

Acceleration

- **Acceleration:**

$$a = \frac{\text{change in velocity}}{\text{change in time}} = \frac{\Delta v}{\Delta t}$$

Standard units of acceleration : m/s^2

- **If there were no air resistance, all objects in Earth gravity would fall with the same acceleration,**

$$\mathbf{g=9.81 \text{ m/s}^2}$$

(directed downward)

Homework 5

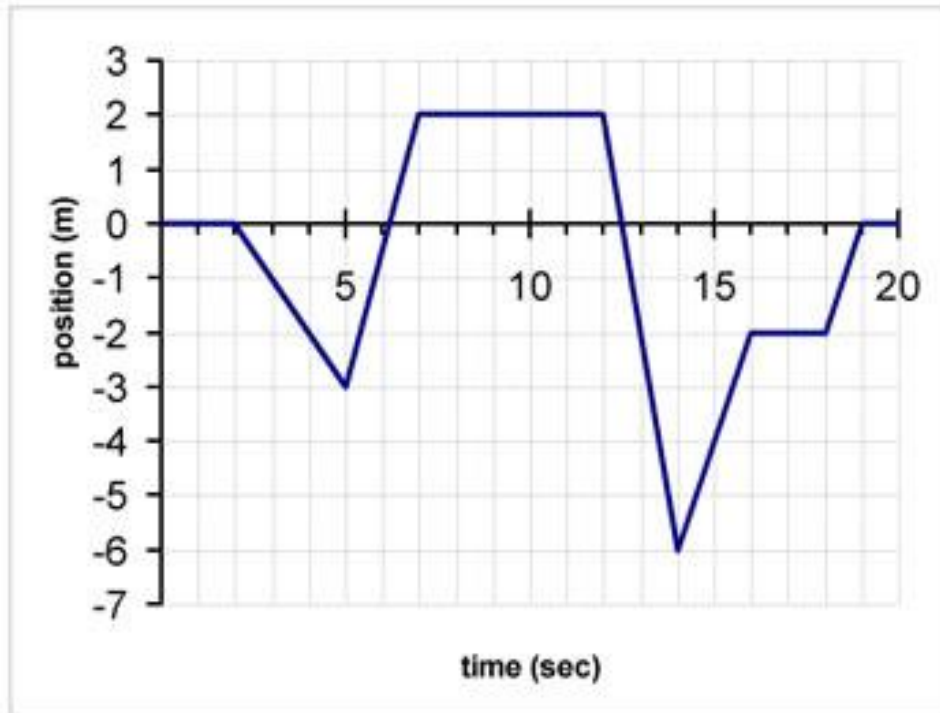
Problem 1.

The largest passenger airplane, Airbus A380, has acceleration $a=2 \text{ m/s}^2$ during its take-off. How much time it needs to reach the take off speed, $v= 280 \text{ km/hr}$?

See problem 2 on the next page

Problem 2.

The figure below shows the position of a sloth crawling back and forth along a straight line. Find its instantaneous speed and velocity at each time interval and fill the table on the right. Also, find the average speed and velocity of the sloth (you'll need to figure out the total distance travelled for this).



Time interval ,s	Speed, m/s	Velocity, m/s
0-2		
2-5		
5-7		
7-12		
12-14		
14-16		
16-18		
18-19		
19-20		
Average (0-20)		