

# 5/16 Lecture

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## 1 1D Kinematics

Distance is scalar

$$\text{speed} = \frac{d}{t} \quad (1)$$

Displacement is a vector

$$\text{average velocity} = \bar{v} = \frac{\Delta s}{\Delta t} \quad (2)$$

$$\Delta x_{tot} = \Delta x_1 + \Delta x_2 + \Delta x_3 + \Delta x_4 \quad (3)$$

$$\Delta x_1 = x_1 - x_i \quad (4)$$

$$\Delta x_2 = x_2 - x_1 \quad (5)$$

$$\Delta x_3 = x_3 - x_2 \quad (6)$$

$$\Delta x_4 = x_f - x_3 \quad (7)$$

$$\text{position} = s(t) \quad (8)$$

$$\text{velocity} = v(t) = s'(t) \quad (9)$$

$$\text{acceleration} = a(t) = v'(t) = s''(t) \quad (10)$$

### 1.1 equations

$$\vec{A} \cdot \vec{B} = s \quad (11)$$

$$m = \frac{\Delta y}{\Delta x} \quad (12)$$