

## Math Study Skills

### Active Study vs. Passive Study

Be actively involved in managing the learning process, the mathematics and your study time:

- Take responsibility for studying, recognizing what you do and don't know, and knowing how to get your Instructor to help you with what you don't know.
- Attend class every day and take complete notes. Instructors formulate test questions based on material and examples covered in class as well as on those in the text.
- Be an active participant in the classroom. Get ahead in the book; try to work some of the problems before they are covered in class. Anticipate what the Instructor's next step will be.
- Ask questions in class! There are usually other students wanting to know the answers to the same questions you have.
- Go to office hours and ask questions. The Instructor will be pleased to see that you are interested, and you will be actively helping yourself.
- Good study habits throughout the semester make it easier to study for tests.

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## Problem Solving

### Problem Solving (Homework and Tests)

- Apply Pólya's four-step process:
  1. The first and most important step in solving a problem is to understand the problem, that is, identify exactly which quantity the problem is asking you to find or solve for (make sure you read the whole problem).
  2. Next you need to devise a plan, that is, identify which skills and techniques you have learned can be applied to solve the problem at hand.
  3. Carry out the plan.
  4. Look back: Does the answer you found seem reasonable? Also review the problem and method of solution so that you will be able to more easily recognize and solve a similar problem.
- Some problem-solving strategies: use one or more variables, complete a table, consider a special case, look for a pattern, guess and test, draw a picture or diagram, make a list, solve a simpler related problem, use reasoning, work backward, solve an equation, look for a formula, use coordinates.
- The higher the math class, the more types of problems: in earlier math classes, problems often required just one step to find a solution.

### Solving an Applied Problem

- First convert the problem into mathematics. This step is (usually) the most challenging part of an applied problem. If possible, start by drawing a picture. Label it with all the quantities mentioned in the problem. If a quantity in the problem is not a fixed number, name it by a variable. Identify the goal of the problem. Then complete the conversion of the problem into math, i.e., find equations which describe relationships among the variables, and also an equation which describes the goal of the problem.
- Solve the math problem you have generated, using whatever skills and techniques you need (refer to the four-step process above).
- As a final step, you should convert the answer of your math problem back into words, so that you have now solved the original applied problem.

### For Further Reading:

George Polya, "How to Solve It," Princeton University Press, Princeton (1945)

## Studying for a Math Test

Everyday Study is a Big Part of Test Preparation

## Taking a Math Test

### Test-Taking Strategy Matters

Just as it is important to think about how you spend your study time (in addition to actually doing the study), it is important to think about what strategies you will use when you take a test (in addition to actually doing the problems on the test). Good test-taking strategy can make a big difference to your grade!

### Taking a Test

## Getting Assistance

### When

Get help as soon as you need it. Don't wait until a test is near. The new material builds on the previous sections, so anything you don't understand now will make future material difficult to understand.

### Use the Resources You Have Available

- Ask questions in class. You get help and stay actively involved in the class.
- Visit the Instructor's Office Hours. Instructors like to see students who want to help themselves.
- Ask friends, members of your study group, or anyone else who can help. The

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