

## Some Suggestions for Constructing Exams

1. Begin by listing the main ideas and methods for which the student is held responsible, and try to cover most, if not all of them. It is a good idea to keep a running list of possible test questions as you go through the material. Use the homework as a guide to level of difficulty.
2. Try to maintain a reasonable balance between "plug and chug" problems and applications or reasoning problems. A good rule of thumb to use is 20% application/reasoning problems. Remember that "reasoning" doesn't necessarily mean "difficult". A good reasoning problem gets the student to stretch out of their usual way of thinking about a problem. This could be as simple as asking the student to give an example of an expression or equation with certain properties, instead of solving a given problem.
3. Determine what concept you are trying to test with each question. Make sure that the question accomplishes this. Try to avoid duplication of identical types of questions.
4. Making test questions significantly interdependent is a form of double jeopardy and should be avoided. If you ask questions with multiple parts, determine in advance how you will judge partial credit for students who miss the first part, and subsequently carry that mistake through to other parts of the question.
5. Try to represent a reasonable range of difficulty on the exam. You will want to use questions that separate "A" students from "B" students, "B" students from "C" students, and so on.
6. Include some multiple choice questions if your final exam will be multiple choice. It is a good idea to prepare students with a few questions of this type throughout the semester. Please be aware, however, that writing a good multiple choice question is usually more difficult than writing a good "free response" question, and that not all types of questions lend themselves to a multiple choice format. Creating good distracters is a skill that takes time to learn.
7. Keep an eye on the length. Work out the test in detail, and write out the solutions. Time yourself. In general, it should take you about 15-20 minutes to do the test this way. For the first few times, it might be a good idea to look at old exams to get a feel for length.
8. Don't give students unnecessary difficulties. Be sure that the copy is readable and free of typos, and that the problems are clearly stated. Give explicit instructions. Work out the solutions to all problems thoroughly before giving the exam in class. Remember that if you have students who will be taking the test in the Testing Center, you will not have the opportunity to make corrections or clarifications for them during the test.
9. ALWAYS work out your exam before you submit it for copying. Use the following checklist to help you evaluate the appropriateness of the exam.

## Short Checklist for reviewing your exam after creating it

- Have you worked out every problem in detail?
- Write out complete solutions to the exam, as if you were the student. Multiply the time it takes you to do the exam by 4. Is this number within the 45-50 minute range? (This is a rough estimate.)
- Does the exam contain questions of varying levels of difficulty?
- Are the questions phrased clearly? Are there any vague directions/questions which might be misinterpreted?
- Have you used the terminology of the textbook?
- Does the exam include application/reasoning problems?
- Does the exam cover the basic concepts covered in the sections?
- Should a second version of the exam be made to avoid cheating? If you have made two versions, are there any significant differences in difficulty or length?