PRELAB 6: COLLISIONS AND CONSERVATION LAWS

COMPLETE THIS EXERCISE BEFORE COMING TO LABORATORY AND TURN IN AT THE BEGINNING OF LAB 6

1) **[10 points]** Suppose a golf ball is hurled with speed v at a much heavier bowling ball initially at rest. The golf ball makes a headon collision and bounces elastically from the bowling ball.

a) Draw a clear sketch of the two balls (i) just before and (ii) just after the collision, labeling the masses and velocities of the two balls.

b) BEFORE doing any detailed calculations, predict which ball will have the greater magnitude of momentum after the collision, and explain your reasoning.

c) BEFORE doing any detailed calculations, predict which ball will have the greater kinetic energy after the collision, and explain your reasoning.

d) Now apply the appropriate conservation law(s) to solve for the velocity of each ball after the collision, showing your work. (Attach an additional sheet if you need more space.) Then check to see if your answers to (b) and (c) are correct. If you were wrong, explain where your reasoning above was flawed.