W1.04

Physics "Counting" Worksheet

(9/24/04)

By using counting techniques, compute (or estimate where computation by counting is difficult) the answers to the following questions:

1. A stone is dropped from rest from the edge of a very high cliff.
   a. What is its speed 12 seconds later?
   b. What is its acceleration 4 seconds later?
   c. How far will it fall in 8 seconds?
   d. How far does it fall in its third second of flight?
   e. How far does it fall in 7.3 seconds?

2. A car accelerates at 6 m/s/s from rest. How long does it take to reach 27 m/s (approximate highway speed)? How far does it travel in that time?

3. A runner travelling at 10 m/s begins to slow at a constant rate of –1 m/s/s. How far will he travel while slowing to rest?

4. A car slows from 30 m/s to 20 m/s in 5 seconds. How far does it travel during that time? What is its constant acceleration?

5. A ball is dropped on a planet with an acceleration of gravity of 4 m/s/s. Fill in the chart below showing the speed of the ball and the total distance the ball has fallen versus time for the first 8 seconds of its fall.

Time (seconds)	Speed (m/s)	Position (meters)
0	0	0
1		
2		
3		
4		
5		
6		
7		
8		