1 **(a)** Define velocity.

.....

..... [1]

(b) In an experiment, two objects A and B are released from the side of a building, as shown in Fig. 1.1.

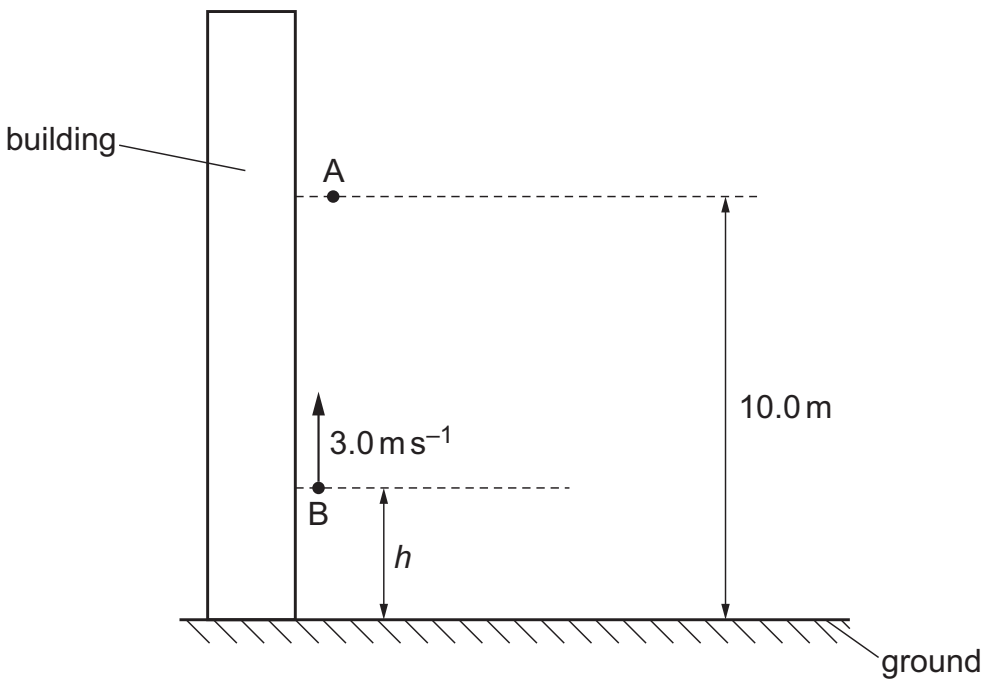

Fig. 1.1 (not to scale)

Object A is released from rest at a height of 10.0 m above horizontal ground.
Object B is released with an initial upward velocity of 3.0 m s^{-1} at a height *h* above the ground.
Both objects take the same time to reach the ground and they do not collide with each other.
Air resistance is negligible.

Calculate *h*.

h = ... m [3]

(c) In a second experiment, object B is released from the same height as in **(b)** but with a speed of 6.0 m s^{-1} at an angle of 60° to the vertical, as shown in Fig. 1.2.

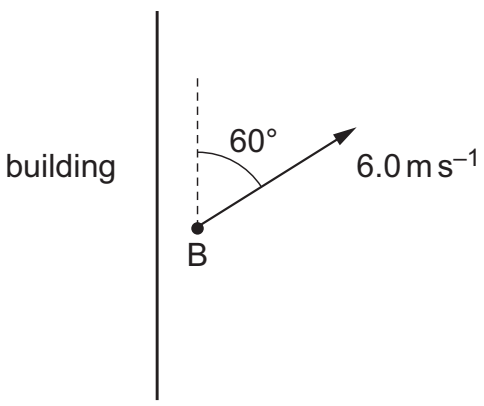

Fig. 1.2

(i) State and explain whether the time taken for object B to reach the ground is less than, the same as, or greater than the time taken in the first experiment.

.....

.....

..... [2]

(ii) By considering energy, state and explain whether the speed at which object B reaches the ground is less than, the same as, or greater than in the first experiment.

.....

.....

..... [2]

[Total: 8]