The Necessity of Language Instruction in Mathematics

Presented by
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Math Common Core

- 3.MP.3 **Construct viable arguments and critique the reasoning of others.**
  - using concrete referents, such as objects, pictures, and drawings. Using both oral and written language, they justify their conclusions, explain their thinking and make connections between models and equations.
  - by refining mathematical communication skills as students participate in mathematical discussions involving questions like “How did you get that?” and “Why is that true?” They respond to others’ thinking by expressing their agreement or disagreement and asking appropriate questions.

- 3.MP.6 **Attend to precision**
  - by refining mathematical communication skills by using clear and precise mathematical language and giving thoughtfully formulated explanations to each other.
"In one study, Arreaga-Mayer and Perdomo-Rivera (1996) found that ELLs spent only 4 percent of the school day engaged in school talk and 2 percent of the school day discussing focal content of the lessons." p. 8

"Since the dawn of language, conversations have been powerful teachers. They engage, motivate, and challenge. They help us build ideas, solve problems, and communicate our thoughts. They cause ideas to stick and grow in our minds. They teach us how other people see and do life, and they teach other people how we see and do life. Conversations strengthen our comprehension of new ideas." p.1

Jeff Zwiers and Marie Crawford, Academic Conversations: Classroom Talk That Fosters Critical Thinking and Content Understandings, 2011
Multiplication Problem Solving

- ____ x 3 = ____  What factor can you use in this equation to make a product that is even and between 20 and 50? Show all possible solutions. Explain your strategy.
Name & Notice

- Look at this mathematical writing
- Identify what qualities make this mathematical writing strong.

\[ \frac{\text{factor}}{3} = \frac{\text{product}}{1} \]

What factor will give an even product between 20 and 50?

1. I know I can list the products of \(-x3\) by skip counting by 3s.
   
   \[ 3, 6, 9, 12, 15, 18, 21, 24, 27, 30, 
       33, 36, 39, 42, 45, 48, 51, 54 \]

2. I stopped at 54 because I’m looking for a product that is between 20 and 50.

3. I crossed off all of the products that are less than 20, and more than 50, and that aren’t even. I circled the products that work.

4. Next I made a table with the products that work. Now I need to give the factors. I know \(10 \times 3 = 30\) so I’ll start here.
   
   \[ 8 \times 3 = 24 \]
   I also know that \(8 \times 3 = 24\) and \(10 \times 3 = 30\)
   I know知 that \(11 \times 3 = 33\), but I crossed that one off, so \(12 \times 3 = 36\). Now I see a pattern! 8, 10, 12, 14, 16
   
   Answer: The factors 8, 10, 12, 14, 16 will give a product that is even and is between 20 and 50.
What good math writers do:

- Use drawings, diagrams or charts
  \[ \frac{36}{12} = 3 \quad \frac{12}{12} = 1 \quad 36 \div 12 = 3 \]
  \[ \frac{15}{3} = 5 \quad \frac{3}{15} = 1 \quad 15 \div 3 = 5 \]

- Use math language & symbols
  \[ \_ \times \_ = ? \quad x \div - + \sqrt{} \approx < > \]

- Show/explain the steps taken to solve a problem.
  \[ \text{First, } \quad \text{Then, } \quad \text{Next, } \quad \text{Finally, } \]

- Give examples
  \[ 7 < 9 \]

- Describe any patterns discovered
  \[ 3, 5, 7, 9, 11, 13 \text{ add 2 each time} \]

- Explain your thinking and how you solved the problem.

- Check and verify what you have written makes sense.
  \[ 15 \div 3 = 5 \text{ No!} \quad 15 \div 3 = 5 \text{ Yes!} \]
  \[ \frac{3 \times 12}{3} = 12 \quad \frac{4 \times 3}{12} = \]

- Verify your answer and revise it if needed.
  Solve it another way.
## Language of Problem Solving

### General Language Support
- Anchor: Speaker & Listener Responsibilities
- Anchor: How to Write like a Mathematician
- Anchor: Sequence Words
- Anchor: Problem Solving Strategies
- Anchor or Rubric for Self Evaluation
- Anchor: How to Critique the Reasoning of Others/ How to give feedback to Others

### Mathematical Concept-Specific Language Support
- Vocabulary
  - Cognates
  - Sentence Frames
- Strategy Posters
- Exemplars
Speaker Responsibilities

Talk clearly and loud enough to be heard.

Look at your partner.

Use math words.

Point to pictures, words or symbols on your paper.

Ask, “Does that make sense?”

Answer questions your partner has about your thinking.

Listener Responsibilities

Look at your partner.

Listen to understand their math thinking.

Ask questions when something doesn’t make sense.

Say if you agree or disagree.

Disagree in a respectful way and tell why.
What good math writers do:

- Use drawings, diagrams or charts
  36 ÷ 12 = 3
  12 ÷ 12 + 12 ÷ 3 = 36
  15 ÷ 3 = 5

- Use math language & symbols
  \[ x \times = ? \]
  \[ x \div + \sqrt{ } \geq < \]

- Show/explain the steps taken to solve a problem.
  1. First,
  2. Then,
  3. Next,
  4. Finally,

- Give examples
  7 < 9
  √ x √ x √

- Describe any patterns discovered
  3, 5, 7, 9, 11, 13 add 2 each time

- Explain your thinking and how you solved the problem.

- Check and verify what you have written makes sense
  15 ÷ 3 = 5 NO!
  15 ÷ 3 = 5 YES!

- Verify your answer and revise it if needed.
  Solve it another way.
# Possible Sequencing Anchor Chart

<table>
<thead>
<tr>
<th>First,</th>
<th>I know…and… because… Therefore, my answer is… I verified my answer by ….</th>
<th>Number each step.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Then,</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Next,</td>
<td></td>
<td></td>
</tr>
<tr>
<td>My answer is…</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Finally, I ……</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Name

Problem-Solving Recording Sheet

Problem:

<table>
<thead>
<tr>
<th>Find? Key Words (÷ - x ÷)</th>
<th>Know?</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Strategies:
- Show the Problem
  - Draw a Picture
  - Write an Equation
  - Make an Organized List
  - Make a Table
  - Make a Graph
  - Act It Out / Use Objects
  - Look for a Pattern
  - Try, Check, Revise
  - Use Reasoning
  - Work Backwards
  - Solve a Simpler Problem

Show the Problem:  

Solution:

Answer:  

Check: Reasonable?

There is a chicken farmer who wants to figure out how many egg cartons he will need for the eggs he has each day. The hens lay 62 eggs each day. You can put 12 eggs into each egg carton. How many egg cartons will you need so all of the eggs will be in a carton?

- 5 cartons will be full
- 1 egg carton will have 2 eggs.
Say it With Pictures

\[ \square = 1 \text{ house} \quad \text{II} = 2 \text{ dogs} \]
Say it With Numbers

how many dogs

\[ 2 \times 16 = 32 \]

total dogs

how many houses
There were two dogs at each house and 16 houses so I counted by 2’s sixteen times. I used my fingers to help me keep track.
1. Dibujo:

2. [Ecuación: $5 + 3 = 8$

3. El duende tendrá $8$ monedas en total.
### Problem Solving Strategies

1. Draw a Picture or Diagram
2. Find a Pattern
3. Guess and Check
4. Make a List
5. Make a Table
6. Solve a Simpler Problem
7. Use Logical Reasoning
8. Work Backward
9. Write an Equation
<table>
<thead>
<tr>
<th>Rúbrica para resolver problemas de matemáticas</th>
<th>Solución de Problemas/ Comprensión</th>
<th>Estrategias, Razonamiento, Procedimiento</th>
<th>Comunicación</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Novato (Novice)</strong></td>
<td>No entendí / comprendí el problema.</td>
<td>No pude empezar</td>
<td>No expliqué cómo solució el problema, no use dibujos, tablas o gráficas para mostrar cómo solucione el problema.</td>
</tr>
<tr>
<td>Apenas estoy comenzando a aprender esto y todavía realmente no lo entiendo</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Estoy comenzando a entenderlo, pero necesito alguien para guiarme en esto</td>
<td></td>
<td>NECESITO AYUDA!</td>
<td></td>
</tr>
<tr>
<td>(Usuario)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yo puedo hacerlo solo/a, pero a veces me equivoco o me quedo atascado</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Experto (expert)</strong></td>
<td>Lo entendí! Le hice usando nuevas métodos y puedo mostrarle cómo funciona. Puedo decirte que conceptos matemáticos se usan. Use una regla y/o verifique que mi estrategia es correcta.</td>
<td>Mi solución es el inventivo uso de conceptos de las matemáticas para solucionar el problema. Tomé en cuenta algunos otros detalles importantes.</td>
<td>Puedo explicar mi pensamiento y considerar el razonamiento de otros. Puedo usar una rúbrica para calificar mis problemas de matemáticas.</td>
</tr>
<tr>
<td>Yo lo entiendo muy bien, y puedo enseñarlo a otra persona completamente</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Building the Conversation for Self Evaluation

- **What did you notice?**
  - I observed/noticed ________________.
  - In this example I noticed ________________.
  - Some of the strengths that I noticed about this example were ________.
  - I realized that there are many different math strategies in this example like ________________.

- **What is a strategy that could be used to improve the example?**
  - This problem needs ____________________.
  - I recommend that he/she includes ______________ next time.
  - It is important to include ______________ in order to ________________.

- **Rubric**
  - I am a/an __________ in ______________ because ________________.
  - I noticed that ________ has/uses ________ and because of that ________ would be a/an ______ in ________.
<table>
<thead>
<tr>
<th><strong>MATH TALK: Building mathematical ideas</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Student</strong> Presenting our ideas</td>
</tr>
<tr>
<td>I have an idea…</td>
</tr>
<tr>
<td>I have an example…</td>
</tr>
<tr>
<td>I have another way…</td>
</tr>
<tr>
<td>I can prove my thinking by…</td>
</tr>
<tr>
<td>I can show you what I am thinking using…</td>
</tr>
<tr>
<td>(drawings, manipulatives, numbers, words)</td>
</tr>
<tr>
<td><strong>Adding to other ideas</strong></td>
</tr>
<tr>
<td>I agree/disagree with ___________’s idea…</td>
</tr>
<tr>
<td>I’d like to add to __________’s idea…</td>
</tr>
<tr>
<td>I have a question about __________’s idea…</td>
</tr>
<tr>
<td>I am not sure if I understand __________’s idea…</td>
</tr>
<tr>
<td><strong>Making connections</strong></td>
</tr>
<tr>
<td>I can make a connection to what we learned before…</td>
</tr>
<tr>
<td>I use this math in the real world when I…</td>
</tr>
<tr>
<td>This is related to …</td>
</tr>
<tr>
<td><strong>Reflecting on what we learned</strong></td>
</tr>
<tr>
<td>I learned that …</td>
</tr>
<tr>
<td>I know how to…</td>
</tr>
<tr>
<td>I can answer the “E” essential question of the day…</td>
</tr>
</tbody>
</table>
# MATH TALK: Building mathematical ideas

**Teacher**

**Presenting our ideas**

- Who can give me an example?
- What is another way to solve this problem?
- How can you convince your classmates (partner)?
- Can you compare your thinking with your partner’s thinking?
- How can you show your thinking using drawings, manipulatives, numbers, and words?

**Adding to other ideas**

- Do you agree/disagree with _____________’s idea? Why?
- What would you like to add to _________’s idea?
- Do you have a question about _________’s idea?
- How can we restate it (question or statement) in our own words?

**Making connections**

- What connection can you make to what we have learned before?
- How would you use this math in the real world?
- How is this related to____________? What if ____________?

**Reflecting on what we learned**

- What concepts or ideas have you learned?
- How do we use ____________________?
- How can we answer the “E” essential question of the day?
Self Evaluation

<table>
<thead>
<tr>
<th></th>
<th>Novice</th>
<th>Apprentice</th>
<th>Practitioner</th>
<th>Expert</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prob Solving &amp;</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Understanding</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Strategies,</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reasoning, &amp;</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Procedures</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Communication</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Writing</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- I am _____ in the area of _____ because I_____.
- I am a novice in the area of communication because I didn’t explain how I solved the problem.
- However, I am an expert in the area of strategies, reasoning and procedures because my solution is effective and I verified my strategies work.
How to Critique/Give Feedback

I agree with ____ because ......
I disagree with ____ because ......
I also noticed ......
I'd like to build on what .... said ......
I didn't understand ......
I think what ...... meant is ......
I predict that ......
My strategy was ......
I think a more efficient strategy would be ....
Another possible strategy would be ...
Can you say more about .... ?
Why do you think that?
How do you know that?
Can you explain that in another way?
Can you prove that?
I agree with you because___

... I noticed the same thing here.

... I got the same answer but used a different strategy.

I disagree with you because___

... I thought about this part a different way.

... I think the question was asking___.
Math Vocabulary Bank:

I added.... I estimated....
I subtracted.... I drew....
I multiplied.... I broke these numbers apart
I divided... I compared _____ with _____.
I revised my work.... I verified....
One strategy that I used was ......
When I finished with this step I ......
Properties of 2-D Polygons

May have:

- Perpendicular lines
- Parallel lines

Will always have:

- Angles
- Vertices
- Three or more sides
- Straight sides

A More sides means larger angles!
Possible Vocabulary Strategies

<table>
<thead>
<tr>
<th>Word</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>multiplication</td>
<td>3 x 4 = 12</td>
</tr>
<tr>
<td></td>
<td>5 x 3 = 15</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Definition</th>
<th>Non-Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>a number is added to itself many times</td>
<td>8 – 6 = 2</td>
</tr>
<tr>
<td></td>
<td>16 ÷ 2 = 8</td>
</tr>
</tbody>
</table>

Examples:

- 3 x 4 = 12
- 5 x 3 = 15

Non-Examples:

- 8 – 6 = 2
- 16 ÷ 2 = 8
Frayer Model

**Definition**
An equation is a mathematical statement that shows that two expressions are equal.

**Facts/Characteristics**
- always has exactly one equal sign
- the left side is equivalent to the right side
- some equations have 0, 1, 2 or more solutions
- some equations contain just numbers
- some equations are algebraic models for relationships and they have corresponding graphical models and numerical models (e.g., tables)

**Equation**

**Examples**
- $3x - 2 = 4x + 7$ (linear equation)
- $ab = ba$ (an identity)
- $F = 1.8C + 32$ (a formula)
- $5 + 6 = 11$ (a number statement)
- $P = 2l + 2w$ (a formula)
- $x = 3$ (statement of value)

**Non-examples**
- $2x + 3y$ (expression)
- $3$ (number)
- perimeter (word)
- $x < y$ (inequality)
- $= 4.2$ (has no left side)
Multi Functional Activities

- Picture File Cards
  - Pre Assess Vocabulary and Language
  - Pre Assess Concept Knowledge
  - Build Concept Knowledge
  - Oracy Practice (Structured Language Practice Activities)
Cognates –
What are they? Why are they important?

- Cognates are words in two languages that share a similar meaning, spelling, and pronunciation.
- English may share very few cognates with a language like Chinese, however 30-40% of all words in English have a related word in Spanish.
- For Spanish-speaking ELLs, cognates are an obvious bridge to the English language.
- Cognate awareness is the ability to use cognates in a primary language as a tool for understanding a second language.

- [www.colorincolorado.org](http://www.colorincolorado.org)
- [www.spanishcognates.org](http://www.spanishcognates.org)
## Cognates used in Math

<table>
<thead>
<tr>
<th>English</th>
<th>Spanish</th>
<th>French</th>
<th>German</th>
</tr>
</thead>
<tbody>
<tr>
<td>analyze</td>
<td>analizar</td>
<td>analyser</td>
<td>analysieren</td>
</tr>
<tr>
<td>Calendar</td>
<td>calendario</td>
<td>calendrier</td>
<td>Kalender</td>
</tr>
<tr>
<td>multiplication</td>
<td>multiplicación</td>
<td>multiplication</td>
<td>multiplikation</td>
</tr>
<tr>
<td>groups</td>
<td>grupos</td>
<td>groupes</td>
<td>gruppen</td>
</tr>
<tr>
<td>result</td>
<td>resultar</td>
<td>résulter</td>
<td>-----</td>
</tr>
<tr>
<td>product</td>
<td>producto</td>
<td>produit</td>
<td>produkt</td>
</tr>
</tbody>
</table>
Matemáticas
Cognados (Español)
Multiplicación
triángulo
Producto
hexágono

Mathematics
Cognates (English)
Multiplication
triangle
product
hexagon
Palabras para fracciones:

\[ \frac{1}{2} \]

____ es el numerador porque ___.

____ es el denominador porque ___.

\[ \frac{1}{2} \quad \frac{2}{4} \]

¿Son fracciones equivalentes?

____ es igual a ___.

____ es igual a ___ porque ____.

___ y ___ son fracciones equivalentes porque _____.

Razones: son los mismos, son iguales, los dos tienen el mismo porcentaje, son el mismo tamaño

___ y ___ no son fracciones equivalentes porque _____.

\[ \frac{3}{5} \quad \frac{60\%}{4} \]

\[ \frac{3}{5} \quad \frac{1}{4} \] = 25%
**Strategy Posters**

**Multiplication Strategies**

- **Arrays!**
  - Make an array by making a rectangle with the factors being the length and width. The product is the area of the rectangle.
  - Example: $3 \times 5 = 15$

- **Equal Groups!**
  - Make equal groups by using one factor to determine how many are in each group and the other factor to know how many groups you have. The product is the total of all of them.
  - Example: $4 \times 3 = 12$

**Number Lines!**

- Use a number line by counting by one factor as many times as the other factor to finish at the product.
  - Example: $6 \times 4 = 24$

**Repeated Addition!**

- Use repeated addition by adding one factor as many times as the other factor.
  - Example: $5 \times 6 = 30$

**Division Strategies**

- **Parts of a Division Problem**
  - **Dividend**: What you are dividing (the big number)
  - **Divisor**: What you are dividing by (the small number)
  - **Quotient**: The amount of times you can divide the Dividend by the Divisor (the answer)

- **Ways to Write Division Problems**
  - $5 \div 4 = 1.25$

- **Number Lines!**
  - Start from the Dividend on the number line, then jump back by the distance of the Divisor as many times as you can.
  - Example: $20 \div 4 = 5$

- **Equal Sized Groups**
  - Figure out how many of the Dividend need to get the Divisor.
  - Example: $20 \div 4 = 5$

**Repeated Subtraction**

- Subtract the Divisor as many times as you can from the Dividend to find the Quotient (answer).
  - Example: $20 \div 4 = 5$

- **Equal Jars**
  - You need 5 groups of 4 to get 20.
Exemplars

- Establish how to use the language within context (frames)
- Establish what students are expected to do with the content and language
  - explain their process/thinking
- Opportunity to model mathematical thinking
Exemplars

\[ \frac{1}{3} \times 3 \quad \frac{\text{factor}}{\text{product}} \]

What factor will give an even product between 20 and 50?

1. I know I can list the products of \(-\times 3\) by skip counting by 3s.
   
   \[
   3, 6, 9, 12, 15, 18, 21, 24, 27, 30, 33, 36, 39, 42, 45, 48, 51, 54
   \]

2. I stopped at 54 because I'm looking for a product that is between 20 and 50.

3. I crossed off all of the products that are less than 20, and more than 50, and that aren't even. I circled the products that work.

4. Next I made a table with the products that work. Now I need to give the factors. I know \(\frac{10}{3} = 30\) so I’ll start here. I also know that \(\frac{8}{3} = 24\), but I circled that one off. So \(\frac{12}{3} = 36\). Now I see a pattern! 8, 10, 12, 14, 16 and 16 are the other factors.

Answer: The factors 8, 10, 12, 14, 16 will give a product that is even and is between 20 and 50.
Exemplars

24 students went on a field trip, and $\frac{2}{3}$ rode on the school bus, while the rest of them rode with their parents in cars.

How many rode on the bus?

How many rode in cars?

Answer:

24 students

$\frac{2}{3}$ student

$\frac{1}{3}$ of the students

$\frac{1}{3}$ of 24 = 8

$\frac{1}{3} \times 24 = 8$

$8 + 8 = 16$

$\frac{1}{3} \times 24 = 8$

$\frac{1}{3}$ went on bus

First I made 3 groups.
Second I labeled them.
Next I wrote the equation $\frac{1}{3} \times 24 = 8$.
After that I figured out the answer.
Finally I wrote down the answer.

First I divided 24 into 3 equal groups, because I needed to turn it into thirds.
Second I figured there were 8 for each $\frac{1}{3}$.
Next I added $\frac{2}{3}$ together, which was $8 + 8 = 16$ or $16 = \frac{4}{3}$. After that I wrote the equation $\frac{4}{3} \times 24 = 16$ and $\frac{1}{3} \times 24 = 8$. Finally I answered the questions by writing $16$ went on the bus.
Don’t Forget…
Additional Considerations

- Use Consistent Structures for Cooperative Learning
- Begin with Language ~ Intentional and Explicit Instruction
  - Vocab Activities (Content Language)
  - Cognates
  - Oracy Practice (Functional Language)
- Accessibility to Language ~ Anchor Charts
  - How to use language within context (frames)
  - What students are expected to do with the language
    - explain their process/thinking
    - application task(s)
- Portable Language
  - For games and seat work (partner and individual)
  - In “Math Journals” or on slips of paper—right in front of students
  - Take Activities from Oracy to Writing
- Take Activities from Oracy to Writing
- Self Evaluation & Critiquing the Reasoning of Others
Use Consistent Structures

- If students know what to expect and how to interact, you will maximize instructional time
- Jeff Zwiers-Academic Conversations
- Teach expectations and structures before using them within content related activity
- Consistent Oral Language Practice Routines
Cooperative Learning Structures that Work Well During Math Time

- Rally Coach
- Numbered Head Together
- Talking Chips
- Placemat Consensus
Begin with Language-Intentional and Explicit

- Frontload with Vocabulary and Language Structures
  - All students have access
  - Facilitates learning
  - Enhances communication
- Vocabulary Building Ideas
  - The Frayer Model
  - Picture File Cards
  - Illustrated Word Bank or Illustrated Dictionary
- Cognates
- Language Structures
  - Shows students how to express their knowledge mathematically—using academic language
Identifying Key Words in Math Word Problems

Structures of Language ~
Identify Key Words (+ - x ÷)

- What factor will give an even product between 20 and 50?

- What **factor** will give an even **product** between 20 and 50?

- **factor** and **product** mean **multiplication**
How can knowing the sum of 4+4 help you find the sum of 4+5? Show how you can use this strategy to solve other problems.

How can knowing the sum of 4+4 help you find the sum of 4+5? Show how you can use this strategy to solve other problems.

sum and + mean addition
Accessibility to/Portability of Language

Provide language for:
- games
- seat work
- math journals
- Discussions

One way to do this is to provide “Language Cards”
- Language Cards (one example—Zwiers)
  - they provide a clear example of what you want students to discuss and how they should do it
### Portable Language
### Multiples-Skip Counting-Partner Language Cards

<table>
<thead>
<tr>
<th>A: Questions</th>
<th>B: Responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>___ , ___ , ___ , … What is the next multiple of ____?</td>
<td>The next multiple of _____ is ______.</td>
</tr>
<tr>
<td><em>15</em> , <em>20</em> , <em>25</em> , … What is the next multiple of <em>5</em>?</td>
<td>The next multiple of <em>5</em> is <em>30</em>.</td>
</tr>
<tr>
<td>What is the _____ multiple of _____? (1st-12th)</td>
<td>The _____ multiple of _____ is _____.(1st-12th)</td>
</tr>
<tr>
<td><strong>What is the <em>3rd</em> multiple of <em>5</em>?</strong></td>
<td><em>The <em>3rd</em> multiple of <em>5</em> is <em>15</em>.</em></td>
</tr>
<tr>
<td>How many multiples of _____ are in _____?</td>
<td>There are _____ multiples of _____ in ______.</td>
</tr>
<tr>
<td><strong>How many multiples of __<strong>3</strong> are in <strong>15</strong>?</strong></td>
<td><em>There are <em>5</em> multiples of <em>3</em> in <strong>15</strong>.</em></td>
</tr>
</tbody>
</table>
Take Activities from Oracy to Writing

- **CHOOSE 1 OR 2 ORACY ACTIVITIES**
  - Inside/Outside Circle
  - Give one get one

- **TAKE THEM TO WRITING**
  - Writing sentences after activities/games
  - Reflection of learning
  - Writing their own problems
  - Math Journals
Additional Resources

- Kagan, Spencer: Cooperative Learning Resources
What can your students create that will help make the world awesome?

http://www.youtube.com/watch?v=l-gQLqv9f4o