Physics 211 Problem Set 8 Due Fri, 10/25/19
Last Name:_____ First Name _____
Workshop time or section:_____TA name or Room # _____

Please submit your homework on this sheet. If you need more space than is available, please attach additional sheets of paper.

1. A railroad car of mass 25000 kg is moving with a speed of 4 m/s. It collides and couples with three other coupled railroad cars, each of the same mass as the single car and moving in the same direction with an initial speed of 2 m/s. (a) What is the speed of four car after the collision? (b) How much energy is lost in the collision?

   Sketch the railroad cars *before* the collision. Indicate values and directions of their velocities.

   Sketch the railroad cars *after* the collision. Indicate direction of their velocity.

   (a)

   (b)

2. A 0.0052kg bullet moving at 672 m/s strikes a 0.7kg wooden block at rest on a frictionless surface. The bullet emerges with its speed reduced to 428 m/s. **Find the resulting speed of the block.**

   Sketch the bullet and the block *before* the collision. Indicate values and directions of their velocities.

   Sketch the bullet and the block *after* the collision. Indicate values (if known) and directions of their velocities.

   Solve by using the total momentum conservation.