1. A car accelerates uniformly from rest to a speed of 23.7 km/h in 6.5 s. Find the distance the car travels during this time.

2. When Maggie applies the brakes of her car, the car slows uniformly from 15.00 m/s to 0.00 m/s in 2.50 s. How many meters before a stop sign must she apply her brakes in order to stop at the sign?

3. A jet plane lands with a velocity of +100 m/s and can accelerate at a maximum rate of –5.0 m/s^2 as it comes to rest. Can this plane land at an airport where the runway is 0.80 km long?

4. A car with an initial speed of 23.7 km/h accelerates at a uniform rate of 0.92 m/s^2 for 3.6 s. Find the final speed and the displacement of the car during this time.

5. An automobile with an initial speed of 4.30 m/s accelerates at the rate of 3.00 m/s^2. Find the final speed and the displacement after 5.0 s.

6. A car starts from rest and travels for 5.0 s with a uniform acceleration of –1.5 m/s^2. What is the final velocity of the car? How far does the car travel in this time interval?

7. A car traveling initially at +7.0 m/s accelerates at the rate of +0.80 m/s^2 for a distance of 245 m. a) What is its velocity at the end of the acceleration? b) What is its velocity after its accelerates for 125 m? c) What is its velocity after it accelerates for 67 m?

8. A gull soaring in a straight line with an initial velocity of –32 m/s accelerates at a rate of +3.0 m/s^2 for 9.0 s. What is the gull's velocity at the end of the acceleration?

9. An aircraft has a liftoff speed of 120 km/h. a) What minimum constant acceleration does this require if the aircraft is to be airborne after a take-off run of 240 m? b) How long does it take the aircraft to become airborne?

10. A car accelerates in a straight line from rest at the rate of 2.3 m/s^2. a) What is the speed of the car after it has traveled 55 m? b) How long does it take the car to travel 55 m?

Examples:

1. A racing car reaches a speed of 42 m/s. It then begins a uniform negative acceleration, using its parachute and braking system, and comes to rest 5.5 s later. Find how far the car moves while stopping.

2. A plane starting at rest at one end of a runway undergoes a constant acceleration of 4.8 m/s^2 for 15 s before takeoff. What is its speed at takeoff? How long must the runway be for the plane to be able to take off?

3. A baby sitter pushing a stroller starts from rest and accelerates at a rate of 0.500 m/s^2. What is the velocity of the stroller after it has traveled 4.75 m?