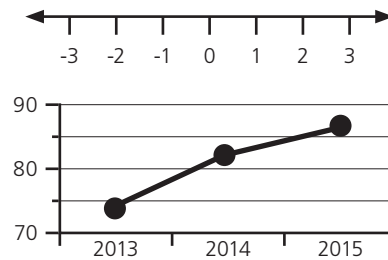


4. Reading Math Textbooks

For students to be successful in life, they need a strong understanding of math literacy. If we think of math as a language, then our work involves assisting students to be able to “read” math – to not only understand the thoughts, ideas and information presented in the form of symbols, patterns, problems, graphs, tables, etc., but to also help students clearly explain the thinking processes and strategies they use to solve math problems. We are living in a world that’s filled with math challenges – whether we’re at work, travelling, cooking or living in our home. The ability to reason, problem solve, visualize, estimate, self-monitor or cross check are important skills for success.

What makes math reading different?

1. Students must be able to read from left to right, but also from right to left (as in an integer number line), from top to bottom or vice versa (as in tables) and even diagonally (as in some graphs).



2. Math textbooks contain more concepts per word, per sentence and per paragraph than any other kind. Because the concepts are abstract, readers find it difficult to visualize the meaning.
3. The text is very concise and logically connected, so students can’t skim it or they’ll miss important details, explanations and logic.
4. Math textbooks shift back and forth between numbers and words, so students are almost switching between two languages.
5. The text may not have a reader-friendly layout, so the fonts, colours, boxes and graphics may be confusing. Students may miss something important while scanning the pages. All text, as well as all pictures and diagrams, must be read.
6. Math textbooks are often written above grade level. The vocabulary and sentence structure are often too difficult for students to read and learn independently.
7. The vocabulary is very important, and can take the form of **symbols** as well as **words**.

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Problem Solving

Problem solving in mathematics is a very important skill, but word problems have their own particular hazards! Some students simply shut down when they are confronted with word problems. This is often a reading issue, rather than a math issue. Facts and details appear at the beginning of a problem, and the question or topic sentence appears at the end. It is easy for a student to lose track of important details before they discover the purpose behind the problem. Your teen needs to practice reading problems and become familiar with their structure.

Almost all mathematics problems can be solved using four common steps:

1. **Understand the problem.**

- Be familiar with all the **words**.
- If there is a **diagram**, read all the labels and analyze the diagram.
- **Identify** the data given, the data needed and the unknown. Highlighting or underlining is useful.
- **Eliminate** unnecessary information. Cross it out!
- Write down or sketch known information.

2. **Come up with a plan.**

- Connect this problem to others like it that have previously been solved.
- Restate the problem to check understanding.
- Decide on a strategy that will fit the problem.
- Determine which mathematical operations are required.
- Settle on a plan.

3. **Carry out the plan.**

- Estimate an answer.
- Check that each step is correct.

4. **Examine the solution.**

- Is the solution reasonable?
- Does the solution solve the problem?