3 **(a)** **(i)** State the principle of conservation of momentum.

.....

.....

.....[2]

(ii) State the difference between an elastic and an inelastic collision.

.....[1]

(b) An object A of mass 4.2 kg and horizontal velocity 3.6 m s^{-1} moves towards object B as shown in Fig. 3.1.

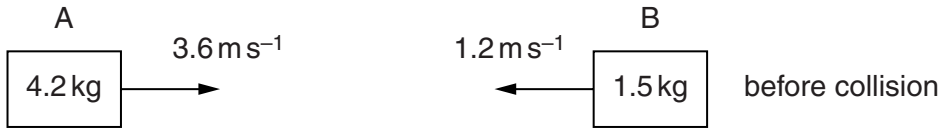

Fig. 3.1

Object B of mass 1.5 kg is moving with a horizontal velocity of 1.2 m s^{-1} towards object A.

The objects collide and then both move to the right, as shown in Fig. 3.2.

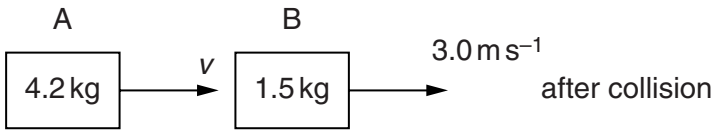

Fig. 3.2

Object A has velocity v and object B has velocity 3.0 m s^{-1}.

(i) Calculate the velocity v of object A after the collision.

velocity = ... m s^{-1} [3]

(ii) Determine whether the collision is elastic or inelastic.

[3]