

## Accelerated Motion Problems #2

Name: \_\_\_\_\_

1. A feather is dropped inside a vacuum chamber.
  - a. What is the velocity after .3 seconds?
  
  
  
  
  
  
  
  
  
  
  - b. How far has it fallen after .3 seconds?
  
  
  
  
  
  
  
  
  
  
2. A dragster is uniformly accelerated from rest at a rate of  $4.5 \text{ m/s}^2$  over a distance of 100 meters. What is its velocity as it hits the 100 meter finish line?
  
  
  
  
  
  
  
  
  
  
3. A woman hits her car brakes in a panic stop and decelerates at a rate of  $5 \text{ m/s}^2$ . The car comes to rest at a distance of 62.5 meters from the point where she first applied her brakes. How fast was she traveling when she hit her brakes?
  
  
  
  
  
  
  
  
  
  
4. A spaceship is traveling at  $3000 \text{ m/s}$  when its booster rocket is fired accelerating it at a rate of  $15 \text{ m/s}^2$ . What distance does the spaceship travel during its first 4 seconds of acceleration?

5. The Eiffel Tower is 300 meters tall. Disregarding air friction, at what velocity would an object be traveling when it reaches the ground if it were dropped from the top of the tower?
  
  
  
  
  
  
  
  
  
6. A rocket accelerates upward from rest with a uniform acceleration of  $4.2 \text{ m/s}^2$ . How far will the rocket have traveled at the end of 8.0 seconds?
  
  
  
  
  
  
  
  
  
7. The brakes on a car permit it to decelerate at the rate of  $-0.8 \text{ m/s}^2$ . How much distance is required to stop this car when it is traveling  $60 \text{ km/hr}$ ?
  
  
  
  
  
  
  
  
  
8. A solar powered aircraft reaches lift off speed of  $120 \text{ km/hr}$  in 300 meters. What is the acceleration of the plane?
  
  
  
  
  
  
  
  
  
9. A motorcycle traveling  $30 \text{ m/s}$  decelerates at the rate of  $-2 \text{ m/s}^2$ . What distance does it travel before coming to rest, and how long does it take to stop?

10. Beth and Rosa brake their racing sled so that it decelerates at a uniform rate of  $-0.43 \text{ m/s}^2$ . How long does it take to stop if it travels 85 meters before coming to rest?
  
11. tests on the new Speedmobile show that it can decelerates at a uniform rate of  $-0.67 \text{ m/s}^2$ . How long does it take to stop if it travels 85 meters before coming to rest?
  
12. Andrew kicks a soccer ball down a hill so that it leaves the top of the hill with a speed of  $0.2 \text{ m/s}$ . It accelerates at a constant  $0.1 \text{ m/s}^2$ . How far will the ball travel in 30 seconds?
  
13. The Saturn car company finds that its new racing car will accelerate at a uniform rate of  $6.28 \text{ m/s}^2$  over a 1 kilometer track. How long will it take the car to cover this track?
  
14. A rocket traveling  $50 \text{ m/s}$  accelerates at a rate of  $2 \text{ m/s}^2$ . What is the speed of the rocket after it has traveled 500 meters, and what time does it take to reach this speed?