

# Reading Mathematics

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Reading mathematics can be difficult, in part because mathematical writing is different from other kinds of writing. However, there is great benefit in learning to read math. Your textbook can become a resource that helps you to master mathematics and gives you a new perspective different from the lectures and problems sessions. Reading mathematics can shed new light on a confusing topic, and it can be a source of guidance when all other sources are unavailable. Once you can read a mathematics textbook, you become an independent learner, capable of discovering a broad range of material that isn't always accessible in a lecture.

## Reading Strategy

Here's one reading strategy that's useful when reading a passage out of a mathematics textbook.

1. **Preview the reading.** Look at the title of the chapter and the section headings. Are you familiar with the material already? Do you see any new terms? How is the chapter laid out?
2. **Read the material in small chunks.** You can use the "click or clunk" method when reading. Take a small section of text and read it. After you read it, ask yourself if it makes sense (that, does it "click"). If it does, describe the passage in your own words. If it "clunks," try to pinpoint what does and doesn't make sense about the passage.

Especially your first time through a section, you don't have to read everything. If you skip a part of the text, mark it so that you can come back to it later. For the parts that you *do* read however, you should read every word for understanding. Keep in mind that you may need to read a paragraph or even a sentence several times before you understand it. Also, you should be sure to read discussions and explanations and not just the examples.

3. **Practice.** You should stop frequently and try to work a problem relating to what you are reading. This will help you to know if you really understand the material. It also makes reading less tedious and tiring. Most textbooks have examples mixed in the the text. Try the examples before reading the author's solution. You can also try homework problems.
4. **Review.** What was the passage about? How much of it did you understand? What questions do you have about it?

## Previewing a Passage

1. What is the title of the chapter, section, or paper you are about to read?
2. Are there any terms in the title that you do not understand?
3. Scan the section. Check off any of the following that appear in the section.
  - Definition or explanation of a new term
  - Figure to illustrate a concept
  - Discussion of a new concept
  - Worked example
  - Step-by-step procedure
  - New formula to use in working problems
  - New terms or vocabulary
  - New symbols or notation
  - Theorem
4. What is the main purpose of this section? What do you hope to gain by reading it?
5. Do you know anything about the topics covered in this reading? If so, briefly summarize your experience with this material
6. Write down any questions that you have before you start reading.

## Deciding if a passage “clicks” or “clunks.”

Read the passage through from beginning to end. Written mathematics can be dense, which means that every word is important. If a phrase, sentence, or equation is confusing, you can mark the spot and come back to it later. Then you can ask yourself some or all of the following questions.

- Do I understand all the words used in the passage? For the words I don't understand, can I guess the meaning using the context?
- If the passage contains an equation, where did it come from? Did the author just make up the equation, or does the equation follow from work done earlier?
- If the passage contains some math worked step by step, can I follow each step? For example in the following two lines of math

$$2y \frac{dy}{dx} = -2x$$
$$\frac{dy}{dx} = \frac{-x}{y},$$

stop to see if you can figure out how the second line follows from the first line. If the authors skips any steps, you should fill them in yourself. This is one reason it is a good idea to read a math text with a pencil (and possibly a calculator) in hand, ready to work through anything the author leaves out.

- If the passage describes a procedure or technique, do each of the steps make sense? You may want to try following the steps using an example.
- If the passage contains a definition, can I think of an example of something that matches this definition? Can I think of an example of something that does *not* match the definition?
- If the passage contains the statement of the problem, can I restate in my own words the problem is asking? Do I have an idea of how to start the problem? If you do, it can be useful to try to work the problem on your own before reading the solution.

## Reviewing a Reading

1. Approximately what percentage of the material you read was new to you?
2. Approximately what percentage of the reading do you feel you now understand?
3. A friend asks you what the passage of material you read is about. Briefly summarize the “point” of the section, in your own words.
4. What ideas in the reading do you understand well? Restate at least one idea you understand in your own words.
5. What ideas are still unclear or confusing? Formulate a question or two about these ideas that you can ask the instructor, the course assistant, or another student.