

- 7 Water is pumped through a hose-pipe at a rate of 90 kg per minute. Water emerges horizontally from the hose-pipe with a speed of 20 m s^{-1} .

What is the minimum force required from a person holding the hose-pipe to prevent it moving backwards?

- A** 30 N **B** 270 N **C** 1800 N **D** 108 000 N

- 8 A ball of mass m is thrown vertically into the air. When the ball has speed v , the air resistance acting on the ball is F .

What is the magnitude of the acceleration of the ball when its speed is v as it rises and as it falls?

	acceleration when ball is rising	acceleration when ball is falling
A	$g - \frac{F}{m}$	$g - \frac{F}{m}$
B	$g - \frac{F}{m}$	$g + \frac{F}{m}$
C	$g + \frac{F}{m}$	$g - \frac{F}{m}$
D	$g + \frac{F}{m}$	$g + \frac{F}{m}$

- 9 What is a statement of the principle of conservation of momentum?

- A** A force is equal to the rate of change of momentum of the body upon which it acts.
- B** In a perfectly elastic collision, the relative momentum of the bodies before impact is equal to their relative momentum after impact.
- C** The momentum of a body is the product of the mass of the body and its velocity.
- D** The total momentum of a system of interacting bodies remains constant, providing no resultant external force acts on the system.