# Conceptual Physics
# Unit 1 Equations:

**Variables**
v = velocity
s = speed
d = displacement or distance
t = time
$v_f$ = final velocity
$v_i$ = initial velocity
a = acceleration

| | |
|---|---|
| $velocity = \frac{displacement}{time}$ | $v = \frac{d}{t}$ |
| $speed = \frac{distance}{time}$ | $s = \frac{d}{t}$ |
| $acceleration = \frac{v_f - v_i}{t}$ | Some of these equations are re-arranged below. |

$$d = v \cdot t$$

$$d = \frac{1}{2}(v_i + v_f)t$$

$$v_f = v_i + at$$

$$d = v_i t + \frac{1}{2}at^2$$

$$v_f^2 = v_i^2 + 2ad$$

**Movement** –
Velocity and Acceleration SAME DIRECTION – SPEEDING UP
Velocity and Acceleration DIFFERENT DIRECTION – SLOWING DOWN