Acceleration

Acceleration: rate at which the velocity of a moving object changes or a change in direction of an object while at a certain velocity

- Formula: acceleration = change in velocity/time

  $a = (v_{final} - v_{start})/t$

- units are meters per second squared, m/s^2
- deceleration: when the change in velocity is decreasing
- Examples:

  a. What is the acceleration of a grasshopper that jumps from standing still to a final velocity of 50 m/s in a time of 0.25 seconds?

  b. What was the final velocity of a sprinter that ran the 100m dash if the acceleration of the runner was 2 m/s^2 and the race was completed in 9.5 seconds?

  c. A person driving a car 32 m/s pushed on the gas pedal to reach a velocity of 40 m/s and did this with an acceleration of 4 m/s^2. How much time did it take to reach its final velocity?