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.