

# Sparking Insights and Igniting Passion: The Power of Our Questions

Sue O'Connell  
@SueOConnellMath

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“By expanding the types of questions we ask, we shift our focus from doing math to thinking mathematically.”

## Moving Beyond “*What’s the Answer?*”

### Question 1: How?

- Can you help me understand what you did?
- How did you solve it?
- How did you get that answer?

Focus: procedures

### Question 2: Why?

- Why do you think that?
- How could you prove that?
- Can you give me an example to support your thinking/prove your point?
- What can you tell me to help me understand why you chose that strategy?

Focus: conceptual understanding, justification

### Question 3: How does this compare to...?

- How is this like...?
- How is this different from...?
- When have you seen this before? Explain.

Focus: observation, connections

### Question 4: What do you notice?

- What did you observe happening?
- What do you notice about our data?
- What patterns do you see?

Focus: observations, inquiry

### Question 5: What’s the big idea?

- What is the rule?
- Can you give an example to show it works?
- Will it always work? Explain your thinking.

Focus: generalizing

### Question 6: What did you learn?

- What did you learn today?
- What surprised you today?
- What questions do you have about the lesson?
- Where did you get stuck today? How did you get unstruck?

Focus: summarizing, reflecting, closure

Number Talk Images website: <http://ntimages.weebly.com/>

### What are we asking?

1. How? (explaining procedures)
2. Can you prove it? (justifying, making sense of)
3. How is this like...? (comparing, making connections)
4. What do you notice? (observing, investigating)
5. What is the big idea? (generalizing)
6. What did you learn? (summarizing, reflecting)

### Considerations: The “How” of Teacher Questioning

- Give students **time to think**.
- Use “**turn and talk**”.
- **Anticipate** student thinking/responses.
- Take time to **consider responses**.
- **Show interest** whether they are right or wrong.
- Don’t interpret their answers. **Ask them to clarify**/interpret them for you.
- Expect and probe for **precision**.
- Ask **others** to respond to answers.

### Our questions...

...help students construct a vision of mathematics as more than procedures and right answers.

...challenge thinking.

...spark insights.

...ignite curiosity and passion.

**Teacher Resource Books by Sue O’Connell**  
Published by Heinemann ([www.heinemann.com](http://www.heinemann.com))

***Math in Practice* ([www.mathinpractice.com](http://www.mathinpractice.com))**

This series is filled with lesson ideas, instructional strategies, 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, as well as a *Guide for Teachers* filled with instructional strategies to support greater understanding of math concepts. A *Guide for Administrators* offers tips and strategies for math coaches/administrators. Visit the website at [www.mathinpractice.com](http://www.mathinpractice.com) to view samplers, see videos, and learn more about the series.

***Putting the Practices into Action - Implementing the Common Core Standards for Mathematical Practice K-8***  
with John SanGiovanni

The Standards for Math Practice are the heart and soul of the Common Core State Standards. This book explains each standard in teacher-friendly terms and highlights practical activities to make the standards come alive in classrooms. It contains PLC study group questions and online resources.

***Mastering the Basic Math Facts for Addition and Subtraction***  
***Mastering the Basic Math Facts for Multiplication and Division***  
with John SanGiovanni

Through investigations, discussions, visual models, children’s literature, and hands-on explorations, students explore the math operations, and through engaging, interactive practice achieve fluency with basic facts. A teacher-friendly CD filled with customizable activities, templates, recording sheets, and teacher tools simplifies your planning and preparation. Over 450 pages of reproducible forms are included in English and Spanish translation.

**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 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.

***Now I Get It: Strategies for Building Confident and Competent Mathematicians, K-6***

Good teaching is the critical factor that helps students “get” math. This book is a practical handbook for the teaching of mathematics, with chapters addressing the teaching of problem solving, the use of manipulatives, differentiating instruction, effective teacher questioning, increasing math talk, and much more. The book includes a CD with over 100 pages of resources to support teachers including manipulative templates, math facts game templates, a bibliography of math-related literature, center ideas, math websites, problem-solving and writing tasks, and a variety of other practical resources.

For additional resources, visit Sue’s website at [www.qualityteacherdevelopment.com](http://www.qualityteacherdevelopment.com)

**Follow Sue on Twitter @SueOConnellMath**

**Gather strategies and ideas on Facebook by liking Sue’s Facebook page (Quality Teacher Development) or joining the Math in Practice Facebook group!**