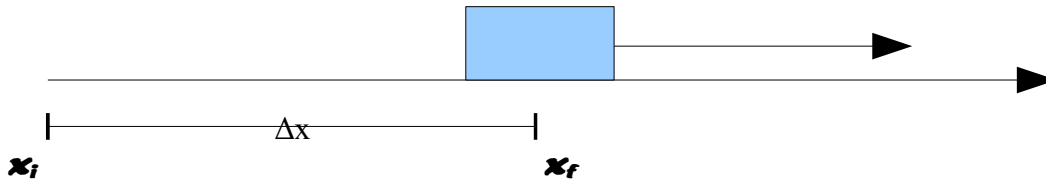


**Lect. 2**

**Motion in one dimension**



***the motion of an object in the direction  $x$  can be described by the so called "Kinematics"***

**these kinematics are :**

- Displacement**
- Velocity**
- Acceleration**

**Displacement:**

***the displacement is a vector quantity represent the distance covered by the object in a definite time  $t$***

$$\Delta x = x_f - x_i$$

***the units of displacement is meter***

**velocity:**

***is a vector quantity represent the rate of change of displacement with time***

$$\text{velocity} = \Delta x / \Delta t$$

***the units of velocity is m/sec***

**Acceleration:**

***is the rate of change of velocity with time.***

$$\text{Acceleration} = \Delta V / \Delta t$$

## **Kinematics Equations**

### **the basic three kinematics equations:**

$$\mathbf{x_f = x_o + v_o t + a t^2 / 2.}$$

**where,  $x_o$  is the initial displacement**

**$x_f$  is the final displacement**

**$t$  is the time**

**$a$  is the acceleration**

$$\mathbf{v_f = v_o + at}$$

**where,  $v_f$  is the final velocity**

**$v_o$  is the initial velocity**

$$\mathbf{x - x_o = at^2 / 2}$$

