

### Unit 2: Describing Motion

#### 2A: Distance and Displacement

**displacement** - an object's overall change in position; the SI unit is the meter (m).

**distance** - is a measure of how far an object has traveled; the SI unit is the meter (m).

#### 2B: Speed and Velocity

**average speed** - an object's total distance traveled divided by the time elapsed. The SI unit is meters/second (m/s).

**average velocity** - an object's displacement divided by time elapsed. The SI unit is meters/second (m/s).

**constant velocity** - velocity that remains unchanged.

**displacement** - an object's overall change in position; the SI unit is the meter (m).

**distance** - is a measure of how far an object has traveled; the SI unit is the meter (m).

**instantaneous velocity** - the velocity of an object at a specific point in time.

#### 2C: Acceleration and Kinematic Equations

**average acceleration** - the rate of change of velocity divided by time elapsed. The SI unit for acceleration is meters per second squared ( $m/s^2$ ).

**constant acceleration** - acceleration that doesn't change.

**instantaneous acceleration** - acceleration at a given moment in time.

**kinematics** - the science of describing the motion of an object.

#### 2D: Graphing Motion

**average acceleration** - the rate of change of velocity divided by time elapsed. Can be found by connecting two points on a line on a velocity versus time graph and finding the slope of that line.

**average velocity** - an object's displacement divided by time elapsed. Can be found by connecting two points on a line on a position versus time graph and finding the slope of that line.

**instantaneous acceleration** - acceleration at a given moment in time. Can be found by drawing a line tangent to a point on a line on a velocity versus time graph and finding the slope of that line.

**instantaneous velocity** - the velocity of an object at a specific point in time. Can be found by drawing a line tangent to a point on a line on a position versus time graph and finding the slope of that line.

**Unit 2: Describing Motion**

**2E: Free Fall**

**free fall** - an object in motion only under the influence of the force of gravity.

**2F: Relative Velocity**

**frame of reference** - the view of the person or object observing the motion.

**Pythagorean Theorem** - a theorem that states that the square of the length of the hypotenuse of a right triangle equals the sum of the squares of the lengths of the other two sides.

**relative velocity** - the vector difference between the velocities of two objects; the velocity of a body with respect to another regarded as being at rest.

**resultant** - a vector quantity that is equal to the addition of two or more vector components acting at the same point.

**2G: Horizontally Launched Projectiles**

**hang time** - the amount of time a projectile remains in the air.

**projectile** - an object that is moving through the air.

**range** - the displacement of a projectile in the horizontal direction.

**trajectory** - the path taken through the air.