

Engineering Science N4

Summary

Module 1: Kinematics

Unit 1: 1 Relative Velocity

Definitions

- 1) **Scalars:** A quantity that consists of *magnitude only*. Examples are time, mass, distance, speed, energy, work done, etc.
- 2) **Vectors:** A quantity consisting of *magnitude and direction*. Displacement, weight, velocity, momentum, acceleration, etc.
- 3) **Mass:** A quantity of matter. A *scalar* quantity because it has no direction
- 4) **Weight:** A force with which an object is attracted to the earth. Measured in Newtons.
- 5) **Speed:** Distance travelled during a time interval. *Scalar* because of no direction.

$$\text{Speed} = \text{distance} \frac{\text{distance}(s)}{\text{time elapsed}(t)}$$

- 6) **Velocity:** Displacement per unit time or rate of displacement and is a vector (direction)

$$\text{Velocity}(v) = \frac{\text{displacement}(\Delta s)}{\text{time elapsed}(\Delta t)}$$

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Michael Hoelscher



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