180 Days of
Number Sense Routines
Grade 4
Days 81-100

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

PowerPoint or Smart Notebook?

Since some of the slides include animation features, these slides will only work when using PowerPoint. Specifically, (1) **Estimation** when presented as images and (2) **Splat!** will only work correctly when you use the Slide Show feature in PowerPoint. Some teachers prefer the functionality of Smart Notebook and slides without animation can be used on this platform.

Download both the PowerPoint and the Smart Notebook versions from Schoology and place them on your computer's desktop so you can access the slides even without an internet connection.

PowerPoint

Animations for these two routines only work when presented in Slide Show mode

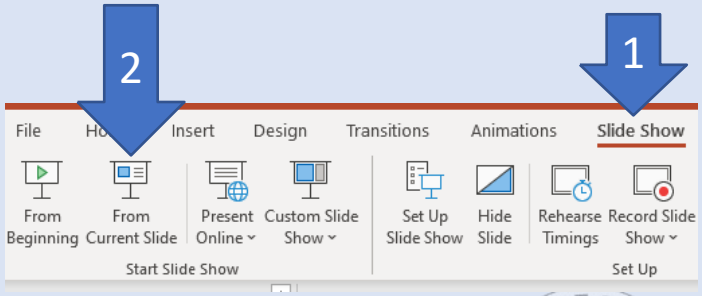
- Estimation
- Splat!

Smart Notebook

Allows for easy annotation

- Decide & Defend
- Number Talk
- Open Number Line
- Quick Count
- Same But Different
- Which One Doesn't Belong?

PRO TIP: You can write directly on any PowerPoint slide when it is in Slide Show mode by right clicking and selecting <Pointer Options>



How to Run PowerPoint in Slide Show mode:

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

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

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

Calculating Elapsed Time

Day 81

- **Let's begin with the time 10:25**
- **Let's count together slowly and thoughtfully.**
- **For each count, we will add 15 minutes to the time.**
- Work slowly. Allow think time as needed.
- Encourage discussion between students as needed (try to just listen and do not over-guide the discussion)
- As students count, click to reveal the next number (see next slide).
- The goal is not speed. Pause to discuss if the value is not as expected.
- After completing all times, ask students to **LOOK FOR PATTERNS**.
- Discuss these patterns. Discuss the mathematical reason the pattern occurred.

NOTE: The next slide MUST be run in SLIDE SHOW mode of PowerPoint

CHORAL COUNTING

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Calculating Elapsed Time

Begin with the time 10:25. Each person adds 15 minutes to the time.

Day 81

10:25				

What patterns do you notice?

CHORAL COUNTING

NOTE: This slide must be used in Slide Show mode to run correctly.

4.MD.A.1
4.OA.C.5

Day 82

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

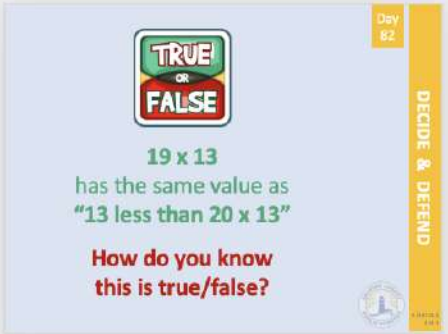
Day 82

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.



- Allow students to grapple with this idea. Some may want to do the calculations. Some may see the connections to numbers of groups. Some may need to talk this through with partners.
- Allow this productive struggle time.
- Once students have decided if the statement is true or false, have them begin formulating their justification for their choice.
- Note: It is not important, at this point, that everyone agree.
- SOLUTION: True.
  If we think of this as "GROUPS OF", we know there are 13 in each group, so 19 groups of 13 would be 1 group (or 13) less than 20 groups of 13. Interpreting the language may be tricky for some.
- WHY? The reason we want student to think in this way is because for many multiplying 20x13 is a MENTAL calculation (260). Then we can subtract the extra group of 13 for a total of 247 (260 – 10 – 3). No paper/pencil or calculator needed (if you practice this type of thinking!)
- YES, this may be rigorous for some – this is a good thing – this routine is not intended to focus on order of operations (a gr.5 skill), but rather the sense-making of what multiplication actually MEANS

DECIDE & DEFEND

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Day 82

19 x 13

has the same value as

“13 less than 20 x 13”

How do you know this is true/false?

DECIDE & DEFEND

4.NBT.B.5
4.R.3

Day 82

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

Day 83

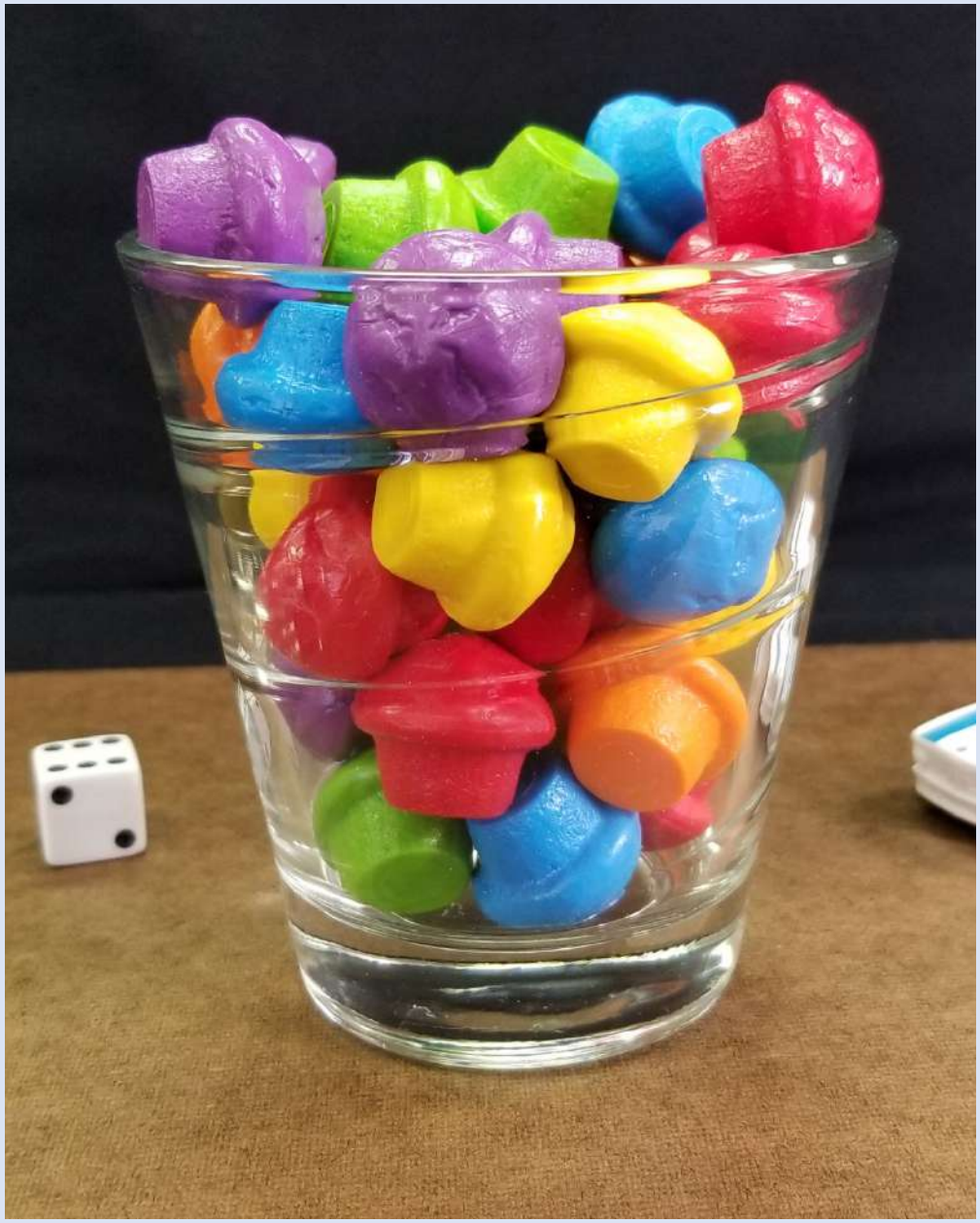
Esti-Mystery

Students use clues to solve the estimation mystery.
After all of the clues are revealed, students will have enough information to determine if their initial estimate was correct.

NOTE: This activity must be run in Slide Show mode of PowerPoint

ESTIMATION

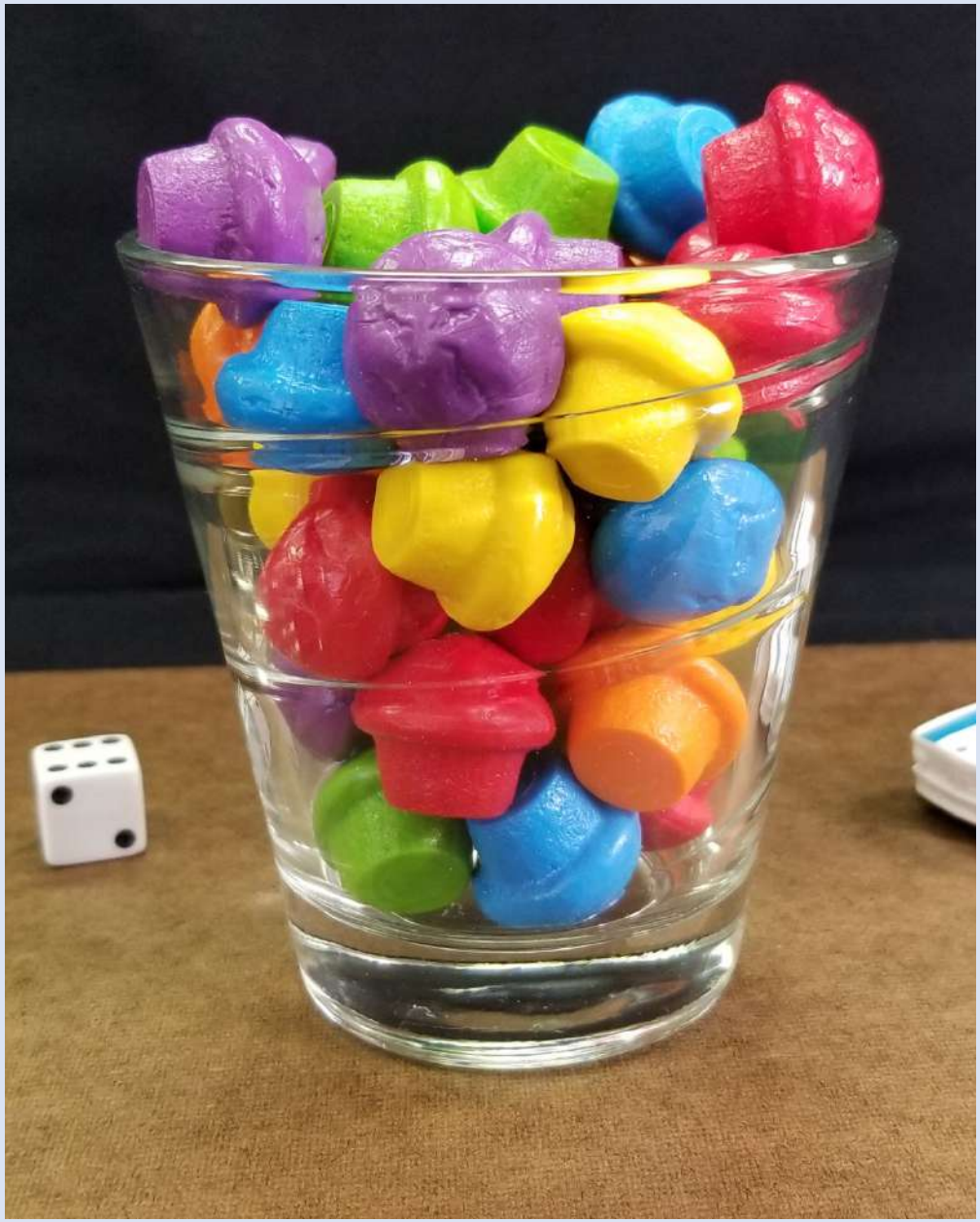
Day 83



How many objects are in the glass?

As the clues appear, use the information to narrow the possibilities to a smaller set. Then use estimation to determine which of the remaining answers is the most reasonable. You may use a paper to keep track of ideas if your teacher allows it.

ESTIMATION



Clue #1

The answer is a number less than 50.

Clue #2

The answer is an odd number.

Clue #3

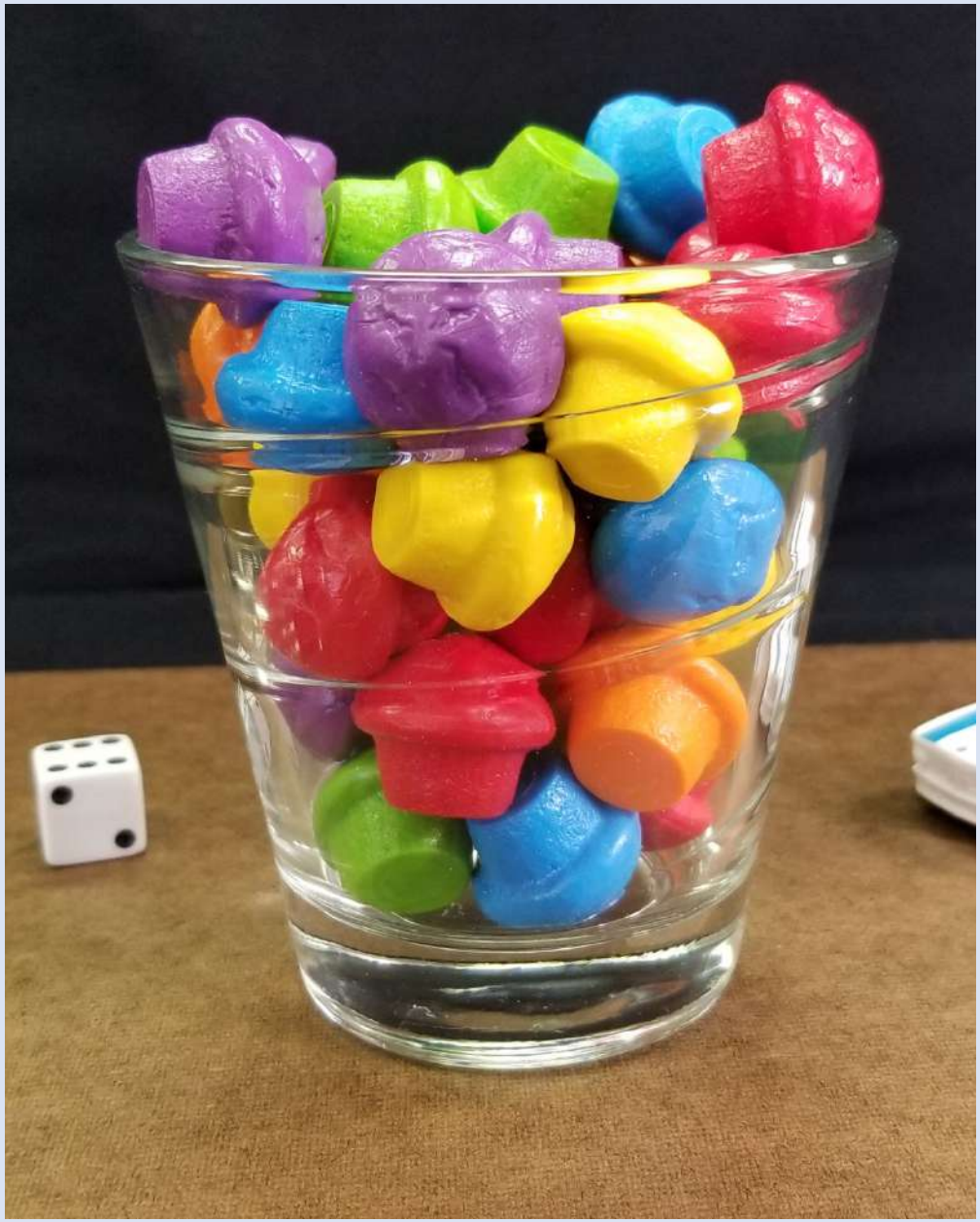
The answer is a multiple of 3.
For example: 3, 6, 9, 12 …

Clue #4

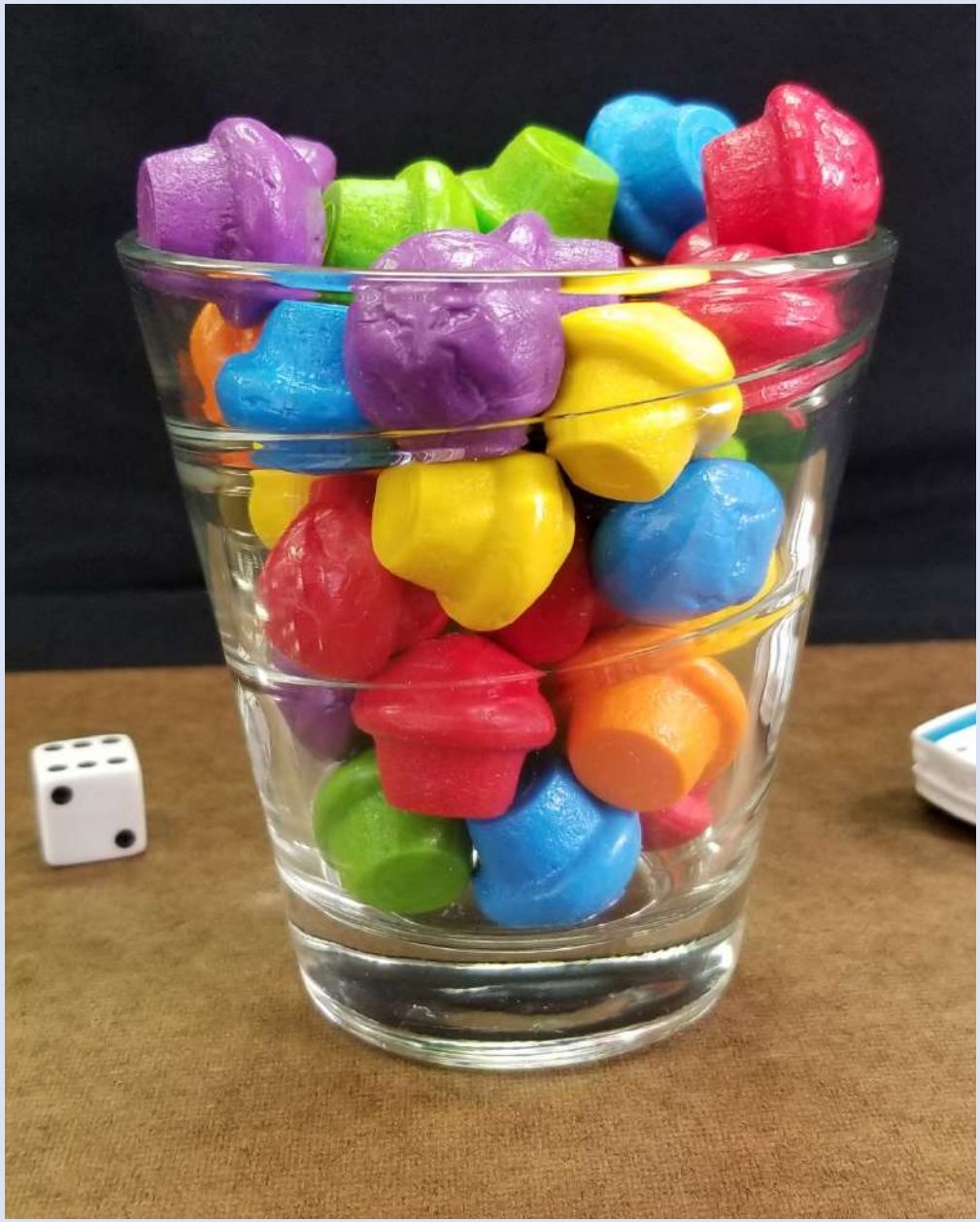
The answer includes 2 different digits.

Clue #5

Neither of the digits is a 2 or a 4.



By combining the clues and estimation, you now have enough information to determine the answer.



The Reveal
Click to see the answer.

Day 84

4 x 5
4 x 50
4 x 49
4 x 48

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

Multiplication: Making Landmark or Friendly Numbers (p. 247 and 267)

Make a problem easier by changing one of the factors to a friendly or landmark number. They key here is for students to understand that when adjusting one of the factors, you are changing the number of "groups".

The problems here are purposefully ordered to help students build their knowledge from one problem to the next.
For 4 x 49, we want students to recognize that if we know 4 x 50 = 200, then 4 x 49 is one less group of 4, so 4 x 49 = 200 – 4 = 196

Possible questions to ask:

1) **How did knowing 4x5 help you to solve 4x50?** (do not accept "I just added a zero to the end" – they did not ADD a zero. Students should discuss this number sense shortcut in terms of multiplying by ten times more)
2) **How does knowing 4x50 help you to solve 4x49?** Students should recognize that they can think of this as having one less 4 than 4x50
3) **How can you build from 4x50 (or 4x49) to solve for 4x48?** Again, students should recognize that they can think of it as having 2 fewer 4s

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 solving the expressions with various strategies, help students to understand how these expressions were all related.

NUMBER TALK

Day 84

4 x 5

4 x 50

4 x 49

4 x 48

NUMBER TALK

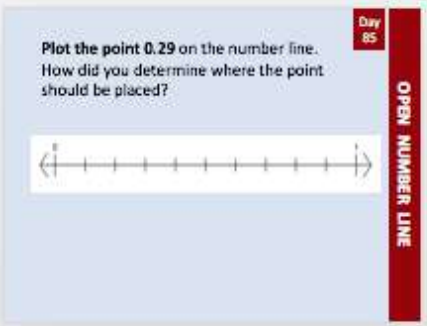
4.NBT.B.5

Use the NEXT SLIDE with students.

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

Day 85

OPEN NUMBER LINE



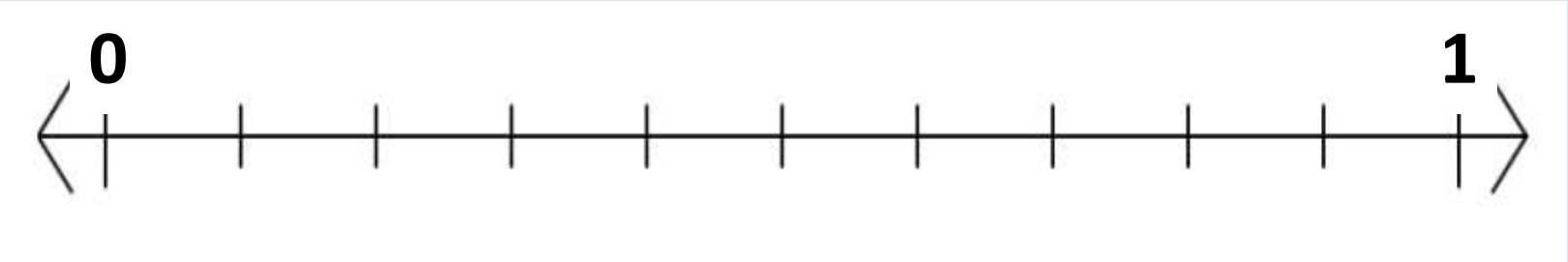
Allow plenty of time for students to discuss this with their Numbered Heads partners before discussing it as a class.
Ask for several answers before revealing the correct location of the dot.

After allowing discussion, ask
Where do you think the point should be placed on the number line?
Have the student DESCRIBE the location to build his/her oral language skills – do NOT ask the student to come up to to board.
Once you have placed the dot in the location that the student indicated, ask the student HOW THEY KNOW it belongs there.
Listen to the reasoning WITHOUT indicating if the student if correct or not.
Ask, "Does anyone think the point belongs in a different location on this number line?"
Place another dot in the location indicated and have the student explain how s/he knows it belongs there.
Again ask, "Does anyone think the point belongs in a different location?"
Continue this process until all ideas are used.
Reveal and discuss the correct location for 0.29 on this number line.

SOLUTION:
0.29 is the same as 29/100
The number line is divided into 10 equal sections, so each section represents 1/100 of the whole.
29/100 would be located just before the third hash mark which represents 30/100.

Day 85

Plot the point 0.29 on the number line. How did you determine where the point should be placed?



OPEN NUMBER LINE

Day 86

CHORAL COUNTING

Adding mixed numbers

- We'll begin with the number $6\frac{1}{3}$
- As we count, we will ADD $1\frac{1}{3}$
- I will chart our numbers. Look for patterns that we will discuss after we go all the way around the circle.

Run today's slide in PowerPoint using Slide Show mode

On each CLICK, the next number in the sequence will be revealed on the chart that is found on the next page. Do not click to reveal the number until AFTER the students say the next number in the sequence. Allow think time. Encourage discussion as the group counts. If the number is not what was expected, take time to discuss the value revealed.

Day 86

Adding mixed numbers

Begin with the number 6 $\frac{1}{3}$ ADD 1$\frac{1}{3}$ What patterns do you notice?

	$6\frac{1}{3}$				

***Remember: Run today's routine in PowerPoint - use Slide Show mode

CHORAL COUNTING

4.OA.C.5
4.NF.B.3c

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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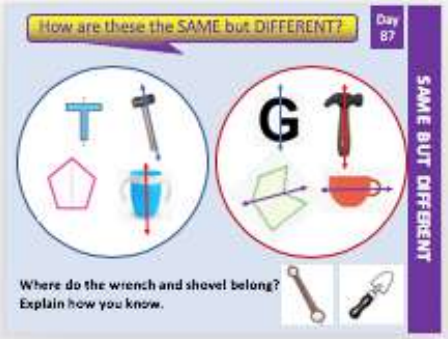
Day 87

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….”

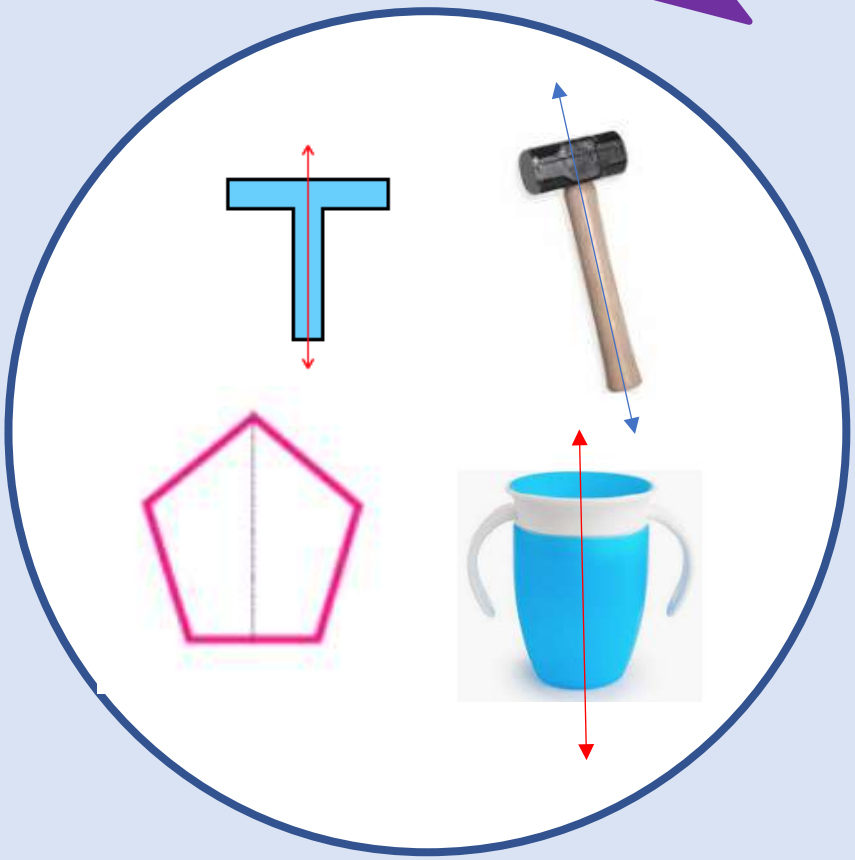


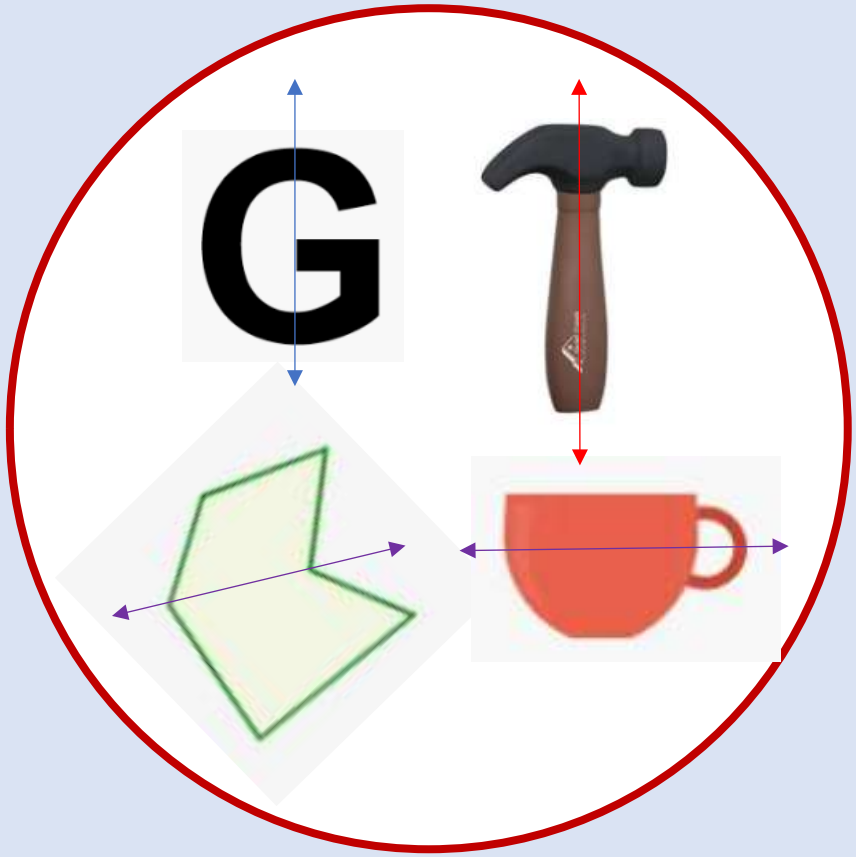
- This activity is designed to reinforce the idea of SYMMETRY.
- If students have not yet explored symmetry, they may not know the term "line of symmetry" but they should still be able to recognize that both sides of the object are the same (in the blue circle) but the item is different on each side of the line for items in the red circle.
- The items in the blue circle HAVE A LINE OF SYMMETRY
- The items in the red circle do NOT have a line of symmetry (it is just a line drawn through the item)
- The wrench and shovel BOTH belong in the BLUE CIRCLE because they both have lines of symmetry like the items in the blue circle.

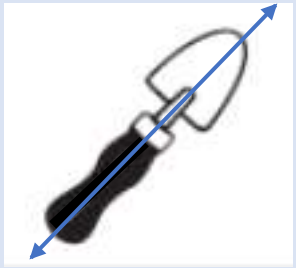
SAME BUT DIFFERENT

How are these the SAME but DIFFERENT?

Day 87







Where do the wrench and shovel belong?
Explain how you know.

SAME BUT DIFFERENT

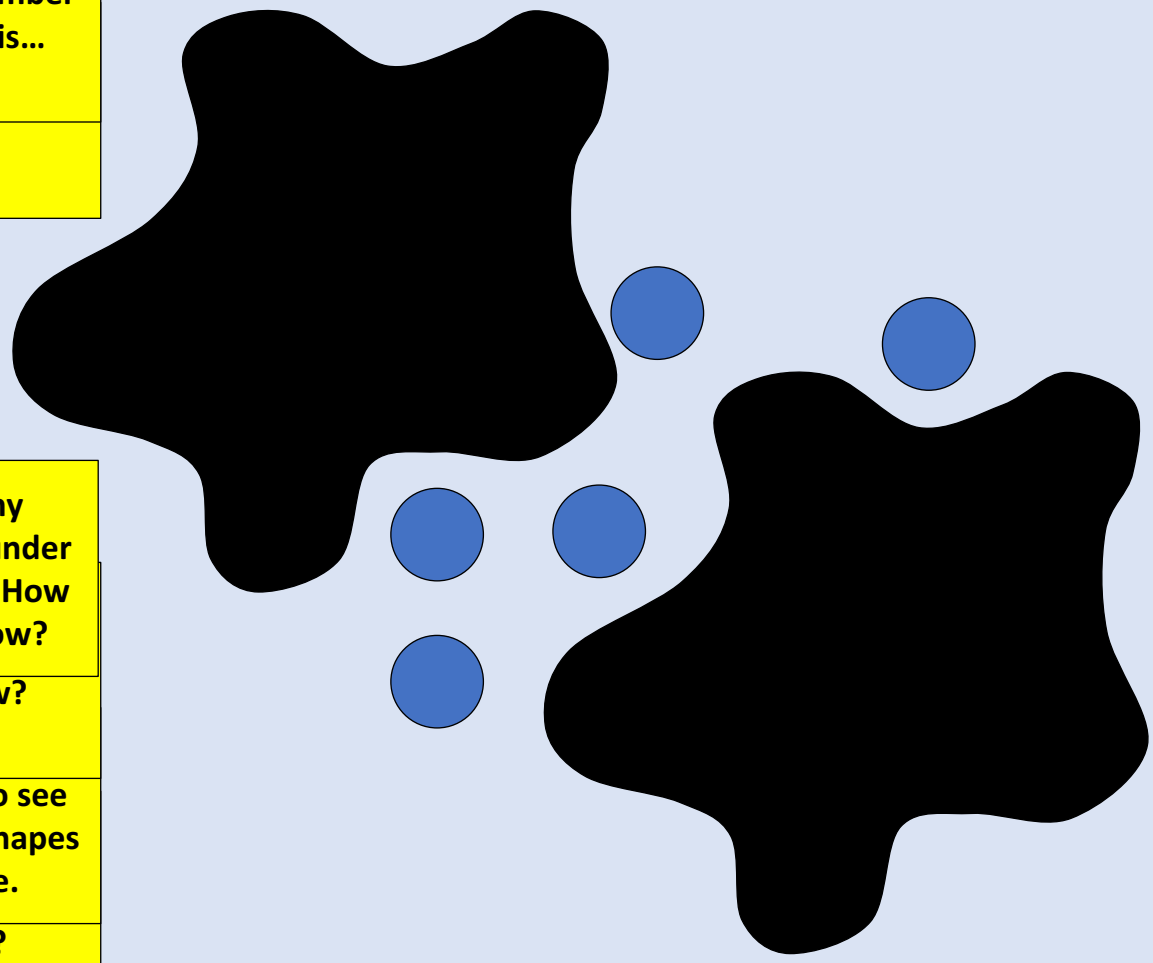
4.G.A.3

Day 88

SPLAT!

The total number of shapes is…

19



How many shapes are under each splat? How do you know?

…ou know?

…splats to see …ow many shapes are there.

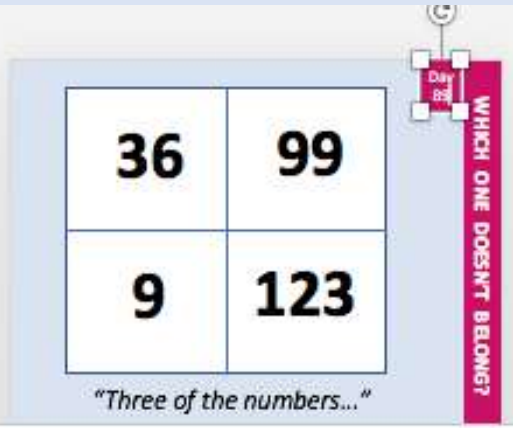
…picture?

Day 89

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 Responses:

- Three of the numbers are odd numbers. 36 is the only number that is not odd.
- Three of the numbers are contain digits that are not the same digit. 99 is the only number that contains repeating digits.
- Three of the numbers are greater than 10. 9 is the only number that is not greater than 10.
- Three of the numbers are multiples of 9. 123 is the only number that is not a multiple of 9.

Day 89

WHICH ONE DOESN'T BELONG?

36	99
9	123

"Three of the numbers…"

4.OA.B.4

Use the NEXT SLIDE with students.

Day 90

TODAY'S GOAL: Since Day 90 marks the halfway point of the schoolyear, our Number Sense will be related to the number ½

**Before beginning today's Number Sense Routine, set the stage by explaining why today is a special day:

*Today is Day 90 of school. We go to school 180 days each year. The number **90 is HALF of 180**, so today marks the HALFWAY point of our school year.*

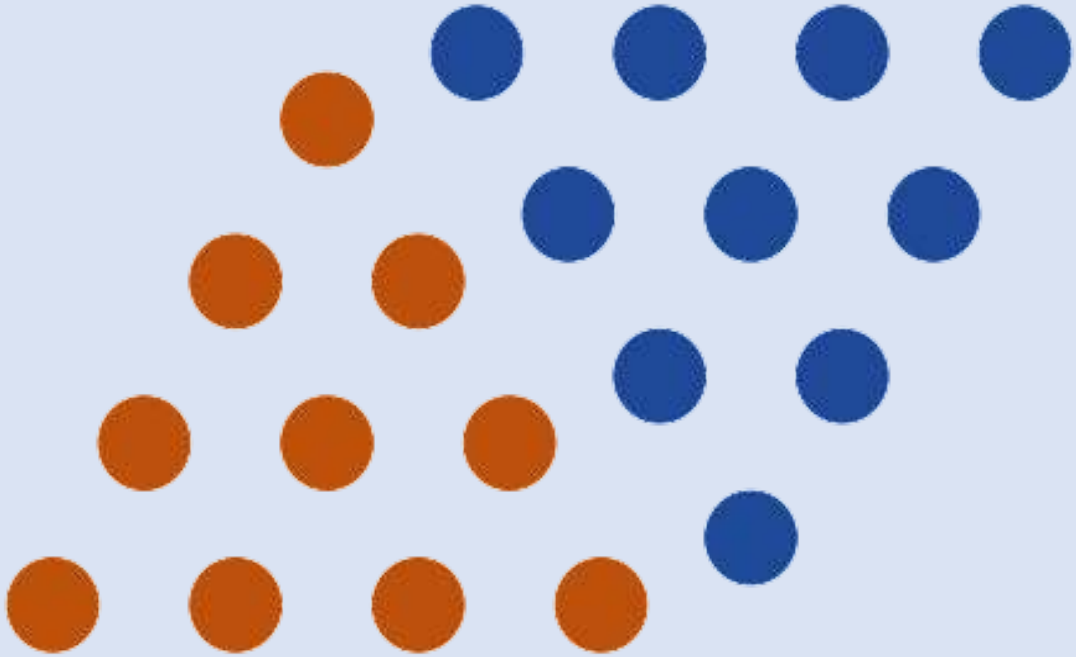
To celebrate the HALFWAY point of school, our Number Sense Routine will be related to the number one-half. See if you can spot the one-half representation in our Quick Count image when I show it.

Remember, the image will only appear for about 3 seconds, so gather all the information you can so you can share some things that you noticed.

Remember to show the next slide for only about 3 seconds then give students time to discuss with partners what they noticed.

QUICK COUNT

Day 90



What do you NOTICE?

QUICK COUNT

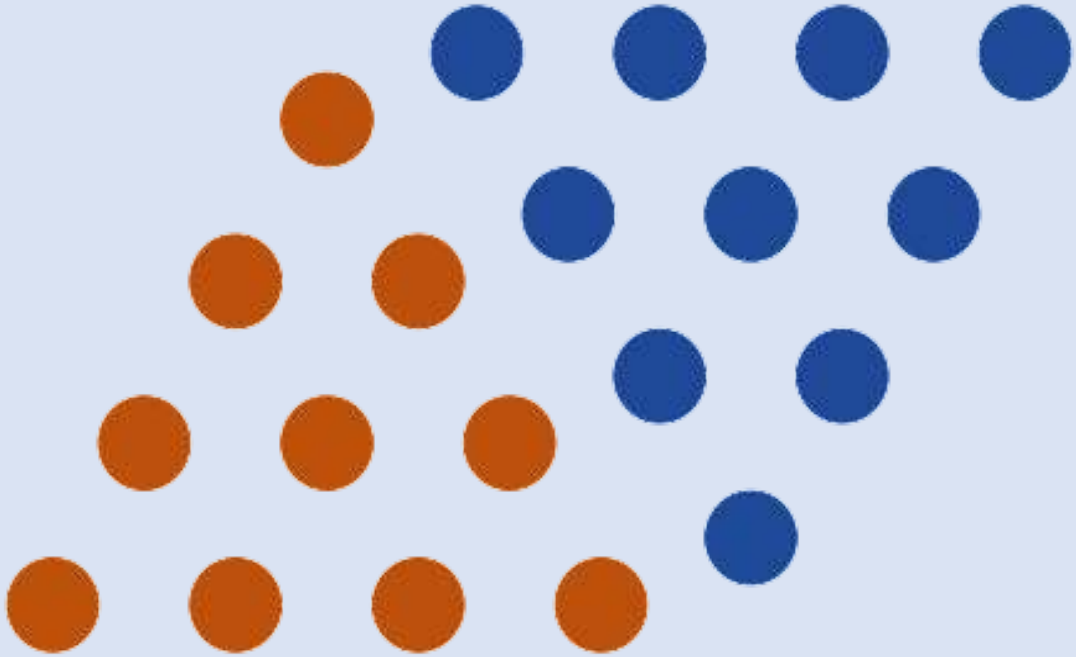
Day 90

QUICK COUNT

What did you NOTICE?

Day 90

QUICK COUNT

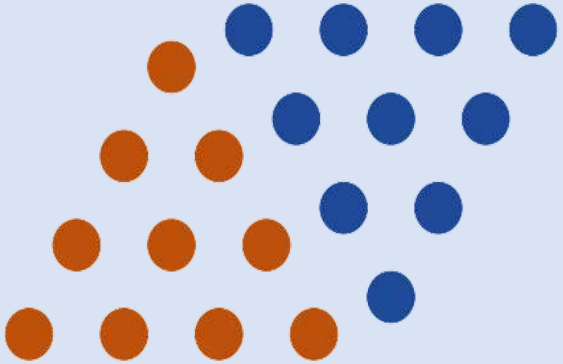


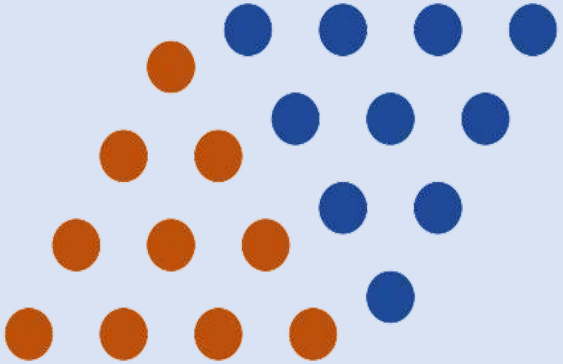
How many do you see?
What counting shortcut did you use?

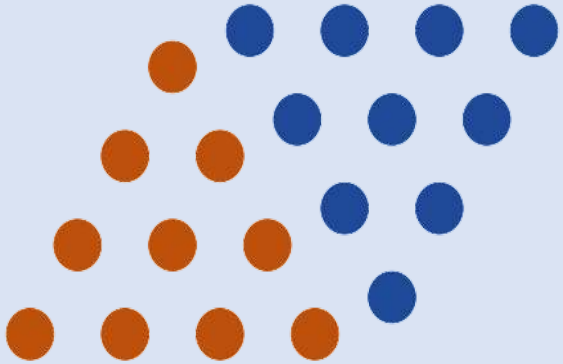
I noticed ____ so I _____

(They) noticed ____ so they___

Day 90







QUICK COUNT

Day 90

Reflect

What was mathematically important?

QUICK COUNT

Day 91

Before seeing the clues, estimate how many objects are in the vase.

As the clues appear, use the information to narrow the possibilities to a smaller set. Then use estimation to determine which of the remaining answers is the most reasonable.

ESTIMATION

Clue #1

The answer is a number less than 100.

Clue #2

The answer is an even number.

Clue #3

The answer is not a multiple of 10.

Clue #4

The answer does not include any of these digits: 2, 4, or 6.

Clue #5

The digit in the tens place and ones place differ by 3

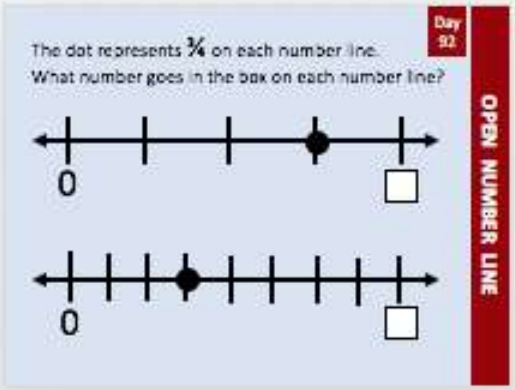
By combining the clues and estimation, you now have enough information to determine the answer.

The Reveal
Click to see the answer.

Day 92

Use the NEXT SLIDE with students.

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



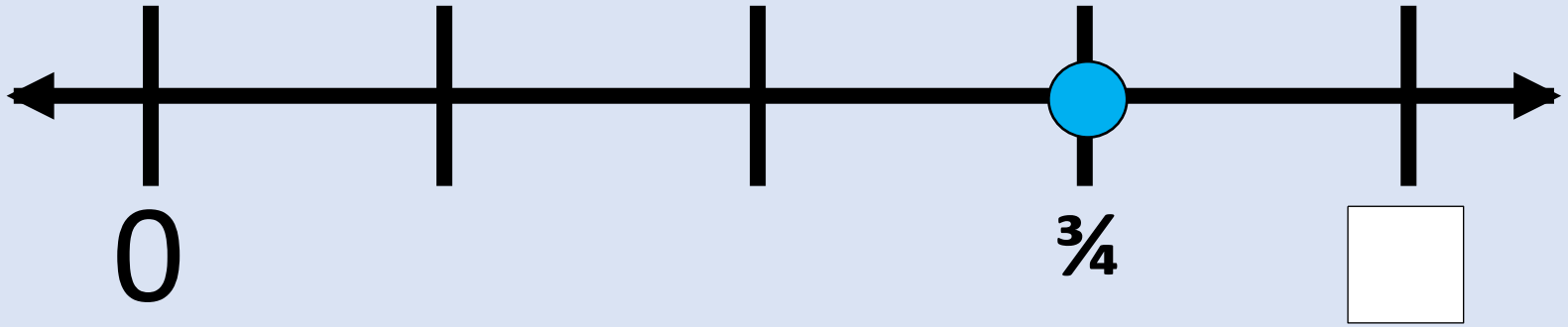
4/4 or 1
8/4 or 2
Be sure to have students EXPLAIN their reasoning. Ask for other ways that students determined the value.

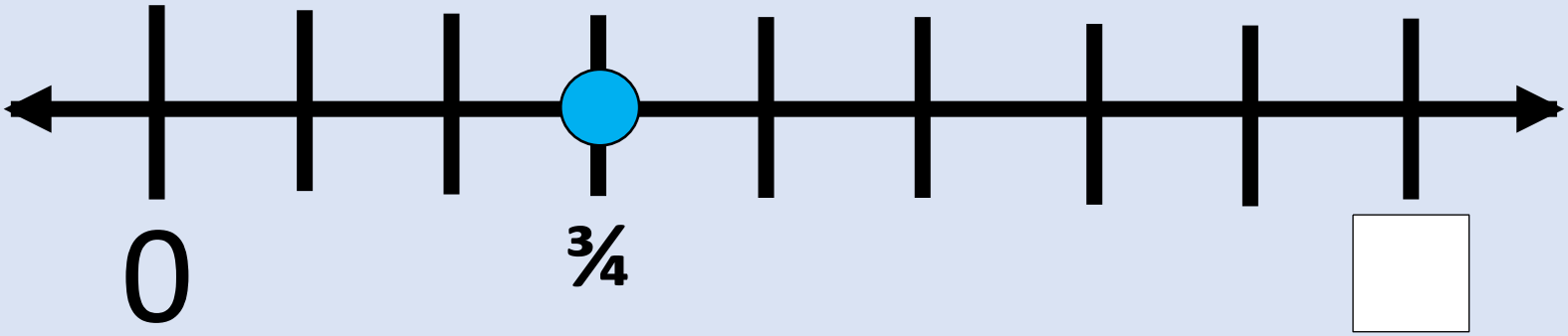
OPEN NUMBER LINE

Day 92

The ● represents ¾ on each number line.

What number goes in the box on each number line?





OPEN NUMBER LINE

3.NF.A.2

Day 93

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….”

SAME

- **Both represent the same portion of the whole**
- **The whole is the same length for both**
- **The shaded portion is the same length for both**
- **The Unshaded portion is the same length for both**

DIFFERENT

- **The shaded portion is represented by different fractions (1/3 vs. 4/12)**
- **The whole is partitioned differently (3 parts vs. 12 parts)**
- **The pieces are different sizes (top = thirds bottom = twelfths)**
- **1 of 3 is shaded vs. 4 of 12 shaded**

SAME BUT DIFFERENT

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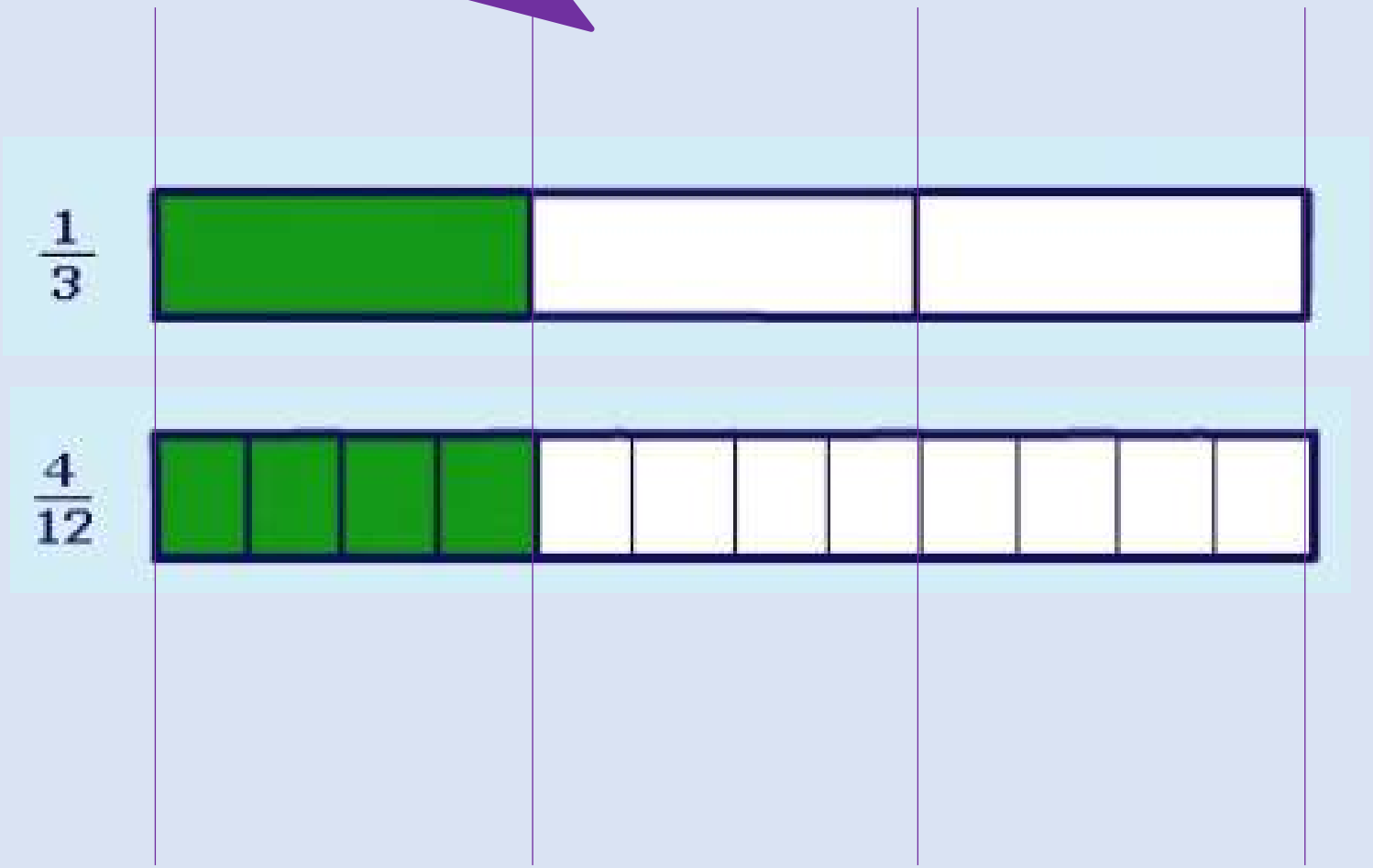
How are these the SAME but DIFFERENT?

Day 93



SAME BUT DIFFERENT

4.NF.A.1

Day 94

5 x 100
5 x 300
5 x 60
5 x 361
5 x 359

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

Multiplication: Making Landmark or Friendly Numbers

The first 3 equations should require very little time. Do not overwork these if it is not needed. If students struggle with the first 3, you may decide to eliminate the last prompt. The first three are there simply to set the foundation that multiplying by friendly numbers is easy and quick to do with a mental calculation.

For 5 x 361, students should recognize that that it can be solved by using 5x300 + 5x60 + 5x1 ----- or by adding the previous values

For 5 x 359 can be thought of as (5 x 300) + (5 x 60) = 1,500 + 300 = 1,800.
But since we added an extra group of 5, we need to take that group out, so 5 x 359 = 1,795.

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 solving the expressions with various strategies, help students to understand how these expressions were all related and an understanding that using friendly numbers can help to quickly and efficiently find a short cut to multiplying more complex numbers.

NUMBER TALK

Day 94

5 x 100

5 x 300

5 x 60

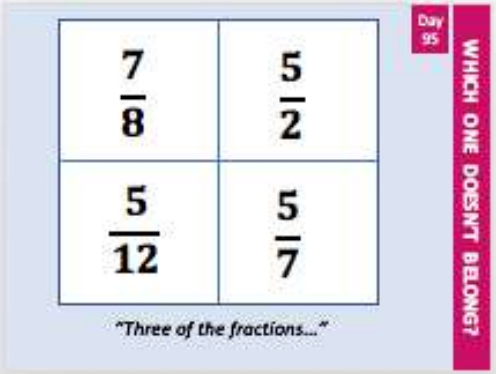
NUMBER TALK

4.NBT.B.5

Day 95

Use the NEXT SLIDE with students.

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



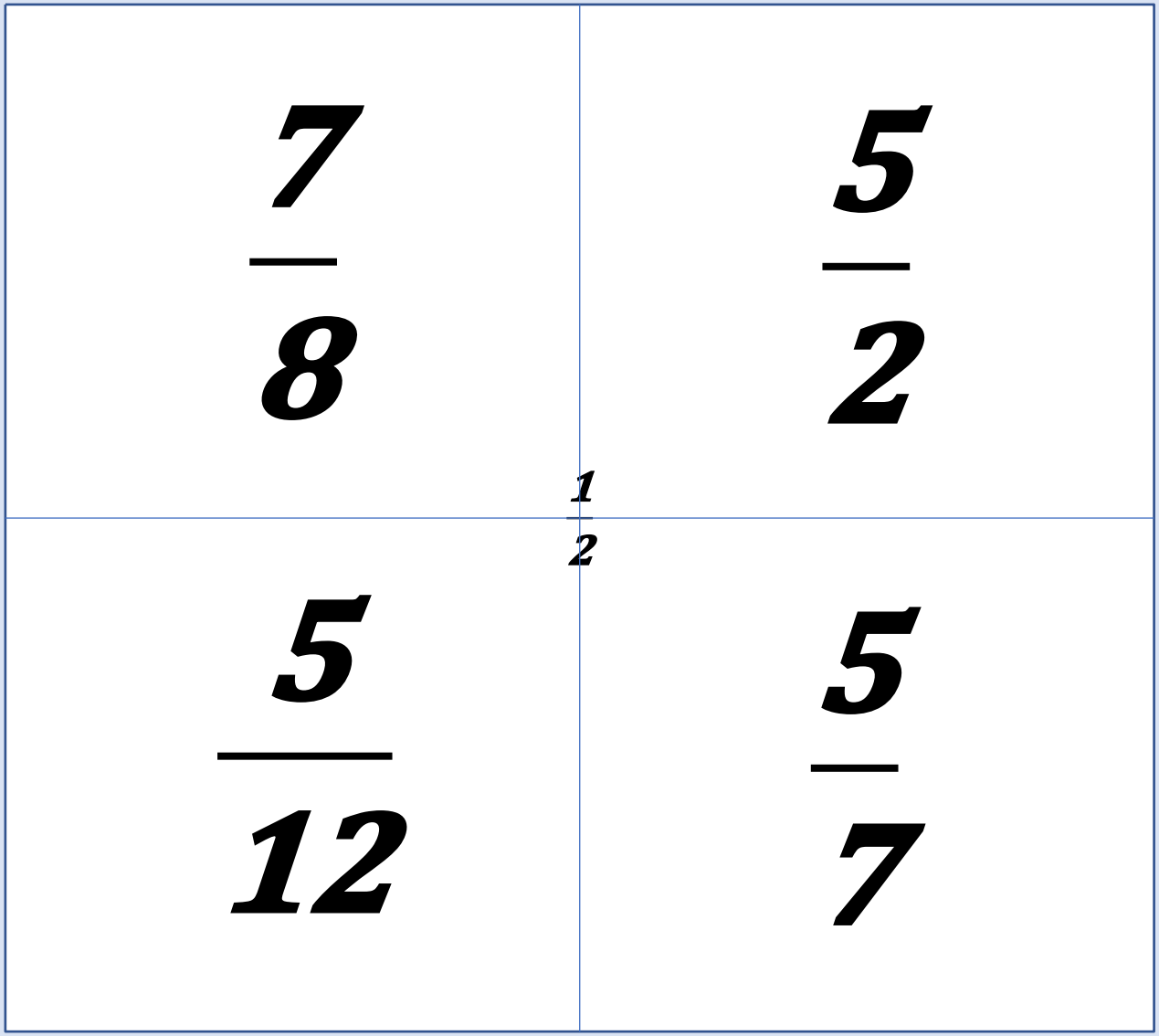
POSSIBLE RESPONSES:

- Three of the fractions have a numerator of 5. The fraction 3/8 does not have 5 as its numerator.
- Three of the fractions have values less than 1. The fraction 5/2 has a value that is greater than 1
- Three of the fractions have values that are greater than ½. The fraction 2/10 is not greater than ½
- Three of the fractions have a denominator that is an even number. The fraction 5/7 does not have an even denominator.

WHICH ONE DOESN'T BELONG?

Day 95

WHICH ONE DOESN'T BELONG?



"Three of the fractions…"

4.NF.A.2

Day 96

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.

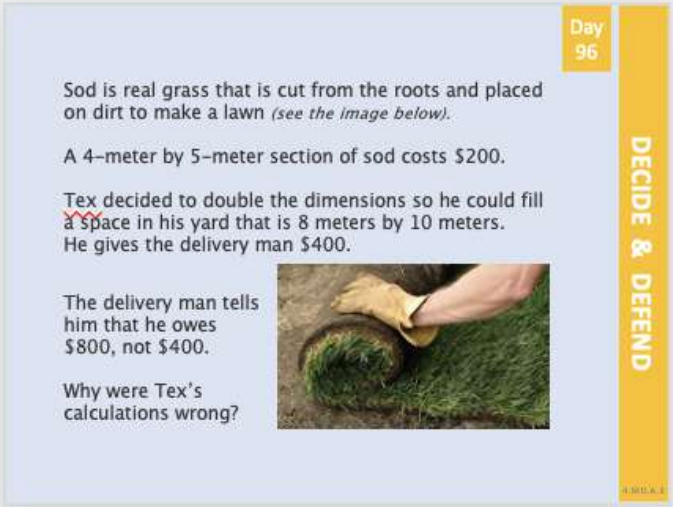
NOTE: This is the CCPS adaptation of the original Decide and Defend protocol

Use the NEXT SLIDE with students.

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

Day 96

DECIDE & DEFEND



When we are talking about doubling the DIMENSIONS of an area, this doubles BOTH the length AND the width of the area. When we double the length and width, the overall area is 4 times greater than the original.

The original 4 x 5 = 20
The new area 8 x 10 = 80
80 is FOUR TIMES greater than 20 so the dollar amount should be 4 times more than the original price.

Day 96

DECIDE & DEFEND

Sod is real grass that is cut from the roots and placed on dirt to make a lawn *(see the image below).*

A 4-meter by 5-meter section of sod costs $200.

Tex decided to double the dimensions so he could fill a space in his yard that is 8 meters by 10 meters. He gives the delivery man $400.

The delivery man tells him that he owes $800, not $400.

Why were Tex's calculations wrong?

4.MD.A.3

Day 96

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

Day 97

QUICK COUNT

What do you notice?

Day 97

QUICK COUNT

What did you NOTICE?

Day 97

QUICK COUNT

How many do you see?

What counting shortcut did you use?

I noticed ____ so I _____

(They) noticed ____ so they___

Day 97

QUICK COUNT

Day 97

Reflect

What was mathematically important?

QUICK COUNT

Day 98

8 x 100
8 x 50
8 x 200
8 x 199

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

Multiplication: Making Landmark or Friendly Numbers

8x100 should be an automatic skill by this point. Help students to use reasoning about 8x100=800 to determine that 8x50=400 because you only have half as many groups of 8 as previously, so the product must be half of the previous. Then use what they know after determining that 8 x 200 = 1,600, then 8 x 199 = 1,592 because it's one less group of 8 from the previous. Be sure to give plenty of time for discussion and for students to have multiple opportunities to summarize this learning with partners and with the whole class.

This number talk consist of multiplication problems designed to help students use the relationships from the sequence to solve the final 2 x 2-digit problem. The Talk is designed to help students build on what they know multiplication and part-part-whole relationships 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 solving the expressions with various strategies, help students to understand how these expressions were all related.

NUMBER TALK

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Day 98

8 x 100

8 x 50

8 x 200

8 x 199

NUMBER TALK

4.NBT.B.5

Day 99

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: *We can solve division equations more easily by thinking of their related multiplication equation.*

*9 x **100** = 900 and 9 x 90 = 810 (think 9 x 9 x 10 = 81 x 10 = 810).*
*900 is about 20 away from 882 while 810 is about 70 away from 882 which means that **882 ÷ 9 is closer to 100**.*

Day 99

Which answer is

As Close as it Gets?

882 ÷ 9

11	*90*	100	900

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

ESTIMATION

4.NBT.B.6

Day 100

QUICK COUNT

This is a game called Jenga.
This version uses colorful blocks.

What do you notice?

4.OA.B.4
4.R.1

Day 100

QUICK COUNT

What did you NOTICE?

Day 100

QUICK COUNT

How many blocks are stacked?

What counting shortcut did you use?

I noticed ____ so I _____

(They) noticed ____ so they___

Day 100

QUICK COUNT

Day 100

Reflect

Today is the 100th day of school.

How many more Jenga blocks are needed to make 100 total blocks?

What strategy did you use to calculate the amount needed?

QUICK COUNT

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