PQ 5

Q1

A train, initially travelling at 10 m s^{-1} has an acceleration of 2 m s^{-2} for 4 s. What is its final velocity and how far does it travel while accelerating?

Q2

A car, 220 m away from traffic lights, is initially travelling at 44 m s^{-1} and slows to a halt at the traffic lights. What is the deceleration?

Q3

A stone is thrown vertically upwards with an initial velocity of 35 m s^{-1}. What is the velocity after 5 s?

Q4

A ball is kicked horizontally at 5 m s^{-1} off a 45 m high cliff. Ignoring air resistance find

(a) the time taken for the ball to land,

(b) the distance the ball lands from the foot of the cliff,

(c) the velocity just as the ball lands.

Q5

A golf ball is hit at 38 m s^{-1} at an angle of 30^{o} to the horizontal. Find

(a) the total time of flight,

(b) the maximum height reached,

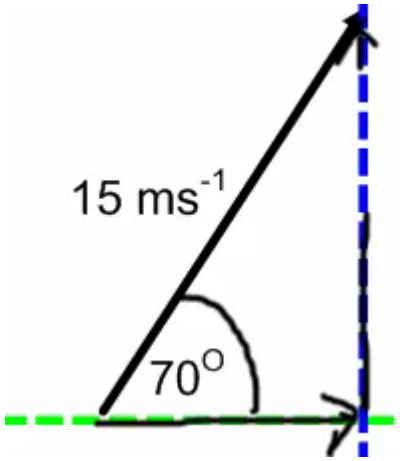
(c) the range of the golf ball.

Q6

(a) Find the horizontal & vertical components

(b) Show that the golf ball is in the air for 2.87s

(c) Find the horizontal distance travelled



Q7

A car initially travelling at $10ms^{-1}$ accelerates at $0.5ms^{-2}$ for 8 seconds. Find its speed after this time interval.

Q8

A hedgehog crossing a road has an initial speed of 0.3 ms^{-1} and accelerates uniformly at 0.04 ms^{-2}. If the hedgehog takes 10 seconds to cross the road, calculate the width of the road.

Q9

A satellite has an initial speed of 500 ms^{-1}. The retro rockets are fired, causing a deceleration of 15 ms^{-2}. Calculate the distance over which the speed will fall to 200 ms^{-1}.

Q10

Two tugs pull a ship off a pier. One pulls forward with a force of 60 000 N while the other pulls sideways with a force of 20 000 N. Calculate the resultant force on the ship.