A-day: Due Wed., Sept 16
B-day: Due Mon., Sept 21

2009 Linear Motion 3

1. An object is dropped from 12 m: a = _____; Δy = _____; v_i = _____.
2. An object is thrown 5 m/s from the ground and lands back on the ground: a = _____; Δy = _____; v_i = _____; v_f = _____;
3. An object is thrown 8 m/s into the air, how high does it go?: a = _____; v_i = _____; v_f = _____;

4. Freefall: yes or no?
   A. _____A balloon is dropped.
   B._____A bowling ball rolls off of a desk to the floor below.

5. What is a vacuum?

6. In a vacuum, which would fall faster: a brick or a leaf?

For each of the following three problems use the special situations on the "Freefall" notes to assign your variables.

7. An object is dropped from 40 meters above the ground. How fast is it going just before it hits the ground?
   Variables: Equation: Solve:

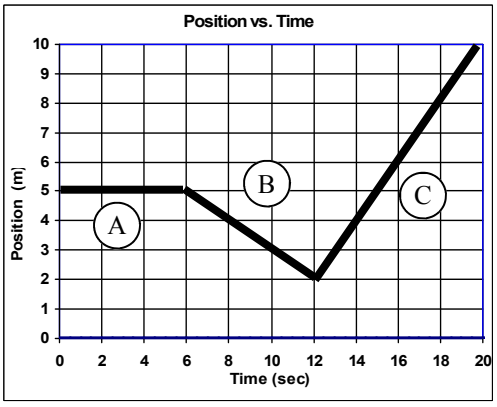
8. A ball is thrown into the air going 50 m/s. If it was thrown from the ground and lands back on the ground, how long was it in the air?
   Variables: Equation: Solve:

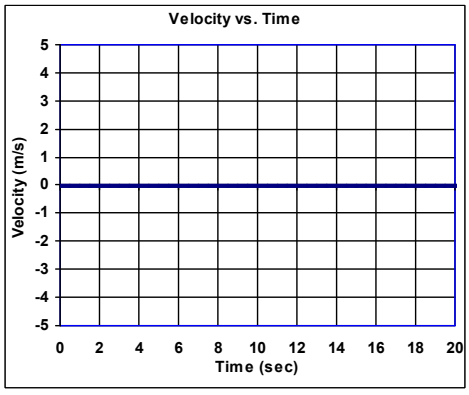
9. A rock is thrown into the air going 15 m/s. How high does it go?
   Variables: Equation: Solve:

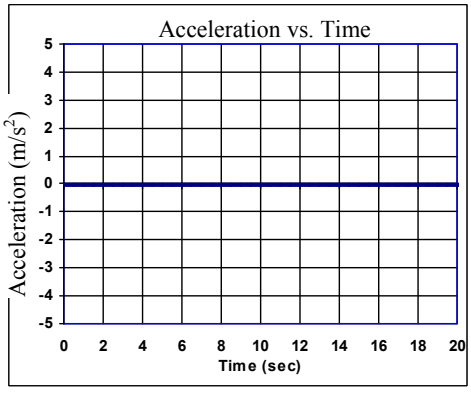
Now, remember that only thrown or dropped objects have an acceleration of –9.8 m/s2. A moving car, for instance, is not in freefall (unless it drives off a cliff, of course), so you would have to calculate its acceleration or be given its acceleration.

10. A ball rolls down a 2.5 meter long ramp in 4 seconds. If it started at rest, what was its acceleration?
    Variables: Equation: Solve:

11. A. Calculate the slopes of each of the line segments on the Position vs. Time graph.
    B. Transfer these slopes to the velocity graph.
    C. Transfer then to the acceleration graph.







Let's not forget how to do this….

12. A. Convert 10 mph (mi per hour) to miles per min.

3.3 ft = 1 m
5280 ft = 1 mi
12 in = 1 ft
2.54 cm = 1 in.

B. Now convert your answer to meters per min.

DNA basics

DNA – Found in the nucleus of all cells
Contain the characteristics of a cell.
Double helix (ladder structure)
Ladder sides made up of a phosphate and deoxyribose sugar; ladder steps: nitrogen bases (A,T,C,G)
Nitrogen bases pair up as: A with T/ C with G.

RNA – Moves from nucleus to ribosomes.
Only 1 side of the ladder.
Ribose sugar instead of deoxyribose
A with U (U not T) and C with G

DNA to mRNA—transcription—moves to ribosome.
mRNA to tRNA—translation (in ribosomes).

13. DNA, mRNA, or tRNA (could be more than one or even all).

A. _____ Contains nitrogen bases.
B. _____ Created in transcription.
C. _____ Must stay in the nucleus.
D. _____ Created in replication.
E. _____ Double helix structure.
F. _____ A goes with T
G. _____ Carries code to ribosomes.
H. _____ Has uracil

14. Given the following genetic codes give the paired sequence.

DNA	DNA
G	
A	
C	
C	
A	

DNA	RNA
A	
C	
G	
U	
G	