



**Question Stems for Math Practices**

**Common Core State Standards**

MP1. Make sense of problems and persevere in solving them.  
 MP2. Reason abstractly and quantitatively.  
 MP3. Construct viable arguments and critique the reasoning of others.  
 MP4. Model with mathematics.  
 MP5. Use appropriate tools strategically.  
 MP6. Attend to precision.  
 MP7. Look for and make use of structure.  
 MP8. Look for and express regularity in repeated reasoning.

**MP8**  
**Look for and express regularity in repeated reasoning**

What did you notice when solving this problem?  
 What would happen if \_\_\_\_\_?  
 What generalizations can you make in this problem?  
 Is your generalization always true? What exceptions can you think of?  
 Are there any repeated calculations you noticed? How did they help you solve?  
 Are there any shortcuts to solving this problem? How can you tell?  
 How could your strategy work in a different situation?  
 How could this problem help you solve another problem?

**I can notice patterns and repeated calculations when problem solving.**

**MP7**  
**Look for and make use of structure**

What do you know about \_\_\_\_\_ that you can apply to this problem?  
 Have you already learned that helped you solve this problem?  
 How do you know about math properties to explain your strategy?  
 How is this problem related to similar problems you have solved?  
 How can using patterns help you solve this problem?  
 How can you tell if you are noticing a pattern when solving?  
 How did understanding parts and wholes of a number help you solve?  
 What observations did you make about this problem?  
 How does this problem connect to other math ideas you know?

**I can see how numbers and math principles work together.**

**MP6**  
**Attend to precision**

Were you be careful and clear while problem solving?  
 Is/vocabulary are important in this problem?  
 Are there any words in the problem that you don't understand?  
 How do you figure out the meaning of those words?  
 How do you know the meaning of those words?  
 How do you know the meaning of those words?  
 How do you know the meaning of those words?  
 How do you know the meaning of those words?  
 How do you know the meaning of those words?  
 How do you know the meaning of those words?

**I've been clear, careful, and accurate when problem solving.**

**MP5**  
**Use appropriate tools strategically**

What tools could you use to help you solve?  
 How do you know which tool to use?  
 How do you know which tool to use?  
 How do you know which tool to use?  
 How do you know which tool to use?  
 How do you know which tool to use?  
 How do you know which tool to use?  
 How do you know which tool to use?

**I know when to use tools to help solve a problem.**

**MP4**  
**Model with mathematics**

Do you recognize any math from everyday life that could help you solve this?  
 What number, sentence, could you use to represent your thinking?  
 How could you use manipulatives to help you solve this problem?  
 Could you make a model to support your idea or prove your answer? How?  
 How can you tell if your model is working?  
 What are some ways you could represent the quantities in this problem?  
 How could you visually represent your strategy/answer?  
 How could you use your strategy/answer to solve this problem?

**MP3**  
**Construct viable arguments and critique the reasoning of others**

What strategy for solving this problem?  
 How do you know that strategy works?  
 How do you know that strategy works?  
 How do you know that strategy works?  
 How do you know that strategy works?  
 How do you know that strategy works?  
 How do you know that strategy works?  
 How do you know that strategy works?

**I can explain my answer to others.**

**MP2**  
**Reason abstractly and quantitatively**

How do you make sense of this problem?  
 How do you make sense of this problem?  
 How do you make sense of this problem?  
 How do you make sense of this problem?  
 How do you make sense of this problem?  
 How do you make sense of this problem?  
 How do you make sense of this problem?

**I can make sense of problems using numbers and words.**

**MP1**  
**Make sense of problems and persevere in solving them**

What is this problem asking you to do?  
 How would you explain the problem in your own words?  
 How many steps are in this problem? How do you know?  
 What do you already know about the problem that needs to be solved?  
 What do you still need to find out?  
 What information do you need in order to solve?  
 What information in the problem that you don't need?  
 What is the first step to solving?  
 How do you start solving this problem?  
 How do you know you are solving this problem?  
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 How do you know you are solving this problem?

**I can make a plan for solving.**

# QUESTION STEMS

## for math practices

by Angela Watson



## Question Stems for Math Practices

### Common Core State Standards

- MP1 Make sense of problems and persevere in solving them.
- MP2 Reason abstractly and quantitatively.
- MP3 Construct viable arguments and critique the reasoning of others.
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**MP1**

**Make sense of problems and  
persevere in solving them**

What is this problem asking you to do?  
How would you explain the problem in your own words?  
How many steps are in this problem? How do you know?  
What do you already know about the problem that needs to be solved?  
What do you still need to find out?  
What information do you need in order to solve?  
Is there any extra information in the problem that you don't need?  
What is the first step in solving?  
How could you start solving this problem?  
What similar problems have you already solved?  
What information is needed to solve this problem?  
How can you use \_\_\_ (specific strategy) to help you solve this problem?  
What other strategies could you try?  
What manipulatives or other tools could help you solve?  
How can you tell if your plan/strategy makes sense?

**I can make and carry out a plan for  
solving a problem, and check  
my answer.**



**MP7**

**Look for and make use of structure**

- What do you know about \_\_\_ that you can apply to this problem?
- What ideas have you already learned that helped you solve this problem?
- How can you use what you know about math properties to explain your strategy?
- How is this problem related to similar problems you have solved?
- How can using patterns help you solve this problem?
- How can you tell if you are noticing a pattern when solving?
- How did understanding parts and wholes of a number help you solve?
- What observations did you make about this problem?
- How does this problem connect to other math ideas you know?

**I can see how numbers and math principles work together.**

**Question Stems for CCSS Math Practices**  
Support for class discussion, partner work, and math journal reflections

**What are my mathematical goals for this problem?**

The Common Core State Standards (CCSS) include a domain called "Practices and Problem Solving." These mathematical practices support students in developing a deep understanding of mathematics and applying it to solve problems. The mathematical practices are:

- 1. Make sense of problems and persevere in solving them.
- 2. Reason abstractly and quantitatively.
- 3. Construct viable arguments and critique the reasoning of others.
- 4. Model with mathematics.
- 5. Use appropriate tools strategically.
- 6. Attend to precision.
- 7. Look for and make use of structure.
- 8. Look for and express regularity in repeated reasoning.

**How do I support my thinking and other students' thinking?**

Use the mathematical practices to guide your thinking and other students' thinking. For example, you can use the practices to:

- 1. Make sense of problems and persevere in solving them.
- 2. Reason abstractly and quantitatively.
- 3. Construct viable arguments and critique the reasoning of others.
- 4. Model with mathematics.
- 5. Use appropriate tools strategically.
- 6. Attend to precision.
- 7. Look for and make use of structure.
- 8. Look for and express regularity in repeated reasoning.

**Question Stems for Math Practices**

**MP1: Make sense of problems and persevere in solving them**

What is the problem asking me to do?  
What information do I have?  
What do I need to know?  
What strategy will I use?  
What if I get stuck?  
What if I am not sure?  
What if I am not finished?  
What if I am not sure?  
What if I am not sure?  
What if I am not sure?

**MP2: Reason abstractly and quantitatively**

How did you use numbers to solve this problem?  
How did you use symbols to solve this problem?  
How did you use words to solve this problem?  
How did you use diagrams to solve this problem?  
How did you use tables to solve this problem?  
How did you use graphs to solve this problem?  
How did you use equations to solve this problem?  
How did you use inequalities to solve this problem?  
How did you use functions to solve this problem?  
How did you use geometry to solve this problem?  
How did you use statistics to solve this problem?

**MP3: Construct viable arguments and critique the reasoning of others**

What is your strategy for solving this problem?  
How did you use your strategy to solve this problem?  
How did you use your strategy to solve this problem?  
How did you use your strategy to solve this problem?  
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**MP4: Model with mathematics**

How did you use math to solve this problem?  
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How did you use math to solve this problem?  
How did you use math to solve this problem?  
How did you use math to solve this problem?

**MP5: Use appropriate tools strategically**

What tools did you use to solve this problem?  
How did you use your tools to solve this problem?  
How did you use your tools to solve this problem?  
How did you use your tools to solve this problem?  
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How did you use your tools to solve this problem?  
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**MP6: Attend to precision**

How did you use precision to solve this problem?  
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How did you use precision to solve this problem?  
How did you use precision to solve this problem?  
How did you use precision to solve this problem?  
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How did you use precision to solve this problem?  
How did you use precision to solve this problem?

**MP7: Look for and make use of structure**

What is the structure of this problem?  
How did you use the structure to solve this problem?  
How did you use the structure to solve this problem?  
How did you use the structure to solve this problem?  
How did you use the structure to solve this problem?  
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How did you use the structure to solve this problem?  
How did you use the structure to solve this problem?  
How did you use the structure to solve this problem?

**MP8: Look for and express regularity in repeated reasoning**

What is the regularity in this problem?  
How did you use the regularity to solve this problem?  
How did you use the regularity to solve this problem?  
How did you use the regularity to solve this problem?  
How did you use the regularity to solve this problem?  
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How did you use the regularity to solve this problem?  
How did you use the regularity to solve this problem?

**How I used math practices today**

My plan for solving this problem was \_\_\_\_\_.

The math tools I used were \_\_\_\_\_.

When I started solving, I could tell my strategy was/wasn't working because \_\_\_\_\_.

So, I \_\_\_\_\_.

When solving, I noticed \_\_\_\_\_ (patterns/generalizations/math properties).

I checked to see if my answer was correct by \_\_\_\_\_.

I could prove my answer is right by \_\_\_\_\_.

<p>My plan for solving this problem was _____.</p> <p>The math tools I used were _____.</p> <p>When I started solving, I could tell my strategy was/wasn't working because _____.</p> <p>So, I _____.</p> <p>When solving, I noticed _____ (patterns/generalizations/math properties).</p> <p>I checked to see if my answer was correct by _____.</p> <p>I could prove my answer is right by _____.</p>	<p>My plan for solving this problem was _____.</p> <p>The math tools I used were _____.</p> <p>When I started solving, I could tell my strategy was/wasn't working because _____.</p> <p>So, I _____.</p> <p>When solving, I noticed _____ (patterns/generalizations/math properties).</p> <p>I checked to see if my answer was correct by _____.</p> <p>I could prove my answer is right by _____.</p>
<p>My plan for solving this problem was _____.</p> <p>The math tools I used were _____.</p> <p>When I started solving, I could tell my strategy was/wasn't working because _____.</p> <p>So, I _____.</p> <p>When solving, I noticed _____ (patterns/generalizations/math properties).</p> <p>I checked to see if my answer was correct by _____.</p> <p>I could prove my answer is right by _____.</p>	<p>My plan for solving this problem was _____.</p> <p>The math tools I used were _____.</p> <p>When I started solving, I could tell my strategy was/wasn't working because _____.</p> <p>So, I _____.</p> <p>When solving, I noticed _____ (patterns/generalizations/math properties).</p> <p>I checked to see if my answer was correct by _____.</p> <p>I could prove my answer is right by _____.</p>

Your friend has \$1.35 in nickels and dimes and gives you half. How many of each coin do you have?

My plan for solving this problem was \_\_\_\_\_.

The math tools I used were \_\_\_\_\_.

When I started solving, I could tell my strategy was/wasn't working because \_\_\_\_\_.

So, I \_\_\_\_\_.

When solving, I noticed \_\_\_\_\_ (patterns/generalizations/math properties).

I checked to see if my answer was correct by \_\_\_\_\_.

I could prove my answer is right by \_\_\_\_\_.

My plan for solving this problem was to figure out how many nickels and dimes are in \$1.35 and then divide by 2 to figure out how much is half. The math tools I used were coins, paper, and pencil. When I started solving, I could tell my strategy wasn't working because there were a lot of coin combinations that make \$1.35. So I had to figure out all the different ways \$1.35 could be made with nickels and dimes. When solving, I noticed that the more nickels I used the greater the total number of coins, and the more dimes, the fewer the total number of coins. I checked to see if my answer was right using estimation and having a final look over my work. I could prove my answer is right using coins.

# Question Stems for CCSS Math Practices

**Support for class discussions, partner work, and  
math journal reflections**

## **What are mathematical practices?**

The Common Core State Standards (CCSS) includes a domain called "Model and reinforce Mathematical Practices." These mathematical practices appear at every grade level and should be integrated into math instruction on all skills and concepts. The mathematical practices are:

- MP1 Make sense of problems and persevere in solving them.
- MP2 Reason abstractly and quantitatively.
- MP3 Construct viable arguments and critique the reasoning of others.
- MP4 Model with mathematics.
- MP5 Use appropriate tools strategically.
- MP6 Attend to precision.
- MP7 Look for and make use of structure.
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## **How am I supposed to teach mathematical practices?**

The mathematical practices can seem daunting since they're more abstract than the content-based math standards. But the best way to teach mathematical practices is just by integrating them into your daily math instruction and routines in a conversational and holistic way. Modeling them, talking about them, and inviting students to talk about them are simple and powerful ways to teach math practices.

### **How do I get kids to talk about math practices?**

Choose questions that will cause students to think deeply about their strategies. It's a good idea to plan out your specific questions in advance and come up with a few responses students might give so you can have follow-up questions ready. As students solve problems, you can monitor their work and ask more questions to help guide their thinking and assist them in finding solutions.

You may want to choose one or more students who have unique or well-articulated strategies to share with the class and present their work. This makes a nice "closing time" at the end of your math lesson and allows you to connect students' responses to the strategies and math concepts you're teaching.

As the school year progresses, your students will begin to do the majority of the talking and even pose their own questions instead of just answering your questions. Students will increasingly become responsible for and direct their own learning, and become more comfortable talking about their mathematical thinking and problem solving strategies.

### **What if my students don't know how to explain their thinking?**

Your initial conversations in math will probably be pretty limited, especially if you teach very young students. You'll end up doing most of the talking and your students won't yet have the words to describe what they're thinking and doing. Keep at it! Model mathematical thinking and practices on a regular (if not daily) basis. Have your more advanced students who are comfortable share their problem solving do lots of think-alouds as well. Over time, your class will internalize the vocabulary and mathematical phrases they've heard and start taking more ownership of the discussions.

### **How do I store and organize the question stem cards?**

You could print the cards onto card stock, mount them on construction paper, or use regular paper and laminate the cards. The cards can be stored on an "o" ring (also called a "book ring"), or clipped together with a large paper clip. You could also keep the pages in your plan book, or refer to the PDF as a digital file on your computer.

## What are some ideas for using the question stems?



Conversations about math practices and problem solving can be included in even the most traditional teaching methods. For example, if you typically have students solve problems on the board while other students solve the problem at their seats, afterward, simply ask the kids who are working at the board to explain their thinking using the question stems in this document.

You can also have a child at the board solve the problem before the rest of the class does and explain his or her strategies, then have students solve the problem their own way and explain the strategies they chose. Students can take turns playing this role and being "Math Practices Leader" for the day.

If you have students work together on a math game or problem-solving task, it can be hard to know how to guide students' conversations and refocus them. Try informally posing questions about math practices to each pair or group as you circulate around the room, and use their responses to gauge student understanding. You may even hear some thinking from a few groups that you'd like to have shared with the whole class at the end of the lesson.

You can also give a set of question stem cards to each group of students and challenge them to pick one question for a specific math practice and discuss it together.

During a lesson or activity, you may only use one or two questions and have students delve deeply into them through written reflections or conversations. Or, you might use many of the questions in a single lesson as you facilitate a discussion. You might want to focus on one math practice standard per day or week, or integrate multiple standards as students complete the problem-solving process. There are lots of possibilities, so you can do whatever you think is best for your students!



## How do I use the math practices reflection prompts?



At the end of the document, there is a card with prompts that cover all the math practices. These prompts are also written out on small rectangles that can be cut apart and given to students.

The prompts go beyond asking students to explain how they arrived at an answer. They require students to reflect on strong math practices and how those practices helped them approach the problem in a systematic, logical way. They help students reflect on their plan for solving, what happened when they noticed their plan was or wasn't working, how math tools assisted them, patterns they noticed, strategies they used for checking their work, and how they could prove their answer is correct.

I recommend displaying the prompts for students and modeling how to respond to each sentence. You may want to model one prompt each day or week and have students practice responding to them either orally (with a partner) or in writing.

Once students are comfortable with the prompts, photocopy and cut apart the small rectangular cards. Give one to each student to glue into their math journals or notebooks. They can then use the format to complete think-pair-share activities at the end of a lesson to review or analyze the day's problem solving work. They can also discuss or write their responses to the prompt on a daily or weekly basis, or at the end of each unit as an assessment tool.

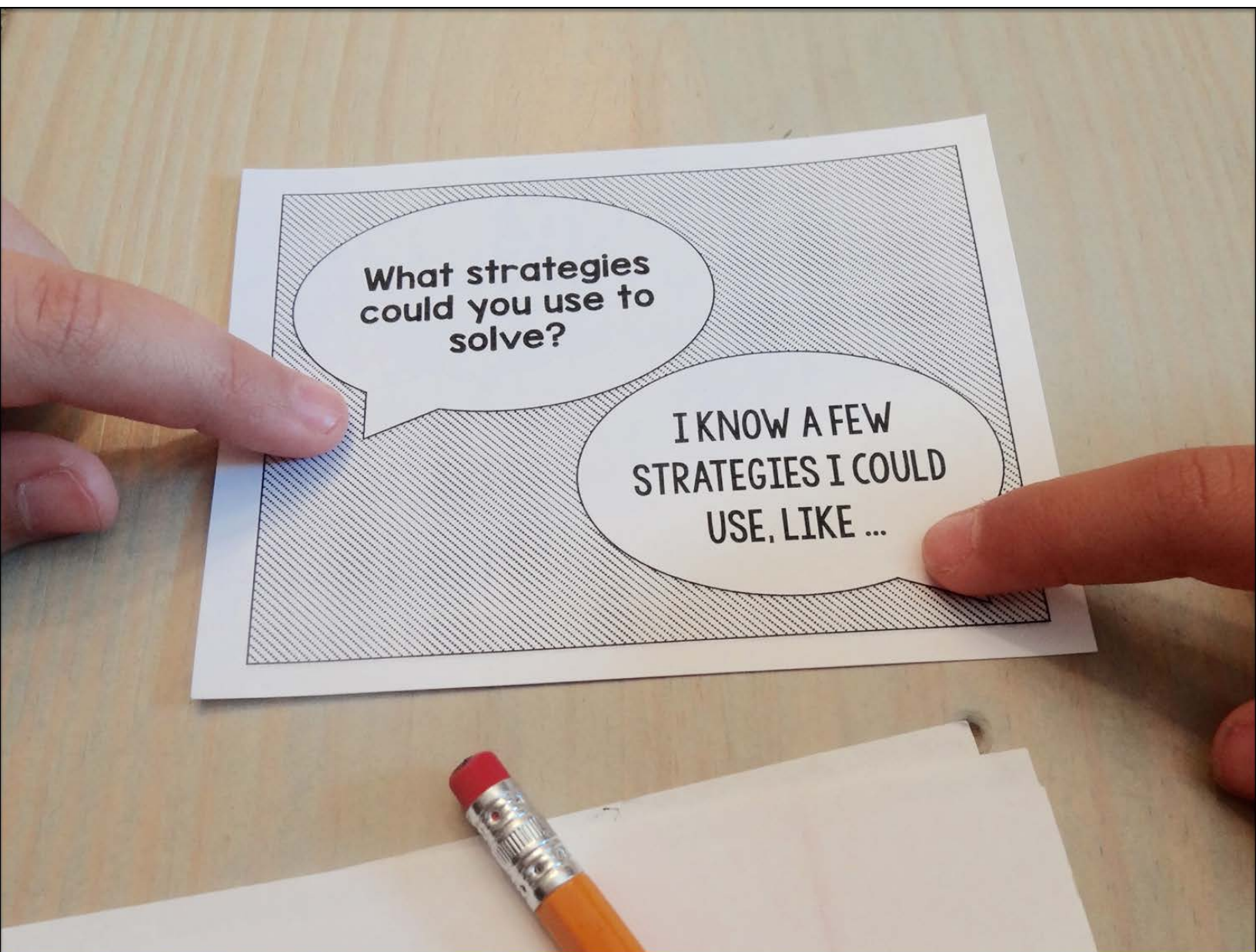
Students' written responses to the math practices prompts are a fantastic way to document their thinking in math. Keep the responses in students' journals or portfolios and you'll be able to see how their mathematical thinking and ability to explain their strategies improved over the course of the school year.

Your friend has \$1.35 in nickels and dimes and gives you half. How many of each coin do you have?

My plan for solving this problem was \_\_\_\_\_.  
The math tools I used were \_\_\_\_\_. When I started solving, I could tell my strategy was/wasn't working because \_\_\_\_\_. So, I \_\_\_\_\_.  
When solving, I noticed \_\_\_\_\_ (patterns/generalizations/math properties). I checked to see if I was right by \_\_\_\_\_. I could prove my answer is correct by \_\_\_\_\_.

My plan for solving this problem was to figure out how many nickels and dimes are in \$1.35 and then divide by 2 to figure out how much is half. The math tools I used were coins, paper, and pencil. When I started solving, I could tell my strategy wasn't working because there were a lot of coin combinations that make \$1.35. So I had to figure out all the different ways \$1.35 could be made with nickels and dimes. When solving, I noticed that the more nickels I used, the greater the total number of coins, and the more dimes, the fewer the total number of coins. I checked to see if my answer was right using estimation and having a friend look over my work. I could prove my answer is right using coins.

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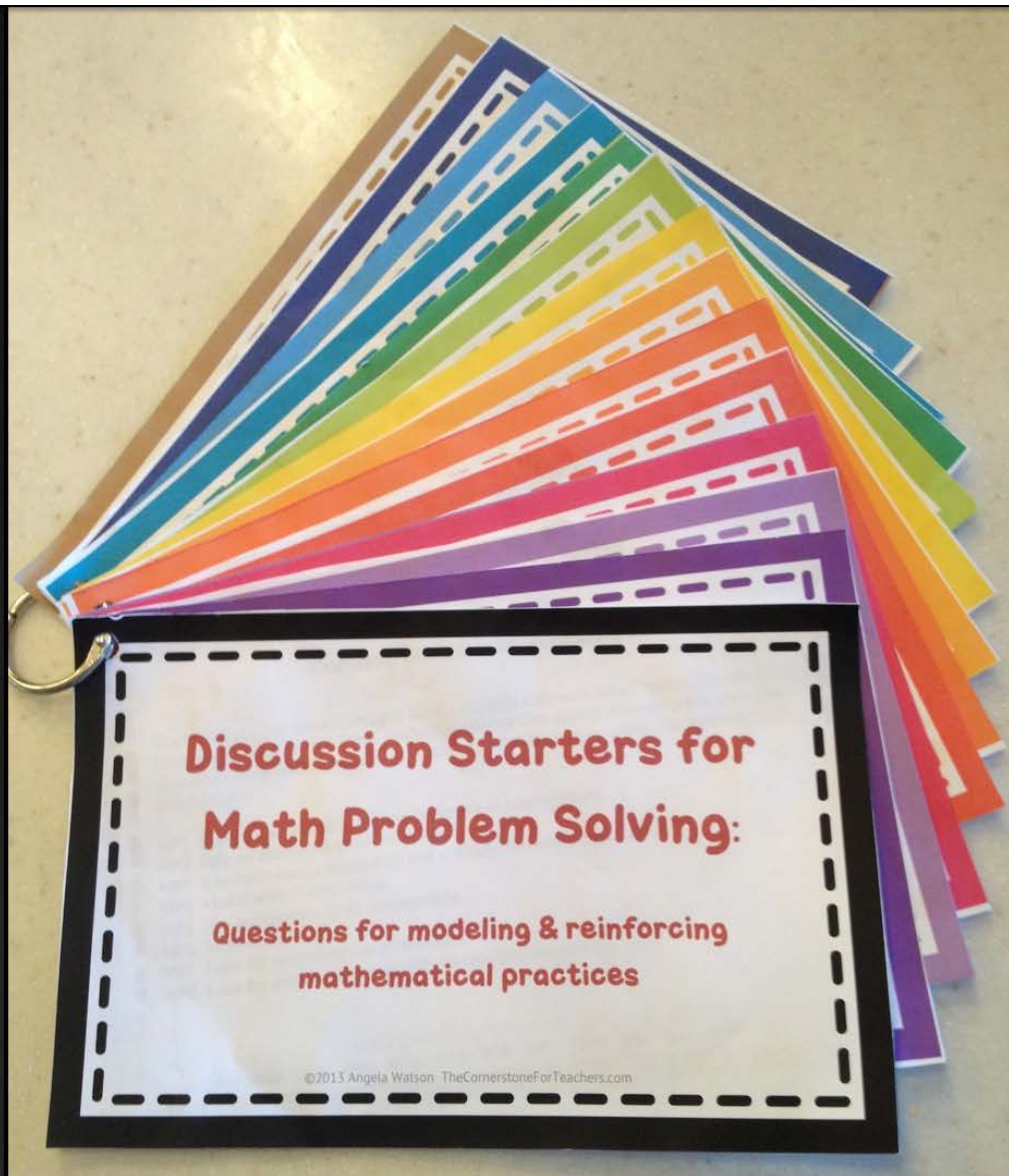


# MATH PARTNER DISCUSSION CARDS

*by Angela Watson*

The partner discussion cards are aligned with the teacher question stems in this product. If you want students to facilitate their *own* conversations about math practices, these discussion cards will help!

You Might Also Like...



# DISCUSSION STARTERS for math problem solving

*by Angela Watson*

Use these questions to prompt discussions with students about their math problem solving strategies. There are questions to help you with active listening, respond when students get stuck, push student thinking on incorrect/incomplete answers, and more.



## BUT WAIT! THERE'S MORE...

I'm **Angela Watson**, the creator of this resource. I'm a National Board Certified Teacher with a masters degree in Curriculum and Instruction, and have 11 years of classroom teaching experience and over a decade of experience as an instructional coach. I currently work as a Productivity and Mindset Specialist in the area of educational consulting. In practical terms, this means I author books, design curriculum, and provide professional development services. Everything I do is centered on sharing more effective, efficient, and enjoyable ways of teaching and learning!

I founded my website ([TruthforTeachers.com](https://www.truthforteachers.com)) in 2003 to connect with other educators. You can now find thousands of ad-free articles and resources there from me and our K-12 teacher-writer's collective.

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