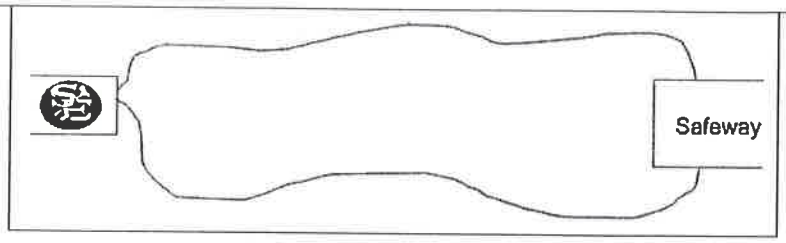
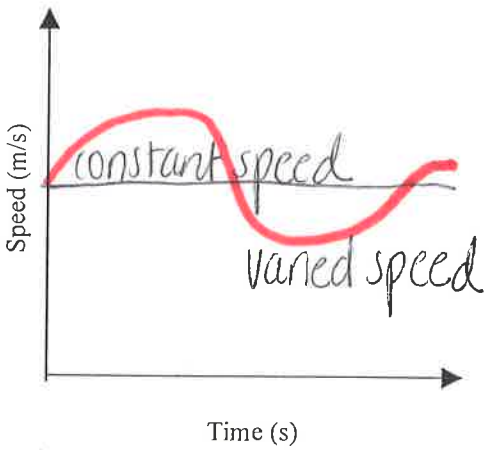
Average vs. Instantaneous



Calculate your speed for a trip to Safeway.

$V = \frac{d}{t}$ distance / time = speed $\frac{0.5 \text{ miles}}{10 \text{ minutes}}$

Sketch a graph of your speed for your trip.



1. Average speed (or velocity): Total distance / total time
   average distance / unit time
2. Instantaneous speed (or velocity): how fast the object is at any given instant
3. Describe a trip in which a car's average speed equals its instantaneous speed for the entire time.
   constant speed entire trip

Problem Solving –Smooth Form

1) state Known variables 3) show all work w/units
2) show equation used in manipulated 4) box answer w/units

4. An airplane flies at a constant speed of 300. m/s. How long will it take the plane to fly a distance of 1.2 km?

$t = ?$ $V = 300. \frac{m}{s}$ $d = 1.2 \text{ km}$ $V = \frac{d}{t}$ $t = \frac{d}{V}$

$t = \frac{1.2 \text{ km}}{300. \frac{m}{s}} = \boxed{4.0 \times 10^{-3} \text{ s}}$

5. A car travels at an average speed of 30. m/s. How far will the car go in 3.0 hours?

$V = 30. \frac{m}{s}$ $t = 3.0 \text{ hours}$ $\frac{3600 \text{ s}}{\text{hr}}$

$d = Vt$ $30. \frac{m}{s}(3.0 \text{ hrs})\left(\frac{3600 \text{ s}}{\text{hr}}\right) = \boxed{3.2 \times 10^5 \text{ m} = d}$