Name:_____ Date:_____

Mr. Croom's Physics Chapter 2: One Dimensional Motion

Kinematic 1

Solve the following problems.

1. A car is traveling at 26 m/s. The driver steps on the brakes and the car comes to a stop in 60 m. What is the car's acceleration?

2. An airplane travels 1000 ft at a constant acceleration while taking off. If it starts from rest, and takes off in 25 seconds, what is the planes acceleration? What is its takeoff velocity?

3. An airplane has a touchdown velocity of 300 m/s and comes to rest in 1.200 km. What is the airplane's average acceleration? How long does it take for the plane to stop?

4. The speedometer of a car reads 60 mph when the brakes are applied. The car comes to rest in 4.55 s. How far does the car travel before coming to rest? Give your answer in feet.

5. A missile has a velocity of 10,000 mph at burn-out, which occurs 2 minutes after ignition. Find the average acceleration during the first 2 minutes in m/s^2. How many meters did the rocket go in that 2 minute period? How many miles is that?

6. A car travels 800 meters at a constant acceleration while starting a trip. If it starts from rest, and reaches the 800 meter mark in 45.0 s, what was its final velocity?

7. A driver traveling at 60 mi/hr tries to stop the car and finds that the brakes have failed. The emergency brake is then pulled and the car comes to a stop in 456 ft. Find the car's acceleration. Compute the time it takes to bring the car to a stop within the 456 ft distance.

8. A train accelerates from an initial velocity of 20 mi/hr to a final velocity of 35 mi/hr in 11.8 s. Compute the acceleration of the train. Calculate the displacement of the train during this time.