Distance, Speed and Acceleration Practice

1. A snowmobile reaches a final speed of 22.5 m/s after accelerating at 1.2 m/s^2 for 17 s. What is the initial speed of the snowmobile? (2.1 m/s)

2. A bus with an initial speed of 12 m/s accelerates at 0.62 m/s^2 for 15 s. What is the final speed of the bus? (21 m/s)

3. In a race, a car travelling at 100 km/h comes to a stop in 5.0 s. What is the average acceleration? (-20 (km/h)/s)

4. A cyclist increases her speed by 5.0 m/s in a time of 4.5 s. What is her acceleration? (1.1 m/s^2)

5. A roller coaster car accelerates at 8.0 m/s^2 for 4.0 s. What is the change in the speed of the roller coaster car? (32 m/s^2)

6. A downhill skier moving at 2.5 m/s accelerates to 20.0 m/s in a time of 3.8 s.

a) Calculate the average acceleration of the skier. (4.6 m/s^2)
b) What does this acceleration mean? (The speed is increasing 4.6 m/s every second.)

7. You are coasting on your skateboard at 1.4 m/s and you decide to speed up. If you accelerate at 0.50 m/s^2 for 7.0 s, what is your final speed? (4.9 m/s)

8. A train is moving at 5.0 km/h and accelerates at 95 km/h^2 for 0.50 h. What is the final speed at the end of the 0.50 h? (53 km/h)

9. A car travelling at a constant speed approaches the top of a hill. The car rolls down the hill at an acceleration of 2.0 m/s^2 for 8.0 s and reaches a final speed of 26 m/s. What was the initial speed of the car before accelerating down the hill? (10 m/s)

10. An octopus can accelerate rapidly by squirting a stream of water for propulsion. An octopus moving at 0.10 m/s accelerates at 5.5 m/s^2 to a final speed of 3.5 m/s. What is the elapsed time during the acceleration? (0.62 s)

11. A Boeing 737 touches down on a runway at an initial speed of 72 m/s and accelerates at a rate of -4.40 m/s^2. How much time does it take for the plane to stop? (16 s)