

Calculating the Average Acceleration

The average acceleration (a) of any object over a given interval of time (t) can be calculated using the equation

Ave. acceleration =
$$\frac{\Delta \text{velocity}}{\text{time}} = \frac{\mathbf{v}_{f} - \mathbf{v}_{i}}{t}$$

Acceleration values are expressed in units of velocity/time. Typical acceleration units include the following:

m/s/s mi/hr/s km/hr/s m/s²

The Direction of the Acceleration Vector

Since acceleration is a <u>vector quantity</u>, it has a direction associated with it. The direction of the acceleration vector depends on two things:

- . whether the object is speeding up or slowing down
- . whether the object is moving in the + or direction

The general **RULE OF THUMB** is:

If an object is slowing down, then its acceleration is in the opposite direction of its motion.