MATH TALK: A WAY TO BUILD STUDENT'S ENGAGEMENT

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Math Talks

Math Talks are a daily ritual with the **entire class** to develop **conceptual understanding** of and **efficiency** with numbers, operations and mathematics, in **about 10 minutes per lesson.**

Math Talks are used to:

- Review and practice procedures and concepts
- Introduce concepts and properties about numbers
- Reinforce procedures and number concepts.
- Explore mathematical connections and relationships.

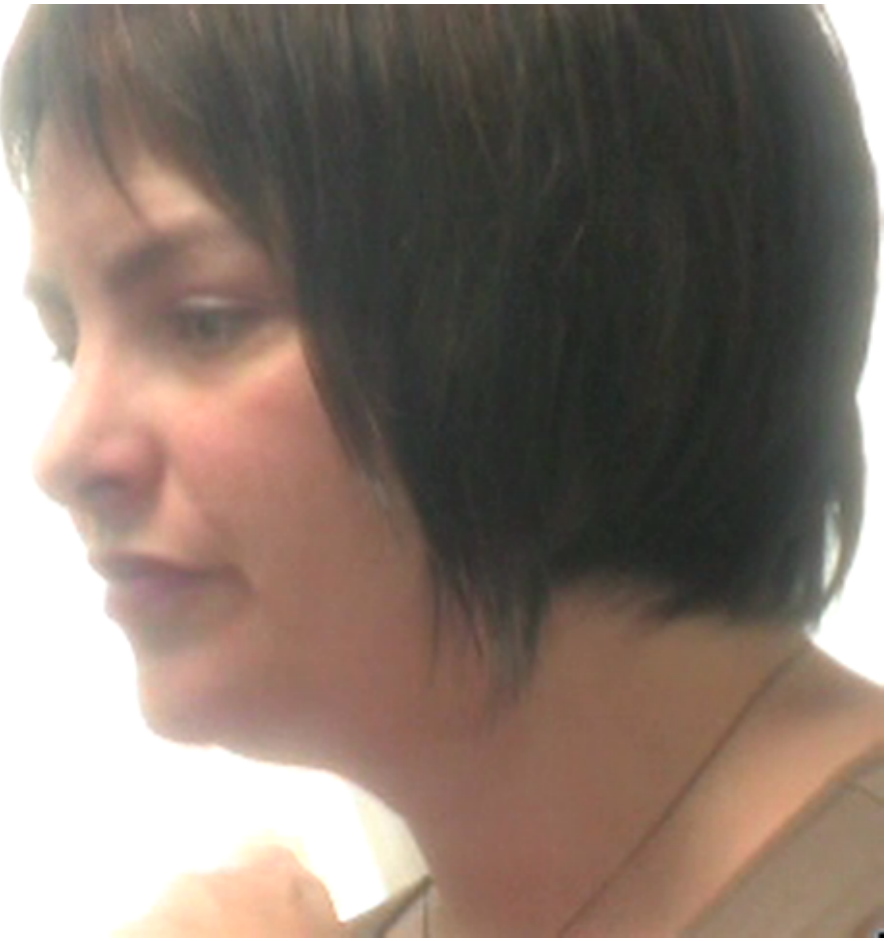
Let's try a math talk

- We will present a prompt to you
- You will generate multiple ways to solve the prompt
- You will use your fingers to signal the number of ways you can solve the prompt

Number of the Day

- Think of as many different ways to make the number 170.
- When you have one way, put your thumb up under your chin.
- When you think of another way, put out a finger…

Math Talk in Practice



Discuss with shoulder partner:

- What stood out to you about this math talk?

Questions we hope to answer during our time together:

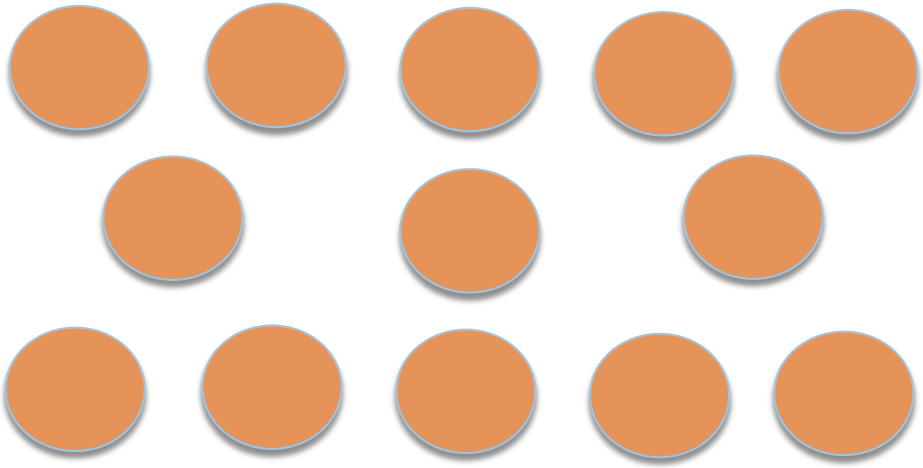
- How do you get started?
- What would it take to do a math talk in your class?
- How can you use math talks in your classroom/school/ district?

MATH TALK

Visual Pattern

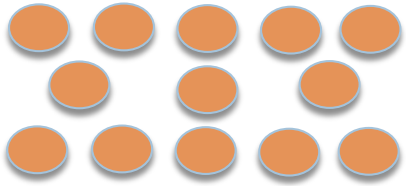
Dot Patterns:

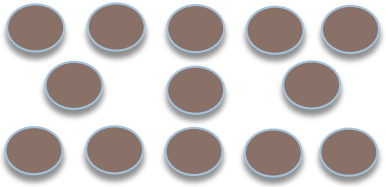
How many dots?

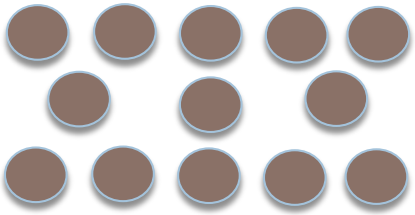


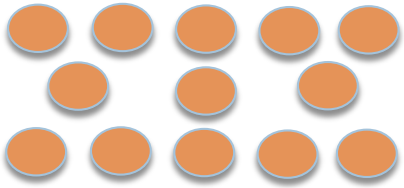
How did you see it?

Sharing









How do you get started?

Begin with a Visual Pattern Math Talk

- Provides access to all students
- Promotes student confidence
- Develops math vocabulary
- Allows for multiple solution strategies

Math Talks – What are they?

Math Talks are a daily ritual with the **entire class** to develop **conceptual understanding** of and **efficiency** with numbers, operations and mathematics in about **10 minutes per lesson**

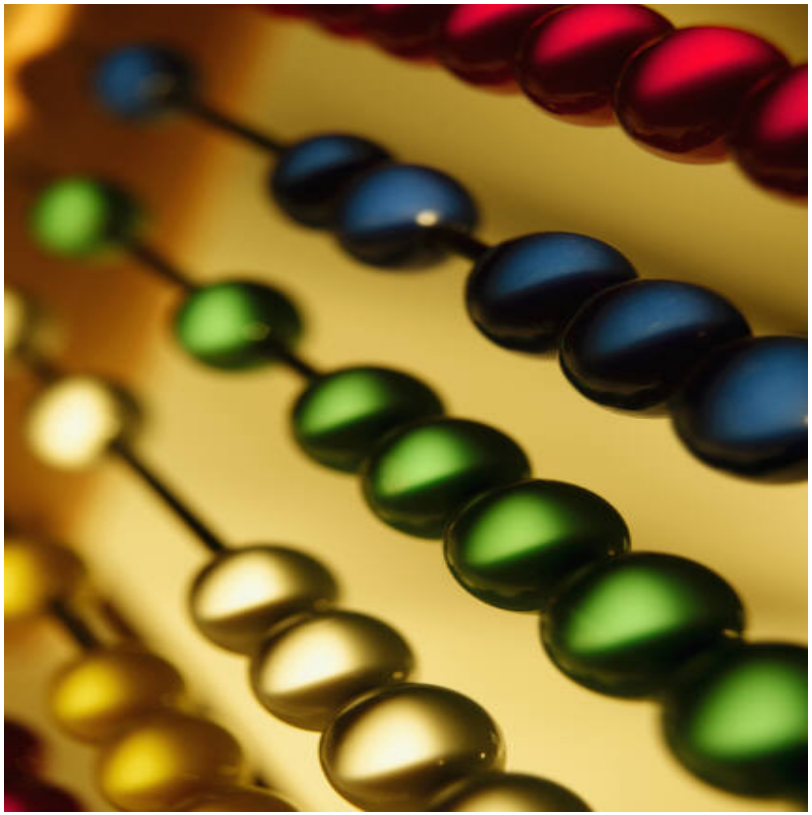
Math Talks – What they do?

- Review and practice procedures and concepts
- Introduce concepts and properties about numbers
- Reinforce procedures and number concepts
- Explore mathematical connections and relationships

Math Talks can help develop

Procedural Fluency

- Accuracy
- Efficiency
- Flexibility



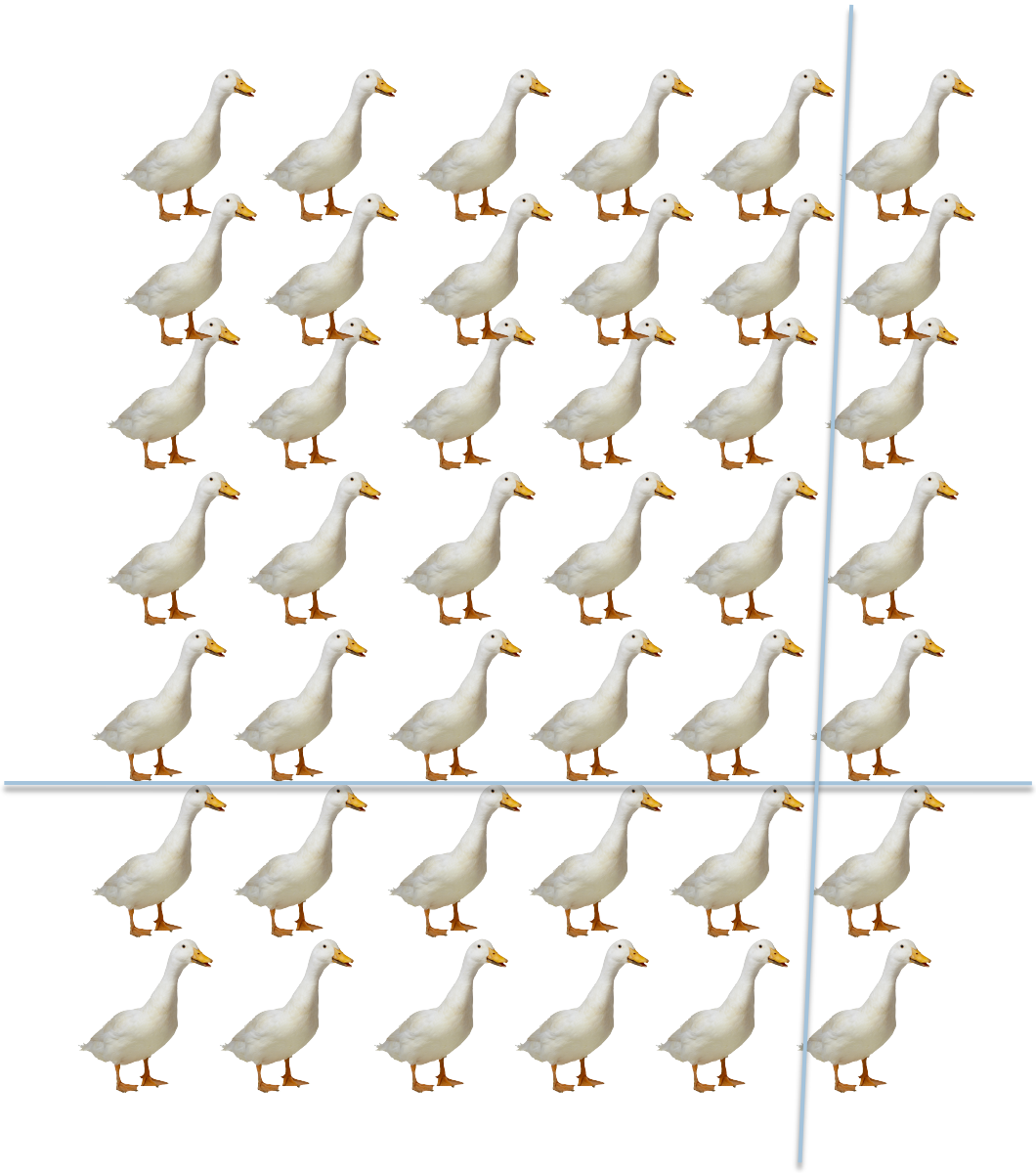
Resource: Sherry Parrish (2010). *Number Talks Helping Children Build Mental Math and Computation Strategies.* Sausalito, CA: Math Solutions.

Standards for Mathematical Practice

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.

Some Varieties of Math Talks

- Number of the Day
- Visual Patterns
- Reinforce Math Facts
- Number Lines
- Mental Math
- Number Strings
- What's My Rule?
- Relational Thinking



How many ducks?

Think of different ways to count the ducks.

MATH TALK

NUMBER Lines

Students Individually:

- Draw a number line
- Place numbers appropriately on the number line

Sharing:

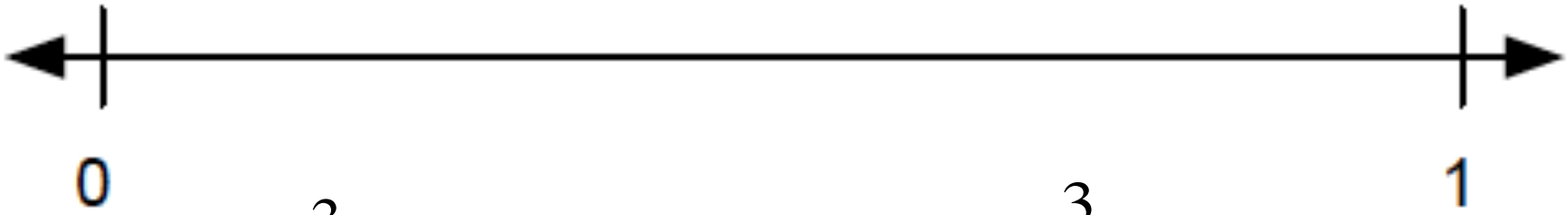
- Call on students to place a number on the public number line and justify its placement

  (Use post it notes if you don't have Smart Board)

Classroom Norms:

- Everyone is responsible for checking each student's placement. If a location is challenged, the class decides whether the number should move to a new location.

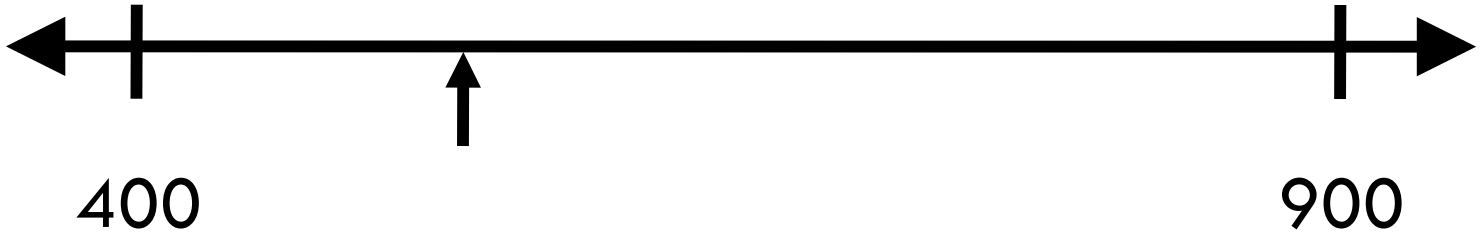
Let's try a number line math talk



- $\frac{3}{4}$
- 0.75%
- 0.45
- $\frac{3}{6}$
- 62.5%
- $\frac{2}{3}$

Place the numbers on the number line

Number Lines: Estimation



What is a reasonable value for the number at the arrow? Why?

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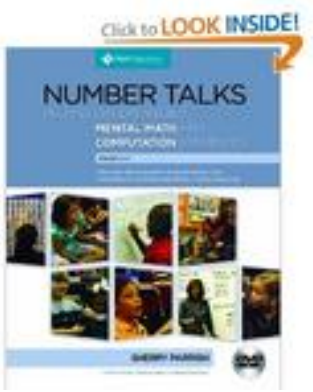
Mental Math

$70 - 59 =$

$56 + 38 =$

$199 + 199 =$

$29 \times 31 =$



Resource: Sherry Parrish (2010). *Number Talks Helping Children Build Mental Math and Computation Strategies.* Sausalito, CA: Math Solutions.

MATH TALK

Number Strings

$$6 \times 8 =$$

$$60 \times 8 =$$

$$60 \times 80 =$$

$$0.6 \times 8 =$$

$$0.6 \times 0.8 =$$

$$0.06 \times 0.8 =$$

$$0.06 \times 0.08 =$$

Resource: Mathematical Routines – San Diego City Schools
http://www.sandi.net/Page/33501

MATH TALK

Open Number Sentences

Find all possible whole number pairs with a sum of 7.

How do we know we have them all?

First Number	Second Number
0	7
1	6
2	5
3	4
4	3
5	2
6	1
7	0

What open number sentence represents these numbers?

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Relational Thinking

Find a value for m that makes the number sentence true.

After you find one way, think of another way….

$$7 + 6 = m + 5$$

$$43 + 28 = m + 42$$

$$28 + 32 = 27 + m$$

$$7 \times 6 = 5 \times 6 + m \times 6$$

$$12 + 9 = 10 + 8 + m$$

$$345 + 576 = 342 + 574 + m$$

$$46 + 28 = 27 + 50 - m$$

$$m + m = 2m$$

MATH TALK

What's My Rule?

Input	Output
62	6.2
50	5
400	40
7	0.7
43	4.3

"The rule is divide by 10."

How can we write an open number sentence for this this rule?

$x \div 10$ or

$\frac{x}{10}$ or

$\frac{1}{10}x$

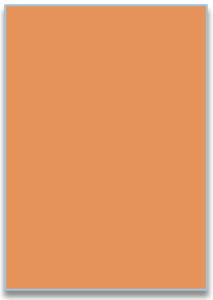
Resource: Inside Mathematics Website

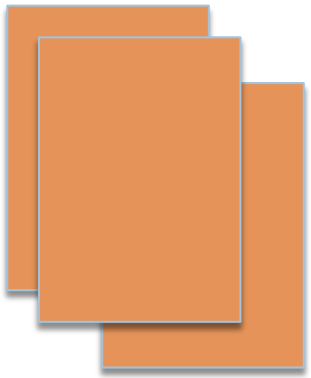
insidemathematics.org

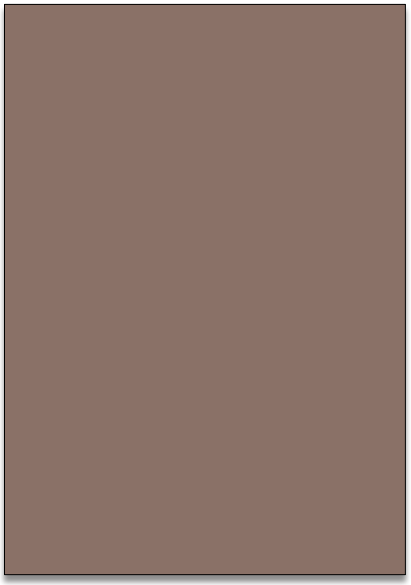
MATH TALK

Area/Perimeter Relationships

How is the orange rectangle related to the the brown rectangle?







A Grade Level Plan at a School

PLAN:

- What we are teaching next week?
- What are students struggling with?
- Select a math talk including a prompt that you as a team agree upon.
- Anticipate student responses
- Try it out in your classroom before the next meeting

SHARE:

- What were the successes/challenges?
- Would you have changed the prompt?
- What type of questions did you ask as the math talk progressed?
- How did your students react?
- How did it inform your future instruction?
- If you recorded bring your charts to share

At the School/District Level:

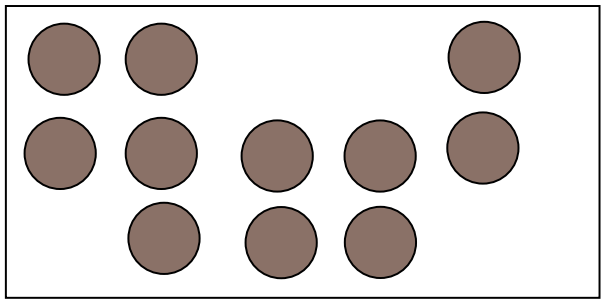
Try a Math Talk Jigsaw using these four prompts

35% of 120

3 ⅓ of 18

What's my rule?

Dot Pattern



Mechanics of a Math Talk Jigsaw

In like groups:

- Brainstorm the many different ways to solve your particular prompt
- Discuss
  - how to record "student" strategies and solutions.
  - how to handle potential pitfalls

Jigsaw:

- One at a time, pose your prompt to your peers
- Practice recording peer strategies and solutions

Next Steps:

- Try out a prompt in your classroom and share a team.

References – Sources

- Mathematical Routines – San Diego City Schools http://www.sandi.net/Page/33501
- Sherry Parrish (2010). *Number Talks Helping Children Build Mental Math and Computation Strategies*. Sausalito, CA: Math Solutions.
- *Number Talks* –Ruth E. Parker
- *Helpful Hints for Implementing Number Talks*- Cathy Young
- Classroom Discussions: Using math talk to help students learn Chapin, O'Connor, Anderson
- Do a Google search for "math talks"
- www.insidemathematics.org

Acknowledgements

- Thanks to David Foster and the work of the Silicon Valley Mathematics Initiative and all the teachers that have worked with him to create a wealth of math talk resources.
- Thanks to teachers who have welcomed us into their classrooms as part of the South and West Cook Mathematics Initiative

Thank you & Good Luck!