



California Mathematics Council - South

55th Annual Mathematics Conference

October 24 - 25, 2014 | Palm Springs Convention Center

www.cmc-south.org

Supporting English Language Development in Math

Grades K – 8th

Presented by

Shelah Feldstein & Kim Webb

Tulare County
Office of Education

Jim Vidak, County Superintendent of Schools

AGENDA

- 4 Domains of Language
- 8 Mathematical Practices
- 4 SBAC Claims
- Lots of Math Practice!

Notice/Wonder

Saúl tiene 35 dólares en su cuenta de ahorros. Evelin tiene 48 dólares en su cuenta de ahorros. ¿Cuanto menos tiene Saúl?

4 Domains of Language

**Listening
(Receptive)**

**Speaking
(Expressive)**
4% EO
2% ELL

**Reading
(Receptive)**

**Writing
(Expressive)**

Mathematical Practices

1. Make sense of problems and persevere in solving them

6. Attend to precision

2. Reason abstractly and quantitatively

3. Construct viable arguments and critique the reasoning of others

4. Model with mathematics

5. Use appropriate tools strategically

7. Look for and make use of structure.

8. Look for and express regularity in repeated reasoning.



Reasoning and explaining



Modeling and using tools



Seeing structure and generalizing



Overarching habits of mind of a productive mathematical thinker.

4 SBAC Claims for Mathematics

Claim 1: Concepts and Procedures

Students can explain and apply mathematical concepts and interpret and carry out mathematical procedures with precision and fluency.

Claim 2: Problem Solving

Students can solve a range of complex, well-posed problems in pure and applied mathematics, making productive use of knowledge and problem solving strategies.

Claim 3: Communicating Reasoning

Students can clearly and precisely construct viable arguments to support their own reasoning and to critique the reasoning of others.

Claim 4: Modeling and Data Analysis

Students can analyze complex, real-world scenarios and can construct and use mathematical models to interpret and solve problems.

Claim 2- Problem Solving

4.MD.3



A rectangle is 6 feet long and has a perimeter of 20 feet.

What is the width of this rectangle? Explain how you solved this problem.

What needs to be in the explanation?

Rectangle 1

Sample Top-Score Response:

$$20 - 6 - 6 = 8 \text{ feet}$$

Half of 8 feet is 4 feet, so the width is 4 feet long.

Full credit (2 points):

The response demonstrates a full and complete understanding of problem solving. The response contains the following evidence:

- The student determines that 4 feet is the width of the rectangle with a correct process clearly demonstrated.

Partial credit (1 point):

The response demonstrates a partial understanding of problem solving. The response contains the following evidence:

- The student determines 4 feet is the width, but does not show sufficient work to support this conclusion.

OR

- The student begins a correct process for determining the missing width, but ends up with an incorrect solution due to an incomplete process, computational mistake, or other mechanical error in the process.

What
opportunities
do we give
students to
explain the
math they did
in words?

Claim 3: Communicating Reasoning

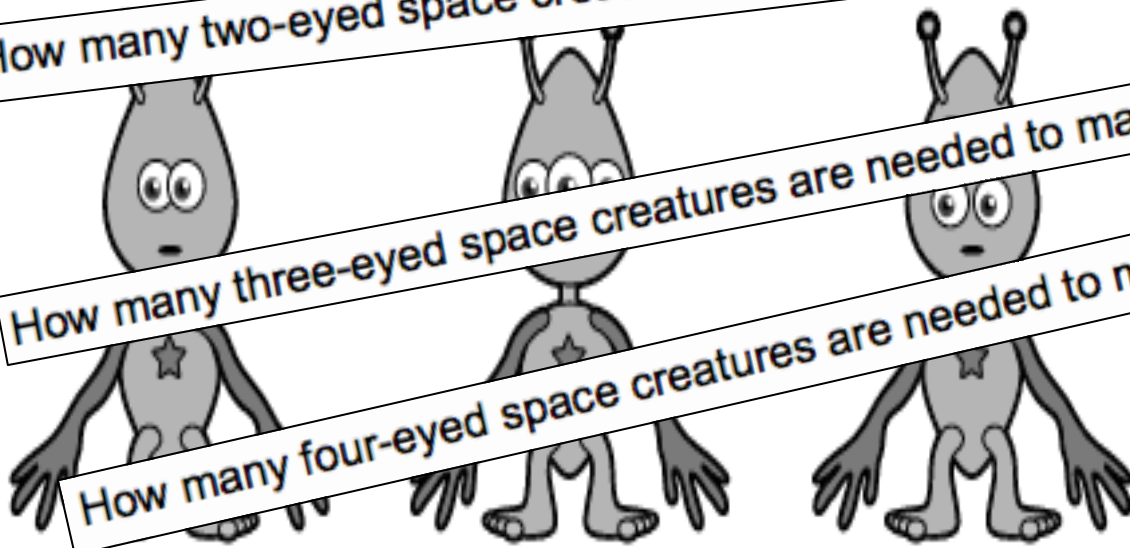
3.OA.2, 4.OA.3, 4.OA.4

The two-eyed space creatures, three-eyed space creatures, and four-eyed space creatures are having a contest to create a group with 24 total eyes.

How many two-eyed space creatures are needed to make a group with 24 total eyes?

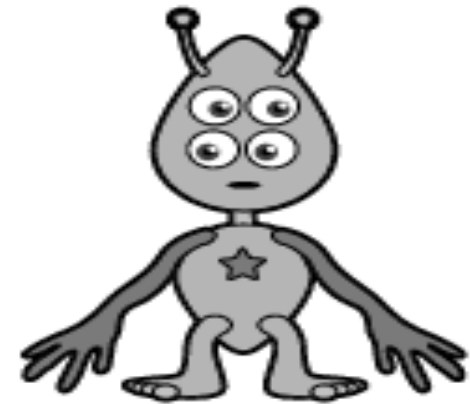
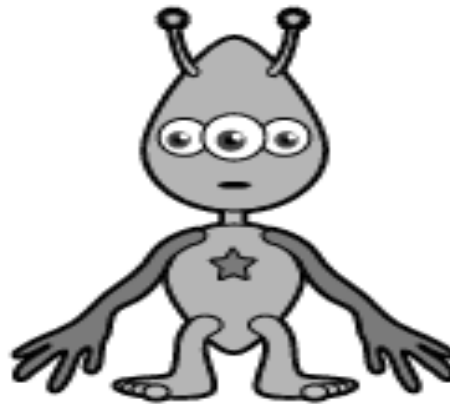
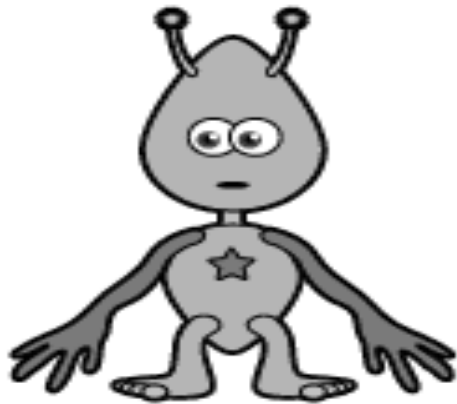
How many three-eyed space creatures are needed to make a group with 24 total eyes?

How many four-eyed space creatures are needed to make a group with 24 total eyes?





The two-eyed space creatures, three-eyed space creatures, and four-eyed space creatures are having a contest to create a group with 24 total eyes.



Somebody told the five-eyed space creatures that they could not join the contest. Explain why five-eyed space creatures cannot make a group with 24 eyes.

Cite
Evidence

Rubric

For full credit (3 points):

The response demonstrates a full and complete understanding of communicating reasoning. The response contains the following evidence:

- The student correctly identifies the correct number of two-, three-, and four-eyed aliens needed to make a group with 24 eyes.

AND

- The student correctly explains that the five-eyed aliens cannot make a group with 24 eyes because 5 is not a factor of 24 or because the groups of eyes can only be multiples of 5.

Claim 2: Problem Solving

6.SP.3

Sandbags 1

Sample Top-Score Response:

Since the mean is less than 50, $\frac{57+41}{2} = 49$ pounds, it is possible to move sand between bags so that each sandbag weighs 49 pounds.

For full credit (1 point):

The response demonstrates a full and complete understanding of solving problems of this type. The response contains the following evidence:

- Student provides sufficient support for the conclusion that it is possible to have less than 50 pounds in each sandbag, (e.g., applying the mean, explaining how much weight would need to be transferred, or other valid supporting explanation).

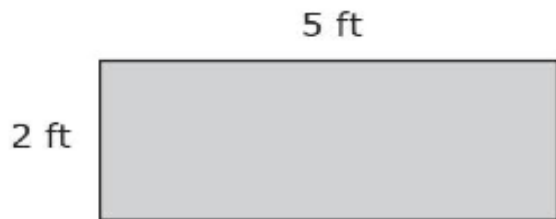
Student Task

PLANTING TULIPS PERFORMANCE TASK

In this task, your class is helping the principal to plant flowers in front of the school. You will help decide the shape of the planter and how many tulips can fit into the container. Remember to calculate the total space needed, which includes the space between the tulip bulbs and the width of the tulip bulb.

Working with Measurements

1. Bernard and Sara recommend a rectangular planter that is 5 feet long and 2 feet wide. Bernard says that it will be easier to figure out how many tulips to plant if the measurements are in inches.



Fill in the blanks to show the number of inches for each measurement.

Length: 5 feet = _____ inches

Width: 2 feet = _____ inches

Figuring Out Digging Depth

2. The class will need to dig a hole to a depth of at least twice the length of the tulip bulb. Rosa measures the length of two different tulip bulbs. She finds one is $1\frac{1}{2}$ inches long and the other is $2\frac{1}{2}$ inches long.

Sam thinks that they should dig all of the holes 3 inches deep, but Rosa says that 3 inches is not deep enough. Who do you think is correct? Explain your reasoning.

Bulbs in the Rectangular Planter

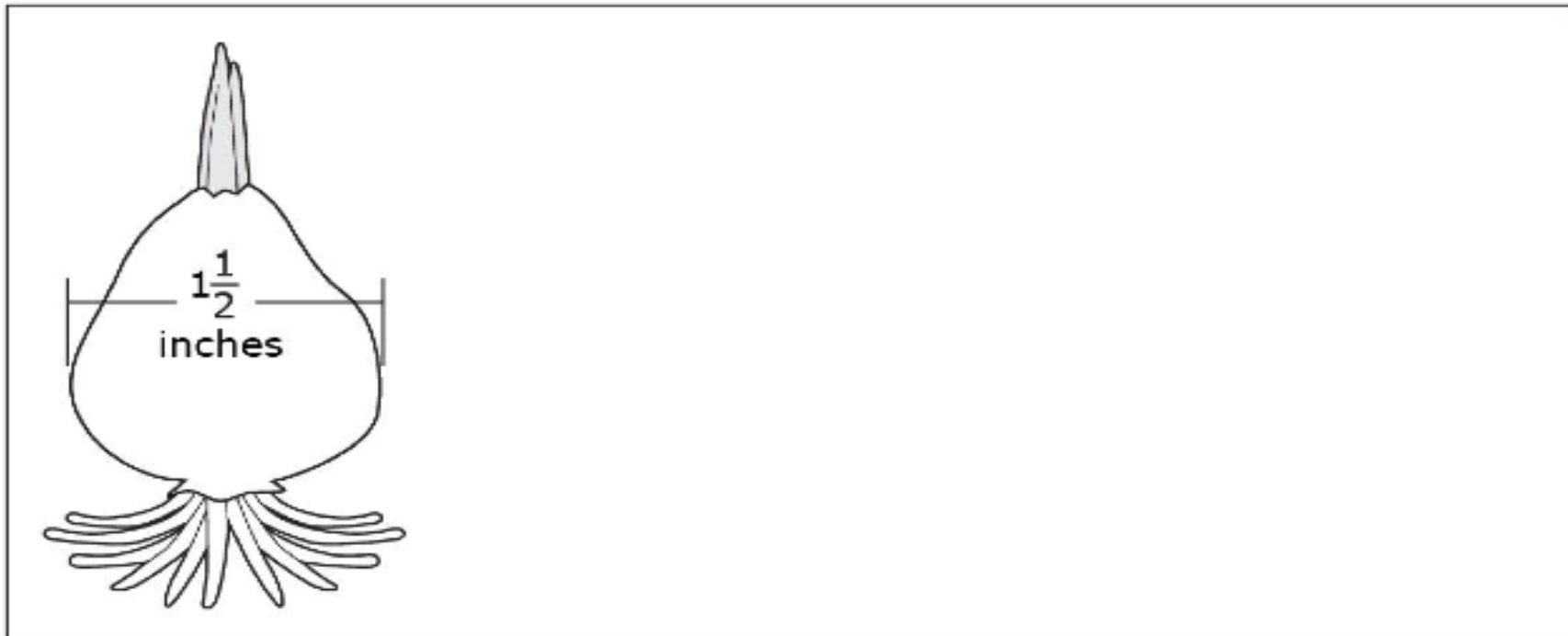
3. The class finds a bag containing bulbs that are each $1\frac{1}{2}$ inches wide and decides to use them in their rectangular planter. Following the planting guidelines, answer the questions and show your calculations.

PLANTING GUIDELINES: The distance between tulip bulbs should be 3 times the width of the bulb.

- A. This picture shows a tulip bulb that is $1\frac{1}{2}$ inches wide. Use your ruler and mark an "X" where the next bulb could be planted.

Task Specifications

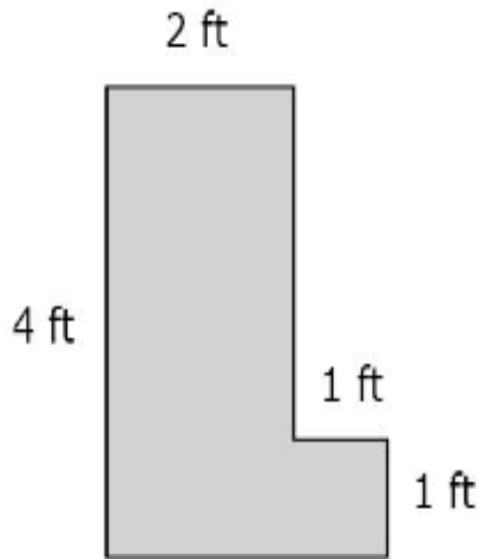
Item Id:	MAT.04.TULIPS.PT
Title:	Planting Tulips
Grade:	4
Content Domain(s):	Operations and Algebraic Thinking; Number and Operations—Fractions; Measurement and Data
Assessment Target(S):	<p>Claim 1, Target I: Solve problems involving measurement and conversion of measurements from a larger unit to a smaller unit.</p> <p>Claim 3, Target E: Distinguish correct logic or reasoning from that which is flawed and—if there is a flaw in the argument—explain what it is.</p> <p>Claim 3, Target B: Construct, autonomously, chains of reasoning that will justify or refute propositions or conjectures.</p> <p>Claim 2, Target D: Identify important quantities in a practical situation and map their relationships (e.g., using diagrams, two-way tables, graphs, flowcharts, or formulas).</p> <p>Claim 2, Target B: Select and use appropriate tools strategically.</p> <p>Claim 2, Target A: Apply mathematics to solve well-posed problems arising in everyday life, society, and the workplace.</p> <p>Claim 3, Target A: Test propositions or conjectures with specific examples.</p> <p>Claim 3, Target D: Use the technique of breaking an argument into cases.</p>



- B. Using your drawing, calculate the total length of space that is needed for each bulb with a $1\frac{1}{2}$ -inch width. Your answer should include the width of the bulb shown.
- C. How many tulip bulbs with a $1\frac{1}{2}$ -inch width can be planted in a single row that is 5 feet long?
- D. How many tulip bulbs with a $1\frac{1}{2}$ -inch width can be planted in a single column that is 2 feet long?
- E. How many total tulip bulbs with a $1\frac{1}{2}$ -inch width can be planted in the 5-foot by 2-foot rectangular planter? Explain or show your reasoning.

Selecting a Planter

4. Edward thinks that the L-shaped planter shown will hold more tulip bulbs than the 5-foot by 2-foot planter.



Following the same planting guidelines, how many tulip bulbs with a $1\frac{1}{2}$ -inch width can the L-shaped planter hold?

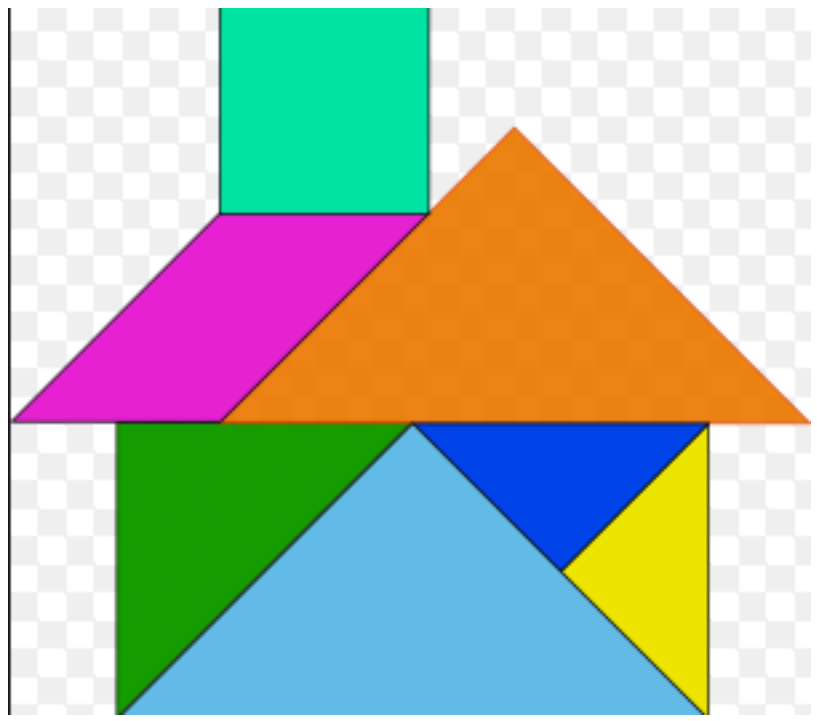
Which planter shape (rectangle or L-shaped) holds more tulip bulbs? Explain or show your reasoning.

Scorable Parts	Points	Claims
<p>1.</p> <p>Bernard says that it will be easier to figure out how many tulips to plant if the measurements are in inches.</p>	<p>0–2 Points</p> <p>Full credit for correctly converting feet to inches for both lengths. Accept other valid responses.</p>	<p>Contributes evidence to Claim 1, Concepts and Procedures</p>
<p>2.</p> <p>Sam thinks that they should dig all of the holes 3 inches deep, but Rosa says that 3 inches is not deep enough. Who do you think is correct? Explain your reasoning.</p>	<p>0–2 Points</p> <p>Full credit for stating Rosa is correct because the $2\frac{1}{2}$-inch bulb will need a hole 5 inches deep. Three inches is not deep enough.</p>	<p>Contributes evidence to Claim 3, Communicating Reasoning</p>
<p>3.</p> <p>A. Use your ruler and mark an "X" where the next bulb could be planted.</p> <p>B. Using your drawing, calculate the total length of space that is needed for each bulb with a $1\frac{1}{2}$-inch width.</p> <p>C. How many tulip bulbs with a $1\frac{1}{2}$-inch width can be planted in a single row that is 5 feet long?</p> <p>D. How many tulip bulbs with a $1\frac{1}{2}$-inch width can be planted in a single column that is 2 feet long?</p> <p>E. How many total tulip bulbs with a $1\frac{1}{2}$-inch width can be planted in the 5-foot by 2-foot rectangular planter? Explain or show your reasoning.</p>	<p>0–6 Points</p> <p>Full credit for:</p> <p>Marking an "X". There should be 3 inches between the edge of the bulb and the edge of "X".</p> <p>Finding 6 inches as the total length of space needed per bulb.</p> <p>Finding 10 bulbs will fit in a 5-foot long row.</p> <p>Finding 4 bulbs will fit in a 2-foot long column.</p> <p>Finding 40 total bulbs will fit in the 5-foot by 2-foot planter.</p>	<p>Contributes evidence to Claim 2, Problem Solving</p>

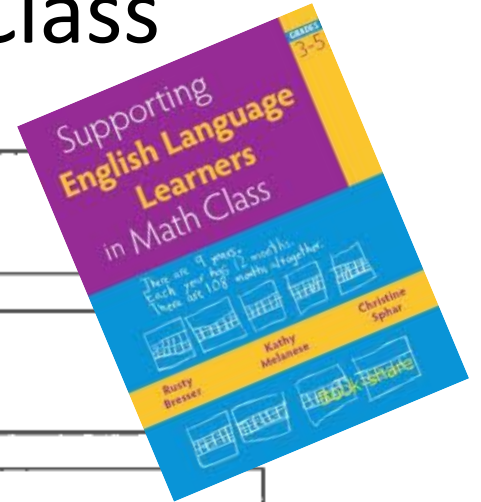
<p>4.</p> <p>Following the same planting guidelines, how many tulip bulbs with a $1\frac{1}{2}$-inch width can the L-shaped planter hold?</p> <p>Which planter shape (rectangle or L-shaped) holds more tulip bulbs? Explain or show your reasoning.</p>	<p>0–3 Points</p> <p>Finding 36 bulbs will fit in the L-shaped planter.</p> <p>Full credit is given for stating the rectangular planter will hold more bulbs and showing all supporting calculations for this answer. Responses should include the calculating of the number of bulbs for the L-shaped planter and comparing this to the number of bulbs for the rectangular planter (found in question 3 E).</p>	<p>Contributes evidence to Claim 3, Communicating Reasoning</p>
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As a Migrant Support Person, how can you help students be successful “Explaining or showing their reasoning?”

Match Mine Geometry



Using Vocabulary and Sentence Frames to Support Writing in Math Class



First, _____.

Next, _____.

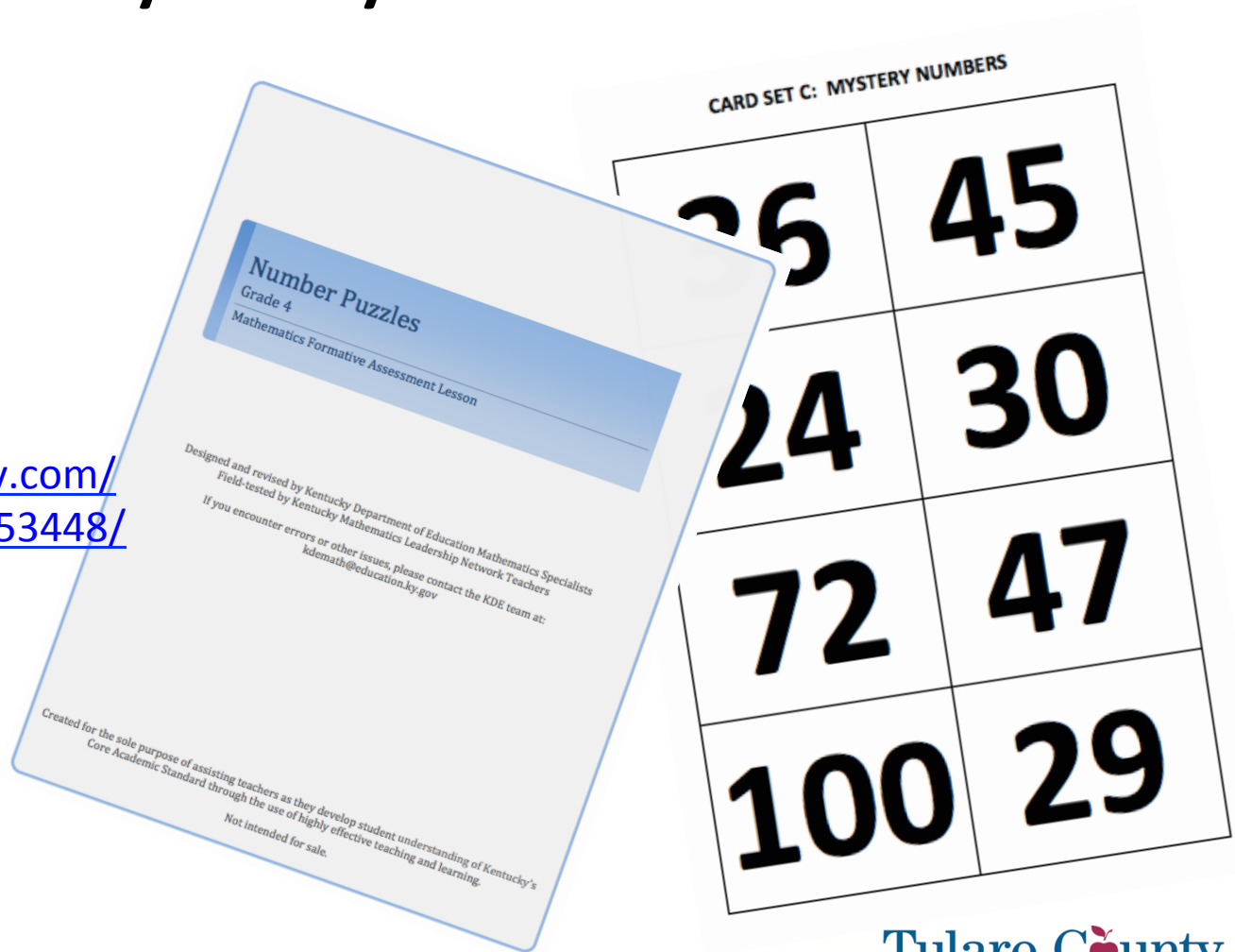
Then, _____.

After that, _____.

Finally, _____.

Mystery Numbers

http://teresaemmert.weebly.com/uploads/1/3/0/5/13053448/number_puzzles.pdf



Tulare County
Office of Education

Jim Vidak, County Superintendent of Schools

Student Task

Your class and your teacher are going on a field trip. They can visit an aquarium, a science museum, or a zoo. Your teacher has asked for your choices. In this task, you will determine where the class has the most votes and the cost per student.

This is a map of your school and the three different places to visit.



School

34 mi



Zoo

The class voted on which place to visit. These tables show the results.

Name	First Choice	Second Choice
Olivia	Zoo	Science Museum
Grace	Science Museum	Aquarium
Jessica	Aquarium	Zoo
Ruby	Zoo	Science Museum
Emily	Science Museum	Aquarium
Sophie	Aquarium	Zoo
Chloe	Aquarium	Science Museum
Lucy	Aquarium	Science Museum
Lily	Science Museum	Aquarium
Ellie	Science Museum	Aquarium
Ella	Zoo	Science Museum
Charlotte	Science Museum	Aquarium
Katie	Science Museum	Aquarium
Mia	Zoo	Science Museum
Hannah	Zoo	Science Museum

Name	First Choice	Second Choice
Jack	Aquarium	Zoo
Thomas	Zoo	Aquarium
Joshua	Zoo	Aquarium
Oliver	Science Museum	Aquarium
Harry	Aquarium	Zoo
James	Zoo	Science Museum
William	Science Museum	Science Museum
Samuel	Zoo	Aquarium
Daniel	Zoo	Science Museum
Charlie	Aquarium	Aquarium
Benjamin	Science Museum	Zoo
Joseph	Zoo	Aquarium
Callum	Zoo	Aquarium
George	Aquarium	Science Museum
Jake	Science Museum	Aquarium

- Based only on the results of the class votes, where would you recommend the class go on the field trip? Show your work or explain how you found your answer.

Here are some more facts about the trip.

2. Now we will think about the costs of the trip. How much will each student pay to go on each trip? Show your work or explain how you found your answer.
3. Daniel thinks that it will cost less to go to the zoo because the entrance fee is only \$2.50 per person. Explain why you agree or disagree with Daniel's thinking.
4. Write a short note to your teacher stating where you think the class should go on its field trip, based on how you would evaluate all the different factors, including student votes, costs, distance, and what you think would be fun.

BUS Charge	\$0 per mile	\$0 per mile	\$0 per mile
Entrance fee	\$6 per person	\$10 per person	\$2.50 per person

- The teacher and parent helpers do not pay an entrance fee.
- There are 30 students in the class.
- Only 1 bus is needed.
- The bus charge is for the entire busload of students (not for each student).
- Each student will pay the same amount.
- The school fund will pay the first \$200 of the trip.

Task Specifications

Item Id:	MAT.6.FIELDTRIP.PT
Title:	Taking a Field Trip
Grade:	6
Content Domain(s):	Ratios and Proportional Relationships
Assessment Target(S):	<p>Claim 2, Target A: Apply mathematics to solve problems arising in everyday life, society, and the workplace.</p> <p>Claim 2, Target C: Interpret results in the context of a situation.</p> <p>Claim 2, Target D: Identify important quantities in a practical situation and map their relationships (e.g., using diagrams, two-way tables, graphs, flowcharts, or formulas).</p> <p>Claim 3, Target C: State logical assumptions being used.</p> <p>Claim 3, Target F: Base arguments on concrete referents such as objects, drawings, diagrams, and actions.</p> <p>Claim 4, Target D: Interpret results in the context of a situation.</p>

Scoring Criteria for Field Trip Task

Scorable Parts	Points	Claims
<p>1. Based only on the results of the class votes, where would you recommend the class go on the field trip? Show your work or explain how you found your answer.</p>	<p>0–1 Point</p> <p>Full credit for correctly answering “Zoo” based on total 1st place votes OR correctly answering “Aquarium” based on total 1st and 2nd place votes OR correctly answering “Science Museum” based on a weighted total for votes.</p>	<p>Contributes evidence to Claim 3.</p>
<p>4. Write a short note to your teacher stating where you think the class should go on its field trip, based on how you would evaluate all the different factors, including student votes, costs, distance, and what you think would be fun.</p>	<p>0–1 Point</p> <p>Full credit for a note that includes a recommendation based on reasoning that includes votes, costs, distance, and personal opinion.</p>	<p>Contributes evidence to Claim 3, Communicating Reasoning</p>
<p>3. Daniel thinks that it will cost less to go to the zoo because the entrance fee is only \$2.50 per person. Explain why you agree or disagree with Daniel’s thinking.</p>	<p>Full credit for using the calculations in the response above; the student would disagree with Daniel and make the argument that the Zoo option is \$2.10 more than the Science Museum option.</p> <p>Full credit for correct reasoning based on incorrect #2.</p>	<p>Contributes evidence to Claim 4, Modeling</p>

Grade 6 Performance Task



Illustrative Tasks

<http://www.illustrativemathematics.org>

5.NBT Marta's Multiplication Error

[Direct link to this task](#) | [PDF](#)

5.NBT Marta's Multiplication Error

Alignments to Content Standards

- Alignment: 5.NBT.A.2

Tags

- *This task is not yet tagged.*

This task is rated +0 (0 ratings) • [Log in if you'd like to rate this task](#)

Marta made an error while finding the product 84.15×10 .

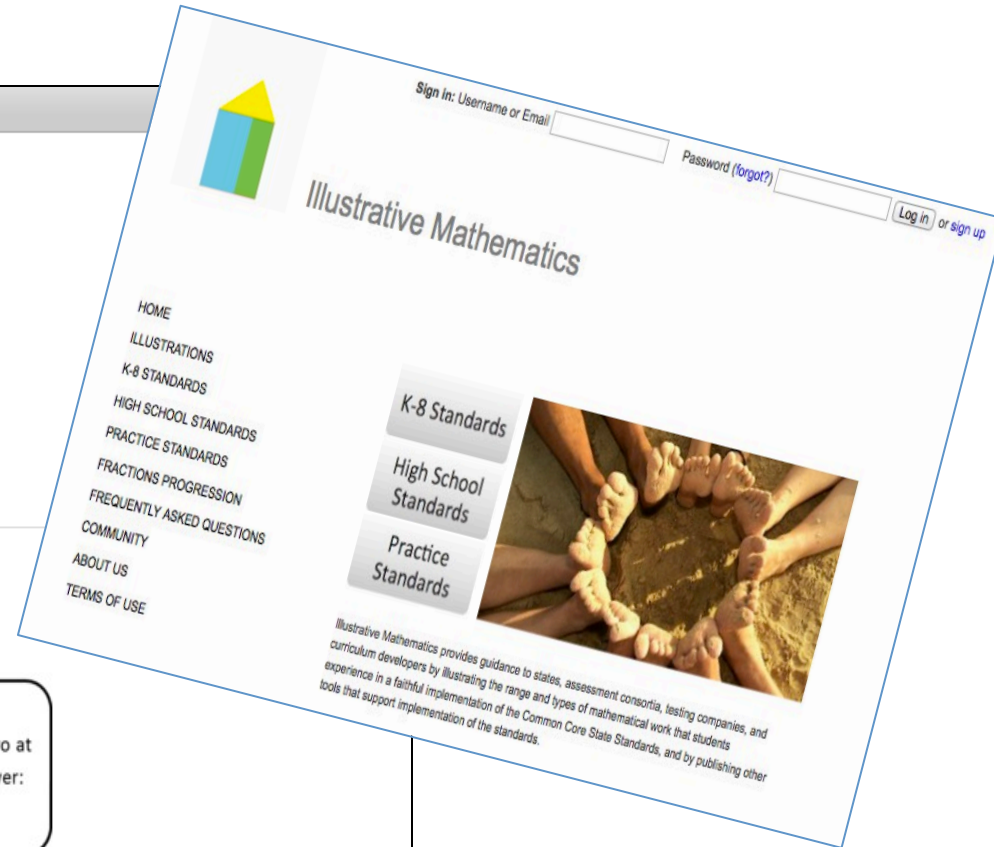


Marta

I wanted to multiply 84.15×10 , so I put a zero at the end to get my answer:

$$84.15 \times 10 = 84.150$$

In your own words, explain Marta's misunderstanding. Please explain what she should do to get the correct answer and include the correct answer in your response.



Tulare County
Office of Education

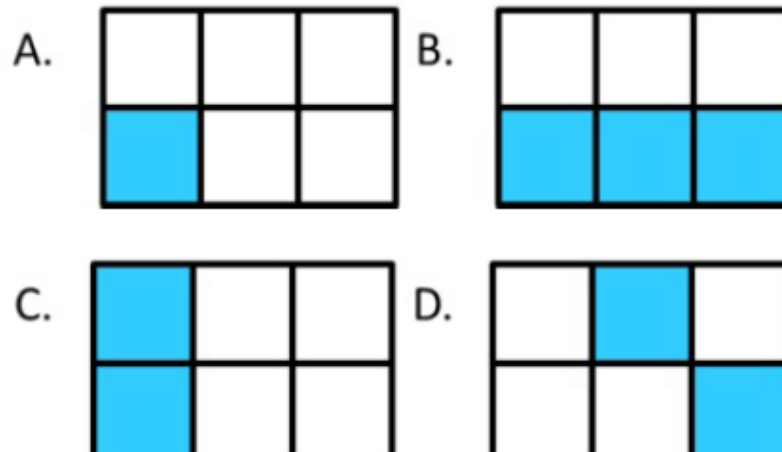
Jim Vidak, County Superintendent of Schools

Illustrative Task 3.NF.3: Halves, Thirds, Sixths

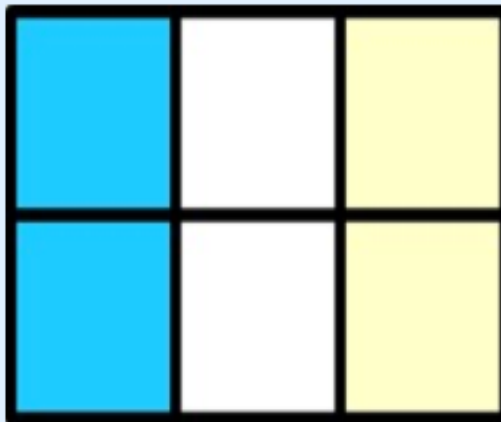
a. A small square is a square unit. What is the area of this rectangle? Explain.



b. What fraction of the area of each rectangle is shaded blue? Name the fraction in as many ways as you can. Explain your answers.



- b.
- $\frac{1}{6}$ of rectangle A is shaded blue because the area is 6 square units and one square unit is shaded.
 - $\frac{3}{6}$ of rectangle B is shaded blue because the area is 6 square units and 3 square units are shaded. We can also say that $\frac{1}{2}$ of rectangle B is shaded blue because half of the squares are shaded. This shows that $\frac{3}{6}$ and $\frac{1}{2}$ are equivalent fractions.
 - $\frac{2}{6}$ of rectangle C is shaded blue because the area is 6 square units and two square units are shaded. We can also say that $\frac{1}{3}$ of rectangle C is shaded blue. This is easier to see if we add some more shading:



We can see that the part that is shaded blue is the same size and shape as the part that is shaded yellow and the part that is white, so each of these parts is $\frac{1}{3}$ of the rectangle. This shows that $\frac{2}{6}$ and $\frac{1}{3}$ are equivalent fractions.

- $\frac{2}{6}$ of rectangle D is shaded blue because the area is 6 square units and two square units are shaded. We can also say that $\frac{1}{3}$ of rectangle D is shaded blue. We can cut figures apart and rearrange them without changing the area (as long as the pieces don't overlap when we are done). We can see that $\frac{1}{3}$ of the area is shaded if we rearrange the squares so it looks like rectangle C.
- $\frac{3}{6}$ of rectangle E is shaded blue because the area is 6 square units and 3 square units are shaded. We can also say that $\frac{1}{2}$ of rectangle E is shaded blue because half of the squares are shaded. We can also rearrange them to look like rectangle B. This shows that $\frac{3}{6}$ and $\frac{1}{2}$ are equivalent fractions.
- $\frac{3}{6}$ of rectangle F is shaded blue because the area is 6 square units and 3 square units are shaded. We can also say that $\frac{1}{2}$ of rectangle F is shaded blue because half of the squares are shaded. We can also see that the three blue squares form a "piece" of the rectangle that is the same size and shape as the piece formed by the three white squares. This shows that $\frac{3}{6}$ and $\frac{1}{2}$ are equivalent fractions.
- $\frac{3}{6}$ of rectangle G is shaded there are 6 equal squares and three are shaded. We can also say that $\frac{1}{2}$ of rectangle G is shaded blue because half of the squares are shaded. We can also rearrange them to look like rectangle B. This shows that $\frac{3}{6}$ and $\frac{1}{2}$ are equivalent fractions.
- $\frac{4}{6}$ of rectangle H is shaded there are 6 equal squares and three are shaded. We can also say that $\frac{2}{3}$ of rectangle H is shaded blue because as we saw earlier, two blue squares represent $\frac{1}{3}$ of the rectangle and two "2-square rectangles" are shaded. This shows that $\frac{4}{6}$ and $\frac{2}{3}$ are equivalent fractions.

Illustrative Mathematics

4.OA Double Plus One

Alignments to Content Standards

- Alignment: 4.OA.C.5

Tags

- This task is not aligned to the standards.

- a. The table below shows the numbers entered by 2 and added to each number.

number	double number plus one
0	
1	
2	
3	
4	
5	
10	
23	
57	
100	
309	

- b. What do you notice about the numbers you entered into the table?

c. Sherri noticed that all the numbers she entered are odd.

- Does an even number multiplied by 2 result in an even or odd number? Why do you think this is?
- Does an odd number multiplied by 2 result in an even or odd number? Why do you think this is?
- Does an even number plus 1 result in an even or odd number? Why do you think this is?
- Does an odd number plus 1 result in an even or odd number? Why do you think this is?
- Explain why the numbers you entered in the table are all odd.

Illustrative Mathematics

5.NBT.1 Tenths and Hundredths

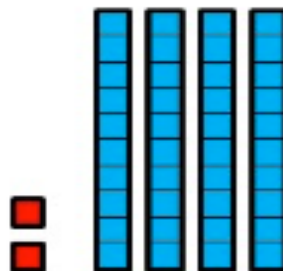
Alignments to Content Standards

- [Alignment: 5.NBT.A.1](#)

Tags

- *This task is not yet tagged.*

Jossie drew a picture to represent 0.24:



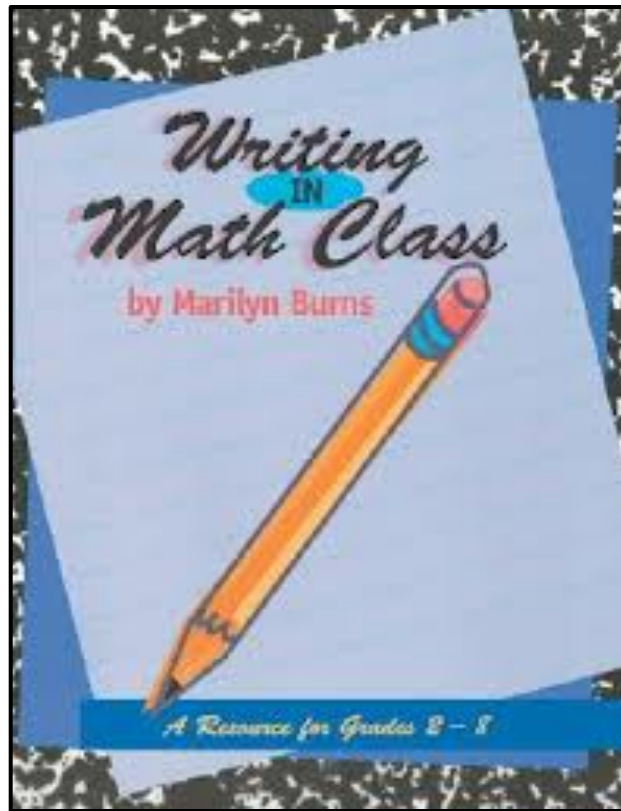
She said,

The little squares represent tenths and the rectangles represent hundredths, which makes sense because ten little squares makes one rectangle, and ten times ten is one hundred.

- Explain what is wrong with Jossie's reasoning.
- Name three numbers that Jossie's picture could represent. In each case, What does a little square represent? What does a rectangle represent?

Writing in Math Class

by Marilyn Burns



Tulare County
Office of Education

Jim Vidak, County Superintendent of Schools

Using Writing to Support Learning

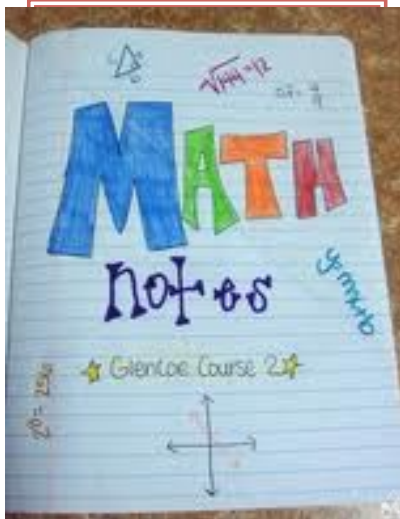
- Writing helps students
 - sort out, clarify and define their thinking.
 - examine their ideas and reflect on what they have learned.
- When students write about mathematics, they are actively involved in thinking and learning about mathematics.

“My job is to help you understand math. To do my job I need to know what you understand and what you don’t understand. So I ask you to write to explain what you are thinking. When I read what you write, I learn what you understand.”

Marilyn Burns, Writing in Math Class p. 128

Part 2:

Types of Writing Assignments



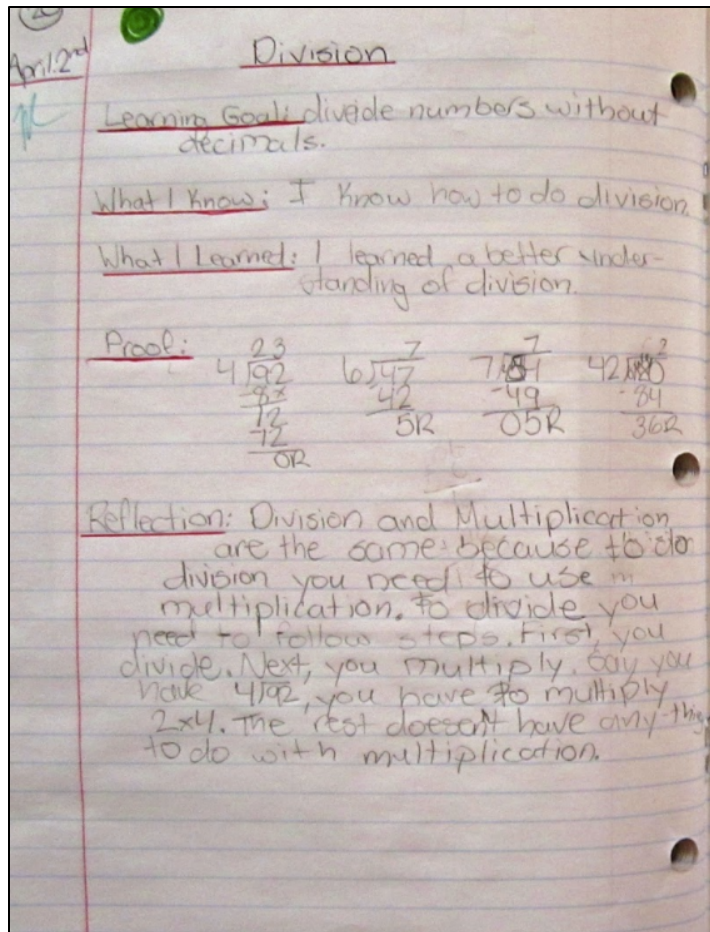
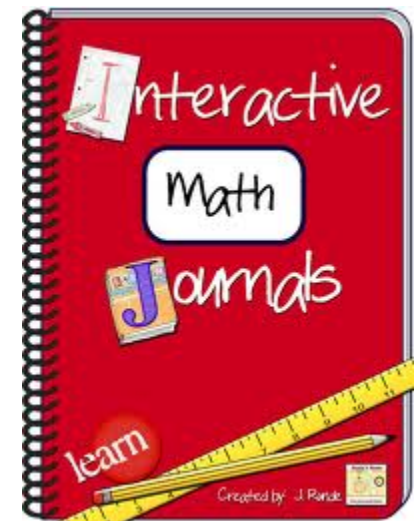
- Ch. 4: Journals or Logs
- Ch. 5: Solving Math Problems
- Ch. 6: Explaining Mathematical ideas
- Ch. 7: Creative Writing
- Ch. 8: General Writing Assignments



Journals or Logs

- Ongoing records of learning
- Ongoing records of understanding
- Ongoing records of how they are feeling

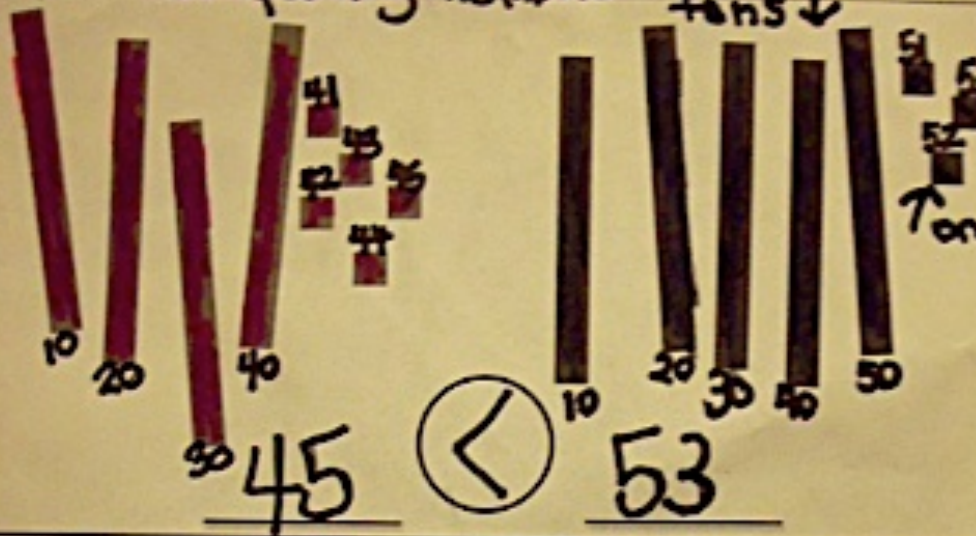
Keeping Journals or Logs



- Journals are a way for students to keep ongoing records of what they are doing and learning.
- Today I _____
- I learned _____
- I am not sure about _____
- I'm wondering about _____

Math Journal: Comparing Numbers

Objective: Comparing Numbers



Math Written Reflection:

Today I compared numbers. I counted by 10s and 1s. I found out that 45 is less than 53. 45 has for tens and five ones. 53 has five tens and three ones.

NAME _____

2nd Grade

Tulare County
Office of Education

Jim Vidak, County Superintendent of Schools

Journal Prompts

Journal Prompts for Elementary Students

Affective/Attitudinal (How do you feel?)

Explain how you feel about mathematics now as compared to before you took this class.

My best kept secret about math is...

If math could be a color (shape, sound), it would be...because...

I want to become better at math so that I...

People who are good at math...

My best experience with math was when...

My worst experience with math was when...

When it comes to math, I find it difficult to...

When I hear someone say math is fun, I...

Draw a picture of a mathematician and describe what a mathematician does.

If I were better at math, I would...

What kind of math figure are you? (Circle, square, triangle, parallelogram, etc.) Why did you choose that figure?

Describe your feelings about showing your work on the board or overhead.

Does mathematics or math class scare you in any way?

My three personal goals for this term are...

Describe how today's math class will affect your day.

What did you like most about your previous math class? What did you like the least?

My math grade now is ...because...

This is how I feel about Algebra (Pre-algebra, Percents, Fractions, etc.)

One mathematics activity I really enjoy is...because...

This is how I used math this week (outside of school)...

Draw a cartoon of the 'Math Monster' and write what the 'Math Monster' is saying to you.

Write a letter to a student who will be taking this class next year, giving some advice about this class.

Design two mathematical bumper stickers, one funny, one serious.

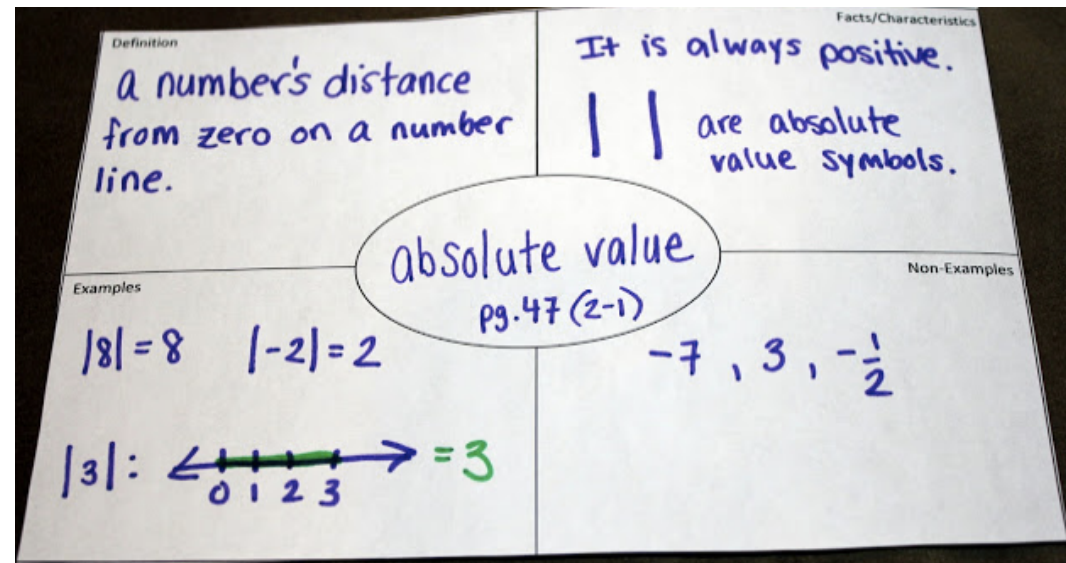
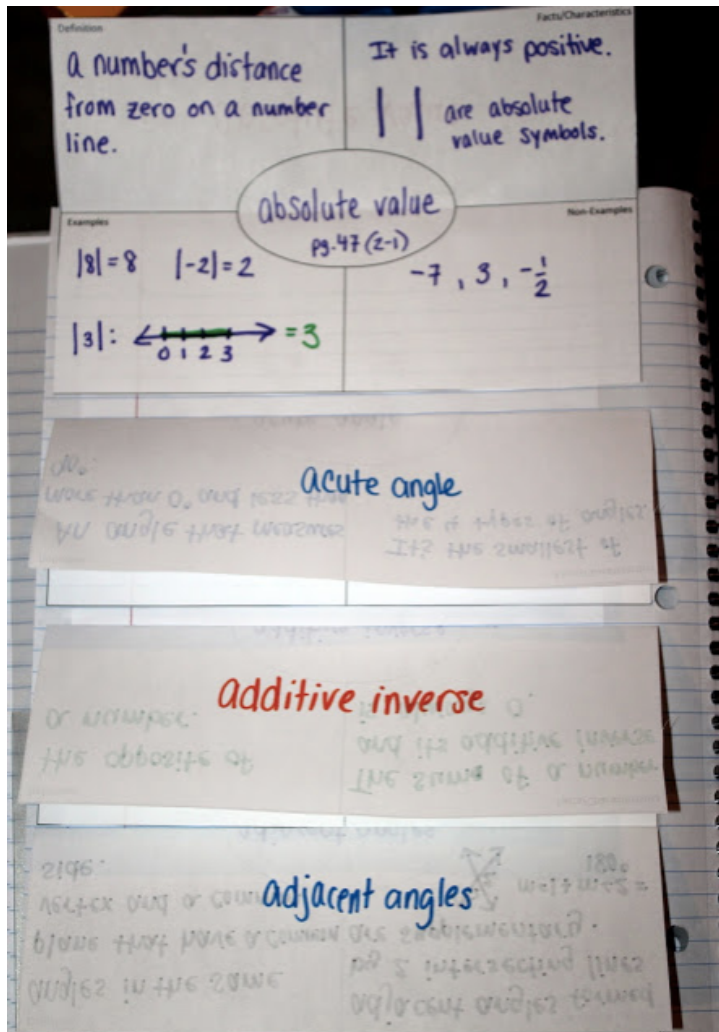
My parents feel that math is...

2nd Grade Journal Samples

Name: Michael
Date: 2-3-93
I played Roll 2 Dice
I won I predicted it would
be it. by the way the
one I played is just
because you roll 2 Dice.

Today I played Roll two
dice.
I learned that you
can get the number
7alot. I did not get
enough time to finish it.
It is just chance.

Journal/Interactive Notebook Samples



Describe Learning

What I Learned

$\triangle + \circledast =$ This Year in Math

This year I have learned things in math I never thought existed.

A few years ago math time meant working in your math book, but not any more.

This year I have learned about geometry, and what it has to do with math. When we were working on polygons a long time ago, we were trying to see how many lines we could draw to the other sides of the polygon.

Example:



Or when we were were working on mirror symmetry, some of the class used one mirror, some two or three. There were always more patterns to be found.

At the beginning of the year I thought that it was very important if you found a pattern, but not now. Now I know that patterns are everywhere just waiting to be found.

Amber
(Grade 3)
described
what she
learned in
math.

Math Journal/Notebook

Describe It

Examine the subject closely and describe what you see.

Compare It

What is it similar to? Different from?

Associate It

What does the subject make you think of?

Analyze It

Break the subject into parts; tell how it is made.

Apply It

Describe the subject's uses.

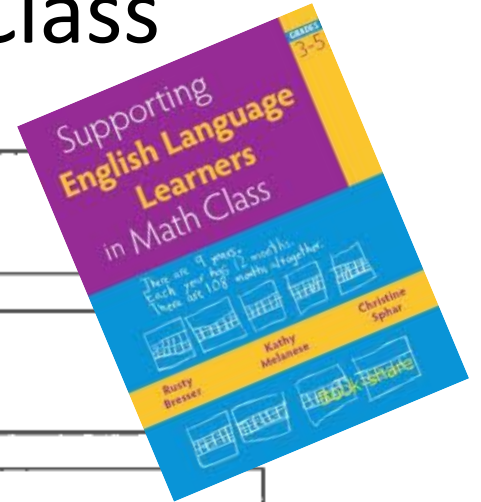
Argue For or Against It

Use any kind of reasoning, silly or rational, to take a stand for or against the subject.

In the space below, write a paragraph about the topic. Remember, the charm of cubing is that once you learn to cube, you can use it anytime, anywhere, and you are never at a loss for words!

Articulate conceptual understanding

Using Vocabulary and Sentence Frames to Support Writing in Math Class



First, _____.

Next, _____.

Then, _____.

After that, _____.

Finally, _____.

Step Up To Writing

SUTW: Writing In Math Is Important

After analyzing the fundraising problem and determining a solution, explain your reasoning then provide a model of your explanation.

Introduction: Based on the given information, I have determined that _____ collected the most amount of money.

Reasons/Facts/Details: _____

Examples/Explanations: _____

In Closing, _____

Model your thinking

if you'd like to rate this task

ney for a school trip.

is Mark.

Solving Math Problems


Solving Math Problems

The pictograph shows how many corn plants Isabella planted over 5 days.
How many corn plants did she plant on Wednesday? *Wednesday*

Show your work.

$4 \times 7 = 28$ plants

key
○ = 4



How many more plants were planted on Thursday than Friday? Explain how you got your answer.

$16 - 8 = 8$ plants

I got my answer by subtracting 16 from 8. I got 16 because 16 plants were planted on Thursday. I got 8 because 8 plants were planted on Friday. Then, I had to subtract 16 from 8, which equals 8. My answer is 8 more plants were planted on Thursday than Friday.

3.OA.1 The student demonstrates the ability to interpret products of whole numbers by drawing an array and writing an equation.

3rd Grade:
“Explain how you got your answer.”

If I Was One Centimeter Tall

Suddenly, I awake to find my self of a different size. It seemed to me that my bed was 1,000 times bigger then it was before. I Climed out of my bed and slid down the edge. To my supprise I found the whole family the same size as me. "Hi dad" Said John.

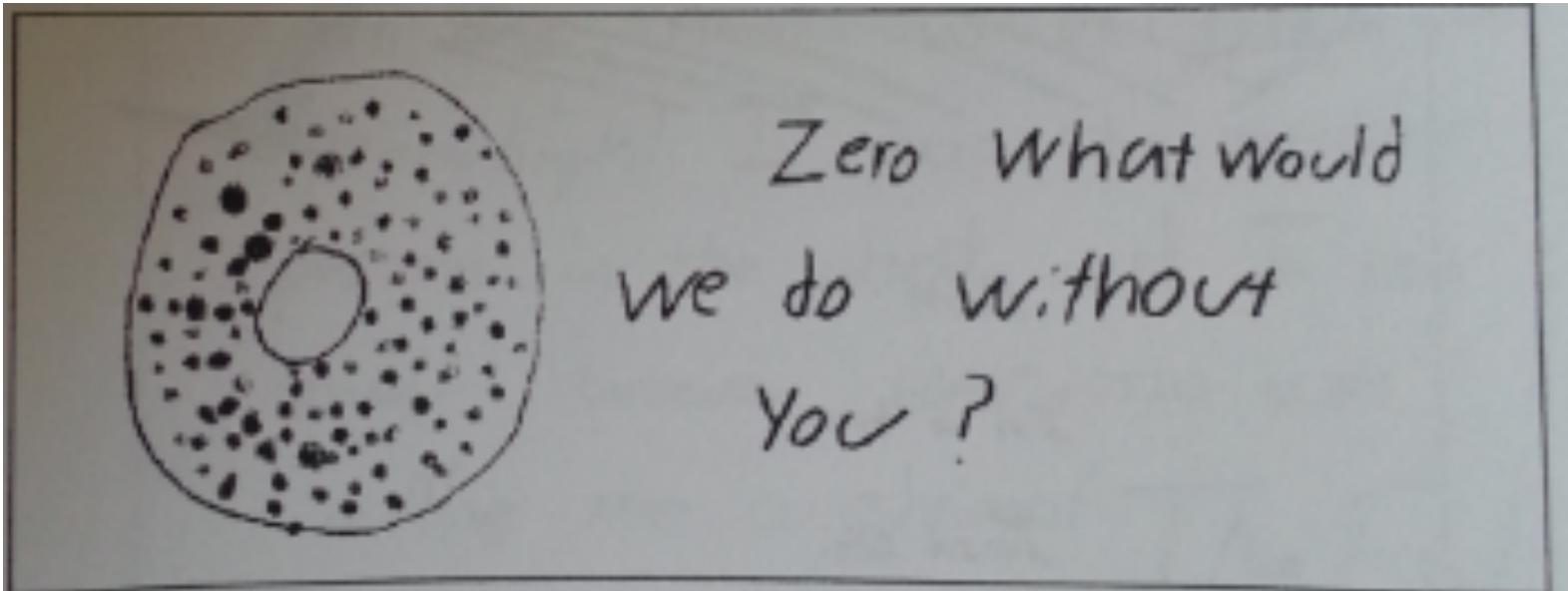
We managed to live like this for twodays. We then decided that this was to much so we decided to live out in the open, but Jenney didnt agree and suggested that we live in her doll house and we all agreed

Suddenly the whole family grew to their normal size except me. So I always had to watch out that nobody would step on me.

one day I walked into a toy store and grabbed a car and drove off into the street and I almost got ran over but I drove down a gutter.

I managed to survive the rest of my life like this.

8th Grade



General Writing Assignments

- Fresh way to think about mathematics
- Can strengthen a math assignment
- Can broaden their view of mathematics

Task

- Think of one fun/engaging task to incorporate each of the writing topics discussed (journal, solving problems, explaining ideas, creative, general) at your grade span.
- Be ready to share with the entire class

How Did Writing in Math Help You?

Math-Writing

Writing about the activities we do in math helps me because it is easier to explain what I think and what I did. and it is easier for the math teacher to understand what you think and what you do. If we just went up to the math teacher and told them what we think the math teacher will not understand unlike writing in writing I can think and make it understandable

Math-Writing

What writing does for me is it unlocks my brain and it lets me think. But if I didn't write I would be getting nowhere. I wouldn't learn anything. I mean I wouldn't think so hard if I didn't write. I would just play the game even if I didn't know how because I wouldn't have to write. But when you write it just makes you think.

www.k-5mathteachingresources.com/ math-journals.html



K-5 Math Teaching Resources

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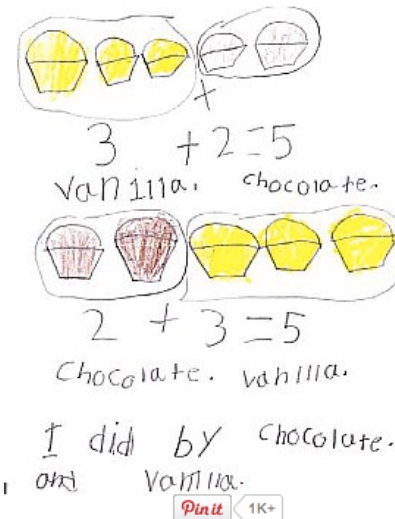
[3-5](#)

Math Journals

A math journal, or problem solving notebook as they are sometimes referred to, is a book in which students record their math work and thinking. They can be used to:

- Record the solutions to math problems, along with the strategy and thought processes used to arrive at the solution
- Write about learning: At times students may be asked to reflect on their math learning. For example, students may be asked to write about "what you already know about" at the beginning of a unit or "what you did today, what you learned, and any questions you have", or "the three most important things you learned in this unit."

By dating entries the journal provides a chronological record of the development of a student's mathematical thinking throughout the year.



commoncore.tcoe.org

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“Common Core means integrating services among all of our departments providing a variety of great services to our students and communities, in preparation for college and career readiness.”

Dr. Guadalupe Solis
Assistant Superintendent Instructional Services

Common Core State Standards Instructional Strategies Mini-Conference

Like what you find? Please share!



California Eclipse

Tulare County Office Education has partnered with CESA 7 to offer **California Eclipse**, an affordable and easy to use curriculum management system.



Customized for use in a Common Core environment, California Eclipse will allow your district and schools to electronically collaborate on, manage, share and store its curriculum.



Tulare County
Office of Education

Jim Vidak, County Superintendent of Schools

Edmodo

- Join code azua89

The screenshot shows the Edmodo interface for a group named "Writing in Math Class". The top navigation bar includes a search bar with the text "Search posts, groups, users, apps and more...", a notification bell with a red "3" badge, and a user profile icon labeled "Me".

On the left sidebar, the group name "Writing in Math Class" is displayed with a gear icon for settings. Below it, the "Group Code" is "je4zgv" and the "Join URL" is visible. There are buttons for "Posts", "Folders", and "Members" (showing "1 joined"). A "Small Groups" section is also present with a "Create a Small Group" button.

The main content area features a "Note" creation form with tabs for "Note", "Alert", "Assignment", "Quiz", and "Poll". The text input field contains "Type your note here...". Below the input is a dropdown menu showing "Writing in Math Class" with a close button. There are icons for adding attachments (document, link, book, clock) and buttons for "Cancel" and "Send".

Below the form, the "Group Posts" section is visible, with a "Filter posts by" dropdown. The first post is from "Me" to "Writing in Math Class" with the text "Welcome to Writing in Math Class!". It was posted "20 seconds ago" and has options for "Reply" and a share icon.

Please complete a feedback form and leave on your table.

- Enjoy the rest of your day!
- Thank you!!



RESOURCES

- K – 5 Math Teaching Resources
 - <http://www.k-5mathteachingresources.com/math-journals.html>
- Writing in the Math Class, Marilyn Burns
 - <http://www.mathsolutions.com/>
- Smarter Balanced Sample Items
 - <http://www.smarterbalanced.org/sample-items-and-performance-tasks/>
- Illustrative Mathematics
 - www.illustrativemathematics.org
- Math Assessment Project
 - <http://map.mathshell.org/>

commoncore.tcoe.org/math

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Steve Leinwand & Max Ray



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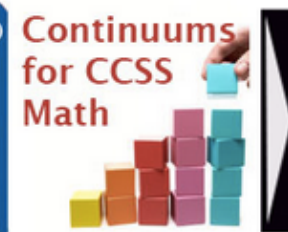
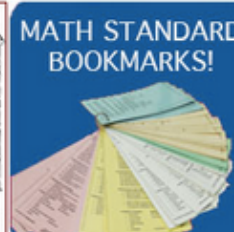
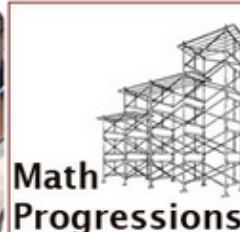
Join two dynamic speakers as they share effective mathematics teaching and assessment practices, as well as methodologies for helping students verbalize problem solving.

“Visit the Math Quicklinks page for easy access to our recommended Common Core resources.”

Shelah Feldstein
Mathematics Consultant, TCOE



Our most popular resource collections: *(Click arrows to scroll through)*



Shelah Feldstein shelahf@ers.tcoe.org

Kim Webb kimw@ers.tcoe.org

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Strongly
Disagree

0

Disagree

1

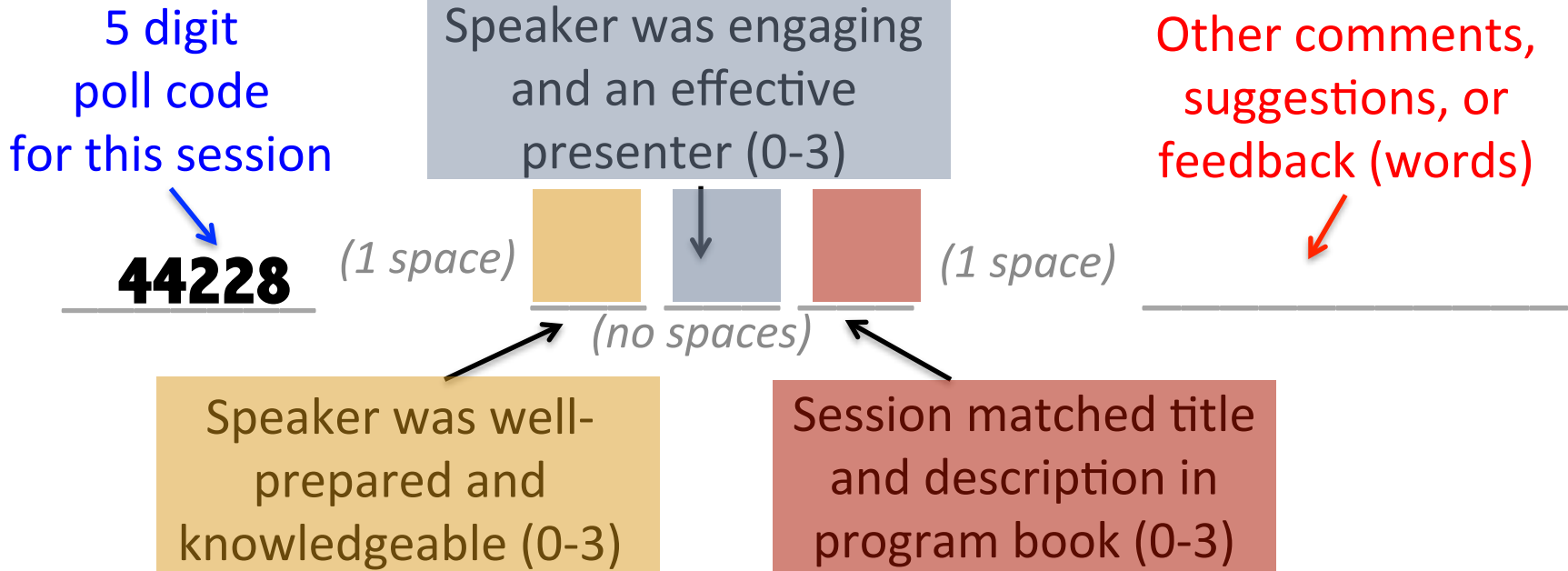
Agree

2

Strongly
Agree

3

Send your text message to this Phone Number: 37607



Example: **38102 323 Great session!**

Non-Example: 38102 3 2 3 Great session!

Non-Example: 381023-2-3Great session!