

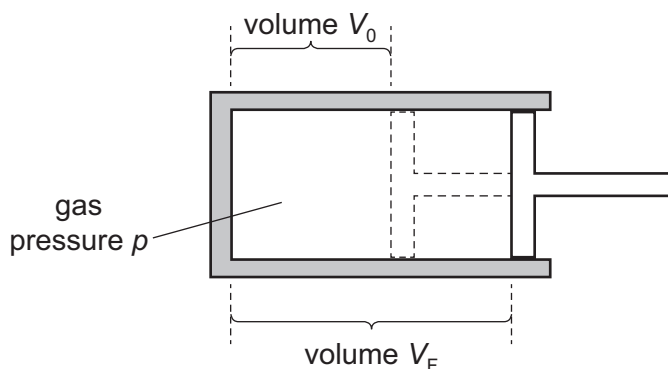
- 16 A ball drops onto a horizontal surface and bounces elastically.

What happens to the kinetic energy of the ball during the very short time that it is in contact with the surface?

- A Most of the kinetic energy is lost as heat and sound.
- B The kinetic energy decreases to zero and then returns to its original value.
- C The kinetic energy remains constant because it is an elastic collision.
- D The kinetic energy remains constant in magnitude but changes direction.

- 17 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 process?

- A $\frac{pV_0}{q}$
 - B $\frac{V_F}{V_0q}$
 - C $\frac{p(V_F - V_0)}{q}$
 - D $\frac{(V_F - V_0)}{V_0q}$
- 18 An object of mass 0.30 kg is thrown vertically upwards from the ground with an initial velocity of 8.0 m s^{-1} . The object reaches a maximum height of 1.9 m .
- How much work is done against air resistance as the object rises to its maximum height?
- A 4.0 J
 - B 5.6 J
 - C 9.6 J
 - D 15 J
- 19 A water pump raises a mass of $27 \times 10^3 \text{ kg}$ of water through a vertical distance of 80 m in a time of 1.0 hour .

What is the average useful output power of the pump?

- A 0.60 kW
- B 5.9 kW
- C 36 kW
- D 350 kW