180 Days of
Number Sense Routines
Grade 4
Days 61-80

Calvert County Public Schools

180 Days of
Number Sense Routines

WHY IS DEVELOPING NUMBER SENSE IMPORTANT? Number Sense is the foundational building block for all strands of mathematics. Students who struggle in mathematics do not lack mathematical ability, but rather, they simply do not have a strong number sense on which to build their knowledge. Just as we are not born knowing how to read, we are not born with Number Sense. It must be developed and nurtured over time through a progression of understandings about numbers and their relationships to one another. With time and focused practice, students come to understand that numbers are meaningful, and outcomes are sensible and expected. Number Sense development encourages students to think flexibly and promotes confidence with numbers.

WHAT IS A NUMBER SENSE ROUTINE? A routine is an activity or event that occurs on a regular basis over time. Routines provide a framework for our day to support both the teacher and students. Routines help to build community and create a safe learning environment for students. Routines build a sense of belonging, ownership, and predictability which make the classroom a place to take risks. We learn through risk-taking; we take risks when we feel safe; we feel safe in a supportive learning environment; we create supportive learning environments through routines. Just as we have established routines for bus dismissal and fire drills, we must also establish routines that build mathematical thinking and discourse.

180 Days of
Number Sense Routines

HOW WILL THESE NUMBER SENSE ROUTINES BENEFIT ME AND MY STUDENTS? What teachers do and how they do it is critically important and has a profound impact on the quality of the educational experience of our students. Effective pedagogy, the art and science of teaching, is a key element in the learning process. The Number Sense are models of effective pedagogy and ensure that the critical Number Sense instruction we provide is equitable to all our students regardless of geography, teacher experience, or student circumstance. As we prepare our students to be mathematically proficient in their lives beyond the classroom walls, these Number Sense routines will help to lay the critical foundation for all future mathematical endeavors.

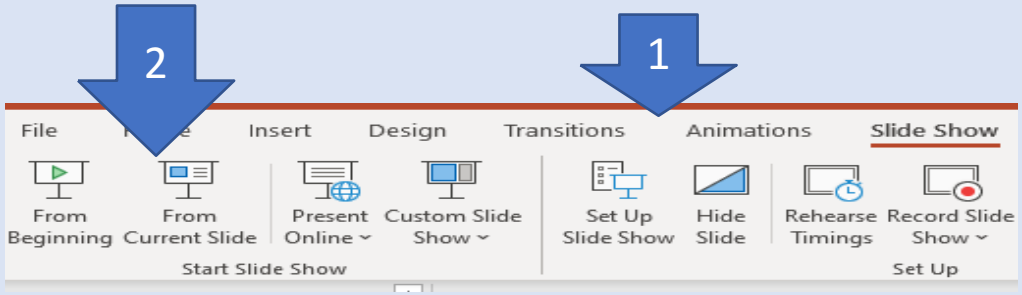
WHAT ARE THE CCPS IMPLEMENTATION EXPECTATIONS? Number sense routines have been developed for all 180 instructional days in grades 1-5. These routines are to be used every day, including early dismissal, late arrival, and field trip days. Because the routines do not require a specific order, it is permissible to trade routines among days to best match the time available. Number Sense must be built over time. With consistency, we can build students' number sense creating a strong mathematical foundation. If students or the teacher is struggling with a routine, it is expected that the teacher collaborate with colleagues to build capacity in that routine – do not just choose to skip the routine. If additional help is needed, the teacher should seek the assistance of their content specialist or mathematics supervisor.

180 Days of
Number Sense Routines

HOW TO RUN POWERPOINT IN SLIDE SHOW MODE:

Slides with animation features, must run in Slide Show mode of PowerPoint for the animations to work correctly.

1. Select <Slide Show> from the menu at the top
2. Select <From Current Slide>



HOW TO ANNOTATE STUDENT THINKING ON THE SLIDE:

- With the slide in Slide Show mode, right click on the slide
- Select <Pointer Options> then choose <Pen>

180 Days of
Number Sense Routines

Acknowledgements

We are grateful to those who have inspired this project – and there have been many. These slide decks were designed for Grades 1–5 with custom-built daily routines for each grade level. The nine routines blend original creations, adaptations, and borrowed OER materials. We have made our work available in Open Educational Resources so that others may benefit as we have. Our deepest gratitude and respect to all those who helped move our work forward, and a special thank you goes to the following whose own work had such a tremendous impact on our 180 Days of Number Sense Routines:

- *Decide & Defend* and *Quick Count* routines were adapted from templates created by Grace Kelemanik and Amy Lucenta at http://FosteringMathPractices.com
- *Estimation Clipboard, Esti-Mysteries,* and *Splat!* templates created by www.SteveWyborney.com
- *Same But Different* discussion from Developing Grayscale Thinking by Looney Math Consulting at https://www.samebutdifferentmath.com
- *Which One Doesn't Belong* tasks adapted from http://wodb.ca by Mary Bourassa

Day 61

Looking for Patterns: Skip Counting by 11's

PART 1: Count by 11s – this should be easy up to 99 then will get difficult

- **SAY: "**We are going begin with the task of skip-counting by 11's. We'll begin with the number 11. As you count, I will circle the numbers on the chart (next page). Watch for patterns that occur as we count. Let's begin."
- **COUNT:** CHORAL COUNT. Circle numbers as students count them.
- **CHART:** Use a 120 chart (next page) to chart the counting pattern. As students choral count the numbers (slowly), circle the numbers.
- **DISCUSS:** The most important part of this routine is the discussion of the patterns. Students should notice a diagonal of circled numbers. Be sure to discuss WHY the pattern is a diagonal (if we add 10 more, it is directly under the previous number, so 11 more would be down one and to the right one creating a diagonal)

PART 2: Count by 11s beginning on 4. The pattern of circled numbers will be the same.

- **SAY**: "Let's count again. We will count by 11s again, but this time let's start with the number 4. What number is 11 more than 4? (15) So we will count 4, 15, etc… It may seem a little trickier than our first counting routine, but I will chart the numbers once again. Watch for how the pattern of circled numbers is the same and how it is different from the first time we charted the numbers."
- **COUNT & CHART: ERASE the original charted numbers.** Use a 120 chart (next page) to chart the counting pattern. Start at the beginning and have students say their number again. This time, circle the number as students say them.
- **DISCUSS the patterns – the visual pattern will be obvious, but be sure to discuss the mathematical patterns, as well.**

CHORAL COUNTING

Looking for Patterns

Skip Counting by 11's

Day 61

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100
101	102	103	104	105	106	107	108	109	110
111	112	113	114	115	116	117	118	119	120

CHORAL COUNTING

Day 62

Using the DECIDE & DEFEND routine

As you do this routine with students, USE the CHECKLIST on the left side of the problem as a way to help organize the thinking process

- **READ to Understand:** Begin by having students discuss the question being asked. At this time, do NOT focus on the math calculations required or the answer. This step is designed for students to understand the context of the question (What is the gist of the question?)

- **DECIDE**: Pair or group students. Using a consistent pairing will make this routine more fluid so you do not have to take time to pair students every time you want them to discuss. Have students discuss the question and discuss the question and decide which solution is correct (note: partners may not agree and that is fine provided they can justify their own thinking).

- **DRAFT**: Students draft a statement about their ideas (either as a group or individually and it can be written or oral – teacher's choice)

- **DEFEND**: Students share their ideas and defend their reasoning with the whole group. Encourage active listening and accountable talk.

- **RELECT**: To further develop comprehension, have students use ONE of the sentence starters on the "Reflect on Learning" slide after they have discussed and listened to new ideas with classmates.

NOTE: This is the CCPS adaptation of the original Decide and Defend protocol

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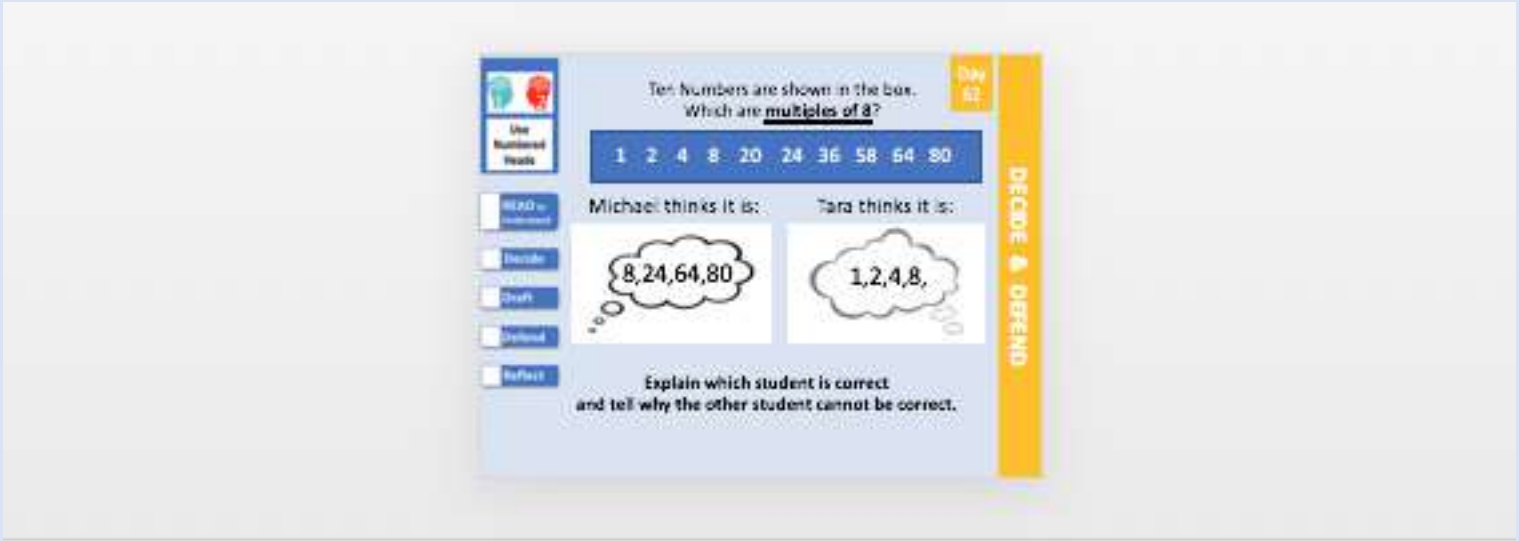
DECIDE & DEFEND

Day 62

Use the NEXT SLIDE with students.

Here is are some possible responses. This list is not all-inclusive.
Additional ideas encouraged!

IMPORTANT! Give students TIME & SPACE to discuss the ideas they want to defend with a partner before beginning a whole-class discussion. Allow them to grapple with the concepts.



This routine is intended to help students discuss the difference between a factor and a multiple (two topics that students often confuse with each other).
Michael has correctly identified the MULTIPLES.
Tara mistakenly found the FACTORS of 8.

Multiples can be found by skip-counting. Multiples are the result when we have "multiple copies" of a number. 12 is a multiple of 2 since 6 groups of 2 equals 12.
Factors: We multiply two factors together to find the product. 2 and 6 are both factors of 12.

DECIDE & DEFEND

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Use Numbered Heads

READ to Understand

Decide

Draft

Defend

Reflect

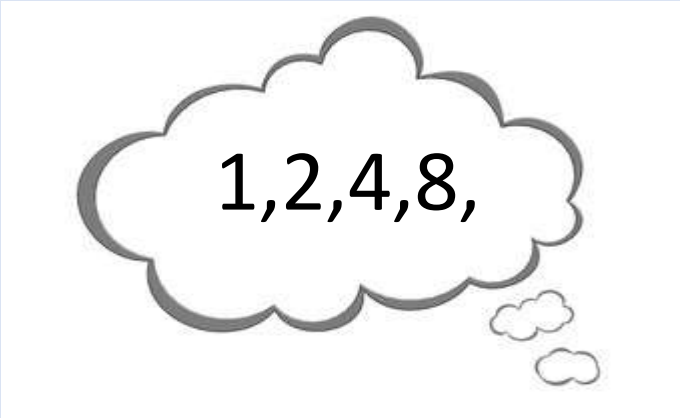
Day 62

Ten Numbers are shown in the box.
Which are **multiples of 8**?

1	2	4	8	20	24	36	58	64	80

Michael thinks it is:

Tara thinks it is:



Explain which student is correct and tell why the other student cannot be correct.

DECIDE & DEFEND

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Day 62

Reflect on Learning

- A new math idea I learned today is….
- Next time I interpret someone else's work, I will…. *(ask myself, pay attention to,…)*
- When you are trying to convince someone of your mathematical ideas, it is important to….

DECIDE & DEFEND

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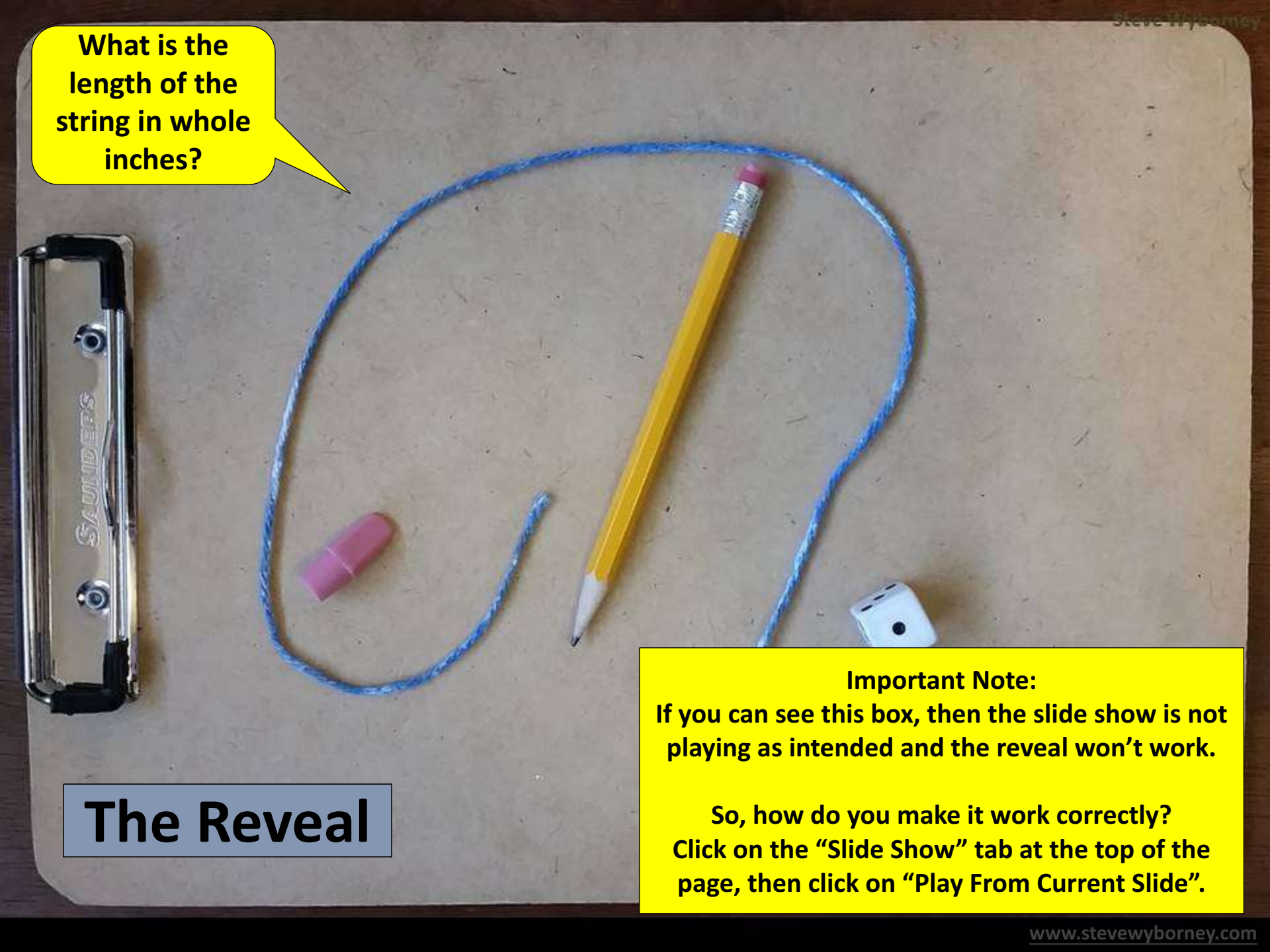
Day 63

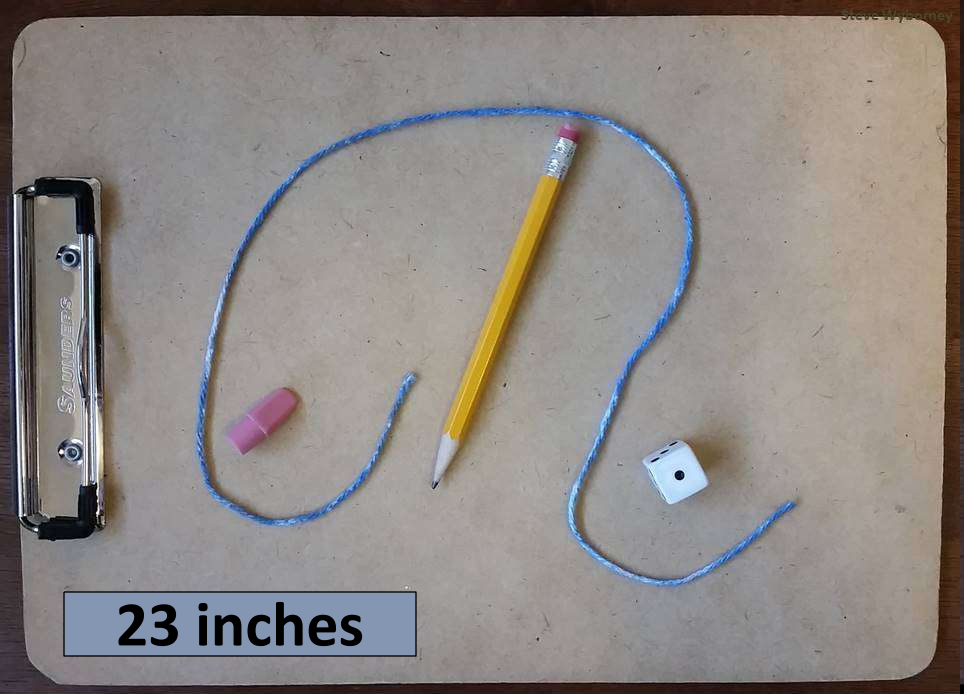
Estimation Activity

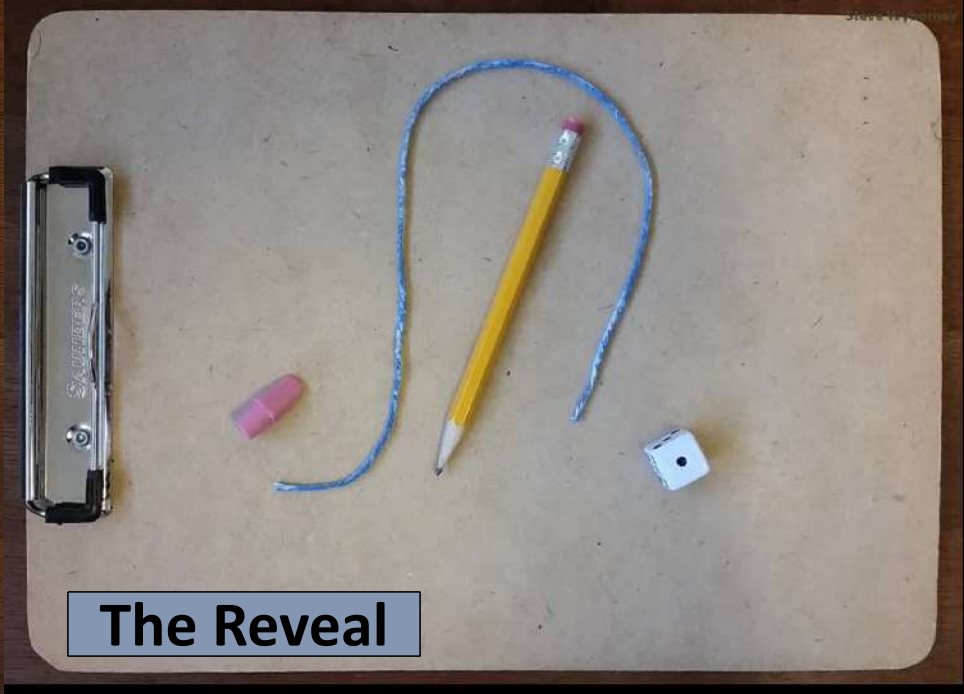
PROMPT: **What is the length of the string in whole inches?**

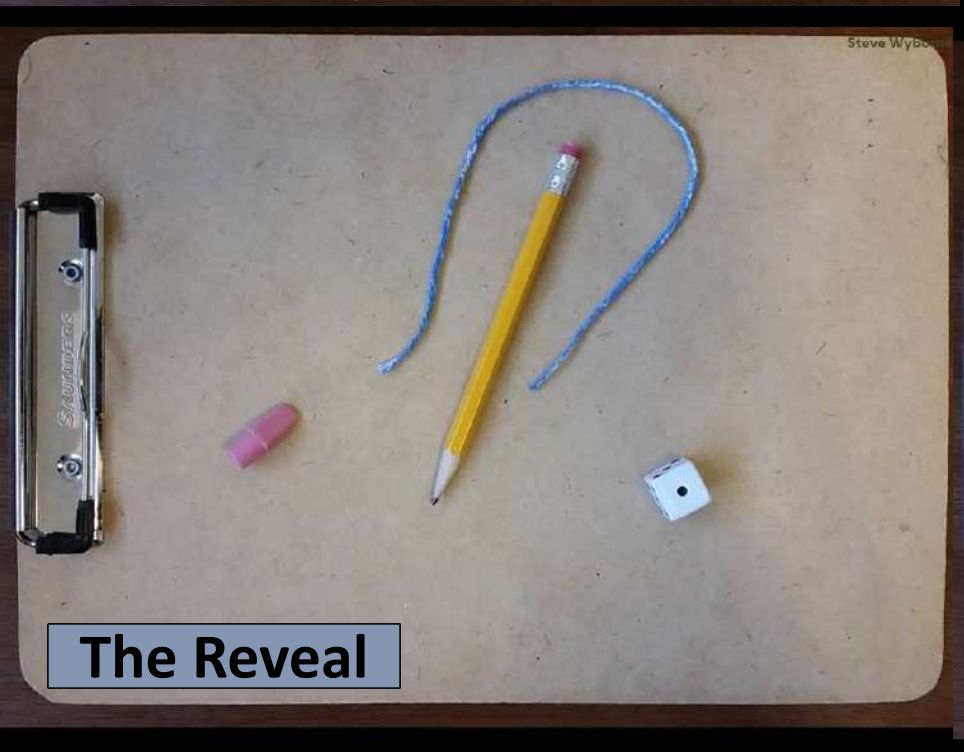
NOTE: This routine must be run in PowerPoint using the Slide Show feature

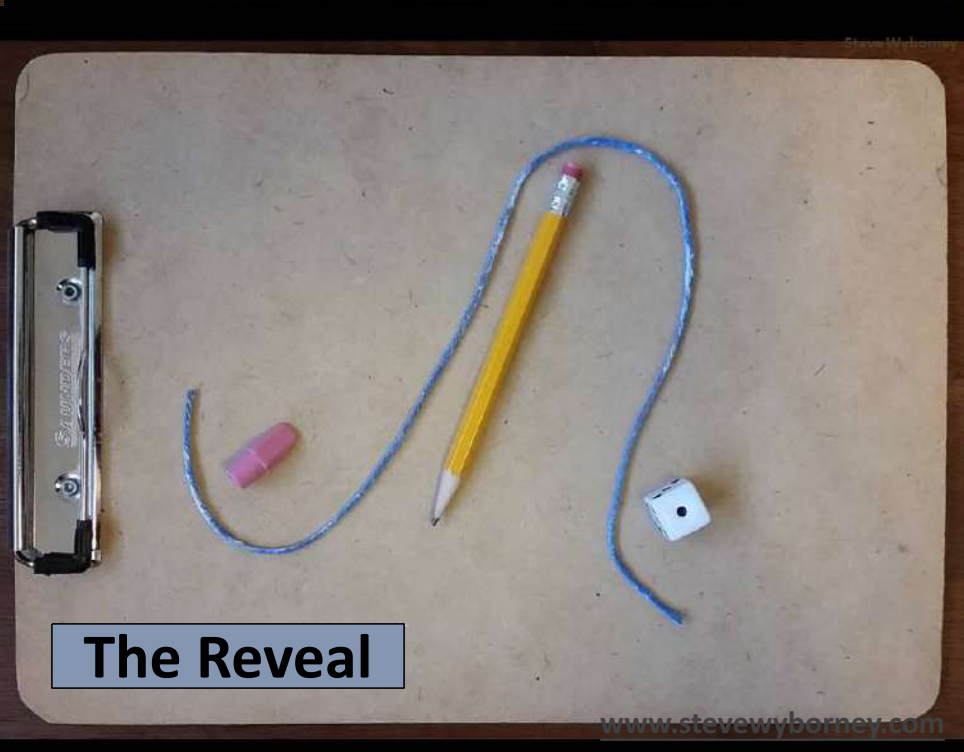
ESTIMATION


What is the length of the string in whole inches?
The Reveal
Important Note:
If you can see this box, then the slide show is not playing as intended and the reveal won't work.
So, how do you make it work correctly?
Click on the "Slide Show" tab at the top of the page, then click on "Play From Current Slide".
www.stevewyborney.com


23 inches


The Reveal


The Reveal


The Reveal
www.stevewyborney.com

60 - 30
60 - 29
60 - 31
60 - 39

Day 64

NUMBER TALK

TEACHER NOTES

BEFORE

This slide has the String of expressions that you will use for today's Number Talk. You can use Smart Ink, right click for PowerPoint Pen, or convert this slide to Smart Notebook so you can easily annotate on the slide. The annotation is an important part of the routine. The expressions should be presented one-at-a-time with skills building on one another. Remember, students will come with a wide variety of strategies. Allow student sharing of these strategies and work toward determining which of the ways were most efficient and brain-friendly.

DURING

Adjusting One Number to Create an Easier Problem

60-30 simple calculation to get 30
60 – 29 requires regrouping with the standard algorithm. INSTEAD, think 60-30=30 so 60-29 must be 31 since we subtracted one less
60-31. Think 60-30=30, so 60-31 must equal 29 since we subtracted one more leaving us with one less.
60-39. Think 60-40=20, so 60-39 must be 21 since we subtracted one less leaving us with one more

Possible questions to ask:
1)Why was subtracting 60-30 an easy task (help students to use the term "benchmark numbers")
2)Would it be easier if the number were a benchmark number instead of 29?
(3)What benchmark number is very close to the number 29?
(4)By how much did we have to adjust 29 to make it 30?
(5)If we added one to 29 before we subtracted, what must we do AFTER we subtract? Explain why (we must ADD one to the solution).

The problems on this slide focus on adjusting the subtrahend (the part being removed) to create an easier problem.
To solve 60-29, students can use what they know about 60-30. Since 60 – 30 = 30, then 60 – 29 = 31 since you are only taking 29 away instead of 30. The Talk is designed to help students build on what they know about benchmark numbers and to purposefully look for opportunities to use that information in related contexts. Remember, students will come with a wide variety of strategies. Allow student sharing of these strategies and work toward determining which of the ways were most efficient and brain-friendly.

AFTER

After doing the Number Talk String, be sure to highlight this strategy and encourage students to "look for" places they can use it throughout the day.

60 - 30

Day 64

60 - 29

60 - 31

60 - 39

NUMBER TALK

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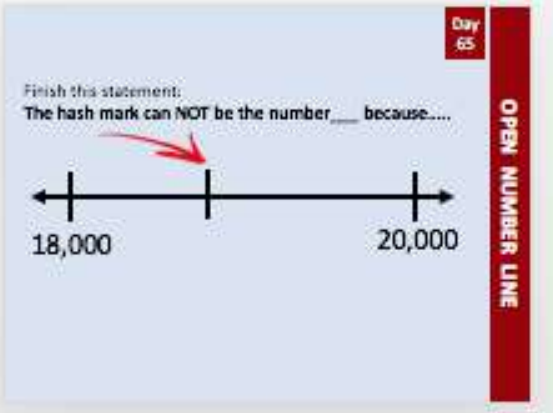
Use the NEXT SLIDE with students.

Here is are some possible responses. This list is not all-inclusive.
Additional ideas encouraged!

Day 65

OPEN NUMBER LINE



Activity: Definitely Not!
This activity is designed to help students develop an understanding of NON-examples.
Have students complete the statement: "The hash mark can NOT be the number ____ because _____."
Challenge students to take bigger mathematical risks. For example, if the hash mark were placed just right of the halfway mark of 19,000, students could say that the hash mark is definitely not 18,999 because 18,999 would be to the left of the halfway mark.

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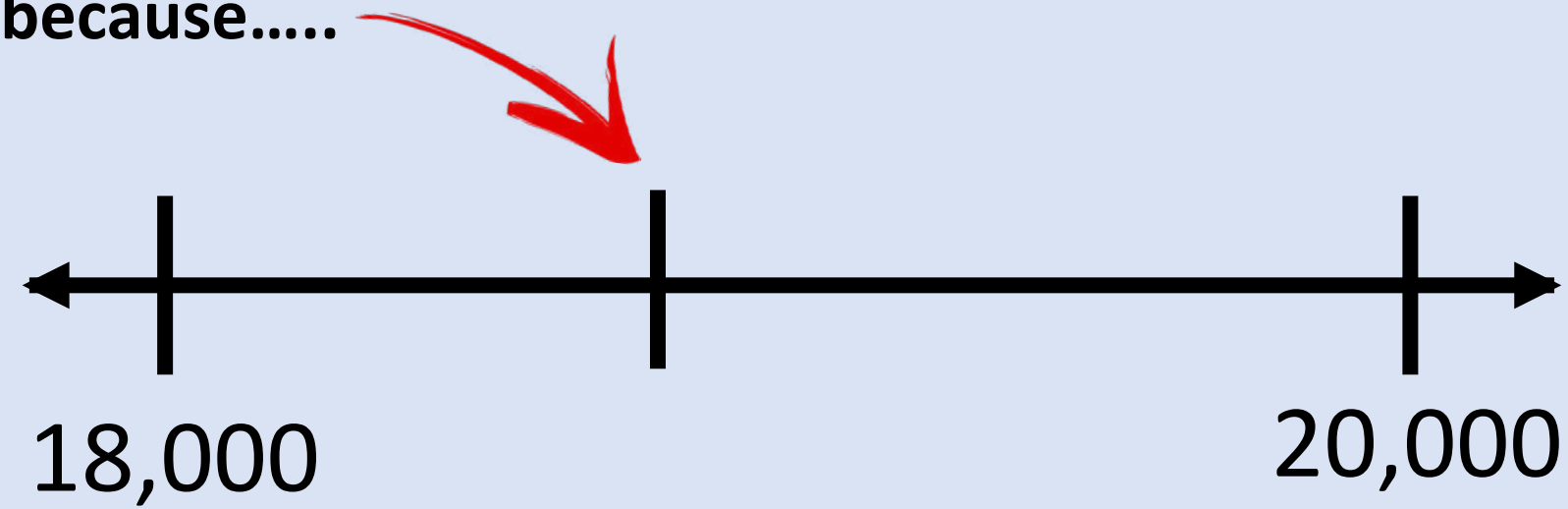
Day 65

OPEN NUMBER LINE

Finish this statement:

The hash mark can NOT represent the number_____ because…..



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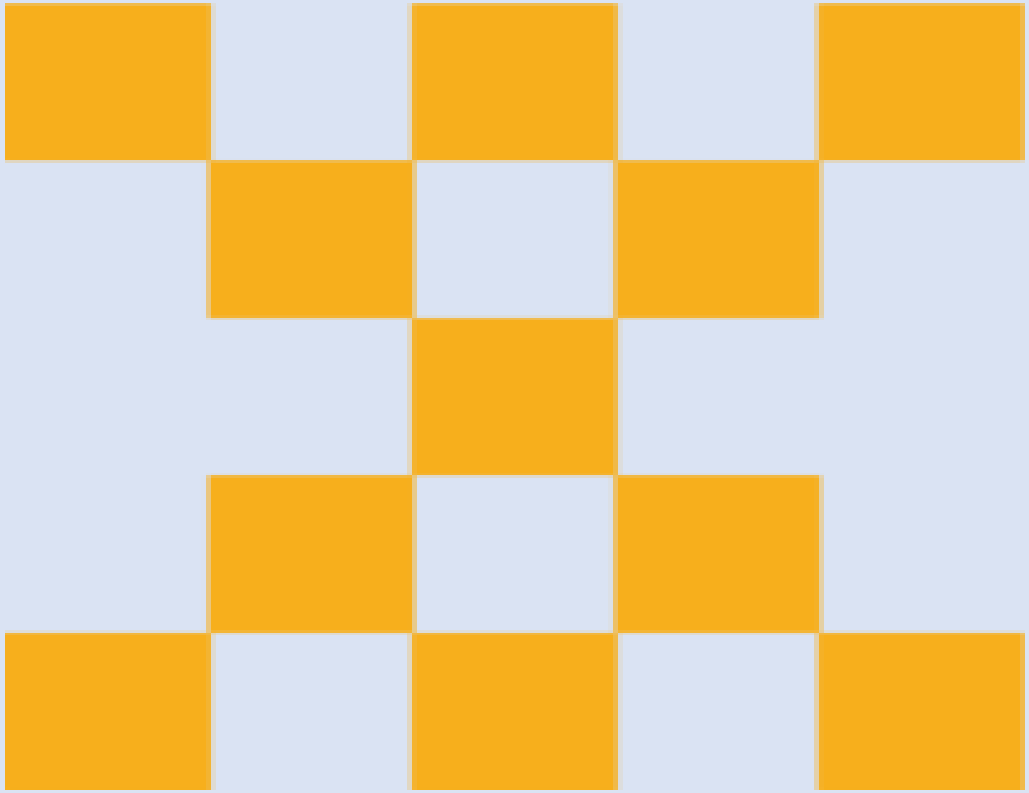
Directions for QUICK COUNT routines

Quick Count is an instructional routine designed to shift attention away from mindless calculations and toward necessary structural interpretations of mathematics. This routine fosters structural thinking, Math Practice 7, and promotes student discourse.

1. Pair students into Numbered Heads (or Peanut Butter Jelly partners, etc.)
2. Show students the first image slide for about 3-5 seconds depending on the complexity of the image and level/experience of the students.
3. With their partner, students discuss everything they can remember about the image.
4. After a minute of partner discussions, have students share ideas to the group.
5. Create a list of student ideas that students can refer to when the image is shown again.
6. Tell students that you are going to put the slide back up. Ask students to COUNT the images using some type of shortcut strategy (chunking, symmetry, arrays…)
7. Show the image again and leave it displayed as students look for counting shortcuts.
8. With their partner again, students discuss how many objects are in the image and how describe the shortcut counting strategy they used. Give time for partner discussions. Walk around and take notes about discussions to determine which students will share.
9. Use the slide with identical images as a comparative visual as students take turns explaining how they counted the objects in the image.
    - Use your notes to select different students with different approaches.
    - The student explains his/her shortcut as the teacher **gestures** over the image.
    - A **different student** is asked to **REPEAT the original student's shortcut** as the teacher **annotates** (circles, underlines) on the image to show the shortcut used.
    - Repeat the process using 3 different student-generated shortcut strategies.
10. End by asking students to explain what was "mathematically important"

Day 66

QUICK COUNT



What do you NOTICE?

Image Credit: Christopher Danielson @Trianglemancsd

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Day 66

QUICK COUNT

What did you NOTICE?

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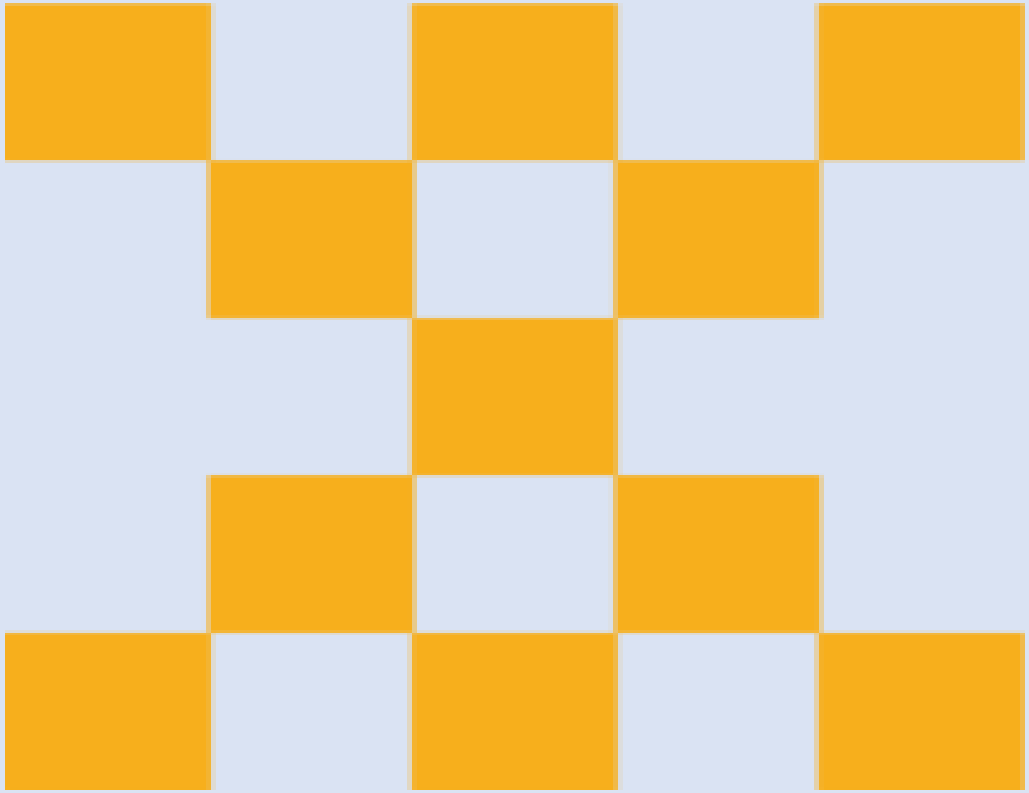
Day 66

QUICK COUNT



How many yellow rectangles do you see?
What counting shortcut did you use?

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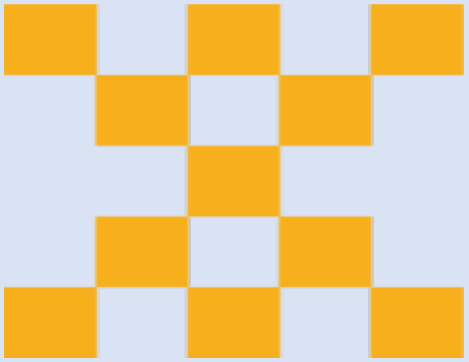
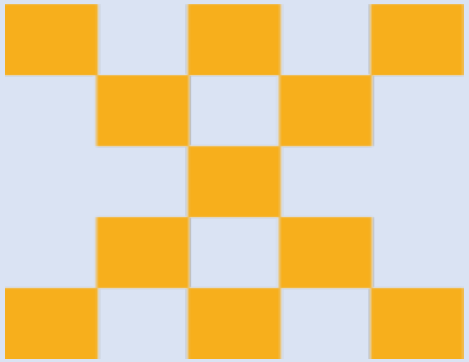
Day 66

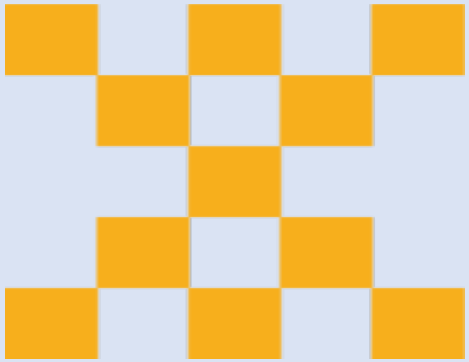
QUICK COUNT



I noticed ____ so I _____

(They) noticed ____ so they _____





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Day 66

Reflect

What was mathematically important?

QUICK COUNT

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Intro

SAME BUT DIFFERENT

About the SAME BUT DIFFERENT Routine

Same But Different is a powerful routine for use in math classrooms. The *Same but Different* routine compares two things **calling attention to both how they are the same and how they are different**. This apparent paradox is the beauty of the activity. In this analysis, *instead of making a choice and trying to prove that these are the same or prove that they are different, **students consider how two items can be both**.* This is a critically important distinction from many other tasks.

One of the reasons students struggle in math is that they struggle to make connections. Someone who has poorly developed number sense might see each number as its own thing, and not part of the larger network of mathematical ideas. A mathematical conversation using the language *same but different* that calls attention to how a new concept in math is the same as another familiar and comfortable concept but different in a specific way is a useful conversation in growing a student's network of connections. Building these connections could also reduce anxiety as children become the sense-makers in the conversation.

Source: www.samebutdifferent.net.com/about

Facilitating the SAME BUT DIFFERENT Routine

1. Present the slide
2. Ask students to THINK about how the two items are both the SAME AND DIFFERENT.
3. Do not allow conversation at this time -- give ample think time for students to consider the possibilities
4. After some time has been given (a minute or so), ask students to talk with their Number Head partner or small group about their ideas -- allow this conversation to dominate the time dedicated to this routine
5. As students talk with partners/groups, walk around and listen to the conversations. Resist jumping in; let them grapple with the ideas with their peers.
6. As you walk around listening, take notes. You will use these notes to help direct the whole group conversation.
7. Refocus student attention to the front of the room for a whole group debriefing session. Ask students to share some of their ideas about how the two were both the SAME and DIFFERENT – use the notes you took to bring out important ideas that will benefit the entire room.

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Day 67

Use the NEXT SLIDE with students.

Here is are some possible responses. This list is not all-inclusive.
Additional ideas encouraged!

- Students may simply recognize a component that makes them the “same” OR “different”
- Some students may state a same/different relationship and say that they are the “same because…. But different because….”

- Both buildings have a measurement of 50 and one of 1,350 BUT the 1,350 is both a different part of the building AND a different UNIT of measure.
- Building #1 has a length of 50 feet and an AREA of 1,350 square feet. Which means the length of this building is 1350 ÷ 50 or 27 feet.
- Building #2 has also has a length of 50 feet, but it's WIDTH is 1,350 feet (a very long building, indeed!). The AREA of building #2 is 50 x 1350 or 67,500 square feet.
- This discussion could be a simple matter of identifying that building #2 will have a MUCH greater area than building #1 OR you could take time to investigate the actual values. The overall area of Building #2 will be 50 times greater than the area of building #1 since 67,500 ÷ 1,350 = 50
- NOTE: A foreman is supervises and directs other workers.

SAME BUT DIFFERENT

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How are these the SAME but DIFFERENT?

Day 67

The foreman of a construction project received measurements related to two different buildings. The numbers are the same. Consider the values. How will the buildings the same? How will they be different?

Building #1

Length: 50 ft

Area: 1,350 ft^2

Building #2

Length: 50 ft

Width: 1,350 ft

SAME BUT DIFFERENT

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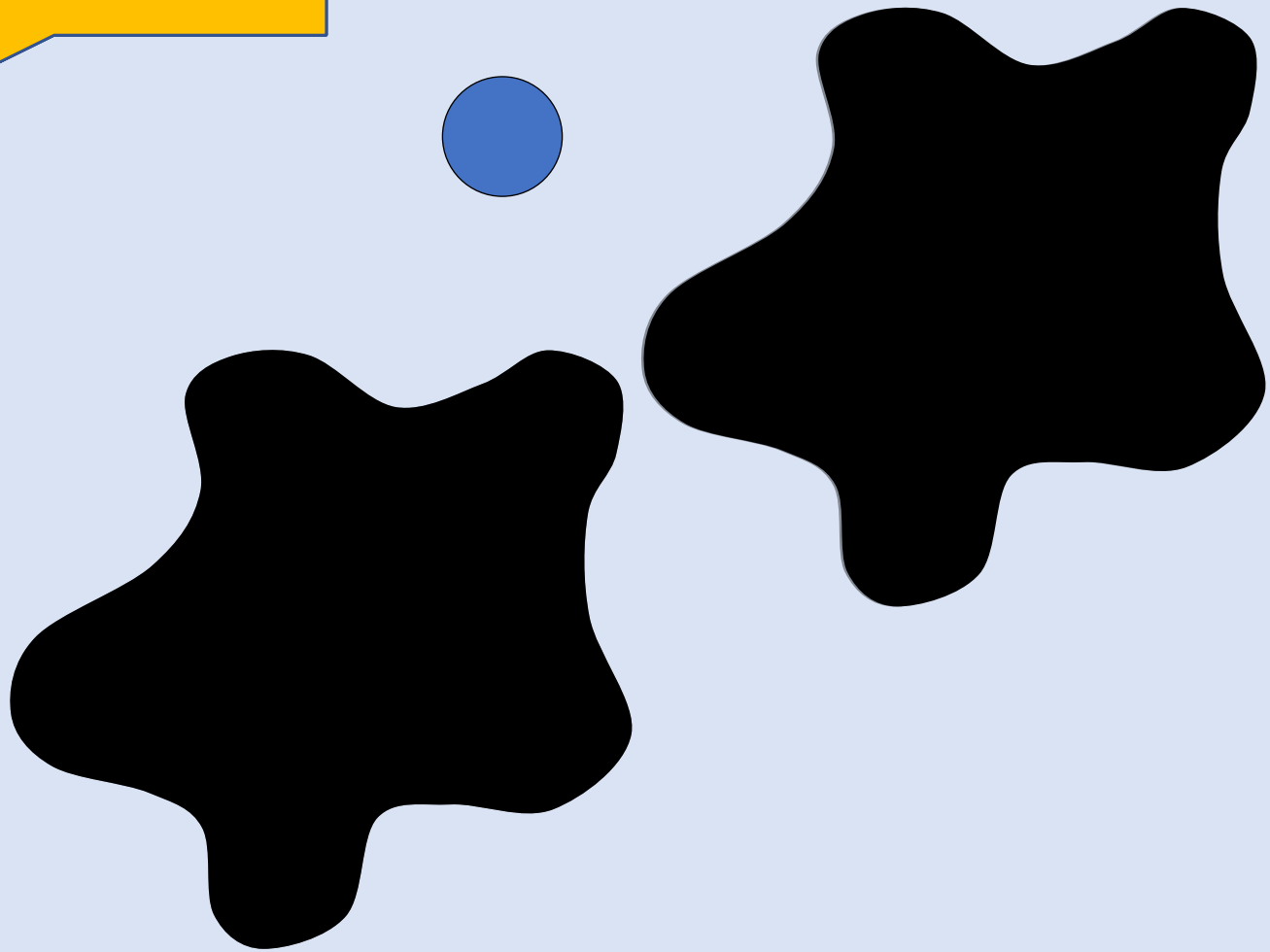
What can we learn from this picture?

6

Day 68

SPLAT!



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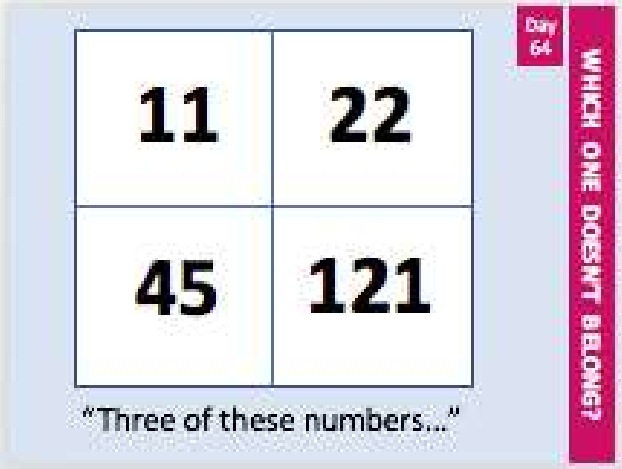
Day 69

WHICH ONE DOESN'T BELONG?

Use the NEXT SLIDE with students.

Here is are some possible responses. This list is not all-inclusive.
Additional ideas encouraged!



SOME POSSIBLE RESPONSES:

- 3 of these numbers are composite numbers. 11 is the only prime number *(prime numbers have EXACTLY 2 factors: 1 and the number itself – composite numbers have more than 2 factors. The numbers 0 and 1 are neither prime nor composite since they do not have exactly 2 factors or more than two factors).*
- 3 of these numbers are odd numbers. 22 is not an odd number, it is even.
- 3 of these numbers are divisible by 11. 45 is the only one that is not divisible by 11.
- 3 of these numbers are double-digit numbers. 121 is not a double-digit number.

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Day 69

WHICH ONE DOESN'T BELONG?

11	22
45	121

"Three of these numbers…"

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Day 70

Add 101

- **SAY: "**We are going choral count today by adding 101 to the previous number.
  Let's do a warm-up choral count by simply adding 100. Let's begin on lucky number 7."

- **COUNT:** CHORAL COUNT. Orally. Do not chart. 7, 107, 207, 307, 407, 507, 607 stop.

- **SAY:** "Okay, now that we are warmed up, think about adding 101 to a number.
  - Think about how it will be the same as adding 100.
  - How will it be different?
  - What strategy can we use to know the next number easily using mental math without paper and pencil?"

- Give some think time. Perhaps allow students to briefly discuss a strategy with a partner.

- **CHART:** Encourage students to count slowly and to look for patterns in the numbers.
  As students choral count, chart the numbers on the next page.

CHORAL COUNTING

ADD 101

Day 70

CHORAL COUNTING

7			
108			
209			

What patterns do you see?

What strategies did you use to make counting by 101 easier?

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Day 71

Esti-Mystery

Estimation Activity with clues!

NOTE: Try using an individual or class number chart to help students chart and track the possible solution.

Students use clues to solve the estimation mystery. After all clues are revealed, students will have narrowed down the possible solutions. They will either have a single value remaining or a small list of values from which to choose and justify their final estimate before revealing the actual amount.

Clues are revealed one at a time with time to discuss and refine original estimates after EACH clue is revealed. No one should be stuck with their original estimate – encourage mindful refinements.

ESTIMATION

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Adapted from slides by Steve Wyborney

How many kazoos are in the vase?

As the clues appear, use the information to narrow the possibilities to a smaller set.

After each clue, if your estimate is no longer possible, write down a new estimate – and be prepared to explain your reasoning.

Light the Future
Calvert County Public Schools

Adapted from slides by Steve Wyborney

How many kazoos are in the vase?

Important Note:
If you can see this box, then the slide show is not playing and the reveal won't work.

How do you make it work correctly?
Click on the "Slide Show" tab at the top of the page, then click on "From Current Slide".

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Adapted from slides by Steve Wyborney

After seeing the clues,
You should have narrowed the possibilities down to just two numbers.

Before you see the answer, select your final estimate.

Write it down and explain to someone why you chose that number.

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The Reveal
Click to see the answer.

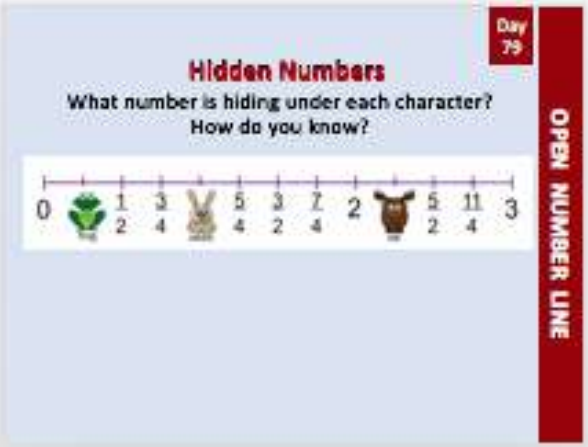
Adapted from slides by Steve Wyborney

Use the NEXT SLIDE with students.

Here is are some possible responses. This list is not all-inclusive.
Additional ideas encouraged!

Day 72

OPEN NUMBER LINE



Ask students to begin by "Noticing and Wondering"
Ask students what they "noticed" or what they are "wondering"
Be sure to note the different denominators and DISCUSS – the discussion during this part will likely be the most powerful part of the routine. Once students seem to understand the fraction, give time for them to "rethink" the hidden numbers. Give time then ask students to offer their ideas AND an explanation of how they know.

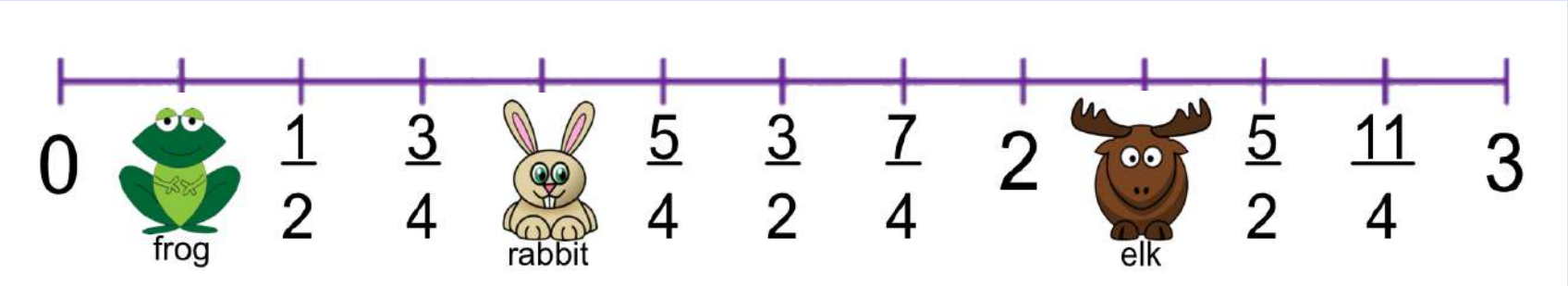
FROG: ¼
RABBIT: 4/4 or 1 (IF the students says "4/4", ask if any other numbers are a possibility – all possibilities should be equivalent to "1")
ELK: 2¼ or 9/4

Day 72

Hidden Numbers

What number is hiding under each character?

How do you know?



OPEN NUMBER LINE

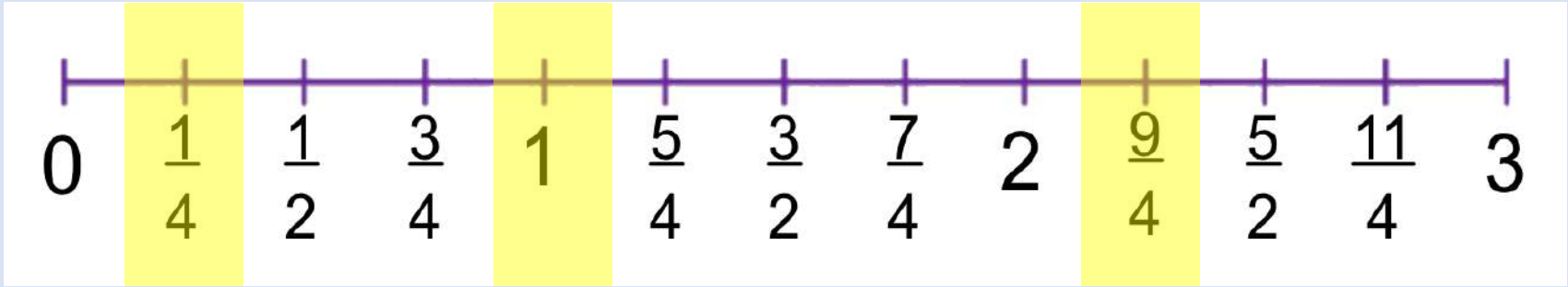
Answer Key

Day 72

Hidden Numbers

What number is hiding under each character?

How do you know?

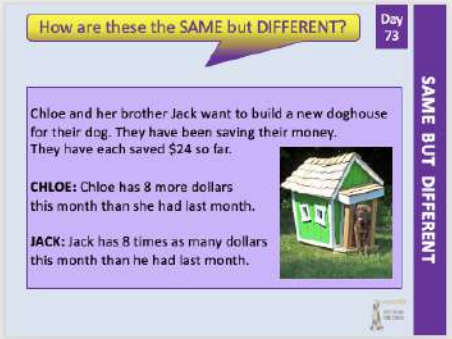


OPEN NUMBER LINE

Use the NEXT SLIDE with students.

Here is are some possible responses. This list is not all-inclusive.
Additional ideas encouraged!

- Students may simply recognize a component that makes them the “same” OR “different”
- Some students may state a same/different relationship and say that they are the “same because…. But different because….”



GOAL: Understand the difference between multiplicative (as many times as) and additive (more) comparisons.

It is critical that students understand the difference between additive and multiplicative comparison.

CHLOE: Since Chloe has 8 dollars more (additive), we can determine how much she had last month with the equation 24 – 8. She had 16 dollars last month.

JACK: Since Jack has 8 TIMES as many dollars (multiplicative), we can figure out how much he had last month with the equation 24 ÷ 8. He had only 3 dollars last month.

They both saved $24 so far. Because Chloe’s total is additive, we know she had $16 last month, but Jack’s total is multiplicative, so he had only $3 last month. If this trend continues, Chloe will have $32 next month, but Jack will have a whopping $192 dollars.

How are these the SAME but DIFFERENT?

Day 73

SAME BUT DIFFERENT

Chloe and her brother Jack want to build a new doghouse for their dog. They have been saving their money. They have each saved $24 so far.

CHLOE: Chloe has 8 more dollars this month than she had last month.

JACK: Jack has 8 times as many dollars this month than he had last month.

Day 74

172 - 60
169 - 59
172 - 59
179 - 88

TEACHER NOTES

BEFORE

This slide has the String of expressions that you will use for today's Number Talk. You can use Smart Ink, right click for PowerPoint Pen, or convert this slide to Smart Notebook so you can easily annotate on the slide. The annotation is an important part of the routine. The expressions should be presented one-at-a-time with skills building on one another. Remember, students will come with a wide variety of strategies. Allow student sharing of these strategies and work toward determining which of the ways were most efficient and brain-friendly.

DURING

Adjusting One Number to Create an Easier Problem

Possible questions to ask:
1)How

The problems on this slide require students to make decisions about which numbers might be adjusted to create an easier problem. To solve 179 – 88, students may change the problem to 180 – 88. In doing this, they've increased the difference between the two numbers by 1, so if they are using 180 – 88 = 92 to solve 179-88, they need to take 1 away from the 92 to get 179-88=91.

The Talk is designed to help students build on what they know about number patterns and skip counting/multiplication and to purposefully look for opportunities to use that information in related contexts. Remember, students will come with a wide variety of strategies. Allow student sharing of these strategies and work toward determining which of the ways were most efficient and brain-friendly.

AFTER

After doing the Number Talk String, be sure to highlight this strategy and encourage students to "look for" places they can use it throughout the day.

NUMBER TALK

Calvert County Public Schools

172 - 60

Day 74

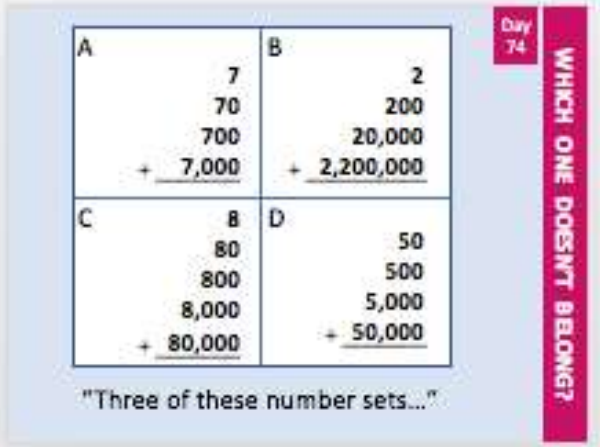
NUMBER TALK

Use the NEXT SLIDE with students.

Here is are some possible responses. This list is not all-inclusive.
Additional ideas encouraged!

Day 75

WHICH ONE DOESN'T BELONG?



POSSIBLE RESPONSES:

- 3 of these number sets have a sum that will result in an even number. Set A results in an odd sum.
- 3 of these number sets use addends that have only 1 non-zero digit. Set B has a value (2,200,000) has a number with more than one non-zero digit in one of the addends.
- 3 of these number sets have 4 expressions added. Set C is adding 5 sets of expressions.
- 3 of these number sets end in a non-zero value. Set D is the only one that will end in zero.

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Day 75

WHICH ONE DOESN'T BELONG?

A	B
7 70 700 + 7,000	2 200 20,000 + 2,200,000
C	**D**
8 80 800 8,000 + 80,000	50 500 5,000 + 50,000

"Three of these number sets…"

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Day 76

Using the DECIDE & DEFEND routine

As you do this routine with students, USE the CHECKLIST on the left side of the problem as a way to help organize the thinking process

- **READ to Understand:** Begin by having students discuss the question being asked. At this time, do NOT focus on the math calculations required or the answer. This step is designed for students to understand the context of the question (What is the gist of the question?)

- **DECIDE**: Pair or group students. Using a consistent pairing will make this routine more fluid so you do not have to take time to pair students every time you want them to discuss. Have students discuss the question and discuss the question and decide which solution is correct (note: partners may not agree and that is fine provided they can justify their own thinking).

- **DRAFT**: Students draft a statement about their ideas (either as a group or individually and it can be written or oral – teacher's choice)

- **DEFEND**: Students share their ideas and defend their reasoning with the whole group. Encourage active listening and accountable talk.

- **RELECT**: To further develop comprehension, have students use ONE of the sentence starters on the "Reflect on Learning" slide after they have discussed and listened to new ideas with classmates.

NOTE: This is the CCPS adaptation of the original Decide and Defend protocol

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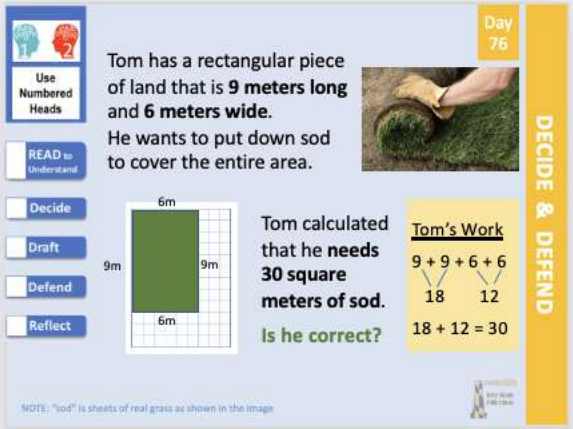
DECIDE & DEFEND

Use the NEXT SLIDE with students.

Here is are some possible responses. This list is not all-inclusive.
Additional ideas encouraged!

Day 76

DECIDE & DEFEND



This is an ERROR ANALYSIS task.
Give students Time & Space to grapple with the story and the work that Tom has done.
Do not intervene too early. Allow students to discuss with a partner.

Tom has mistakenly calculated the perimeter of the area he plans to put sod.
Tom should have multiplied the length by the width of the area he plans to put sod.

6 x 9 = 54 square meters.
If Tom orders 30 square feet of sod, he will need an additional 24 square feet to cover the entire area.

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Use Numbered Heads

READ to Understand

Decide

Draft

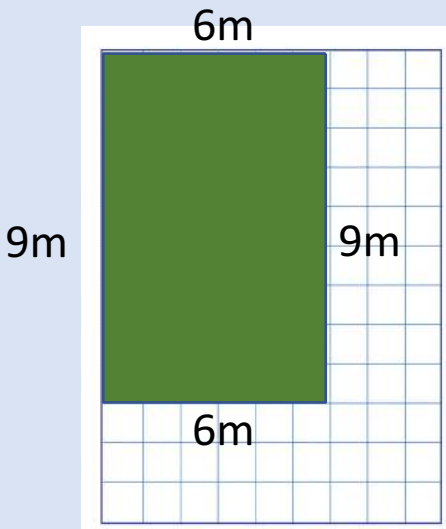
Defend

Reflect

Day 76

DECIDE & DEFEND

Tom has a rectangular piece of land that is **9 meters long** and **6 meters wide**.
He wants to put down sod to cover the entire area.



Tom calculated that he **needs 30 square meters of sod**.

Is he correct?

Tom's Work

9 + 9 + 6 + 6

18 12

18 + 12 = 30

NOTE: "sod" is sheets of real grass as shown in the image

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Day 76

Reflect on Learning

- What was mathematically important in the problem?
- What new math idea did you learn today?
- Next time I plan to… because….

DECIDE & DEFEND

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61 – 29
129 - 59
349 - 17

Day 77

TEACHER NOTES

BEFORE

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DURING

Keeping a Constant Difference

Possible questions to ask:

1)How did you decide what the pattern was?
2) Can you write an expression to determine the next term?
3) What other strategies might you use to determine how to continue a pattern?
4) Does the second pattern relate to the first pattern? How does it relate?
5) What are the next three numbers?
6) Create two new patterns that relate to each other.

With this strategy, both the minuend and the subtrahend are adjusted by the same amounts. This maintains the distance, or the space between the two quantities. Example: With 61 – 29 we can deduct from both values which will keep the distance the same. So 60 – 28 is the same distance as 61 – 29. Both are 32. With 129 – 59, If both numbers are adjusted by adding 1, the problem is changed to 130 – 60. The answer is 70 for either problem because the numbers have both shifted by the same amount, keeping the difference between them the same.

The Talk is designed to help students build on what they know about benchmark numbers and to purposefully look for opportunities to use that information in related contexts. Remember, students will come with a wide variety of strategies. Allow student sharing of these strategies and work toward determining which of the ways were most efficient and brain-friendly.

AFTER

After doing the Number Talk String, be sure to highlight this strategy and encourage students to "look for" places they can use it throughout the day.

Light the Future
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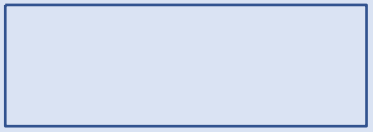
NUMBER TALK

Day 77

NUMBER TALK

61 – 29



Light the Future
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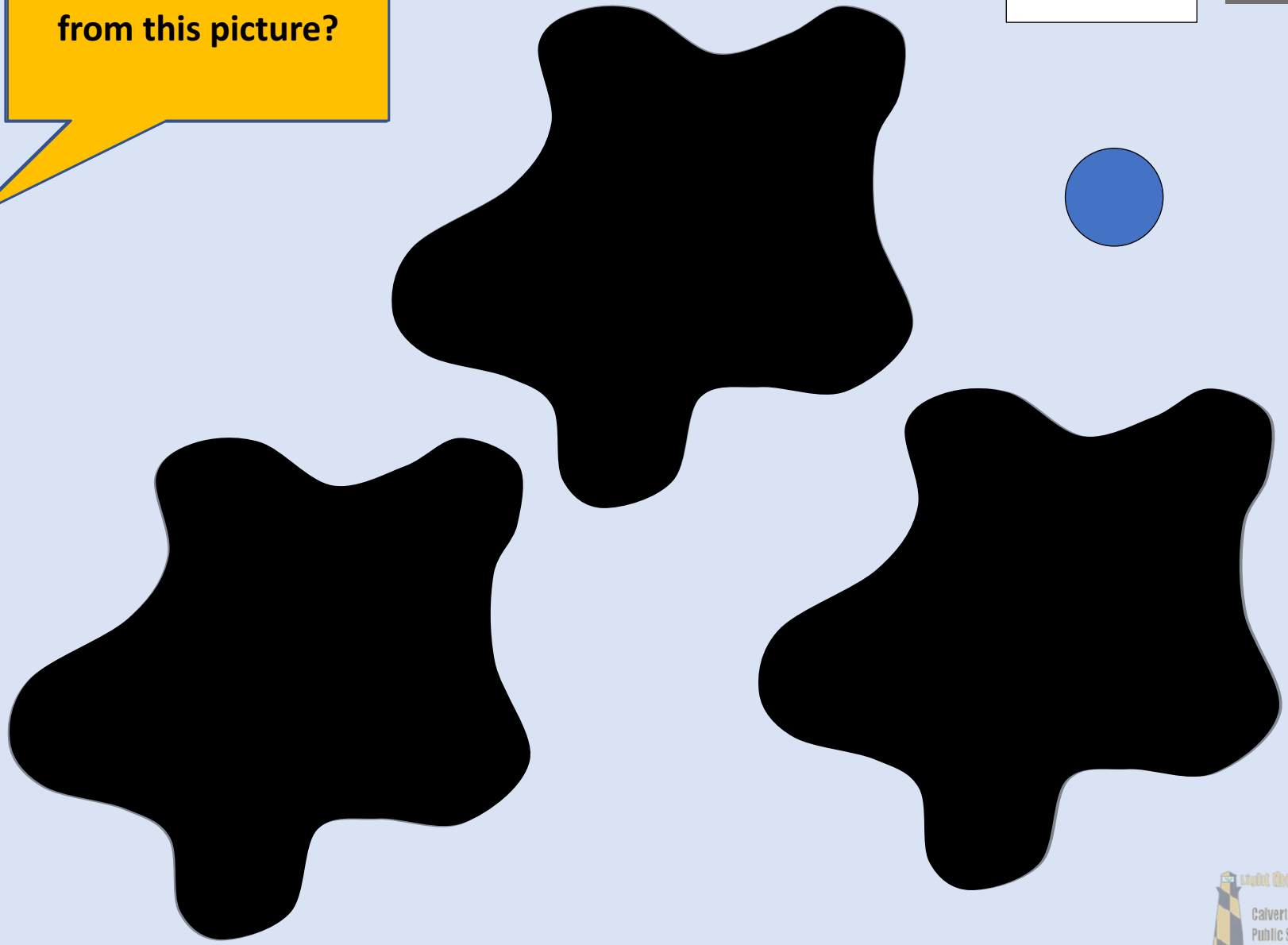
What can we learn from this picture?

8

Day 78



SPLAT!

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Day 79

QUICK COUNT

What do you notice?

Light the Future
Calvert County Public Schools

Day 79

QUICK COUNT

What did you NOTICE?

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Day 79

QUICK COUNT

How many do you see?

What counting shortcut did you use?

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I noticed ____ so I _____

(They) noticed ____ so they___

Day 79

QUICK COUNT

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Day 79

Reflect

What was mathematically important?

QUICK COUNT

Day 80

NUMBER TALK

139 - 61
138 - 59
114 - 90
112 - 88

TEACHER NOTES

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DURING

Keeping a Constant Difference

Possible questions to ask:

1)How did you decide what the pattern was?
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4) Does the second pattern relate to the first pattern? How does it relate?
5) What are the next three numbers?
6) Create two new patterns that relate to each other.

With this strategy, both the minuend and the subtrahend are adjusted by the same amounts. This maintains the distance, or the space between the two quantities. Example: With 139-61 we can subtract 1 to both values which will keep the distance the same. So 139-61 is the same distance as 138-60 . Both are 78.

The Talk is designed to help students build on what they know benchmark numbers and to purposefully look for opportunities to use that information in related contexts. Remember, students will come with a wide variety of strategies. Allow student sharing of these strategies and work toward determining which of the ways were most efficient and brain-friendly.

AFTER

After doing the Number Talk String, be sure to highlight this strategy and encourage students to "look for" places they can use it throughout the day.

Day 80

139 - 60

NUMBER TALK

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