180 Days of
Number Sense Routines
Grade 5
Days 41-60

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.

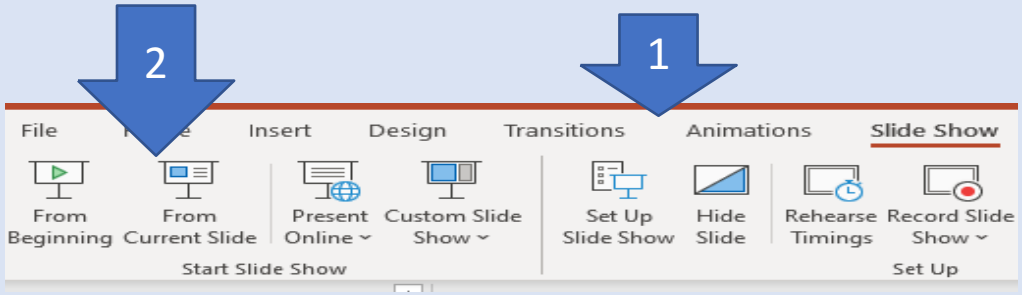
WHAT ARE THE CCPS IMPLEMENTATION EXPECTATIONS? Number sense routines have been developed for all 180 instructional days in grades 1-5. These routines are to be used every day, including early dismissal, late arrival, and field trip days. Because the routines do not require a specific order, it is permissible to trade routines among days within the week 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 OER materials. We have made our work available in Open Educational Resources so that others may benefit as we have from the collaboration of other educators. 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
- *As Close As It Gets* https://www.mathisfigureoutable.com/ascloseasitgets by Pam Harris

Directions for the CHORAL COUNT routine

Choral Counting is an activity in which the teacher leads children in counting aloud together by a given number. As the class calls out each number, the teacher records the count on the board, pausing the count at strategic moments.

To begin, the teacher decides on a number for the students to skip count by, whether to count forwards or backwards, and what number to start and end the count on. Different numbers lend themselves well to surfacing different mathematical ideas.

The goal of this activity is not just to practice rote counting, but to engage children in reasoning, predicting, and justifying. To do this, teachers record the count so that patterns within the numbers are readily noticeable and pause during the count to ask questions like, “What do you think will come next? How do you know?”

– Tedd.org

Want to see a Choral Counting routine in action? Click the image.

Day 41

CHORAL COUNTING

Looking for Patterns: Skip Counting by 9's

- **SAY: "**We are going begin with the task of skip-counting by 9's. We'll begin with the number 9. Let's begin." Choral count: 9, 18, 27, 36, 45, ….
- Stop when the counting seems to fall apart (you may not get very far – that's okay)
- **SAY:** "Think about the strategies you used to think of the next number." Give a moment of think time.
- **ASK:** "Let's share some of the strategies you were thinking about." Allow several students to share their strategies.
- **SAY: "**I wonder if there is a strategy that would help us to count as high as we want to go?"
- **CHART:** Use a 120 chart (next page) to chart the counting pattern.
- **SAY**: "Let's count again. This time I will chart the numbers we count. As I circle the numbers, see if you can see a pattern that allows us to easily predict the next number." Go slowly. Circle the number as students say them. You're likely to see students suddenly see the pattern and the counting will become much more fluid even in the higher numbers.
- **SAY: "**Math is all about patterns and relationships. Does anyone see a pattern with the numbers we circled during our count?"
- **DISCUSS:** Take time to discuss the pattern of circled numbers. Ask questions to continue focusing the discussion on the reasons WHY we see those patterns (9 is one less than 10, so the circled numbers will always be down one (+10) and then back one (-1) when charted.
- **ASK: "**What is a shortcut we could use to efficiently count by 9's?" (add 10 then subtract 1)
- **SAY:** "Let's try counting by 9's again, but this time, let's begin with the number 8. As we count, think about the pattern." Erase the first circles and begin circling the new numbers: 8, 17, 26, 35, 44…. Allow and encourage students to use the chart as a visual aide.
- **ASK**: "Do we see the same PATTERN?" yes – down one (+10) and back one (-1)

Looking for Patterns

Skip Counting by 9's

Day 41

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

5.OA.B.3

Day 42

Using the DECIDE & DEFEND routine

- **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.

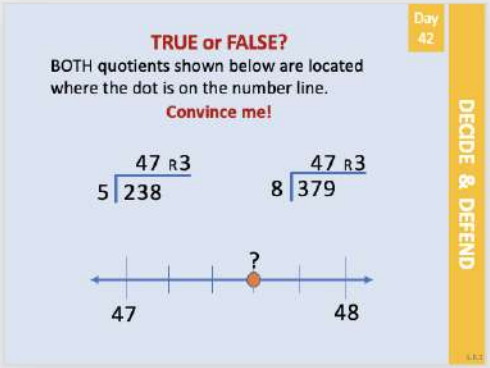
NOTE: This is the CCPS adaptation of the original Decide and Defend protocol

DECIDE & DEFEND

Day 42

Use the NEXT SLIDE with students.

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



Begin by making sure that students understand these representations to mean 238 divided by 5 equals 47 with a remainder of 3 AND 379 divided by 8 also equals 47 with a remainder of 3.

Pose the question: Both equations shown have a quotient of 47r3. Allow them to check it on a calculator.
Does this mean that both will be on the same place on the number line?
Allow for plenty of THINK TIME, DISCUSSION, and DEBATE – the **discussion is the key to this task**, not just the correct answer

Answer: NO!
The orange point represents a remainder of 3 out of 5 since there are 5 equally spaced intervals between the 47 and 48.
Use the idea of ½ benchmark to further the explanation. Remainder 3 out of 5 is more than half while remainder 3 out of 8 is less than half – meaning one would be a bit more than halfway to between 47 and 48 while the other is a less than halfway.

SEE the page following the prompt FOR MODEL OF SOLUTION

This is a great activity to **ALLOW students to USE CALCULATORS** since we are working on developing number sense and not division skills

DECIDE & DEFEND

Day 42

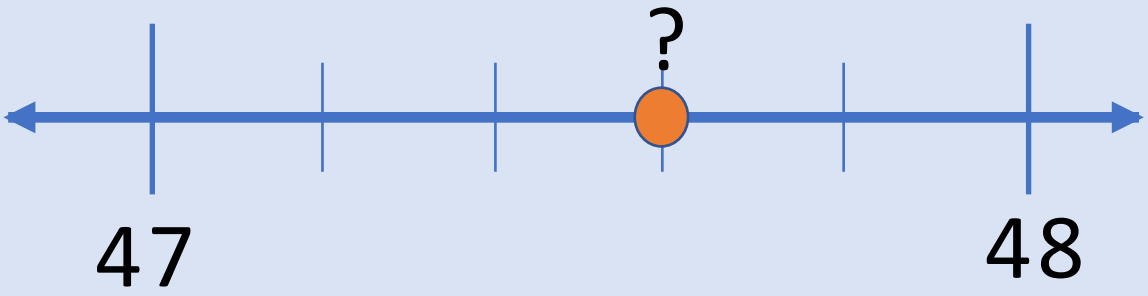
TRUE or FALSE?

BOTH quotients shown below are located where the dot is on the number line.

Convince me!

$$5\overline{)238} = 47\ R3$$

$$8\overline{)379} = 47\ R3$$

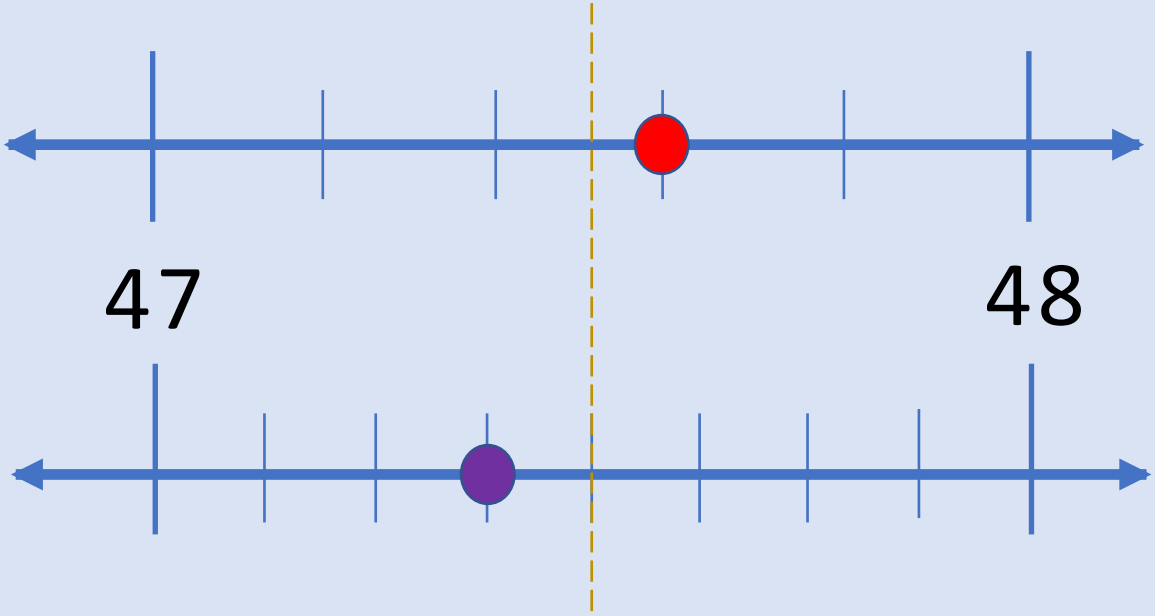


DECIDE & DEFEND

Day 42

DECIDE & DEFEND

$$5\overline{)238} \quad 47\ R3$$



$$8\overline{)379} \quad 47\ R3$$

MODEL OF THE CORRECT NUMBER LINE LOCATIONS

Day 42

Reflect on Learning

- A new math idea I learned today is…
- Next time I plan to… because….
- To help others understand my ideas, it is important to….

DECIDE & DEFEND

Day 43

Estimation Activity

Have you already watched the teacher information video?

When you are ready to use this activity,
use the PowerPoint platform so the slides work properly.

PROMPT: **How many dice are being held by the vase?**

ESTIMATION

How many dice are being held by the vase?

The Reveal

43 dice

The Reveal

The Reveal

The Reveal

Day 44

0, 7, 14, 21, 28, ___, ___, ___

0, 14, 28, 42, 56, ___, ___, ___

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

Number Patterns

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.

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

Day 44

0, 7, 14, 21, 28, ___, ___, ___

NUMBER TALK

5.OA.B.3

Day 45

OPEN NUMBER LINE

Directions for OPEN NUMBER LINE routines

If you have never watched, or haven't watched it recently, we encourage you to watch the video that models how to use an interactive number line.
https://www.youtube.com/watch?v=p8nssffnHkM&feature=youtu.be

Teacher Note: You may want to create an interactive number line in your classroom for some of the Open Number Line routines. The slides provided can be used as teacher reference or used interactively if this file is "printed" as a Smart Notebook file.

For more Open Number Line Activities, visit http://www.MathSnack.blogspot.com

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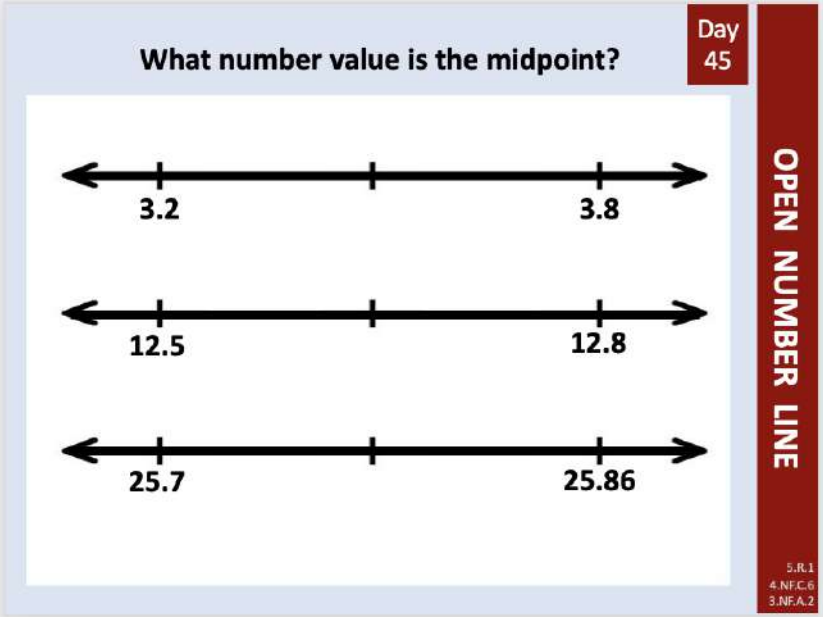
Use the NEXT SLIDE with students.

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

Day 45

OPEN NUMBER LINE



NOTE: **Use the screen shade on Smart Notebook to cover the number lines and reveal just one number line at a time.**

Have students find the midpoint on the number line and share their reasoning.
Example: The midpoint of 38 and 46 is 42. The difference between 38 and 46 is 8. Half of 8 is 4. 38+4=42 and 46-4=42.

- 38-42-46
- 120-280-440
- 257-257.5 or 257½ -258

Day 45

What number value is the midpoint?

OPEN NUMBER LINE

5.R.1
4.NF.C.6
3.NF.A.2

Day 46

ESTIMATION

Which answer is

As Close as it Gets?

Explain that NONE of the answers shown are the exact solution.

- Students should use **mathematical reasoning** to select the answer that is **closest** to the actual answer. **Discourage complex calculations, encourage estimation and reasoning.**
- Students are expected to **explain the reasoning they used** to select the answer that they think is closest to the actual answer.

Possible Reasoning: *10^3 is a Power of Ten. This mathematical notation means that we MULTIPLY by 10 three times since the exponent is a 3. This equation could be interpreted as 3.512 x 10 x 10 x 10. We can think about 10 x 10 x 10 = 1000 meaning this would be 3.512 x 1000. We know that 3 x 1000 = 3000, so the solution is near 3000.*

Day 46

Which answer is

As Close as it Gets?

$$3.512 \times 10^3$$

0.35	*3.5*	350	3500

What mathematical reasoning did you use to decide on the closest answer?

ESTIMATION

5.NBT.A.2

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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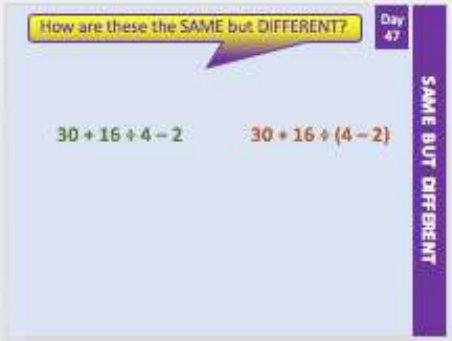
Day 47

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….”



POSSIBLE RESPONSES

Both use the number 30, 16, 4, and 2
Both use add, divide, and subtraction operations
The numbers are written in the same order.
The operations are written in the same order, but are not performed in the same order because of the order of operations rule.
The value of the first one is 32.
16÷4=4 then 30+4=34 then 34-2=32
The value of the second expression is 38.
4-2=2 then 16÷2=8 then 30+8=38

SAME BUT DIFFERENT

How are these the SAME but DIFFERENT?

Day 47

SAME BUT DIFFERENT

$30 + 16 \div 4 - 2$

$30 + 16 \div (4 - 2)$

Day 48

SPLAT!

What number does this

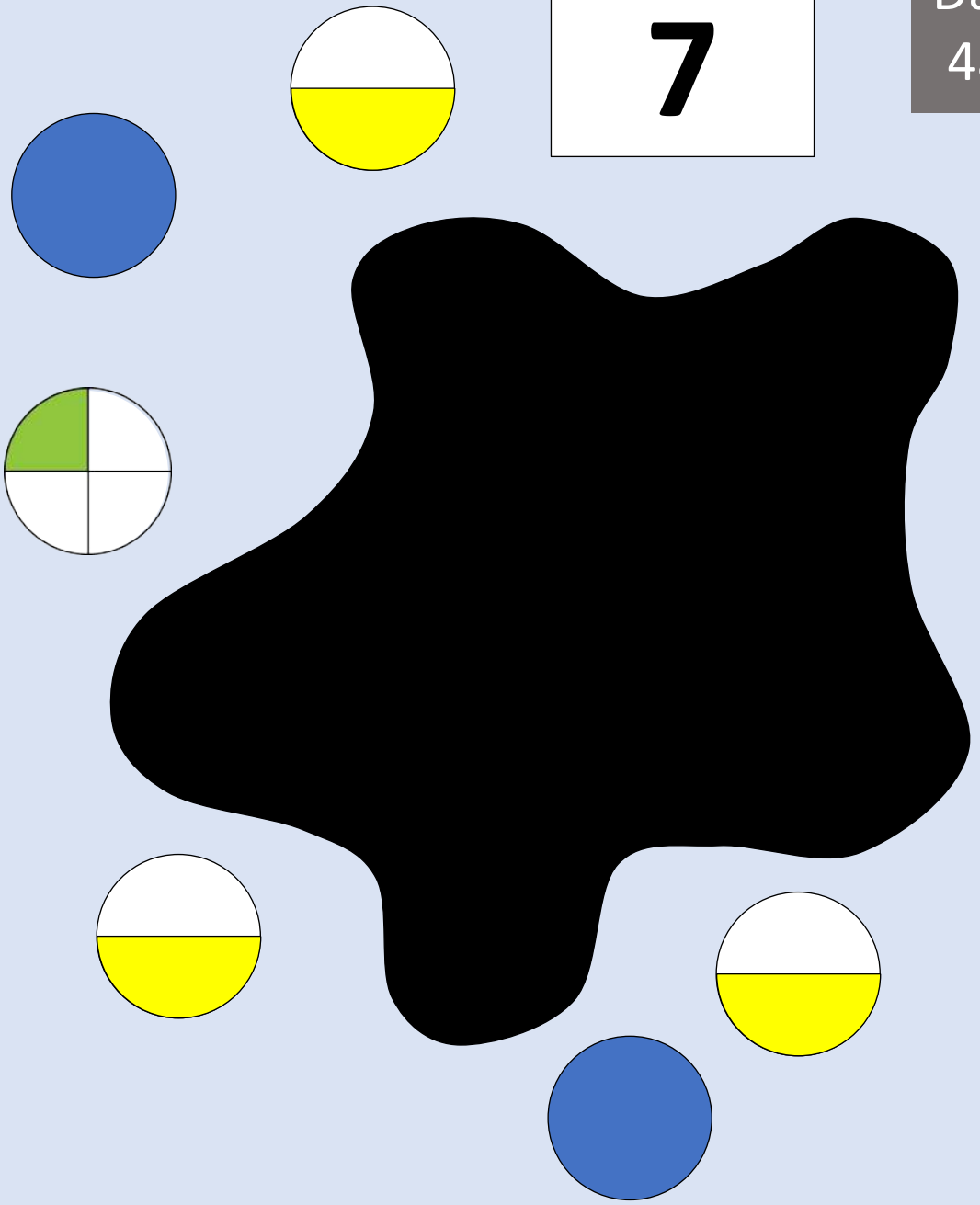
Splat!

What is the total under the splat? How do you

How else could you know?

Let's look under the splat to see

What can we learn from this picture?



Day 49

WHICH ONE DOESN'T BELONG?

Use the NEXT SLIDE with students.

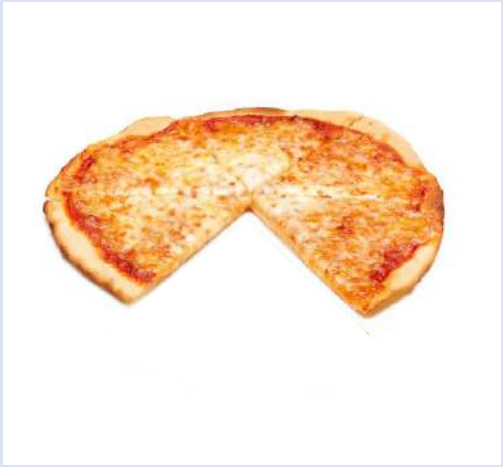
Here is are some possible responses. This list is not all-inclusive.
Additional ideas encouraged!

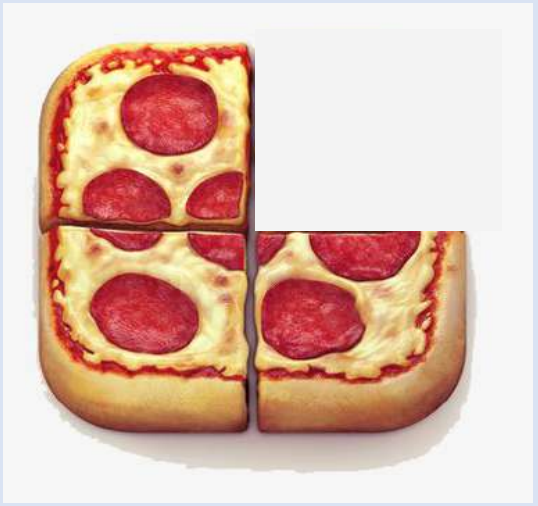
Possible Eliminations:

- 3 of the pizzas are missing some, but Pizza A is the only image that has no missing fractional piece
- 3 of the pizzas have toppings on the cheese, but Pizza B does not have toppings
- 3 of the pizzas are circle shaped, but Pizza C is not originally a circle
- 3 of the pizzas have more than ½ remaining, but Pizza D slightly less than half remaining

Day 49

WHICH ONE DOESN'T BELONG?





"Three of the pizzas…."

5.R.1
4.NF.A.2

Day 50

Looking for Patterns: Skip Counting by 9's

-this is an extension of the Day 41 routine-

PRO TIP: You may want to PRINT this page to use as a script as you lead the discussion.

- **SAY: "**Do you remember that last time we did a Choral Counting routine, we skip-counted by 9's and discovered a pattern on the 120 chart? Today we are going to discover other patterns that occur when we skip count by 9's. Let's skip count by 9's beginning with 9 while I chart the numbers."
- **CHART**: As students count, circle the numbers on the 120 chart (next page)
- **ASK:** "Does anyone notice something interesting about the SUM of the DIGITS?" (the sum is always 9 if you continue adding the digits until you get a single digit – be sure to give special attention to 99 since you must add the digits again until you get a single digit – 9+9=18 then 1+8=9)
- **SHOW:** This pattern is shown on the 3rd slide for this routine.
- **SAY:** "The sum of 9 in this pattern of sums is called the ***DIGITAL ROOT***."
- **ASK:** "Do you think we will get a digital root if we skip count by 9's but we do not begin on 9. **What if we begin counting by 9's but we begin with the number 8**?"
- **WAIT TIME:** Allow students time to consider your question – encourage partner/small group discussion.
- **SAY:** "Let's skip-count by 9's again beginning with the number 8. I will chart the numbers."
- **CHART:** Erase the circles on the 120 chart and chart the new values – 8, 17, 26, 35, 44…
- ASK: "Do we still have a digital root of 9?" Give students time to consider your question and to begin formulating ideas.
- **DISCUSS**: Students should discover that the new digital root is 8. 8, 1+7=8, 2+6=8, 3+5=8, 4+4=8….. (reminder: add the digits until you get a single-digit number)
- **ASK:** "I wonder what would happen if we counted by 9's by started on 7?" You do NOT have to continue the routine; you can simply leave the question hanging for students to explore on their own if they choose (be sure to celebrate students who take the initiative to try it on their own)

CHORAL COUNTING

CALVERT COUNTY PUBLIC SCHOOLS

Looking for Patterns

Skip Counting by 9's

Day 50

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

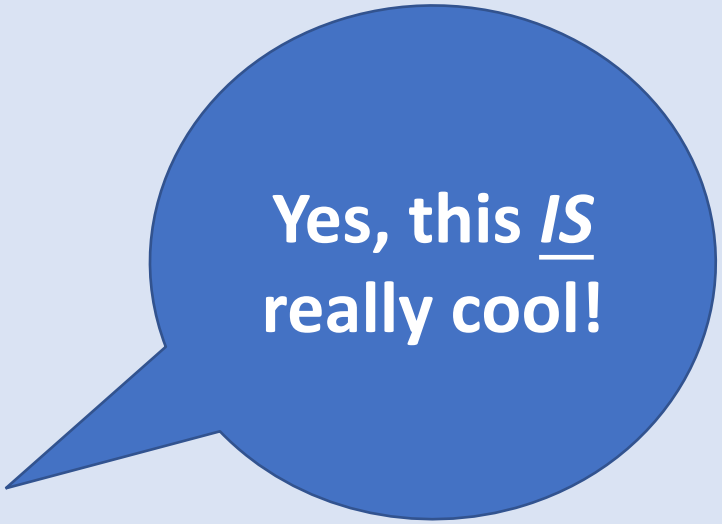
5.R.1
3.OA.D.9

Day 50

CHORAL COUNTING

Digital Roots

9	**9**
18	1 + 8 = **9**
27	2 + 7 = **9**
36	3 + 6 = **9**
45	4 + 5 = **9**
54	5 + 4 = **9**
63	6 + 3 = **9**
72	7 + 2 = **9**
81	8 + 1 = **9**
90	9 + 0 = **9**
99	9 + 9 = 18
108	1 + 0 + 8 = **9**
117	1 + 1 + 7 = **9**



1 + 8 = **9** (add digits until you get a single digit)

Day 51

Estimation Activity

Have you already watched the teacher information video?

When you are ready to use this activity,
use the PowerPoint platform so the slides work properly.

PROMPT:

PART 1: What is the total number of marbles?

PART 2: How many marbles are in each bowl?

Teacher Note: Go through each reveal slowly giving students opportunities to make estimations at every step of the process!

ESTIMATION

Day 51

ESTIMATION

Use the NEXT SLIDE with students.

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

Teacher Notes:

This Estimation is a bit different than some of the others we have seen: All three bowls are shown at the same time from the very beginning.

Students will begin by trying to make an estimate of the TOTAL of the three bowls combined.

The answer is revealed with a click (no "Reveal" prompt as in the past)

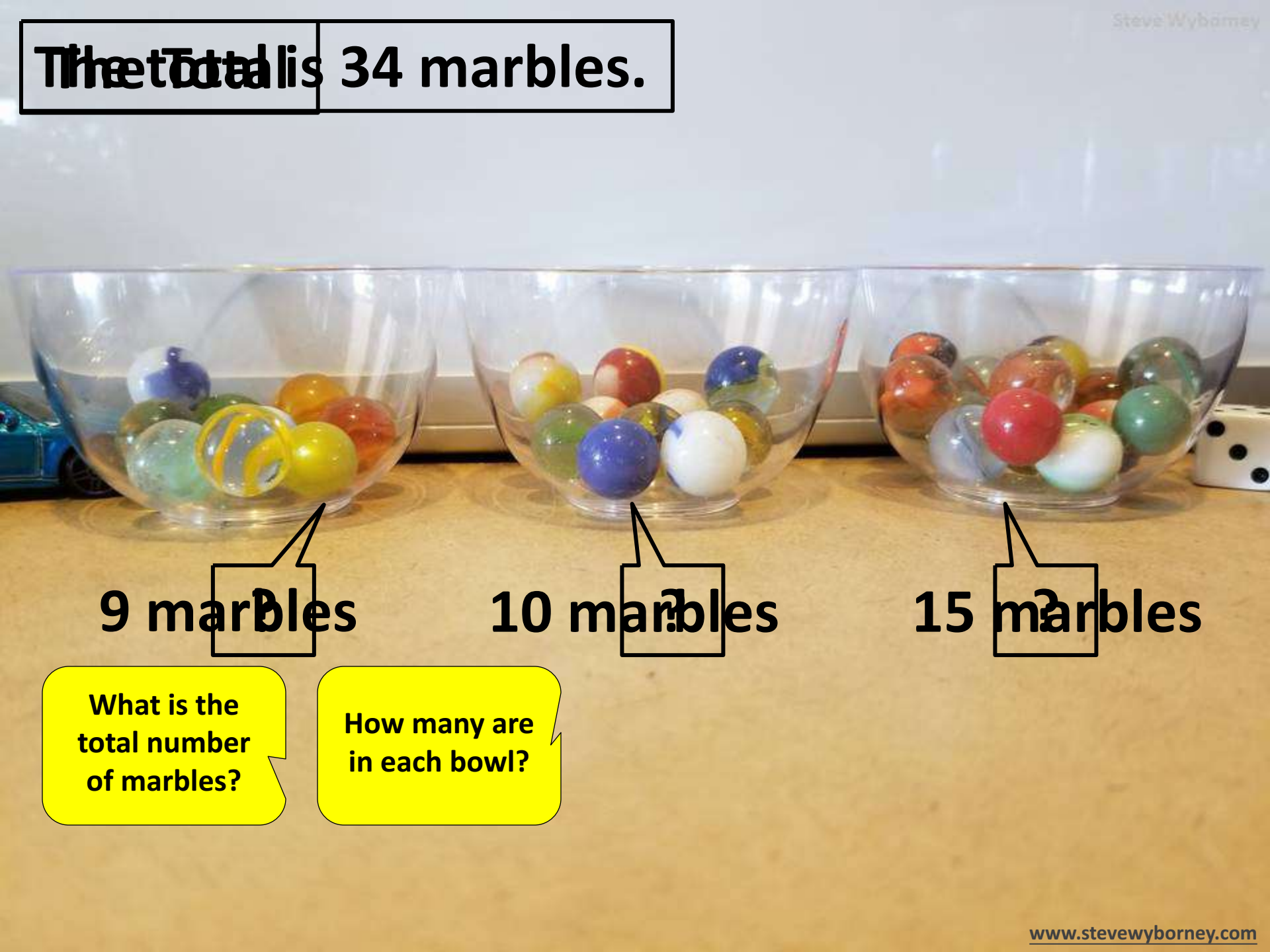
Then students are asked to consider the totals in EACH bowl.

AFTER presenting that question but BEFORE allowing students to discuss in small groups/partners, you may want to guide them through a series of focusing questions:

- What do we KNOW about the total of the three bowls? (there are 34)
- What do we know about the SUM of the three individual bowls? (they must equal 34 when added together)
- What can you SEE about the third bowl as compared to the first two bowls? (it has more than each but less than the two combined)

After you reveal the total in the FIRST BOWL, allow students to ADJUST their estimates. Discuss adjustments they may have made and WHY they adjusted.

Go through each reveal slowly giving students opportunities to make estimations at every step of the process!

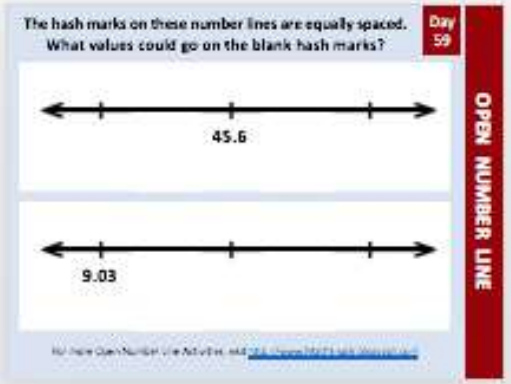


Use the NEXT SLIDE with students.

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

Day 52

OPEN NUMBER LINE



NOTE: Use the screen shade on Smart Notebook to cover the number lines and reveal just one number line at a time.

KEY IDEA: Equal intervals
There is a WIDE range of numbers that could go on each hash mark; however, the key is that the intervals MUST BE equal between the values. As students state the values, write them on the number line. Evaluate each student's response. Check the interval. To this writing and checking of intervals purposefully so students come to understand the importance of intervals on the number line.

For example, the top number line could NOT be 45 and 46 – although 45.6 does fall between 45 and 46, it is not in the middle of those values. Instead, students could say 45 and 46.2 making the interval for each side 0.6

For more Open Number Line Activities, visit http://www.MathSnack.blogspot.com

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The hash marks on these number lines are equally spaced. What values could go on the blank hash marks?

Day 52

OPEN NUMBER LINE

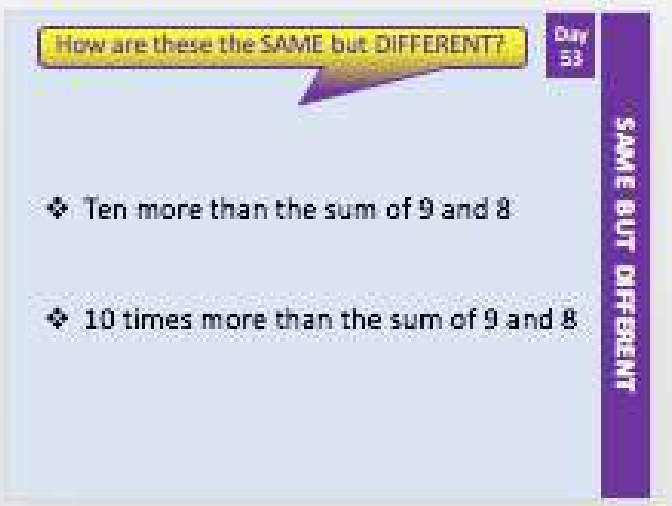
5.NBT.A.3b

Day 53

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….”



POSSIBLE RESPONSES

- Both sentences mention the numbers 10, 9, and 8
- Both are asking for the SUM of 9 and 8, but the first is TEN MORE (ADD 10) and the second is TEN TIMES MORE (multiply by 10)
- They have different values: 17+10=27 vs. 10x17=170

SAME BUT DIFFERENT

How are these the SAME but DIFFERENT?

Day 53

SAME BUT DIFFERENT

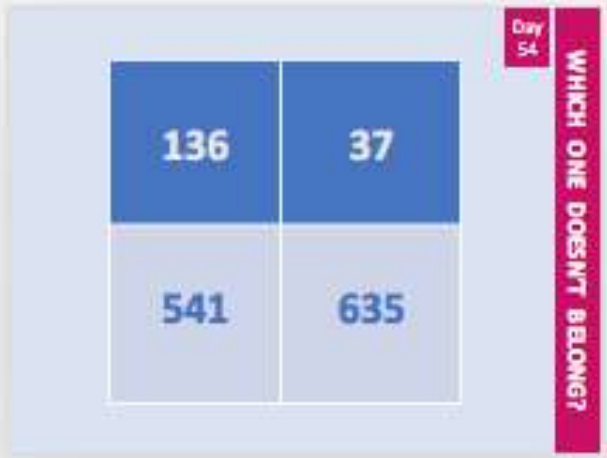
- Ten more than the sum of 9 and 8
- 10 times more than the sum of 9 and 8

Day 54

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!



Possible Eliminations:

- Three of the numbers are 3-digits, but 37 is the only one that is not 3 digits
- Three of the numbers have a digital root (sum of digits) that equals 10. 635 is the only one whose digits do not add up to 10
- Three of the numbers have a 3 in the tens place. 541 is the only one that does not have a 3 in the tens place value
- Three of the numbers are odd numbers. 136 is the only one that is not an odd number

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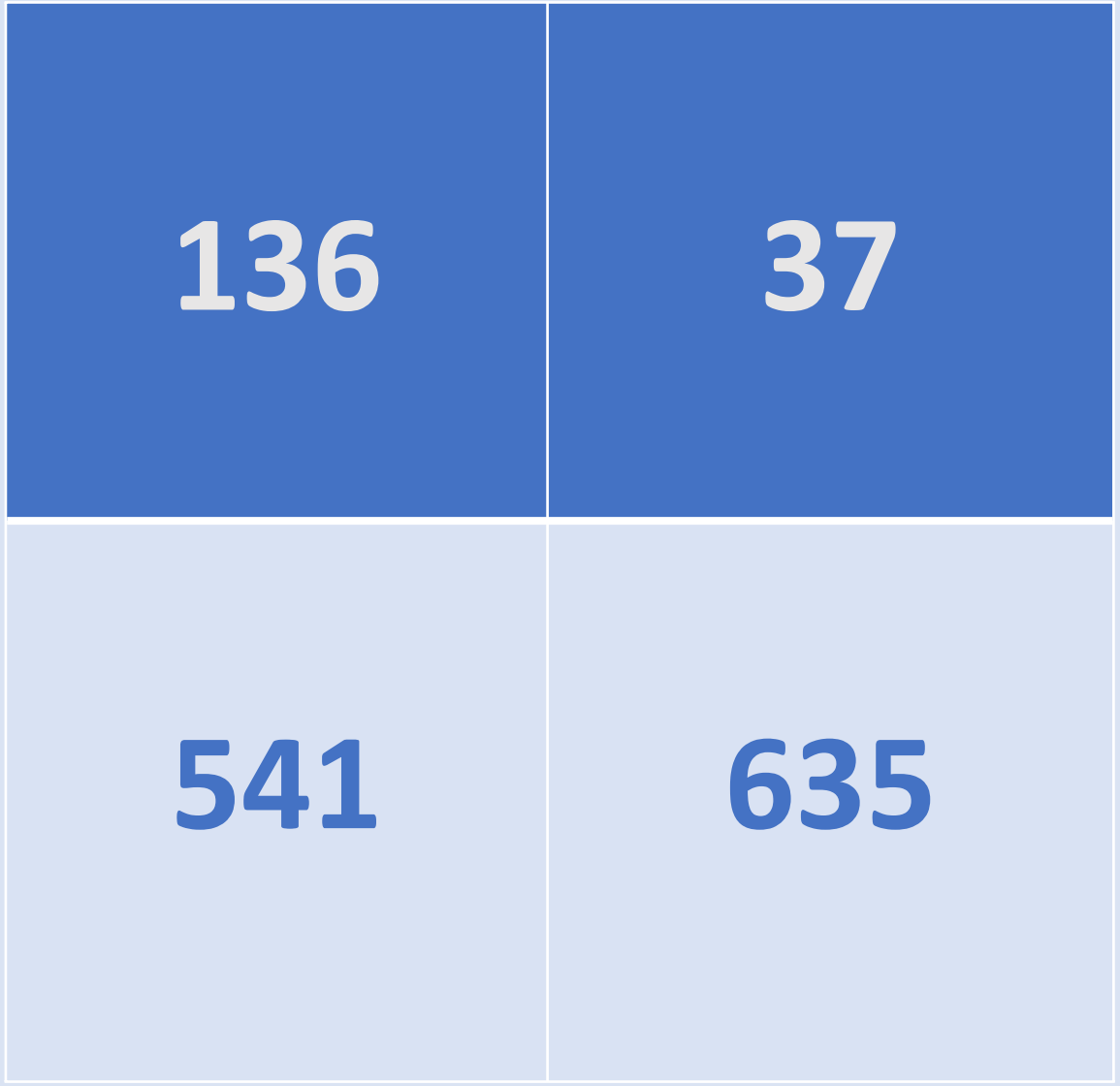
Day 54

WHICH ONE DOESN'T BELONG?



"Three of the numbers..."

Day 55

DECIDE & DEFEND

Using the DECIDE & DEFEND routine

- **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.

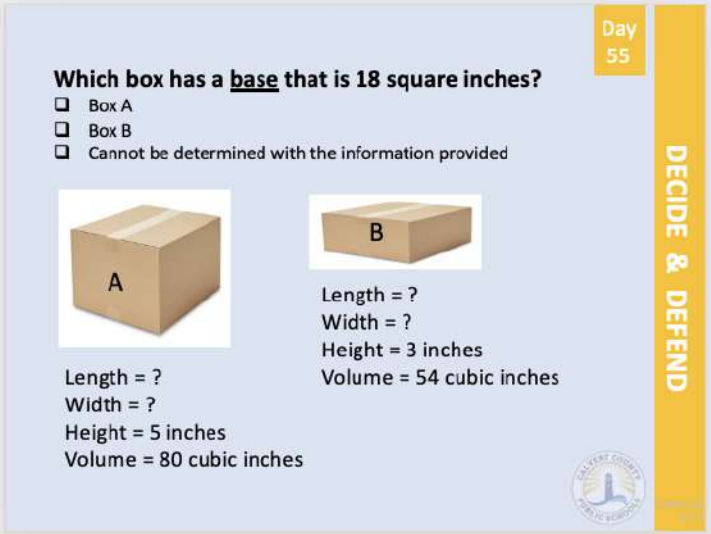
NOTE: This is the CCPS adaptation of the original Decide and Defend protocol

Use the NEXT SLIDE with students.

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

Day 55

DECIDE & DEFEND



Box B has a base of 18 square inches.

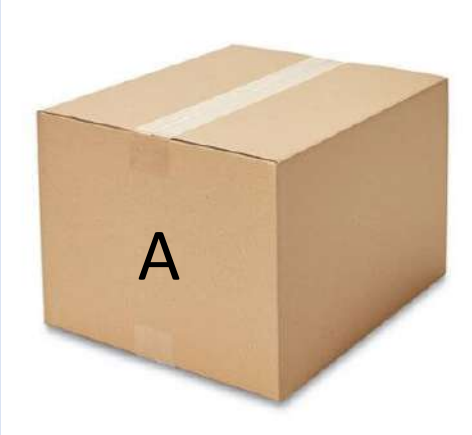
- A: If the volume is 80, then the base must be a value of 80 divided by 5 which equals 16
- B: If the volume is 54, then the base must be a value of ___ x 3 = 54 or 54 divided by 3 equals 18.

- Note: We do not know the exact length and width but is might be 6x3 or 9x2 or 18x1 or even 12x1.5, etc.…

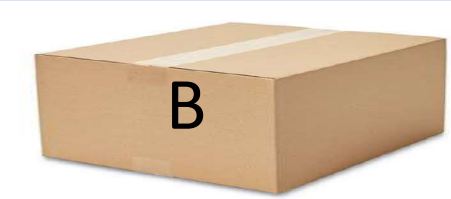
Day 55

Which box has a <u>base</u> that is 18 square inches?

- ❑ Box A
- ❑ Box B
- ❑ Cannot be determined with the information provided



Length = ?
Width = ?
Height = 5 inches
Volume = 80 cubic inches



Length = ?
Width = ?
Height = 3 inches
Volume = 54 cubic inches

DECIDE & DEFEND

5.MD.C.5b
5.R.1

Day 55

Reflect on Learning

- A new math idea I learned today is…
- Next time I plan to… because….
- To help others understand my ideas, it is important to….

DECIDE & DEFEND

Day 56

9, 11, 13, 15, 17, ___, ___, ___, ___
27, 33, 39, 45, 51, ___, ___, ___, ___

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

Number Patterns

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.

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

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Day 56

9, 11, 13, 15, 17, ___, ___, ___, ___

NUMBER TALK

5.OA.B.3

Day 57

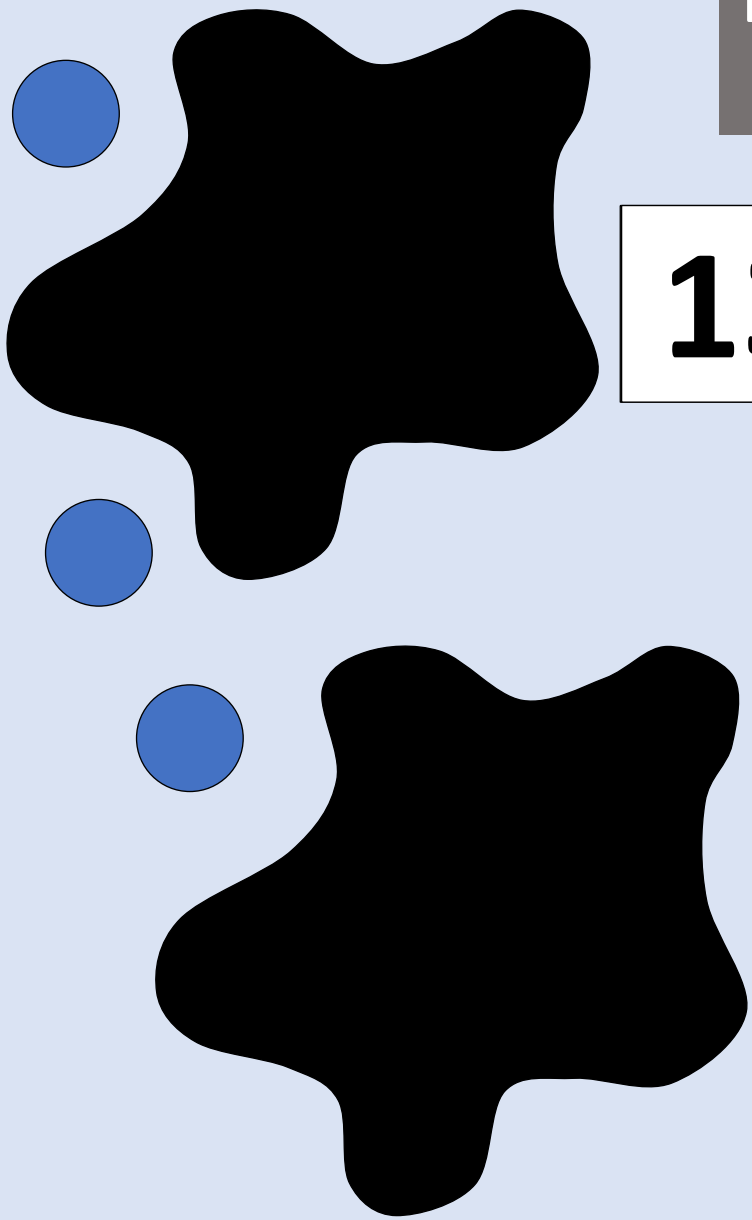
We don't know the total number of blue shapes.

What could the total be? What are some possibilities? Let's make a list.

How is the list of possible totals like the picture?

Let's look under one splat to see how it is like the picture.

What is the total?

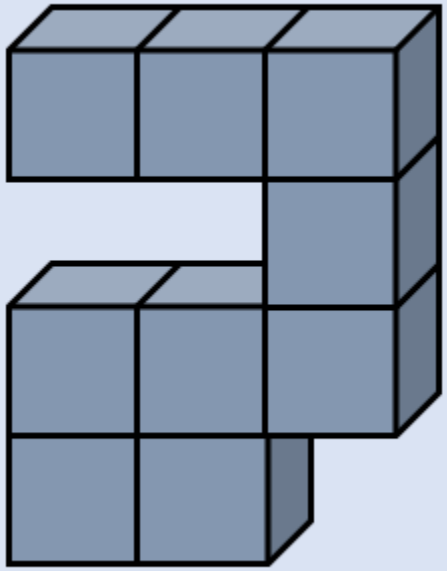


13

SPLAT!

Day
58

QUICK COUNT



What do you NOTICE?

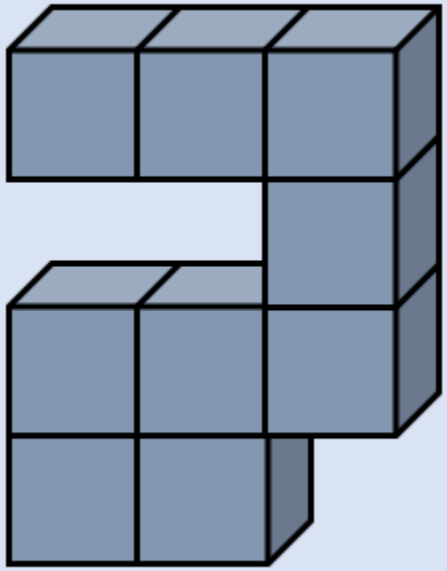
Day 58

QUICK COUNT

What did you NOTICE?

Day
58

QUICK COUNT



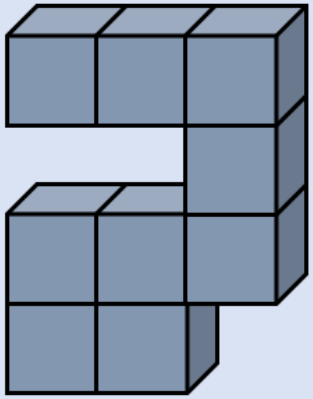
How many do you see?
What counting shortcut did you use?

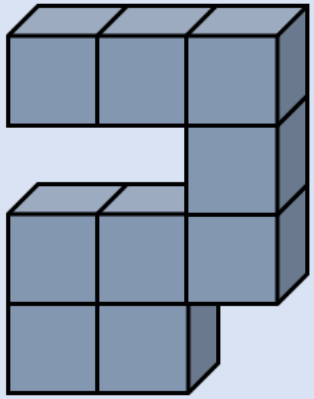
I noticed _____ so I _____

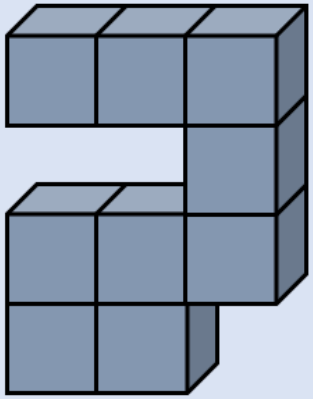
(They) noticed _____ so they___

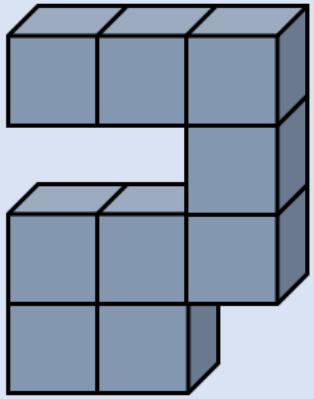
Day 58

QUICK COUNT









Day 58

Reflect

What was mathematically important?

QUICK COUNT

999 + 99
998 + 49
997 + 199
199 + 99 + 49

Day 59

NUMBER TALK

TEACHER NOTES

*Use the Screen Shade in Smart Notebook to reveal just one expression at a time for discussion

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

Making Landmark or Friendly Numbers:

This number talk includes computation problems that encourage students to decompose numbers to create friendly numbers when adding. This string will build on students' previous experiences in primary grades of "make-a-ten". We should move from the basic idea of "make-a-ten" (which is very limited) to "making friendly numbers" (which has a much broader scope). 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 more efficient and brain-friendly.

Example: 999 + 99
999 + (1 + 98)
(999 + 1) + 98
1000 + 98
1098
*note: this is not the only way – may will see it as 1000 + 100 – 2 and get the same result

Example: 199 + 99 + 49
(199 +1) + (99 + 1) + (49 – 2)
note that we decomposed the 49 so we could take two 1s needed to bring 999 and 99 up to a friendly number
200 + 100 + 47
300 + 47
347

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 59

999 + 99

NUMBER TALK

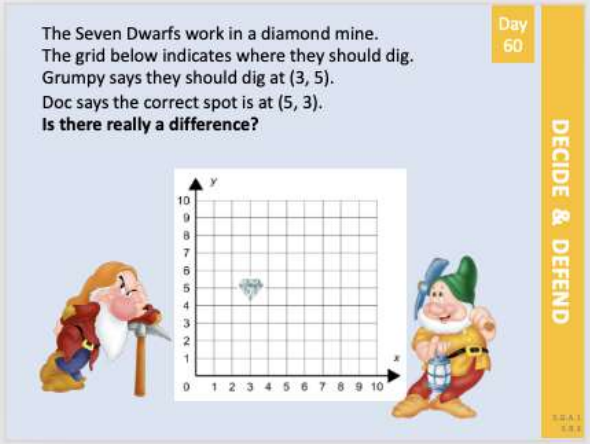
5.R.1

Use the NEXT SLIDE with students.

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

Day 60

DECIDE & DEFEND



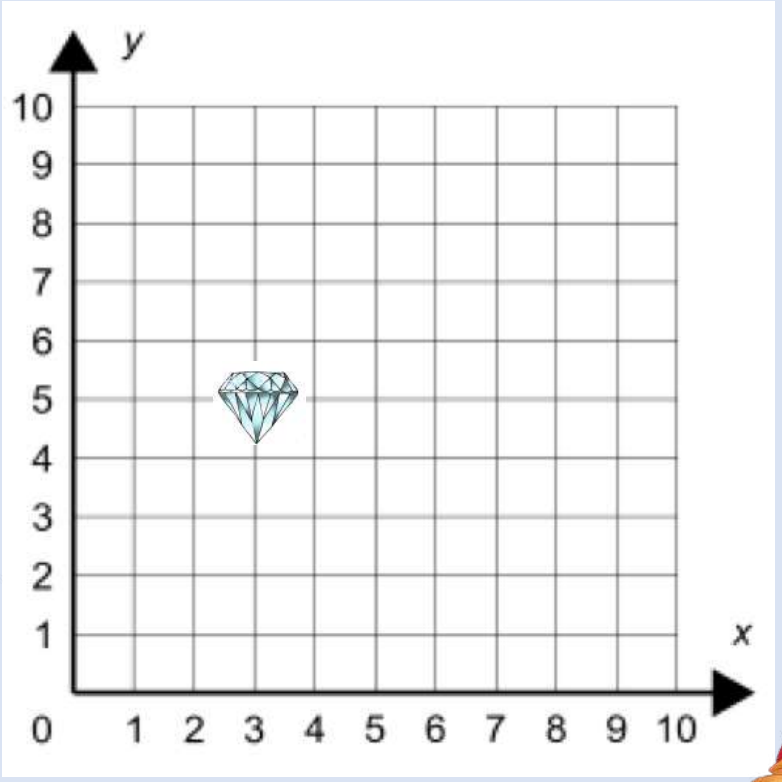
It is likely that students have not worked with this concept, yet, since it is taught later in our curriculum. Do not let that keep you from a great discussion!
Encourage discussion about the "2 ways" the point can be interpreted.
Allow for debate and differing perspectives to start the conversation.

Ask, "Would it be easier to understand the correct location if everyone found the point using the same method?" (yes)
Briefly explain that mathematicians agreed that they will start at zero and move ACROSS (the x-axis) first. Then move UP (the y-axis) to find the point.

In that case, who was right? Turns out, Grumpy is correct.

Day 60

The Seven Dwarfs work in a diamond mine.
The grid below indicates where they should dig.
Grumpy says they should dig at (3, 5).
Doc says the correct spot is at (5, 3).
Is there really a difference?



DECIDE & DEFEND

5.G.A.1
5.R.3