

Teaching How to Use Close Reading Strategies to Solve Math Word Problems

The Close Reading Strategy students have learned in Language Arts can easily be applied to reading and solving word problems in math. This guide outlines a three read procedure with steps 4 and 5 reserved for students to represent and solve the problem using symbols and numbers along with any explanations or justifications the problem is asking students to demonstrate.

Listed below are the steps for teaching the Close Reading Strategy for Math. Each step should be introduced gradually, one step at a time. As the next step is introduced it will be added to the procedure from previous steps. Students should not be given all 5 steps at once. Be guided by your students as to when they can proficiently handle each part(s) before introducing a new part.

It is also important to connect the close reading strategies for reading math word problems to the close reading strategies that have been taught for language arts.

There are two resources that accompany this explanation. One resource is mentioned in the text, *Close Reading in Math Organizer*. This is a graphic organizer that provides space for students to complete each step as they read the problem several times. Also included is a Close Reading in Math list that could be enlarged as a poster or given to each child. It is a reminder of the steps in the close reading strategy for math.

Introducing Close Reading for Math Using a Three Read Strategy



Introducing Step 1-Read the problem for general understanding.

- Provide a single step word problem that is appropriate for the grade level. Use a problem with a readability level that is comfortable for the students in the class. You may want to select a problem that is an easier one for students to solve for the first attempt.
 - Make a copy of the problem for each student.
 - Provide a copy of the *Close Reading in Math Organizer*
- Introduce the problem and ask students to individually read the problem carefully. They should not solve it or make any marks on the problem.
- Ask the students, “How would you describe the problem in your own words?” Have students share their ideas with a partner.

- Next, have students share their descriptions with the group. Discuss similarities and/or differences in their descriptions
- Have students refer back to the text of this problem. Discuss as a class if the information is found in the text. Work with the students to agree on a general description for what the problem is about.
- Record this general description on a chart or display so students can read this easily. (You could make a poster size copy of the *Close Reading in Math Organizer* and model how to complete the first section of the organizer.)
- Repeat the procedure above by providing another problem for students to practice step 1 in the Close Reading Strategy for Math. Once students are proficient with step 1, introduce Step 2 of the Close Reading for Math Strategy.



Introducing Step 2-Read for Details

- Introduce a problem to the class and follow the procedure for summarizing the problem, and recording the summary on a chart or poster that represents the Close Reading In Math Organizer. Provide each student with a copy of the Close Reading in Math Organizer and use it for completing steps 1 and 2.
- Have students read the problem a second time and identify information in the problem that would be useful to solving the problem. Have them mark the information with a symbol such as +/ * etc. (You should use symbols that are similar to the ones you are using in your classroom for other Close Reading strategy if applicable to math word problems.)
- Next have students go back to the problem and identify the parts of the problem that do not make sense or they do not understand. Have them record this by using another symbol (? Underline, etc.) or symbols you are using in the classroom for Close Reading in other subjects.
- Have the students share their information with a partner and also discuss any information they did not understand.
- Have students meet as a class to share the information from the problem that will be useful and not useful when solving the problem. The following questions may be used to guide the discussion.
 - What problem structure (type) is this problem?
 - What patterns, properties and structures are in the problem?
 - What do the numbers in the problem represent?
 - What information is given in charts or diagrams?
 - What is the relationship between the numbers in the problem?

- What information does not make sense?
 - What words are not understood?
 - What information is missing?
- Have the class work together to identify the information in the problem that is useful and clarify any questions. Be sure to note mathematics vocabulary and that all students understand the problem.
- Summarize the two steps. Record on the chart paper along with the general description the helpful information and information clarifications that were discussed.
- Repeat this procedure until students are confident in the two steps of using closed reading strategies.



Introducing Step 3-Read to Represent (Draw a Picture of the Problem)

- Introduce a problem to the students and have them complete steps one and two in the Close Reading Strategy for Math. Have them record their thoughts on the *Close Reading for Math Organizer*.
- Have students share their thoughts with a partner and review them as a class.
- Introduce the third step- draw a picture of the problem. Explain to students, how they will use the information from steps one and two to draw a picture to represent the problem.
- Before drawing an example, have students think about ways to represent the problem WITHOUT numbers... This could be tape diagrams/ part-part-whole diagrams/ tables/number line, etc. If needed, provide manipulatives for students to use and then draw a picture of those materials.
- The following questions could help guide the students thinking:
 - What operation(s) will be needed to solve the problem? How can those operations be represented with a picture or diagram?
 - What materials can be used to help represent the problem? How could you draw those materials?
- Provide time for students to represent the problem.
- Have students share their representations and explain them. Students will be constructing a plan for solving the problem when they explain their representation.
- As a whole group discuss the various representations for the problem. Have students relate the visual representation to the words in the problem. (Go Back to the Text) Clarify any misunderstandings and support the various strategies and representation.
- Discuss how the representations help them develop a strategy to solve the problem.
- Keep several of the representations with the problem on display as an example for students.
- As needed, provide more problems for students to become proficient using Steps 1-3 to read and prepare to solve the problem.

Introducing Step 4 -Solve the  **problem and**

Step 5 -Check Your  **Work**

- Introduce a problem and have students complete steps 1-3 in the Close Reading strategy. Provide a copy of the *Close Reading Strategy for Math Organizer* to be used to solve the problem.
- Discuss and demonstrate how to use steps 1-3 to represent the problem to show a solution. Depending on the problem some students may solve the problem using the pictures, encourage them to represent the problem with a drawing, symbols and numbers (depending on the grade level)
- Have students check to make sure they have paid attention to details such as units, vocabulary, correct numbers, and symbols to show how to solve the problem.
- Continue to introduce the last step, Check Your Work.

Introducing Step 5-Check Your Work

- Have students go back to the problem and check for accuracy.
- Make sure the solution has correct mathematics, operations, and answer and provide all information asked for in the problem.