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@Math\_Solutions #NCSM17 @lamacgirl @Nikki\_mathsol

#### Talk, Talk, Talk, Talk, Talk, Talk: Engaging Students in Mathematical Discourse





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#### Introductions

- Introduce yourself to other attendees sitting next to you
  - Name, District, and Position
  - What have you observed about Math Talk in your district?





#### Goals

- Explore math talk routines that increase productive student discourse to engage students in mathematical reasoning
- Identify the instructional leaders' role in supporting productive math talk
- Examine results of districts' work on math talk





#### **Questions to Consider:**

- How would you describe the math talk in your classrooms?
- What is your role in supporting math talk in your schools/classrooms?





#### What are the benefits of Math Talk?

- Talk can reveal understanding and misunderstanding.
- Talk supports robust learning by boosting memory.
- Talk supports deeper reasoning.
- Talk supports language development,
- Talk supports development of social skills.

Classroom Discussions: Seeing Math Discourse in Action, Grades K–6. A Multimedia Professional Learning Resource by Nancy C. Anderson, Suzanne H. Chapin, and Catherine O'Connor. © 2011 Scholastic Inc.





#### **Instructional Practices Inventory**





## **District A (Fall 2015)**

#### **99 Classrooms**





#### **Students**



Math Solutions.

## District B (Fall 2014) 40 classrooms

















## Brain Teaser (Do Now!)

#### Solve this riddle:

Vicki is in elementary school. She is exactly half the age of her sister. What could be the ages of Vicki and her sister?

Vicki could be \_\_\_\_\_ years old. Her sister would be \_\_\_\_\_ years old.





## **Mathematical Habits of Mind**

Construct viable arguments and critique the reasoning of others.

"Mathematically proficient students understand and use stated assumptions, definitions, and previously established results in constructing arguments. They justify their conclusions, communicate them to others, and respond to arguments of other. Students at all grades can listen or read the arguments of others, decide whether they make sense, and ask useful questions to clarify or improve the arguments.







# What Doesn't Belong?



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#### Which Does Not Belong?

- •2, 6, 5, 10
- •2, 3, 15, 23
- •1/2, 2, 8, 16
- •9, 16, 25, 43





### **Habits of Mathematical Thinkers**

#### Attend to Precision.

"Mathematically proficient students try to communicate precisely to others. They try to use clear definitions in discussion with others and in their own reasoning. They state the meaning of the symbols they choose, including using the equal sign consistently and appropriately. They are careful about specifying units of measure, and labeling axes to clarify the correspondence with quantities in a problem. They calculate accurately and efficiently, express numerical answers with a degree of precision appropriate for the problem context."





#### **Talk Moves**

- Revoicing
- Repeating
- Reasoning
- Press for Reasoning
- Adding on
- Say More
- Turn and Talk
- Waiting



Suzanne H. Chapin Catherine O'Connor Nancy Canavan Anderson

Suzanne H. Chapin, Catherine O' Connor, and Nancy Canavan Anderson, *Classroom Discussion in Math, Grades K-6*. (Math Solutions, 2013).







# Tell Me All You Can



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### 12 x 7

- The answer is going to be about \_\_\_\_ because \_\_\_\_.
- The answer is going to be between \_\_\_\_\_ and \_\_\_\_\_ because \_\_\_\_.
- The answer is going to be less than \_\_\_\_ because \_\_\_\_.
- The answer is going to be greater than \_\_\_\_ because \_\_\_\_.





- The answer is going to be about \_\_\_\_\_ because \_\_\_\_\_.
- The answer is going to be between \_\_\_\_\_ and \_\_\_\_\_ because \_\_\_\_.
- The answer is going to be less than \_\_\_\_ because \_\_\_\_.
- The answer is going to be greater than \_\_\_\_ because \_\_\_\_.





861÷8	29 + 19	2/3+3/4
5 X 12	22 X 65	345 + 298
920 X 0.8	<b>3 X</b> 3/4	0.25 x 80

- The answer is going to be about \_\_\_\_\_ because \_\_\_\_\_.
- The answer is going to be between \_\_\_\_\_ and \_\_\_\_\_ because \_\_\_\_\_.
- The answer is going to be less than \_\_\_\_ because \_\_\_\_.
- The answer is going to be greater than \_\_\_\_ because \_\_\_\_.





### Processing Tell Me All You Can

- How does this routine support students with engaging in math talk? How did you engage in mathematical habits?
- What will you be able to assess about student thinking and reasoning if you observe this activity in a classroom?





### **Final Processing**

- How would these routines (Which Doesn't Belong, Do Now, or Tell Me All You Can) support your teachers with increasing Math Talk?
- What is your role in supporting the implementation of Math Talk routines?





# District A (Fall 2015 to Fall 2016)

#### **102 Classrooms**

Math Solutions.





# District B (Spring 2014 to Spring 2016)





Math Solutions.

#### **Final Processing**

• What are your next steps to support Math Talk in your district/school?





# **Thank You!**

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# Engaging Students in Mathematical Discourse

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