



Deciphering the Language of Math Problems

Reading Strategies for the Math Classroom

Adapted from [*How Did You Get That? Seven Strategies for Improving Written Responses in Math*](#)
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Math word problems are loaded with important clues, academic vocabulary, and graphics that have to be untangled. Sometimes there is too much information, sometimes not enough, and all too often the reader has to bring critical background knowledge to the problem. This makes reading perhaps one of the biggest obstacles in problem solving. If the students cannot read and understand the question, they will not even have the opportunity to solve it.

The following strategies provide students with a way to approach open response problems. Repeated practice with these strategies will make reading math problems less stressful as students internalize the approach and build good reading habits.

- **Model how to preview the problem.**
 - Pay close attention to any graphics included in the problem, pulling out as much information as possible.
 - Make predictions as you read. (I bet it's going to ask me...)
 - Connect what you see to what you already know. The more problems you see, the more likely you are to make connections!
 - Write, circle, or draw directly on the problem as you preview.
- **Model strategies to use while reading the problem.**
 - Read carefully and slowly, sounding out unfamiliar words and trying to put them in context.
 - Reread passages more than once.
 - Be sure to read all parts of the problem. Number the parts of the problem if it includes multiple tasks.
 - Mark up the problem with notes, diagrams, pictures, labels. Use a ? for any parts you don't understand.
 - Underline what you know (the clues or givens) and circle or () what you have to do.
- **Give quizzes (Type Twos).** Make sure students know the reading strategies and can identify them when they see someone else using them.
- **Paste math graphics onto the front of index cards.** Show students how to make the index cards. On the back, have them list three or four different questions that might be asked and five to ten vocabulary associated with the graphic. Make big ones and post them around the room. Have students make a set and use them like flashcards. It can also be good to have students predict the mistakes to avoid with these questions.
- **Have students practice marking up problems all the time.** Practice on the board with your daily Type Twos and on worksheets. Have students come to the white board and mark up the daily question or the "Do Now."

- **Have students learn text structure by writing their own word problems.** This can be one of the most powerful strategies. First, it is great with differentiation because students can be challenged on many levels. Second, if they can write a question, then it means they understand the text structure (introduction, graphic, questions). When they see a problem similar to one they've written, you will hear them say, "This one is just like the one I wrote, only this one is easier than mine!" For more on this strategy, see the [You Make a Math Test Question](#) assignment.
- **Show students lots of examples of problems and typical questions.** See if they can identify similarities and differences between them. The more they see the similarities and differences, the less likely they will fall into the trap of answering a question other than the one asked.
- **Use a carousel activity.** Set up four sheets of newsprint around the room. On each sheet, post a common math graphic. Next, divide students into four groups, give them a marker, and send them to one of the graphics you placed around the room. When you say "GO," students should brainstorm together the math words that fit the graphic. After one minute, tell them to switch, and they should move clockwise to the next graphic. At your command, they should quickly look over the words and then write down several questions that fit the graphic. Then, they can switch again and add more questions or more vocabulary words. After four switches, have the groups of students at each sheet present that sheet to the class.

You can also do this same activity by posting actual math open response questions. Students then work in groups to underline the clues or givens (what they know). After switching, they circle or () the question or task (what they have to do or find). Then, each group moves to the next problem and records what they know and need to find in diagrams, number sentences, or lists. At the last switch, groups show the steps and circle the answer with units and check it. When all groups are done, each group presents the results to the class. You need to allow more time for the last step of this carousel.
- **Have students do a fish-bowl activity.** One group of students sits in the middle of the room. They read a problem, model the reading strategies, and other students critique how well they made sense of it.
- **Have students check their own understanding.** Have students read a word problem and then immediately flip it over and state or write the problem in their own words.
- **Mix in graphics with regular instruction.** When working on the times tables, embed a graphic such as area. When working with integers, use a thermometer. When working with number combinations, use models like dart boards.