In Class Activity Plan
Week 12: Practice with Forces and Momentum & Group Exam

Note: Group Exam will be held at the end of this week through the beginnings of momentum
A couple of things the instructor should be sure to mention about the design of the group exam:
Video Examples: (Instructions exam day, Instructions1, Instructions2)

- They will not know their groups until they walk into class that morning.
- We do a group exam because we want to assess the students on things we have said are important. We emphasize group work in class, so we also emphasize it in our assessment. We emphasize the role of explaining, be sure to practice it.
- Emphasize to the students that "divide and conquer" is a *bad* method for doing group exams
- Let them know that the exam will be more difficult, but the reason is that they are going to have 3 minds
- If someone arrives late, they only receive the percentage of the grade that they were present for

Note to Instructors: For setting up the groups you should try to have 3 people in a group, and you should think about having the groups at similar ability levels. Try not to make a group with two men and only one woman.

120 min **Repeated cycle of Whiteboard and Board Meeting - Practice with Momentum Problems**
Note: There are lots of momentum and impulse problems in Momentum Problems 101 (Word, Pdf) and More Momentum Question (Word, Pdf). The instructor should choose a subset of these problems for practice here. The instructor may choose to whiteboard all the problems, a subset, or assign problems from the worksheet for different groups to work on. The details are left up to time constraints and instructor interests.
Video Examples: (Discussion1, Discussion2, Discussion3)

120 min **Repeated cycle of Whiteboard and Board Meeting - Practice with Force and Momentum Problems**
Note: The goal is to spend a significant amount of time doing problems to practice learning when to use momentum and forces when solving problems. The instructor should make up a worksheet that contains both force (Word, Pdf) and momentum problems (Word, Pdf) intermingled so that students can learn when to use the different tools. The instructor may choose to whiteboard a subset of these problems or assign different groups to work on different problems.
Video Examples: (Discussion1, Discussion2, Discussion3)

- Focus on the metacognitive things going on when doing these problems.
    - How do you set one up?
    - Where do you start?
    - What are the critical steps?
    - Practice making clear explanations.