

Tips for Reading Mathematics

Reading the textbook is important for succeeding academically. This holds true in your math class. However, reading mathematics is different from other types of reading. Getting the most out of a math textbook will require more than just skimming through the text. Below are some tips for helping you get the most from your mathematics text.

- **Focus on concepts, not exercises.**

The most important material in a math textbook is the stuff *between* the problem sets and exercises. If in the past, you have opened your math book only when doing problem sets and exercises (looking at the rest of the book only for examples which mirror the current assigned homework), you must rid yourself of this bad habit now. Instead, set aside time to read the text when you are not working on a homework assignment. This will enable you to truly focus on the mathematical concepts at hand.

There are an infinite number of types of mathematics problems, so there is no way to learn every single problem-solving technique. Mathematics is about ideas. The math problems which you are assigned are expressions of these ideas. If you can learn the key concepts, you will be able to solve *any* type of problem (including ones you have never seen before) involving those concepts.

- **Read the text more than once.**

You cannot read mathematics in the same way as you would read a newspaper or a novel. Many of the ideas presented in a typical college mathematics course have confounded brilliant minds in centuries past. So it is not unexpected that you may have difficulty learning these same ideas if you quickly scan through the reading assignments just once. You should expect to go through the each reading assignment several times before you can gain a full understanding of the material.

- **When reading through for the first time, scan for big ideas.**

The first time you read through a chapter of the textbook, you should be thinking to yourself: “What is the main point of the chapter?” Look for the big picture. The details are important, but you need to be aware of the forest first before focusing on the trees.

- **The second time through, fill in details.**

After you get the big picture, you should then look at the details. Take some time to think about each of the definitions, theorems, and formulas you encounter (more on this later).

- **Read with paper, pen, and calculator.**

As you are reading through the text, you should be writing notes. Check calculations. Rewrite definitions and theorems *in your own words*. See if you can come up with your own examples.

- **Read the narrative.**

There is a story to be told in mathematics. What is the progression of ideas being told? Don't just skip to the formulas and examples!

- **Study the examples.**

What points do each of the examples illustrate? Some examples are extreme cases. Other examples are supposed to illustrate "typical" situations.

- **Read the pictures.**

There are good reasons for the many pictures and graphs in mathematics texts. You should be asking yourself what features of the picture are important to the key concepts. Focus on how each picture illustrates a particular idea.

- **Learn the vocabulary and the language.**

Pay attention to definitions and what they mean. Mathematics language is very precise, and a word may have a different meaning when used in a mathematical context than in everyday use.

- **Learn the theorems and what they mean.**

Theorems are vital bricks to building mathematical knowledge. When you see a theorem in a mathematics text, look at it very closely. What does it say? What do you know from a theorem?

- **Use the index and the appendices. Know what every word means.**

Make sure that you understand all of the words and ideas. If there is a particular word which you do not know (or which you want to know better), look it up. Use the table of contents or the index to help you.

- **Make a note of things you don't understand; ask for help afterwards.**

Even after following all of the above advice, you might still find some of the ideas confusing. That's O.K. You are studying difficult stuff! If there is something that you don't understand, mark it. Write down any questions you may have. You then can bring up these issues with your instructor or a classmate.
