(c) With reference to Fig. 1.1, determine the magnitude of the acceleration of the ball when it is in the air.

acceleration = …….. m s^{-2} [1]

(d) Determine the time at which the ball next reaches the ground.

time = …….. s [1]

2 Block A with mass *m* and speed of 10 m s^{-1} collides head-on with block B of mass 5*m* that has a speed of 2.0 m s^{-1} in the same direction.

(a) After the collision, the block B travels in the original direction with a speed of 4.5 m s^{-1}.

(i) Calculate the velocity of the block A immediately after the collision.

velocity = …….. m s^{-1} [2]

(ii) Consider block A and block B as a system.

Determine the percentage of kinetic energy lost by the system after the collision.

percentage = …….. % [3]

(b) If no kinetic energy were lost during the collision, determine the velocity of block A and block B immediately after they have collided.

velocity of block A = …….. m s^{-1}

velocity of block B = …….. m s^{-1} [4]