PQ 5 Q

Q 1

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?

Q 2

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 stone is released from rest at the top of a well. It hits the surface of the water after exactly 3.00 seconds. Calculate the distance between the top of the well and the surface of the water.
($g = 9.81\ \mathrm{m\,s^{-2}}$)

Q5

A snowboarder in a race is travelling 15 m s^{-1} east as she crosses the finishing line. She then decelerates uniformly until coming to a stop over a distance of 30 m.

Q6 (from Q5)

How long does she take to come to a stop?

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.