SPH 4C

**SPEED AND VELOCITY**

**Extra Practice**

1. A light plane leaves Oshawa, Ontario and flies 80 km [S] toward Buffalo, New York. After arriving over Buffalo the pilot is informed that the navigational equipment at the airport is malfunctioning. He is advised to land at an airport near Niagara Falls, New York, located 18 km [N] of Buffalo. The trip from Oshawa to Buffalo takes 20 minutes, and the trip from Buffalo back to the airport near Niagara Falls takes 8.0 minutes.
   1. What is the total distance travelled by the airplane?
   2. What is the total displacement travelled by the airplane?
   3. What is the velocity for the airplane in travelling from
      1. Oshawa to Buffalo?
      2. Buffalo to Niagara Falls?
      3. Oshawa to Niagara Falls?
   4. What is the speed of the entire trip?
2. The sun is located a distance of 1.49 x 1011 m from Earth. Light travels at 3.00 x 108 m/s. How much time will elapse between the time a solar flare erupts from the surface of the sun and the time it is seen by an astronomer on Earth?
3. A marathon runner in training runs 22 km [N] and then 32 km [S]. Assuming the entire run takes 4.2 h, answer the following questions.
   1. What is the runner’s displacement for the run?
   2. What is the runner’s velocity?
   3. What is the runner’s total distance?
   4. What is the runner’s speed?
4. How far will a man travel in 15 minutes, driving his car down a highway at 24 m/s?
5. A goalkeeper for the Canadian hockey team has a reaction time of 0.40 s. A puck travelling at 25 m/s bounces off an opposing player’s pads without slowing down. How far away must this occur to give the goalkeeper a chance to make a save?