Sections 8.4, 8.5, and 8.6 cover various practical applications of the integral, primarily in physics and economics. Instead of introducing this material with reading and discussion assignments, we will have **group presentations** on topics from each section.

Preparing and Giving the Presentation

1. Read and discuss the relevant section (or portion of a section) of the textbook.
2. Solve your assigned presentation problem. An asterisk indicates a challenge problem.
3. Write up your solution (only one per group) and turn it in on the day that you present.
   - Your written solution will count as a quality solution. (+1) for challenge problem.
4. Create and rehearse your presentation. (Time yourselves!)
5. Outline your presentation on the board, *before* class starts, on the day of your presentation.
6. Present your topic, in a 7-10 minute oral presentation, in which each group member speaks.
   - Explain the physics or economics background and why an integral is appropriate in this situation; then explain the solution to your assigned problem.
   - The oral presentation will count towards your grade like a quality solution.
   - Graded for: clarity of delivery, depth of conceptual explanations, correctness of content.

1. Presentation Problems

Each group of students will present one or two of the eight application topics below. I will email the class to solicit input on the assignment of groups and topics. Once you have been assigned a topic, choose one of the presentation problems for your topic, listed below. You will receive a grade for the written solution of your problem as well as for the oral presentation of your problem. If you choose a challenge problem, the written solution receives a bonus, but the oral presentation does not.

8.4 (Apr 13) Density: 14 or 16*; Center of Mass: 24 or 26*
8.5 (Apr 15) Work: 12 or 16*; Pressure: 26a* or 30; Energy: 36*; Gravitation: 38&39*
8.6 (Apr 18) Income Stream: 20 or 32*; Consumer/Producer Surplus: 38*

Note. Problems 38 and 39 in Section 8.5 go together and count as *one* problem.

2. Practice Problems

After hearing the presentations on a given section, you will have an opportunity to start the practice problems in class. The practice problems are due at the beginning of the next class.

P 8.4 (due Apr 15) Density: 5, 9, 12, 15, 17, 19; Center of Mass: 8, 25, 27, 28, 29
P 8.5 (due Apr 18) Work: 4, 5, 11, 13, 15; Force and Pressure: 7, 28, 31, 32, 33
P 8.6 (due Apr 20) Income Stream: 11, 21, 29, 30, 31; Consumer/Producer Surplus: 35, 39

3. Quality Solutions

Choose **two** of the following problems (not both on the same topic) to write up nicely, as quality solutions. These are due at the beginning of class **Apr 20**, which is the first class after we have finished all the presentations. *All of these are challenge problems* and will receive the (+1) bonus.

QS 8.4: Density: 20, 22 Center of Mass: 32, 34
QS 8.5: Work: 24, 26b; Pressure: 34; Kinetic Energy: 36; Gravitational Force: 40&41
QS 8.6: Income Stream: 34; Consumer/Producer Surplus: 40

Note. Problems 40 and 41 in Section 8.5 go together and count as *one* problem.