

## ***Kinematics Learning Goals***

### ***Vocabulary***

acceleration, average velocity, constant acceleration, displacement, final velocity, instantaneous velocity, initial velocity, kinematics, scalar, speed, vector, velocity

### ***Knowledge***

- scalar and vector quantities
- distance and displacement
- speed and velocity
- initial velocity, final velocity, average velocity
- instantaneous velocity
- acceleration
- constant acceleration
- projectile motion

### ***Skills and Attitudes***

- conduct appropriate experiments
- systematically gather and organize data from experiments
- produce and interpret graphs (e.g., slope and intercept)
- verify relationships (e.g., linear, inverse, square, and inverse square) between variables
- apply models (e.g., physics formulae, diagrams, graphs) to solve a variety of problems
- use appropriate units and metric prefixes
- construct displacement-versus-time graphs
- construct velocity-versus-time graphs

C1 Apply knowledge of the relationships between time, displacement, distance, velocity, and speed to situations involving objects in one dimension

- differentiate between scalar and vector quantities
- define *distance*, *displacement*, *speed*, and *velocity*
- construct displacement-versus-time graphs, based on data from various sources
- use a displacement-versus-time graph to determine
  - displacement and distance
  - average velocity and speed
  - instantaneous velocity and speed
- solve problems involving
  - displacement
  - time
  - average velocity
- construct velocity-versus-time graphs, based on data from various sources
- use velocity-versus-time graphs to determine
  - velocity
  - displacement
  - average velocity

