2 **(a)** State Newton's second law of motion.

.....

.....

.....

.....

..... [2]

(b) A soccer ball of mass 0.20 kg is kicked from point A of a sloping ground as shown in Fig. 2.1.

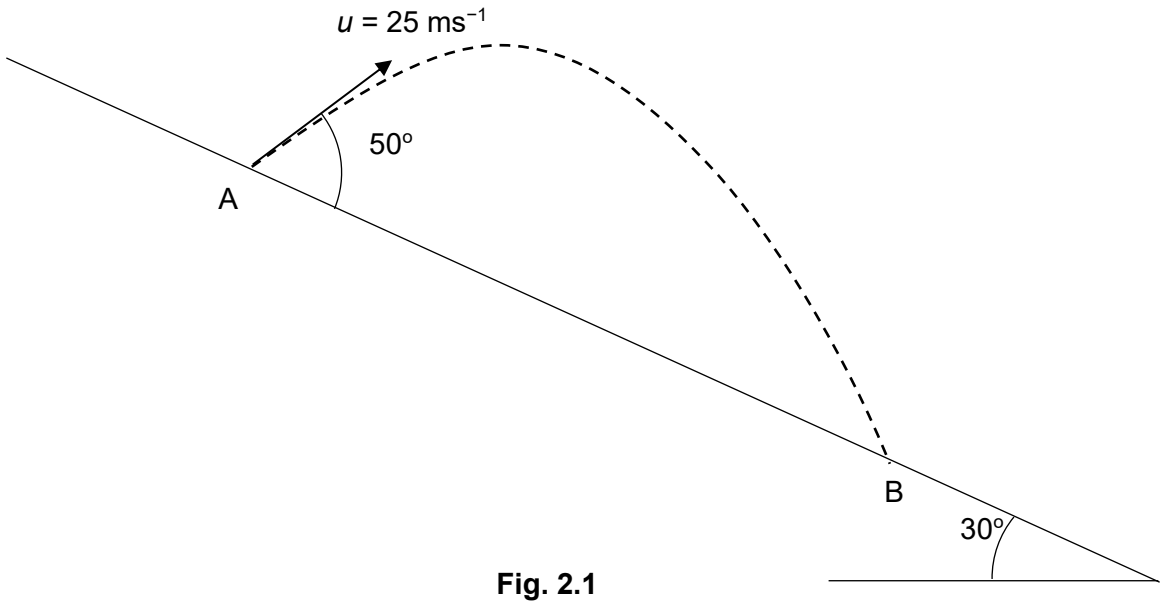

Fig. 2.1

(i) Calculate the time of travel between A and B.

time = ... s [3]

(ii) The ball hits the slope at B as illustrated in Fig. 2.2.

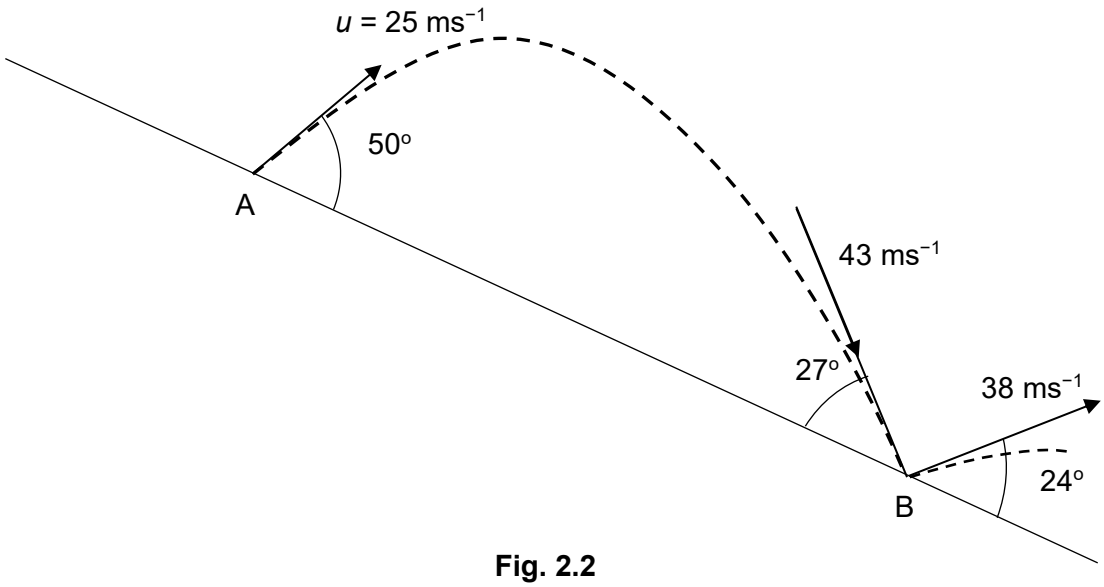

Fig. 2.2

Calculate the change in velocity of the ball at B due to the impact.

change in velocity = ... m s^{-1} [2]

(iii) Calculate the resultant force on the ball at B, given the duration of impact is 0.050 s.

resultant force = ... N [1]

[Total: 8]