A-Day: Due Mon., Dec 10 (Assigned: 12/6)
B-Day: Due Tues., Dec 11 (Assigned: 12/7)

2007 Momentum 2

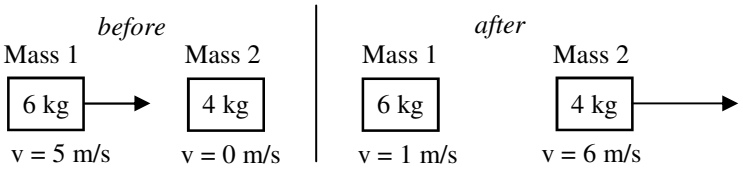
1) In the previous chapter, a force does **work** which creates _____. In this chapter a force is called an _____, which changes _____.

2) So the change of momentum of an object equals the object's change of _____.

3) How can a group of objects have a net momentum of zero?

4) A 3 kg object going 4 m/s to the right ends up going 6 m/s to the left.
   A) p_i = B) Δv = C) Δp =

5) Two objects at the collide. The diagram shows their speeds before and after the collision.



   A) Σp_{before} =

   B) Σp_{after} =

   C) How do your answers in A and B compare?

   This is ALWAYS the case: momentum is conserved.

6) A 2 kg object going 10 m/s to the right feels a +3 N force for 6 seconds.
   A) Find the impulse on the object. B) Find the final velocity of the 2 kg object.

   C) Using a very simple equation, find the acceleration of the object.

7) Force A is 10 N. Force B is 30 N. Both forces push on identical 5 kg objects to accelerate them from rest to 10 m/s.
   A) Since the objects are at originally at rest, their initial momentum is:
   B) Find their final momentum.

   C) What is the change of momentum (Δp) for the objects (*it's the same amount for both*).

   B) Using the impulse equation, how long does Force A act on the object?

   C) How long does Force B act on the object?

   D) Which force gave more momentum to the object?
   E) Which object accelerates the object faster?

   F) So, to accelerate an object you have two choices. Give them:

Two identical eggs are dropped from the same height. Egg A is dropped on a concrete floor, Egg B on a pillow.

8) Which one was moving faster just before it hit?
9) Which one experienced a greater force?
10) Which one survives?
11) Why? (Don't use any words like "absorb".)

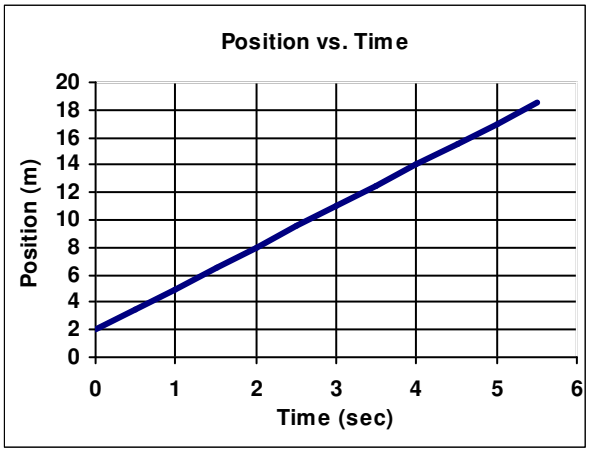
A 5 kg object slows from 20 m/s to 15 m/s in 6 seconds.

A) Calculate the change of momentum.

B) What impulse caused this?

C) Find the force that caused this.

12) The graph at the right shows the motion of a 35 kg object. Calculate its momentum.



13) Physical or chemical change?

A) _____ Burning paper.
Why?

B) _____ A sugar cube disappearing in water.
Why?

C) _____ If two liquids are put together and create heat?

D) _____ Baking soda (a solid) and vinegar (a liquid) mix to create a gas.

E) _____ Cutting up something

Preparing for the final exam, whether with your book (or the Internet or something…) answer the following:
(And you had better do this part yourself…)

14) A) How is a black hole created?

B) Why is it called a black hole?

15) What is terminal velocity?

16) Which will have a greater terminal velocity a feather or a hammer?

17) What is escape velocity?

18) What is the escape velocity of the earth?