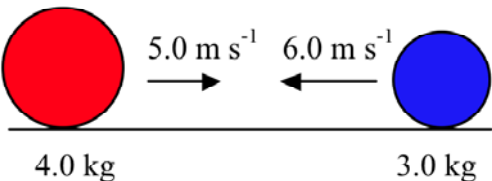
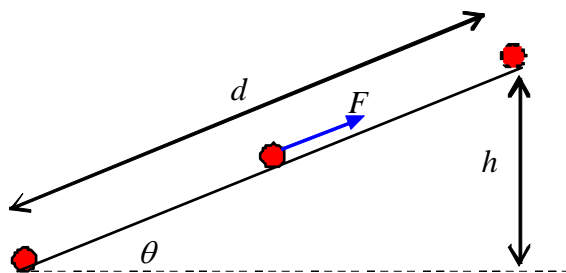


**Support Worksheet – Topic 2, Worksheet 2**

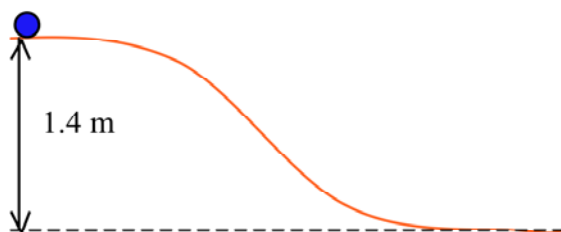
- 1 A person stands on a scale in an elevator. The forces on the person are his weight,  $W$ , and the reaction force  $R$  from the scale. The elevator is accelerating downwards. The reading of the scale is
- A  $W$
- B  $R$
- C  $W + R$
- D  $W - R$  [1]
- 2 A body slides down an inclined plane with acceleration  $a$ . Friction is not negligible. A body of double the mass and double the frictional force opposing its motion would experience an acceleration:
- A  $\frac{a}{2}$
- B  $a$
- C  $2a$
- D  $4a$  [1]
- 3 Calculate the magnitude of the total momentum of the system consisting of the two balls of the diagram below.
- 
- 4 A body of mass 0.20 kg and speed 3.0 m s<sup>-1</sup> moves on a horizontal floor. It hits a vertical wall and rebounds with a speed 2.0 m s<sup>-1</sup>. Calculate the magnitude of the change in the momentum of the ball. [2]
- 5 A ball of mass 0.20 kg falls vertically on a hard floor. The speed of the ball on impact is 3.0 m s<sup>-1</sup>. The speed immediately after leaving the floor is 2.0 m s<sup>-1</sup>. The ball was in contact with the floor for 0.10 s. Calculate the magnitude of the force exerted on the ball by the floor. [3]
- 6 A body of mass 2.4 kg moves on a horizontal straight line with velocity 4.6 m s<sup>-1</sup>. After 0.25 s the velocity becomes 6.3 m s<sup>-1</sup>. Calculate the impulse delivered to the body. [1]
- 7 Define the work done by a force. [1]

- 8 A particle of mass  $m$  moves up a frictionless inclined plane with constant speed. A force  $F$  acts on the body parallel to the plane. The distance travelled along the plane is  $d$  and the vertical height reached is  $h$ . The work done by the weight of the particle is  $W$ .



Which of the following relations is **not** true?

- A  $W = -mgh$
- B  $W = -mgd \sin \theta$
- C  $W = -Fd$
- D  $W = -Fd \sin \theta$  [1]
- 9 The work done by the net force on a body is equal to the change in the body's
- A kinetic energy
- B gravitational potential energy
- C elastic potential energy
- D total energy [1]
- 10 A particle has a kinetic energy of 48 J. It is brought to rest by a constant frictional force  $F$  over a distance of 12 m. Calculate the magnitude of  $F$ . [1]
- 11 A body slides from rest down a ramp with no friction. Calculate the speed of the body when it reaches the level part of the ramp.



[1]