

# How to Read a Math Textbook

## GET TO KNOW YOUR BOOK

The first thing we should do (this goes for any textbook) is to read, not just skim, the introduction to the textbook. Here we will find vital information on how the book is written and what the different figures and sections mean. Knowing this information will help us as we skim through chapters, do our homework, or prepare for tests. After we are familiar with how the book is laid out, we can begin reading it.



## SKIM

The ability to quickly scan a chapter in order to refresh for a test, prepare for a lecture, or even write a report becomes an invaluable tool that most students learn early on in high school or sometimes sooner. However, when tackling a mathematics textbook, regular skimming techniques won't make the grade. In fact, if that is all you rely on, you will find mathematics will become confusing, dreadful, and feared (if you don't already). That doesn't mean we through skimming out the window, we just need to have a different purpose.

## Preview the Chapter

Before studying a chapter it is always a good idea to get an understanding of where things are headed. In mathematics, concepts are generally learned in a sequence. For example, in order to understand multiplication, you first learned how numbers are ordered (1,2,3,etc.), then you learned how to add them, and finally you learned how to add groups of numbers (multiplication). Getting a preview of where you are headed will help in understanding the purpose for a given concept and will help in putting the pieces together.

## Mark Key Concepts

As you skim, take a pencil and circle the definitions, theorems, and concepts that you don't fully understand. This will help you to know where you should spend more time when you actually start reading the chapter. Don't spend a lot of time trying to learn the concepts at this stage, just make note that these are items that you will need to spend more time on. When you are reading the textbook, once you understand a concept that you have circled, simply erase the circle and move on to the next concept.

## READ

Reading a math textbook can often feel like your reading another language. That is because you are. Mathematics is a language of its own that uses symbols, definitions, and theorems to try and be as precise as possible. This can often lead to confusion and frustration if you are unfamiliar with what the different symbols mean or if you are unfamiliar with a mathematical term. However, it is possible to get the most out of your textbook if you follow a few simple tips.

## Slow Down!!

As you begin to read, you need to read to understand the mathematics, not just memorize facts and formulas. Because mathematics is a language of its own, you can't read a math textbook like you would a novel or any other textbook; you need to take your time and make sure that you understand the current material before you move on. Just know that reading a math textbook will take more time than reading other books and plan accordingly. Don't rely on skimming or reading just what's in the boxes because if you do, you may not understand the concept well enough to move on. This can lead to further confusion and frustration later on. If you don't understand a concept, take the time to really read the chapters and sections pertaining to that topic.

## Study the Examples

A common misconception is that the examples given are just extra reading and unnecessary. Like other figures and illustrations, examples are given to help you understand and grasp a concept. By taking the time to really understand the examples, you give yourself the opportunity to understand the underlying concept.

Often it is the case that some of the examples will have steps that have been omitted to help preserve space and save money, take the time to fill in those steps, especially if you are having a hard time understanding a concept. Having all the steps written in your book will help you if you ever need to review the example again.



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A good way to make sure that you understand a given example is to do it yourself. This may seem like extra work, but it is a great way to solidify your understanding of a concept. After all, you are reading to understand.

### **Read Again and Read More**

Most students don't completely understand a concept the first time they read about it. In fact most may need to reread a section several times to really get a grasp on the concepts being taught. Don't be afraid to spend the time you need to understand what is being taught.

Textbooks typically favor a certain learning style and are unable to cater to every possible learning style. Mathematics textbooks are no exception. If you find that after several readings of a certain section you still don't understand a concept, you may benefit from looking to another source. Internet, YouTube videos, and different textbooks can be invaluable sources for better understanding. A word of caution however, be sure that you are searching for understanding a concept, not just an answer to a problem.

### **WRITE**

An excellent way to know if you understand a concept is to write about it. Some textbooks will have homework problems that require you to write out explanations or give reasons for certain steps in a problem. Take the time to do these types of problems even if they are not assigned. If you can't answer the problem or give adequate reasons, chances are your understanding of the concept is not as complete as it could be.

If your textbook doesn't have these kind of problems, then you can build your understanding by writing summaries as you complete different sections in your book. Write them as if you were trying to explain the concept to a good friend who doesn't understand the concepts. Doing this kind of activity will help you see where your strengths and weaknesses are. This will help you focus your study time on those concepts that still need a little refinement.

By far the best way to check your understanding is to do your homework. A lot of classes will assign homework problems, but then won't collect them or they will be worth very little points. This is not a free pass on homework. If you really want to understand a concept, you need to do the homework. If you come across problems that you don't know how to solve, it shows a possible lack of understanding of a concept and shows you where you should spend some extra time.

# Get to Know Your Mathematics Textbook

## Introduction (Preface)

1. Does your textbook have an introduction or a preface? YES NO
2. If so, what pages is it on?
3. What kind of information is given in the introduction or preface?
4. Of all the information given, what are two things you learned about your textbook?

## Content

1. How does your textbook mark important words?
2. How does your textbook identify definitions?
3. How does your textbook identify theorems or rules?
4. How does your textbook identify examples?
5. Find a definition from the first chapter and write it down here.
6. Find a theorem anywhere in the book at write it down here.

## Glossary and Index

1. Does your textbook have a glossary? YES NO
2. If so, what pages is it on?
3. If you do have a glossary, find a word you didn't know before and write its definition here.
4. What page does your index start on?
5. If you answered question 3, what page can you find more information about that concept or word? If your book doesn't have a glossary, find a word in the index that you are not familiar with and write the page number where you can find more information.

# Flowchart for Reading Mathematical Textbooks

