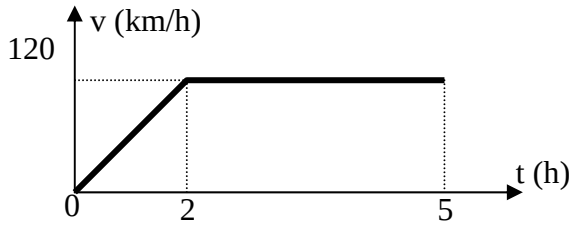
Chapter 2 (Motion along a strait line)

1- The figure represents the straight-line motion of a car.
What is the distance traveled by the car from t = 0 to t = 5 h? (A: 480 km)



2- A particle moves along the x-axis according to the equation: **x = 50*t + 10*t**2**
where x is in m and t is in s. Calculate the instantaneous velocity of the particle at t = 3s. (A: 110 m/s)

3- A balloon carrying a package is ascending (going vertically upward) at the rate of 12 m/s. When it is 80 m above the ground the package is released. How long does the package take to reach the ground? (A: 5.4 s)

4- The position of a particle moving along the x axis is described by the equation

x(t) = 5.0 + 2.0t + t**3

Find its average acceleration for the time interval t = 1.0 s to t = 2.0 s. (A: 9.0 m/s**2)

5-A racing car traveling with constant acceleration increases its speed from 10 m/s to 30 m/s over a distance of 80 m? How long does this take? (A: 4.0 s)

6- An object is thrown vertically upward at 35 m/s. Taking g = 10 m/s^2, the velocity of the object after 5 seconds later is: (A: 15 m/s downward)

7- A stone is thrown vertically upward with an initial speed of 19.5 m/s. It will rise to a maximum height of: (A:19.4 m)

8- A stone is released from rest from the edge of a building 190 m above the ground. Neglecting air resistance, the speed of the stone, just before striking the ground, is: (A: 61 m/s)

9- A projectile is shot vertically upward with a given initial velocity. It reaches a maximum height of 100 m. If, on a second shot, the initial velocity is doubled then the projectile will reach a maximum height of: (A: 400 m)

10- An object is released from rest at a height H. It takes 2.00 s for the object to fall from point A to point B (see the Figure). What is the initial height H? (A: 385 m)