Chapter 2
Example Problems

1. For the first 20.0 s of a trip, a car accelerates from rest to 30.0 km/hr. Then the driver hits the brakes and slows to a stop in 8.00s.
   a. What is the average acceleration of the car when it was speeding up?
   b. What was the average acceleration for the car when it was slowing down?

2. A race car starts from rest and accelerates in a straight line at 2.00 m/s^2 for 30.0 s.
   a. What is its final speed of the car in miles per hours (mph)? (1 mi = 1.602 km)
   b. How far has it travelled in this time?
   c. The driver then slams on the brakes and it travels a further 80.0 m before stopping. What is the deceleration during this period?
   d. How does your answer compare the values in the following table?

Type of activity	**Typical values of *g* experienced**
Takeoff and landing in commercial aircraft	1 – 1.5
Roller coasters	2 – 3
NASCAR drivers during turns	3 – 4
Air force pilots	5 – 7

3. A pitcher tosses a baseball straight up along a *y*-axis, with an initial speed of 12 m/s.
   a. How long does the ball take to reach its maximum height?
   b. What is the ball's maximum height above its release point?
   c. How long does the ball take to reach a point 5.0 m above the release point?