Section 9.1
Describing Acceleration
Check Your Understanding

Checking Concepts

1. Describe two ways to change the velocity of a moving car.

2. (a) Define "acceleration."

    (b) Define "deceleration."

3. In terms of initial velocity and final velocity, how is change in velocity determined?

4. Determine the change in velocity of a car that starts at rest and has a final velocity of 20 m/s [N].

5. How are the direction of an object's acceleration and the direction of the same object's change in velocity related?

6. Suppose motion toward the east is positive (+). Is the acceleration positive, negative, or zero for each of the following situations?

    (a) slowing down while travelling east

    (b) travelling with a constant velocity west

    (c) increase in speed while travelling east

    (d) increase in speed while travelling west

    (e) decrease in speed while travelling west

Understanding Key Ideas

7. Given the following data, calculate the change in velocity for the following time intervals. Let motion to the north represent positive (+) velocity.

Time (s)	Velocity (m/s [N])
0	0
5	8
10	12
15	12
20	15
25	9

(a) 0 s - 5 s

(b) 5 s - 10 s

(c) 10 s - 15 s

(d) 15 s - 20 s

(e) 20 s - 25 s

8. (a) If the acceleration is in the same direction as the velocity, what happens to the speed of an object?

(b) If the acceleration is in the opposite direction to the velocity, what happens to the speed of an object?

9. A car travelling forward at 25.0 m/s stops and backs up at 4.0 m/s.

(a) What is the car's change in velocity?

(b) What is the direction of the car's acceleration?

10. Describe the direction of the acceleration for each of the following situations.

   (a) Sliding into home plate

   (b) Starting a race

Pause and Reflect

Give an example from your own life of two objects that can accelerate to the same speed but have different accelerations. Explain why their accelerations are different.