UCONN Physics 1201Q
1-D & 2-D Momentum, Center of Mass / 40
Practice Quiz A-D

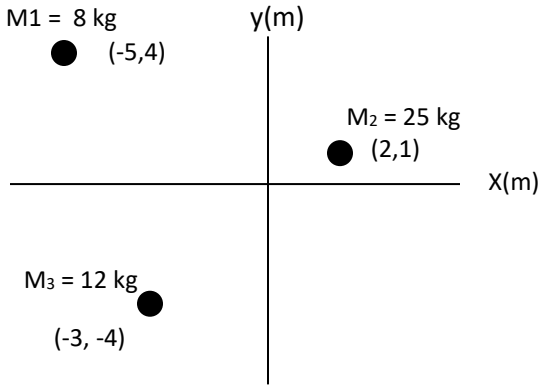
Name:_____
Date: _____ Period _____

Formula's: See formula sheet.

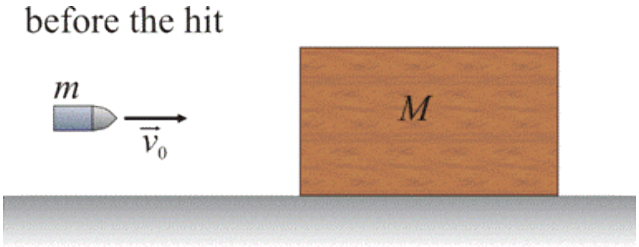
Directions: **Show all your work – Neatly -** in the space provided or attach additional paper to this sheet upon completion. Circle or identify final answers!!!

1. Max, who has a mass of 95 kg and his girlfriend, Allison, who has a mass of 120 kg are wearing skates and are standing together on a frozen lake. If they push apart and Max has a velocity of 0.72 m/s in the opposite direction of Allison, then what is the velocity of Allison? (Neglect friction) 5pts.

2. Where is the center of mass of the three-particle system shown below using the origin as the reference point? 10 pts



3. A 120 g bullet is fired horizontally into a 17.0 kg block of wood resting on a horizontal surface, and the bullet becomes embedded in the block. If the muzzle velocity of the bullet is 275 m/s, what is the velocity of the block containing the embedded bullet immediately after impact? (Neglect surface friction) 5 pts.



4. Two bowling balls, A & B have a masses of 7.25 kg and 5.5 kg respectively, undergo a perfectly elastic head-on collision. If the speed of ball "A" was initially 5 m/s, and the other was 3 m/s in the opposite direction, what will be their speeds after the collision?
10 pts.

5. A 2600kg car (A) heading west collides with a 3500kg car (B) heading north. The 2600 kg car, after collision moves at 15 degrees east of North @ 5 m/s and the 3500 kg car bounces off with a velocity of 18 m/s @ 25^{o} W of N. What was the original speed of the 3500 kg and the 2600 cars? 15 pts.