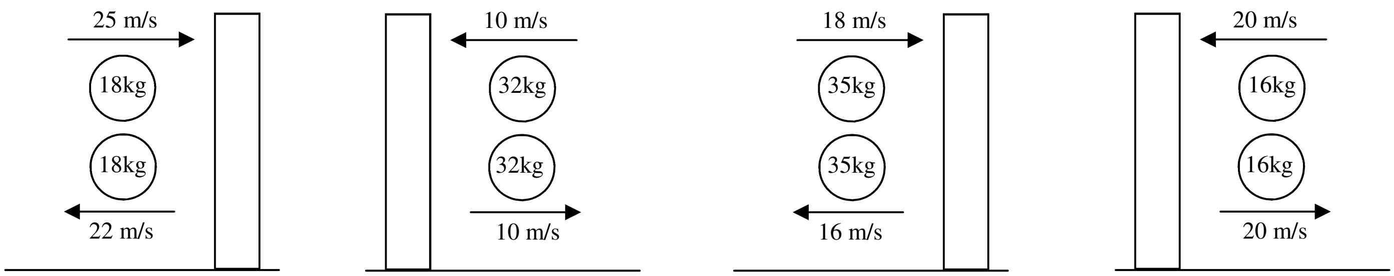
Due Tues., Dec 13

2011 PreAP Momentum 8

1. For each of the masses below decide if the Δp is + or − and calculate Δp.



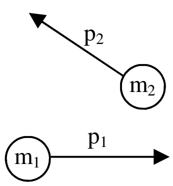
A. Δp: + or −?
*Δp = ______

B. Δp: + or −?
* Δp = ______

C. Δp: + or −?
Δp = ______

D. Δp: + or −?
Δp = ______

Remember when drawing vectors, longer arrows = greater magnitude.

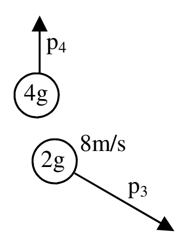


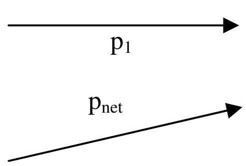
2. A. If $p_1 = p_2$ and m_2 is moving faster, which is more massive: m_1 or m_2?

B. * Draw the p_{net} of the system.

3. A. If $p_3 = 2p_4$, what is the velocity of the 4g mass?

B. Draw p_{net} .



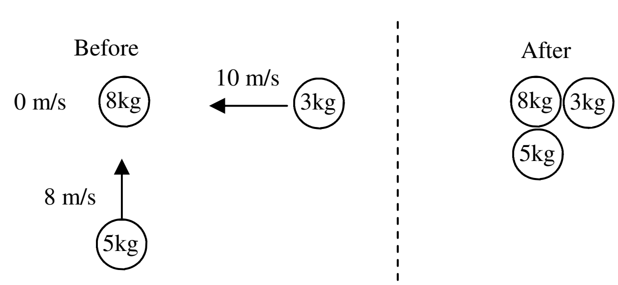


4. The momentum of m_1 and p_{net} are given.
A. *Draw the momentum of m_2.

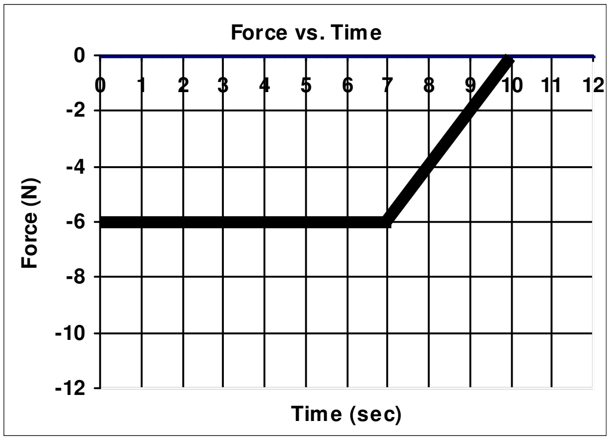
B. If $m_1 = m_2$, which mass is moving faster?

5. Three hockey pucks are on frictionless ice. Two hockey pucks slam into and attach to the third puck.
A. Since they stick together, m_{final} =
B. * Calculate the initial net momentum.

C. What must be the final net momentum?
D. Calculate the final velocity of the combined object.
(*Velocity is a vector, so magnitude and direction.)*



6. A 12 kg object is moving 20 m/s in the positive direction when it encounters the forces shown on the graph below.



A. When is the object feeling a positive acceleration?

B. When is the object feeling no acceleration?

C. When is the object experiencing a negative acceleration?

D. * Calculate the impulse on the object.

E. Calculate the change of momentum of the object.

F. Calculate its final momentum.

G. Calculate its final velocity.

Q1A: change is negative, since it started + and ended –. $\Delta p = -846$ kgm/s Q1B: + change; $\Delta p = 640$ kgm/s
Q2B: Crazy and Lazy, where p1 and p2 are crazy.
Q4A: p_{net} is Lazy. You have one of crazy's paths. Find the other one that makes Lazy's path.
Q5A: Find p1 and p2, then do pyth and inverse tan to find p_{net}. Be sure to do a quadrant check for the angle.
Q6D: Find the area of the graph.