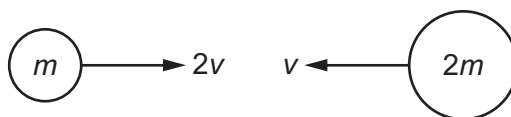


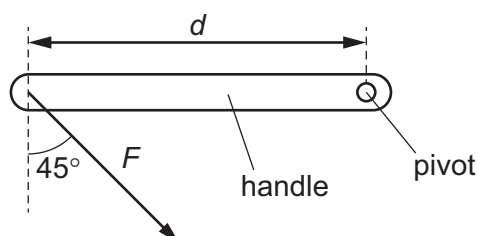
- 10 Two balls, of masses  $m$  and  $2m$ , travelling in a vacuum with initial velocities  $2v$  and  $v$  respectively, collide with each other head-on, as shown.



After the collision, the ball of mass  $m$  rebounds to the left with velocity  $v$ .

What is the loss of kinetic energy in the collision?

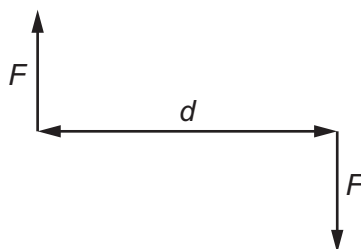
- A  $\frac{3}{4}mv^2$       B  $\frac{3}{2}mv^2$       C  $\frac{9}{4}mv^2$       D  $\frac{9}{2}mv^2$
- 11 A force  $F$  is applied at an angle of  $45^\circ$  to a door handle at a distance  $d$  from the pivot of the handle, as shown.



What is the moment of the force about the pivot?

- A  $\frac{Fd}{\sqrt{2}}$       B  $Fd$       C  $Fd\sqrt{2}$       D  $2Fd$
- 12 A couple consists of two forces, each of magnitude  $F$ , that act in opposite directions in the same plane.

The perpendicular distance between the two forces is  $d$ .



What is the torque of the couple?

- A  $\frac{Fd}{2}$       B  $\frac{F}{d}$       C  $Fd$       D  $2Fd$