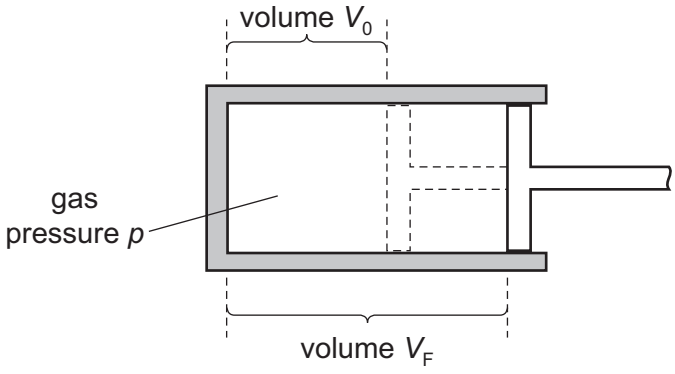
16 Some gas in a cylinder is supplied with thermal energy q.

The gas does useful work in expanding at constant pressure p from volume V_0 to volume V_F, as shown.



Which expression gives the efficiency of this change?

A $\frac{pV_0}{q}$ **B** $\frac{V_F}{V_0 q}$ **C** $\frac{p(V_F - V_0)}{q}$ **D** $\frac{(V_F - V_0)}{V_0 q}$

17 The power P required to move an object through a medium at constant speed depends on the speed v and the resistive force F acting on the object.

The resistive force F also depends on the speed v.

Which row shows a possible relationship between speed v, resistive force F and power P?

	resistive force F	power P
A	proportional to v	constant
B	proportional to v	proportional to v
C	proportional to v^2	proportional to v^2
D	proportional to v^2	proportional to v^3

18 Which amount of energy is **not** 2400 J?

A the decrease in gravitational potential energy of a body of mass 60 kg when it moves vertically downwards through 40 m near the Earth's surface

B the energy transferred in 15 s by a machine of power 160 W

C the kinetic energy of a body of mass 12 kg moving at a speed of 20 m s^{-1}

D the work done by a gas expanding against a constant external pressure of 120 kPa when its volume increases by 0.020 m^3