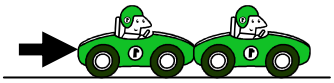
A-Day: Due Tues., Dec 18 (Assigned: 12/14)
B-Day: Due Wed., Dec 19 (Assigned: 12/17)

2007 Momentum 5



1) If an object decreases its speed does its momentum increase or decrease?
2) A car bumps into another car in front of it. Does the momentum of the car in the back increase or decrease?
3) If the two cars have a total of 12,500 kgm/s of momentum before, how much total momentum do they have afterwards?

4) Force A is 2000 N and pushes for 2 seconds.
   A) How much impulse does it give?
   B) How much change of momentum does it give?

5) Force B is 40 N and pushes for 700 seconds.
   A) How much impulse does it give?
   B) How much change of momentum does it give?

6) Which force gave the greatest impulse?
7) If both forces pushed on equal masses, which forces changes speed the most?
8) A bigger force always causes a bigger change of momentum. True or false and why?

9) How many total atoms are there in $2Be_3N_2$?

10) Give the reaction notation for: $3C_2F_4$:

11) The picture at the right shows a test tube with a cork sealing the opening.
   A) Is this an open or closed reaction?
   B) Will the mass of his products be greater than, less than, or equal to his reactants?
   C) Why?

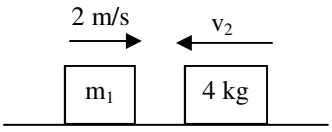
   D) What Law does this setup allow us to prove?

12) Balance the following reactions.

$$\_\_\_\_\ Fe + \_\_\_\_\ O_2 \rightarrow \_\_\_\_\ Fe_2O_3$$

$$\_\_\_\_\ K_3N + \_\_\_\_\ Ca(CrO_4) \rightarrow \_\_\_\_\ Ca_3N_2 + \_\_\_\_\ K_2(CrO_4)$$

13) What is the net momentum of the two objects shown?
(*Your answer will have variables in it.)*

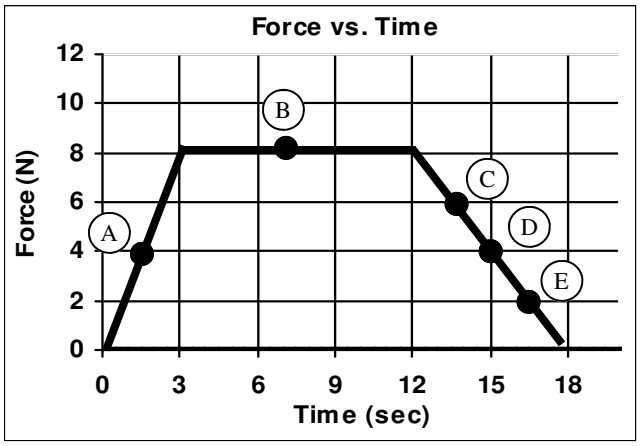


14) A 4 kg cart is moving 8 m/s. It slams into a 2 kg cart that is moving 3 m/s. They attach during the collision.
   A) What kind of collision is it?
   B) Find the final velocity of the combined object. (*For more help, see the "walk thru" steps on the back.)*

15) What is the formula for the area of a rectangle?

16) What is the formula for the area of a triangle?

17) Find the area of the graph.



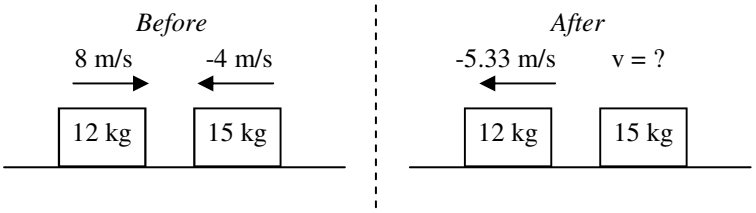
18) The area of the graph tells you the _____ acting on an object.

19) If a 6 kg object is moving 4 m/s and experiences the impulse on the above graph, use conservation of momentum to find the final velocity.

Use the letters on the graph to answer the following:

20) Which is the strongest positive force shown?
21) What is the force at E?
22) Would E pull to the left or pull to the right?
23) Does E give a positive or negative acceleration?
24) Which forces are pulling to the right?
25) Which forces give negative accelerations?
26) Which forces give positive accelerations?
27) Which forces would cause an object to slow down in the negative direction?
28) Which force would give the greatest positive change of speed (in the same amount of time)?

29) The diagram below shows the collision between two objects.
A) Find the velocity of the second object afterwards (*use the steps below*).



_____ ← *Step 1) Write the Conservation of Momentum eq.*

_____ ← *Step 2) For Σp put in "mv" for each independent object and I or –I if there are any forces acting.*

_____ ← *Step 3) Put in m and v for each object, leaving any unknowns as variables.*

← *Step 4) Solve for the unknown.*