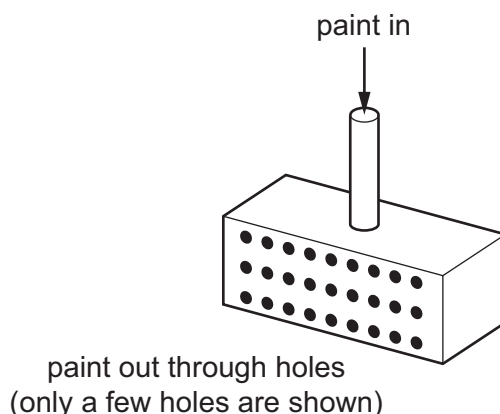


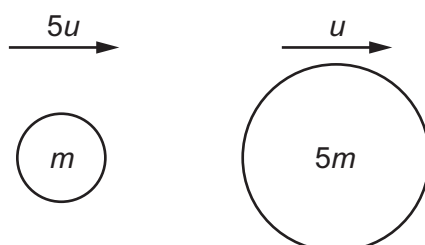
- 8 A device for spraying paint consists of a box with its axes horizontal and vertical. One of its vertical faces contains small holes. Paint is fed into the box under pressure via a vertical tube and exits through the holes as fine streams moving horizontally.



The paint is ejected at a speed of  $2.5 \text{ m s}^{-1}$  through 400 holes, each of area  $0.4 \text{ mm}^2$ . The density of the paint is  $900 \text{ kg m}^{-3}$ .

What is the horizontal force required to hold the device stationary as it ejects the paint?

- A** 0.36 N      **B** 0.90 N      **C** 2.3 N      **D** 900 N
- 9 A party balloon is filled with air and held stationary at a height of several metres above the ground. The balloon is then dropped in still air.
- Which statement describes the motion of the balloon from the moment of release until just before it hits the floor?
- A** The balloon decelerates continuously.  
**B** The balloon falls at a constant speed and then decelerates.  
**C** The balloon falls at a constant speed.  
**D** The balloon initially accelerates and then reaches a constant speed.
- 10 An object of mass  $m$  travelling with speed  $5u$  collides with, and sticks to, an object of mass  $5m$  travelling in the same direction with speed  $u$ .



What is the speed with which the two objects travel together in the original direction?

- A**  $\frac{3}{10}u$       **B**  $u$       **C**  $\frac{6}{5}u$       **D**  $\frac{10}{6}u$