

## Math Talk and Writing: Diving Deeper Into Math Understanding

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Grades 3-5

All Write Conference

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### Why talk and write in math class?

- Math is more than content to be memorized. Math is about thinking!
- Talk/writing helps develop thinking.
  - Process ideas
  - Organize ideas
  - Retain ideas
- Talk/writing helps us see into our students' heads to assess their thinking.

### In order to effectively talk and write about math, you have to...

- ...know the math.
- ...find words to express your thinking.
- ...understand the question being asked.
- ...know appropriate ways of expressing math content.
- ...understand expectations for an acceptable response.
- ...possess a variety of writing skills.

### Goals for Our Students

- 1) Communicate to learn mathematics
- 2) Learn to communicate mathematically

### Teacher Tips

- Ask questions that challenge students to verbalize their math ideas. Talking about math prepares students for writing about math.
- Expect precision! Explore math vocabulary so students have the words to describe their mathematical thinking.
- Be sure your students understand what writing in math looks like.
- Help students understand the questions you ask and know your expectations for their answers.
- Model math talk/writing.
- Connect writing in math to writing across the curriculum. Help students see that what they learn in language arts transfers to writing in math class.
- Develop discussion and writing tasks that motivate students to want to talk/write.

### Highlighted Strategies/Activities

**Math Talk Charts:** Record new math words as they are introduced. Include pictures, examples, and phrases to explain the word meanings. Make connections between words and ideas on the chart.

**Math Word Walls:** Display and discuss key math vocabulary.

- Find 2 words that go together. Why?
- Find the word that matches my clue.

- Web words that go with my word.
- Draw a picture to show my word.

Word walls provide constant reminders of key words and concepts.

**Textbook Search:** Have students look through their math books to find ways the author expresses math ideas (e.g., phrases, pictures and diagrams, numbers, examples). Discuss how the use of each might help them better express their mathematical thinking.

**Word Banks:** When students provide short, general responses, challenge them to use words from a word bank to provide more elaboration. Describe a rhombus using the words angles, parallel, and equal.

**Focus on Words, Pictures, Numbers, and Examples:** How do these help us get thinking out of our heads? Describe parallel lines.

Would a picture help?

Symmetry is...

Would an example help?

What is an acute angle?

Would numbers make it more precise?

Define perimeter.

What words will help you describe it?

**Agree or Disagree** – Pose a statement for students to agree/disagree and justify.

Remind them that they might use models, reasoning, or computation to build an argument.

15 is a prime number.

5.25 is greater than 5.4

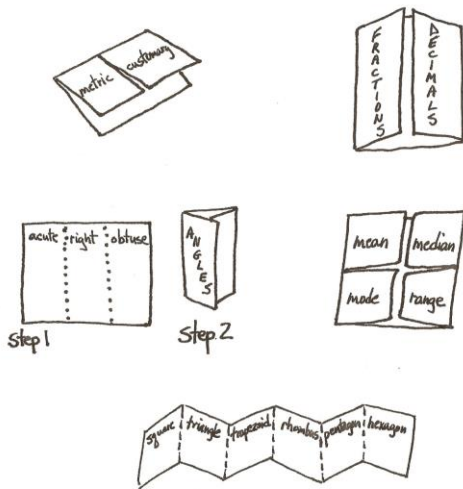
**Number the Steps:** Before explaining how they solved the problem, ask students to label the steps in their work box with 1, 2, 3... as a pre-organizer for writing. Students can then write the steps in a numbered list 1, 2, 3... or use sequence words to show the steps.

- First...
- Second...
- Third...
- Next... Then...
- Last... Finally...

**Write for a Purpose:**

- Explain to a friend how to...
- Write directions for a 2<sup>nd</sup> or 3<sup>rd</sup> grader...
- Write a book about...

**Folded books:** Students create folded math books to describe concepts using words, pictures, numbers, and examples.



## Helping Students Communicate About Math

- Vocabulary
- Teacher questioning
- Expect precision
- Frequent & varied writing activities
- Support with the process of writing
- Understanding expectations

## What can be gained by focusing on Mathematical communication?

UNDERSTANDING

For more on Talk and Writing in Mathematics, see the following resources:

### ***Math in Practice* (Heinemann, 2016)**

This series is filled with lesson ideas, instructional strategies, sample teacher questions, practice tasks, and many online printable resources to make teaching K-5 math more meaningful and more fun. There is a book for each grade level K-5 that contains a wealth of grade-specific activities, including many prompts for talk and writing related to the grade-level topics. The *Guide for Teachers* is filled with instructional strategies including tips for generating productive math talk and writing. The series includes an *Administrator's Guide* for math coaches and district math leaders. Visit the website at [www.mathinpractice.com](http://www.mathinpractice.com) to view the materials. *Math in Practice* is PD in a book - like having a math coach for every teacher!

### **The Math Process Standards Series**

Each book in this series is a practical guide for helping students refine their skills in the highlighted math process (problem solving, communication, reasoning, representations, connections). You will find specific teaching strategies and tips to help all students strengthen their skills. Included with each book is a CD filled with teacher tools and customizable student activities to allow you to change names, data, or spacing for a quick way to differentiate instruction within your classroom. *Introduction to Communication* contains specific strategies for generating talk and writing about math and a CD filled with math writing tasks.

***Introduction to Problem Solving***

***Introduction to Communication***

***Introduction to Representation***

***Introduction to Reasoning and Proof***

***Introduction to Connections***

All books in this series are available for Grades PK-2, Grades 3-5, and Grades 6-8.

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For information on resources or workshops by Sue O'Connell, visit her website at [www.qualityteacherdevelopment.com](http://www.qualityteacherdevelopment.com).

For more information on the Math in Practice series, visit [www.mathinpractice.com](http://www.mathinpractice.com).