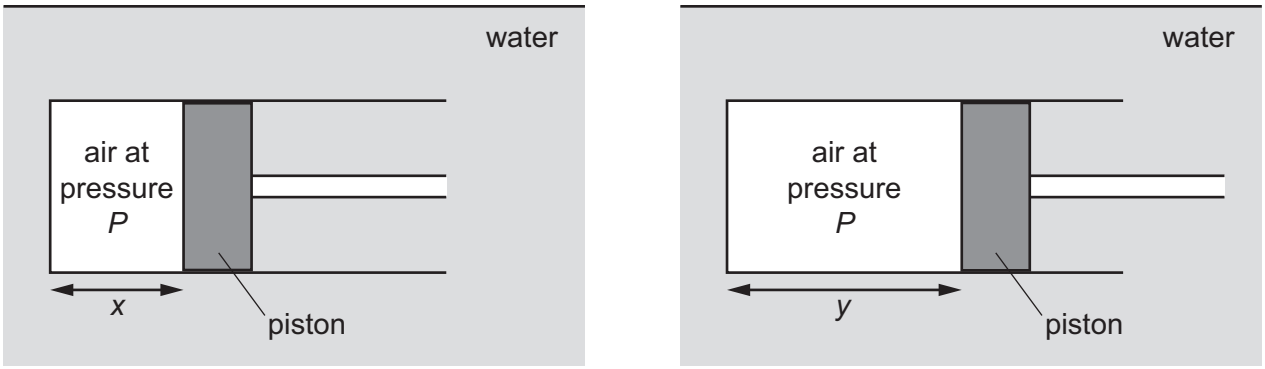
A driving force and momentum

B kinetic energy and mass

C mass and momentum

D speed and driving force

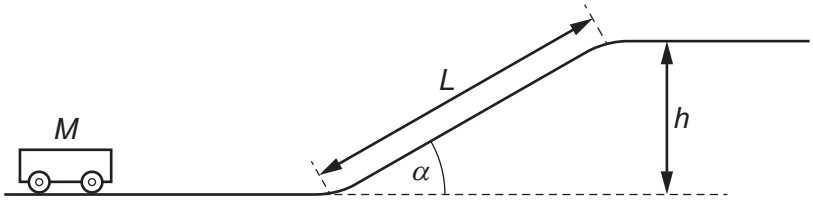
17 A horizontal cylinder of cross-sectional area *A* is fitted with a frictionless piston and contains air at pressure *P*. It is immersed in hot water and the length of the air column increases from *x* to *y*. The pressure *P* is constant.



Which equation represents the work done by the trapped air during this process?

A PAy **B** $-PAy$ **C** $PA(y - x)$ **D** $-PA(y - x)$

18 A trolley rolls along a horizontal surface and then travels up a slope before reaching a second horizontal surface. The slope is of length *L*. The trolley has mass *M.* The slope is at an angle α to the horizontal surface. The second horizontal surface is at height *h* above the first surface.



Assume negligible frictional forces. The acceleration of free fall is known.

In order to determine the minimum initial velocity of the trolley for it to reach the top of the slope, which additional values are needed?

A *h* and *M* **B** *M*, *L* and *h* **C** α, *L*, *M* **D** *h* only