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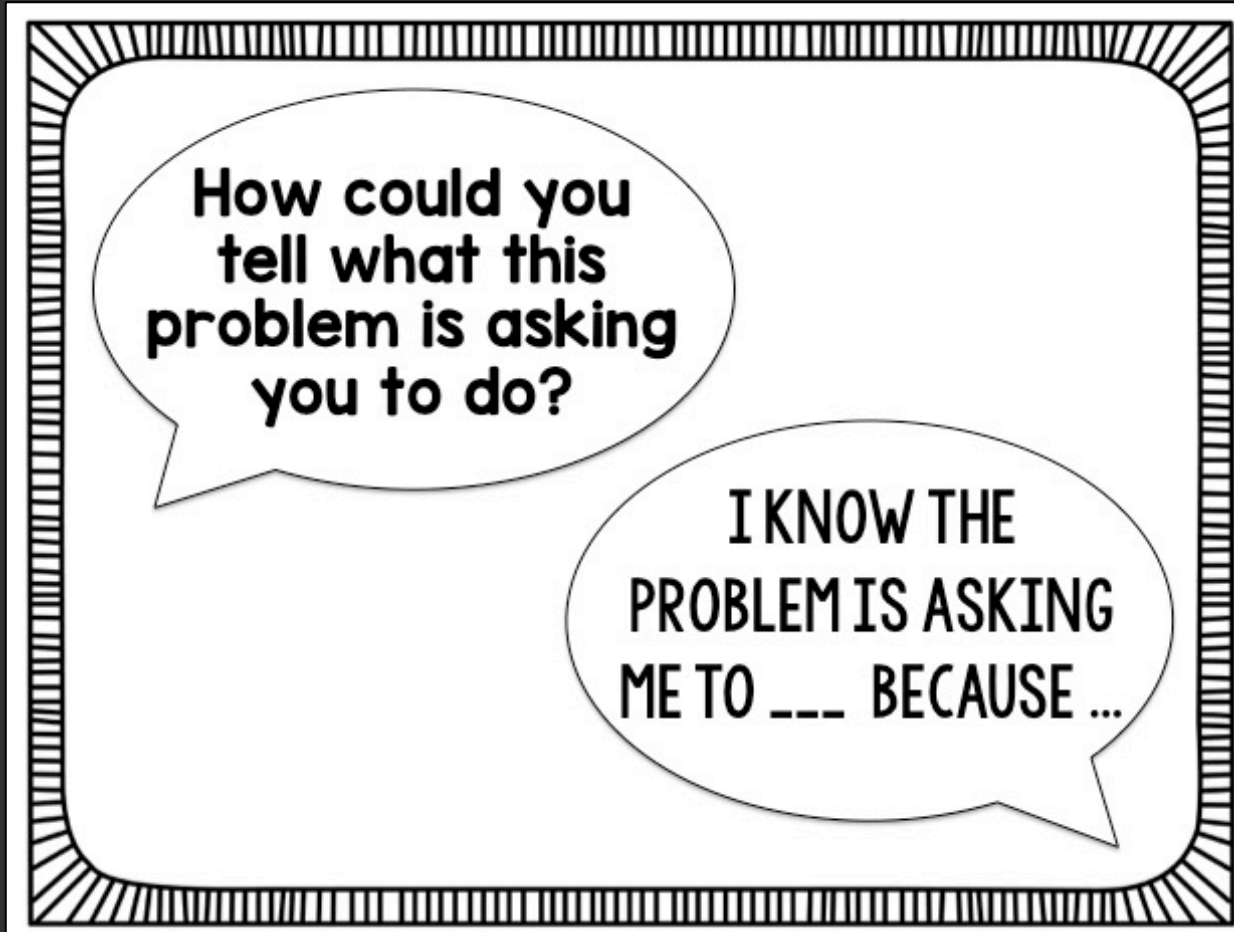
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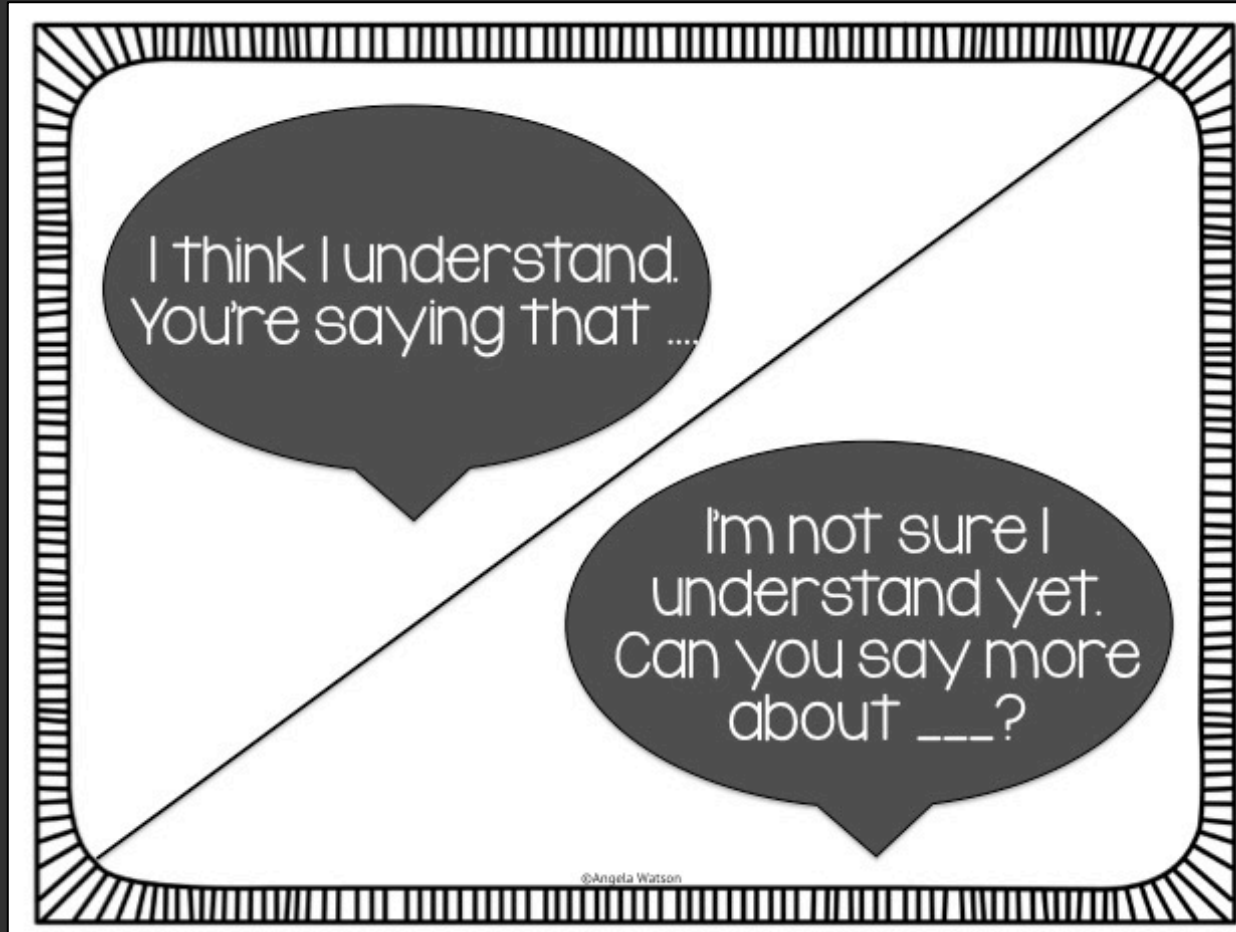
# MATH TALK POSTERS

Conversation starters for problem solving

*by Angela Watson*



**8 full size (8.5 x11) black and white  
math talk posters to help kids have conversations  
about problem solving**



**4 full size (8.5 x11) black and white  
conversation extender posters to help students  
expand on each other's responses and continue the discussion**

How could you tell what this problem is asking you to do?

I KNOW THE PROBLEM IS ASKING ME TO \_\_\_\_ BECAUSE ...

What strategies did you use to solve this problem?

THE STRATEGIES I USED WERE ...

I agree, and I'd like to add that...

I have a different idea. I think ...

My thinking is similar. I ...

My thinking is different. I ...

What kinds of math tools did you use to help you solve?

THE MATH TOOLS I CHOOSE WERE \_\_\_\_ BECAUSE ...

How did you form a plan for solving the problem?

I CREATED MY PLAN BY THINKING ABOUT...

I think that makes sense because ...

I'm not sure that makes sense, because ...

I think I understand. You're saying that ...

I'm not sure I understand yet. Can you say more about \_\_\_\_?

What did you do when you first started solving? What next?

THE FIRST THING I DID TO SOLVE WAS \_\_\_\_ THEN I ...

How can you prove your answer is correct?

I CAN PROVE MY ANSWER BY...

How did you test your answer to see if it was right?

I CHECKED MY ANSWER BY...

What's another way to solve this problem?

I COULD HAVE ALSO SOLVED BY...

The 8 conversation starter posters + the 4 conversation extender posters are provided at 4 to a page so you can create cards or reference sheets for students to keep at their tables or in centers

# Math Talk Posters

## Student conversation starters for problem solving

### **What preparations should I make before having math conversations in my classroom?**

The most important thing is to ensure that you're creating a supportive learning environment in which kids feel comfortable taking risks and experiencing failure. There will be many times when students try strategies that don't work or share an idea with the class that isn't successful. We want kids to view those moments as learning opportunities and not something to be ashamed of.

It's really important that students know how to listen to one another, share ideas respectfully, and respond supportively and kindly to their classmates' attempts at problem-solving. Students should be taught how to recover and rebound when they experience failure, and also how to win and lose gracefully.

You'll need to model, practice, and reinforce these expectations throughout the school year, and be prepared to support students at very different levels of progress.

### **How do I help kids practice these conversations about problem solving?**

If you're used to doing most of the talking during your math time, there will be a bit of an adjustment period for you and your students as you move toward a more student-led approach. This is perfectly fine! It will take time for you to start giving more ownership to students and for them to feel comfortable taking the lead in problem solving discussions rather than depending on you.

One of the best ways to support students in these conversations is by looking for and sharing examples of kids who are thinking deeply about their work. Observe students as they talk with their partners or groups, and choose one or more students who have unique or well-articulated strategies to share with the class afterward.

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. The more that students hear math conversations from their peers, the more they will incorporate the vocabulary they need and the better they'll get at having math discussions themselves.

## **When should I have students hold problem solving discussions?**

You can encourage students to use the math talk posters and articulate their thinking *any time* students are problem solving. This includes:

- whole-class number talks and math discussions
- problem-solving sessions conducted as a class
- mental math/mental computation mini-lessons
- complex, multi-step word problem solving instruction
- math partner games
- partner and group discussions
- small group math instruction
- math workshop
- math centers
- math stations
- math tubs
- written reflection questions
- math journals

## **Can I integrate problem solving discussions with teaching strategies I've always used?**

Sure! Lots of traditional methods of teaching math can include critical thinking conversations. For example, if you typically have students solve problems on the board while other students solve the problem at their seats, simply ask the kids who are working at the board to explain their thinking using the math talk posters. You (or another student) can ask the question on the poster, and the child at the board can respond.

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 pair up and compare strategies.

If you have students work together on a math game or to collaboratively solve a problem, try having each pair or group use the posters (or a small version of the posters printed as cards) to talk about their thinking after game play for closure.

## **How do I make the posters?**

Since the posters are in black and white, I recommend printing them on colored paper or card stock. You could also print on white paper and mount them on colored construction paper.

Display the 8 problem solving posters together, and place the 4 conversation extending posters together in the same display or nearby.

You may want to prepare all the posters at once, and then hang them individually as you introduce, model, and practice each one as a class.



### **Can I print the posters as cards and give each pair of students a set?**

Yes! I have included smaller versions of the posters (4 to a page). Print them on card stock if you'd like to make them sturdier, then make photocopies and cut them apart. The cards can be stored on an "o" ring (also called a book ring or binder ring). They can also be clipped together with a large paper clip, or stored in a small index card file box.

Another idea is to leave the cards as 4 to a page and NOT cut them apart. This creates a 3 page reference guide that students can keep in their binders or math journals.

You can allow students to keep a set of these cards (or the pages) at their desks/tables to reference throughout the day, or store the cards in your math games or math center area.

### **How do students use the posters or cards?**

When a pair of students uses the posters, the person on sitting on the left asks the question printed on the left side, and the person sitting on the right uses the sentence stem on the right side to help him or her answer the question. They can then switch roles and repeat with the same poster or choose a different poster.

The posters are designed to help kids discuss problem solving verbally, but you can also teach your students how to use the stem on the right side of the poster as a math journal prompt so they can record their thinking in writing.

### **How do I teach kids to add on or extend their conversations?**

Once students get the hang of using the problem solving posters, introduce the 4 conversation extender posters. During your whole class discussions, have student volunteers practice using the phrases on the posters to respond.

For example, if student A reads the left side of a problem solving poster and student B reads the right and responds, student A can then choose one of the phrases on the conversation extender posters to say something constructive afterward in response to student B.

Student A: How did you test your answer to see if it was right?

Student B: I checked my answer by using the reverse operation.

Student A: I think that makes sense, because you subtracted when problem solving, and addition can help you check your work.

Guide students to understand that the phrase on the top left of the extender posters agrees and expands on what their partner has said, and the phrase on the bottom right disagrees, pushes back, asks for clarification.

The questions in these student-friendly posters are based on the teacher resource I created called [Discussion Starters for Math Problem Solving](#).

There are over 150 questions in that product which are organized into 14 categories, such as active listening, analyzing strategies, responding when students get stuck, pushing student thinking on incorrect/incomplete answers, and summing up/reflecting on math work.

You may want to use *Discussion Starters for Math Problem Solving* as a reference tool to ensure you are asking critical thinking questions and to help you facilitate conversations with and between students.



# DISCUSSION STARTERS for math problem solving

*by Angela Watson*





## 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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