**Assignment VII, FYSE 130**
**Fall 2014**
**Due 10/3/14 at start of class**

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Remember, work out and submit your answers on a separate piece of paper, and organize
the solutions carefully! Feel free to work with your classmates on these problems, just
make sure you make a note of this in your solutions.

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This is the last homework with set "problems" that you will be asked to complete this
semester; after this, your work will be mostly focused on individualized and/or group
problem solving activities. To get you used to having to go to more resources than just
your class notes, there will be some things you have to look up in this homework. (e.g.
masses and speeds of items). Go ahead and use whatever resource you need to complete
the problem. Just make sure you let me know where you got the information.

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1. Calculate the approximate kinetic energy associated with each of the following. (Remember to leave
   your answer in Joules!)

   a) A baseball pitched by a major league pitcher.

   b) A softball pitched by a top-level fast-pitch competitor.

   c) A soccerball penalty-kicked at top-level competition.

   d) A bowling ball thrown by a professional bowler.

   e) A golf-ball driven off the tee by a professional.

   f) A tennis serve from one of the top world-wide players.

   g) A hockey puck hit via a slap-shot.

   h) A football kicked off in the NFL.

   i) A sprinter running at top speed.

2. In class, we talked about the coefficient of restitution. Let's say you drop a ball from 2.3 meters onto
   an unknown surface and, on its first bounce, it reaches a height of 1.6 meters.

   a) How high will the ball bounce on its second bounce?

   b) If you dropped the same ball from a height of 1.6 meters, how high would it bounce?

   c) If you dropped the same ball from a height of 3.1 meters, how high would its second bounce be?

   d) (Extra credit). If you dropped the same ball from a height of 8.7 meters, how high would its
      eighth bounce be?