A-Day: Due Thurs., Dec 7 (Assigned: 12/5)
B-Day: Due Fri., Dec 8 (Assigned: 12/6)

Momentum 5

1) Two eggs are dropped from 2 meters in the air. Each egg has a mass of 0.1 kg.
   A) What kind of energy do the eggs have?
   B) Calculate how much energy each egg has.

   C) If the eggs drop, what kind of energy are they gaining?
   D) What kind of energy are they losing?
   E) How do these two energies compare?
   F) Calculate the speed of the eggs just before they hit the ground.

   G) Calculate each how much momentum each egg has just before it hits the ground.

   H) What will be the change of momentum of each egg after they hit the ground.
   I) What is the impulse of the eggs as they hit the ground.
   J) If egg 1 lands on the ground and egg 2 lands on a pillow, which egg experiences the greater impulse?
   K) Which egg will likely survive?
   L) Why?

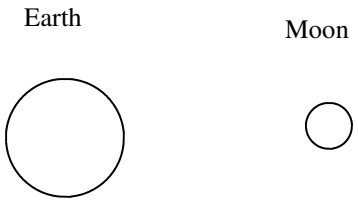
   M) If Egg 1stops in 0.75 seconds, find the force on egg 1.

   N) If Egg 2 stops in only 0.01 seconds, find the force on egg 2.

2) What is a solar eclipse?
3) Draw the sun, moon, and earth to show how a solar eclipse works.

4) What is a lunar eclipse?
5) Draw the sun, moon, and earth to show how a lunar eclipse works.

6) What causes ocean tides?



7) On the diagram, show where high tides will be on the earth.

8) What is a spring tide?

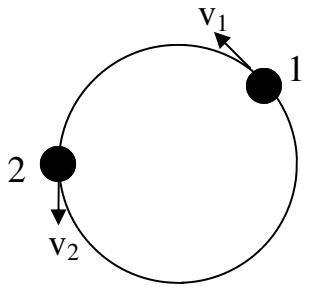
9) Give two factors that affect how much terminal velocity an object has.

10) True or False and why: when the northern hemisphere experiences winter the earth is farther away from the sun.

11) Using your book: What is escape velocity and what is the escape velocity for the earth?

12) When an object is moving in a circle, what kind of force is it experiencing?

13) Draw and label an arrow to represent the force on the object at the right.



14) If at position 2 the force is removed, draw the path the object will take.

15) A 4 kg object going 3 m/s to the right strikes a 3 kg object going 5 m/s to the left. If afterwards the 3 kg object ends up going 1 m/s to the right draw the situation and find the final velocity of the 4 kg object.

16) In the previous problem, how does the initial and final total momentum of the two objects compare?

17) Why?

18) What is a vector?

19) What quantities (like time, velocity, distance, etc) do you need to find the following:
   A) Velocity:
   B) Acceleration:
   C) Momentum:
   D) Kinetic energy:
   F) Potential energy:
   G) Force: