180 Days of
Number Sense Routines
Grade 4
Days 121-140

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.

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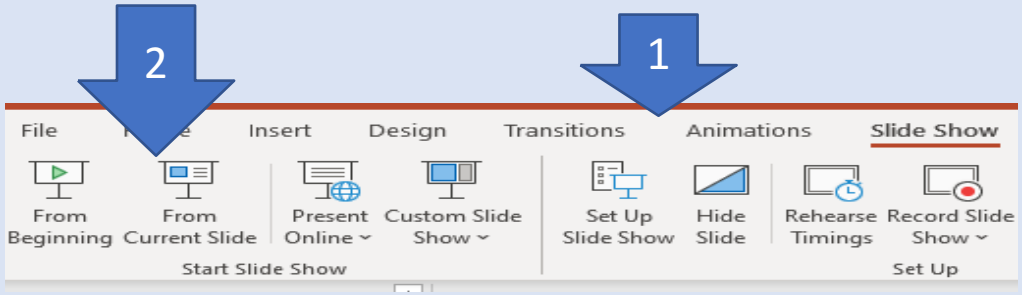
HOW TO RUN POWERPOINT IN SLIDE SHOW MODE:

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

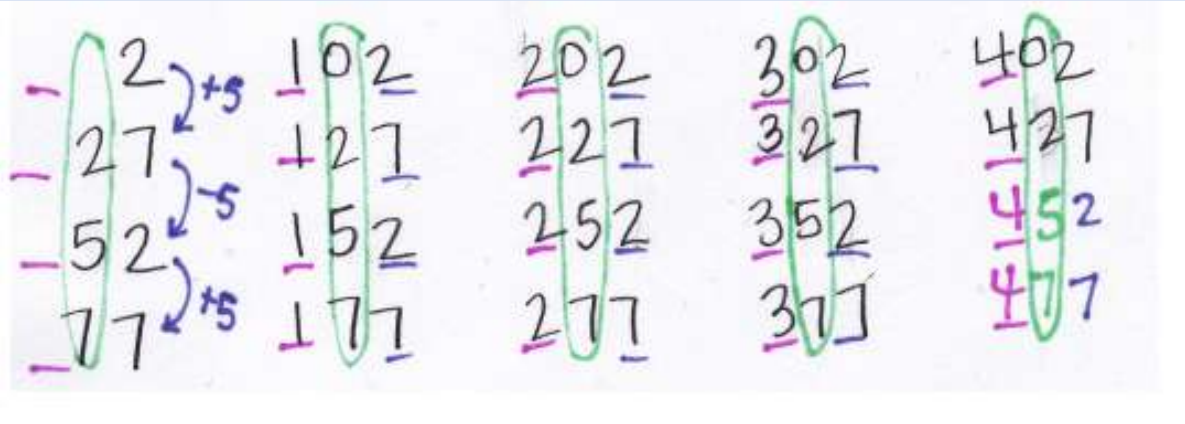
We are grateful to those who have inspired this project – and there have been many. These slide decks were designed for Grades 1–5 with custom-built daily routines for each grade level. The nine routines blend original creations, adaptations, and borrowed OER materials. We have made our work available 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 121

Count Forward by 25s

- SAY: Today we will be **counting forward by 25s**… but we are not starting on the number 25. Instead, we will begin on the **number 2**.
- SAY: What will be the next number in the sequence if we count by 25 and begin on 25? (27)
- SAY: Take a few minutes to think about a strategy we can use to say the next number in the sequence (give individual think time)
- SAY: Now that you have some ideas about how we might be able to count by 25s, talk with your partner about your ideas (give just a short amount of time – 1 minute or so)
- SAY: As we count, I will chart the numbers. As I chart the numbers, begin looking for patterns that may make the count easier as we get to larger and larger number values.
- Chart the count on the next page.



CHORAL COUNTING

Counting Forward by 25

Day 121

2	_____	_____	_____	_____
27	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____

What patterns do you see?

WHY are those patterns occurring?

CHORAL COUNTING

Day 122

Esti-Mystery

Estimation Activity with clues!

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.

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.

Students may benefit from using paper and pencil to work through possibilities or consider creating a class chart where possibilities are added and crossed off as each clue is revealed.

ESTIMATION

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What is the total number of steps?

This structure is called **El Castillo.**
It is located in Yucatán, Mexico.

It has **four identical sets of steps**.

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.

Photo Source: Jaakko Sakari Reinikainen, 2005

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What is the total number of steps?

This structure is called **El Castillo.**
It is located in Yucatán, Mexico.

Clue #1
The number of steps on one side is between 70-100.

Clue #2
The number of steps on one side is a multiple of 7.

Clue #3
The number of steps on one side has non-repeating odd digits.

Clue #4
There is an identical set of steps on all four sides.

Clue #5
At the top, there is one more step used to enter the temple

What is the total number of steps?

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

This structure is called **El Castillo.**
It is located in Yucatán, Mexico.

It has **four identical sets of steps**.

What is the total number of steps?

This structure is called **El Castillo.**
It is located in Yucatán, Mexico.

It has **four identical sets of steps**.

The Reveal
Click to see the answer.

When the temple at the top is included, El Castillo is about 100 feet tall (30 meters).

There are 91 steps on each of the pyramid's four sides.

$$91 \times 4 = 364$$

There is one more step at the very top that is used to enter the temple.

The **total # of steps is 365**

– that's the number of days in a year

…isn't that interesting?

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Day 123

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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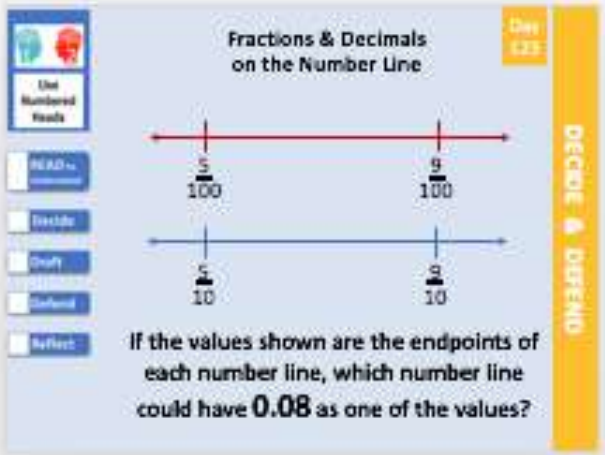
DECIDE & DEFEND

Use the NEXT SLIDE with students.

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

Day 123

DECIDE & DEFEND



0.08 is equivalent to 8/100 so it would be on the **top (red) number line.**
The value would sit closer to 9/100 than 5/100.
On the blue number line 0.08 would be to the far left of 5/10.

INSTRUCTIONAL NOTE: When reading the directions, be sure to say "**this number**" rather than saying "eight-hundredths" since saying "eight-hundredths" would remove much of the rigor of this task by giving away that this number is expressed in hundredths.

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Use Numbered Heads

READ to Understand

Decide

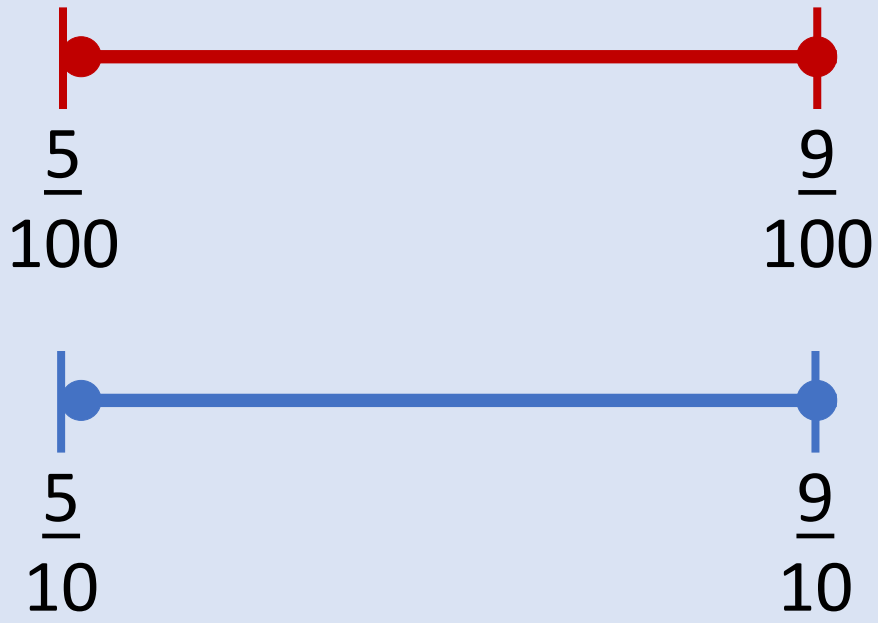
Draft

Defend

Reflect

Fractions & Decimals on the Number Line

Day 123



If the values shown are the endpoints of each number line segment, which segment could have 0.08 as one of the values?

DECIDE & DEFEND

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Day 123

Reflect on Learning

- A new math idea I learned today is…
- A math topic that I can explain better after today's discussion is…

DECIDE & DEFEND

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Day 124

NUMBER TALK

30 ÷ 3
66 ÷ 3
123 ÷ 3
318 ÷ 3

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.

DURING

Division: Partial Quotients (p. 258 and 288)

This strategy allows students to work their way toward the quotient by using friendly multipliers such as tens and multiples of ten. The problems here are purposefully ordered to help students build their knowledge from one problem to the next.

- **Since 3x10 is 30, 30÷3 must be 10**
- **66÷3 = 60÷3 + 6÷3 = 20+2 = 22**
- **123÷3 = 120÷3 + 3÷3 = 40+1 = 41**
- **318÷3 = 300÷3 + 18÷3 = 100+6 = 106**

Remember, students will come with a variety of strategies. Help students to understand a wide variety and guide them into understanding that some strategies work better in some situations, so knowing more than one way to solve an equation like this one is important so they can later choose the method that is most efficient.

AFTER

Bring students attention back to the strategies that were highly efficient. In this case, using Partial Quotients or thinking about values that are 10 or 100 times greater/less than the given value

Light the Future
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Day 124

NUMBER TALK

$30 \div 3$

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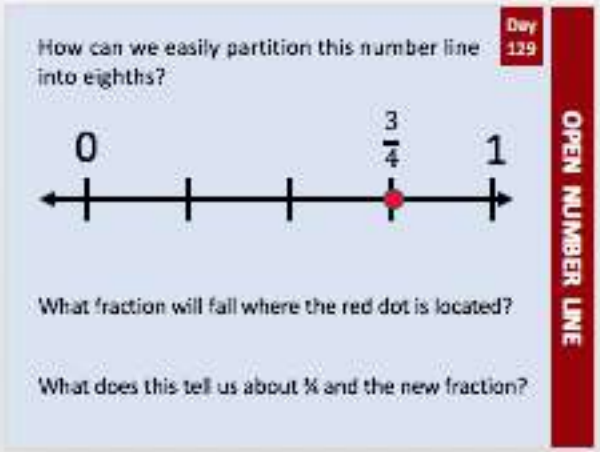
Day 125

Use the NEXT SLIDE with students.

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



How can we easily partition this number line into eighths?
A: Divide each fourth in half to make 8 equal parts

What fraction will fall where the red dot is located?
A: 6/8

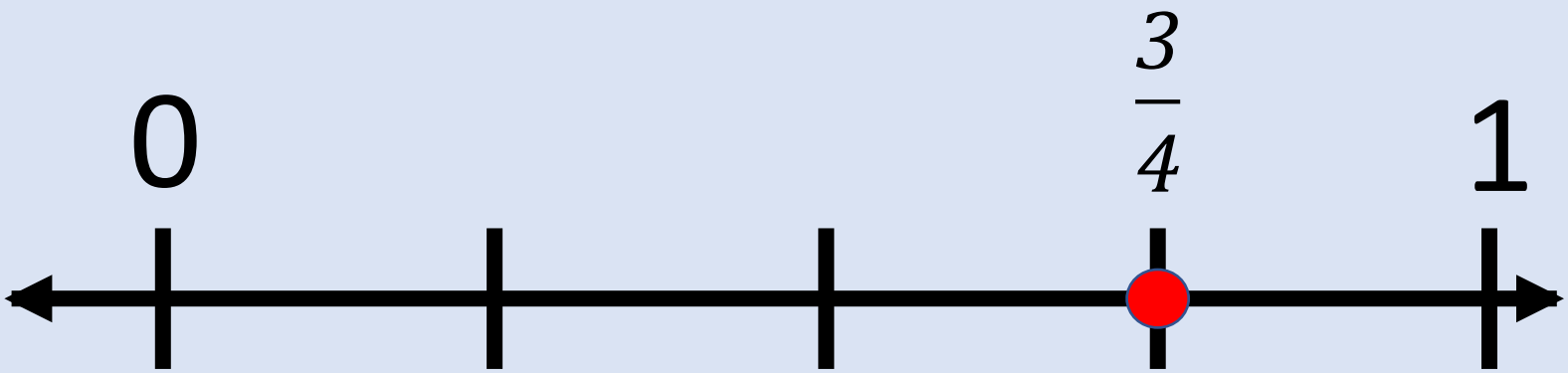
What does this tell us about ¾ and the new fraction?
A: ¾ is equivalent to 6/8

OPEN NUMBER LINE

Day 125

OPEN NUMBER LINE

How can we easily partition this number line into **eighths**?



- What fraction (expressed in eighths) will be located at the red dot on this number line?
- What does this tell us about ¾ and the new fraction?

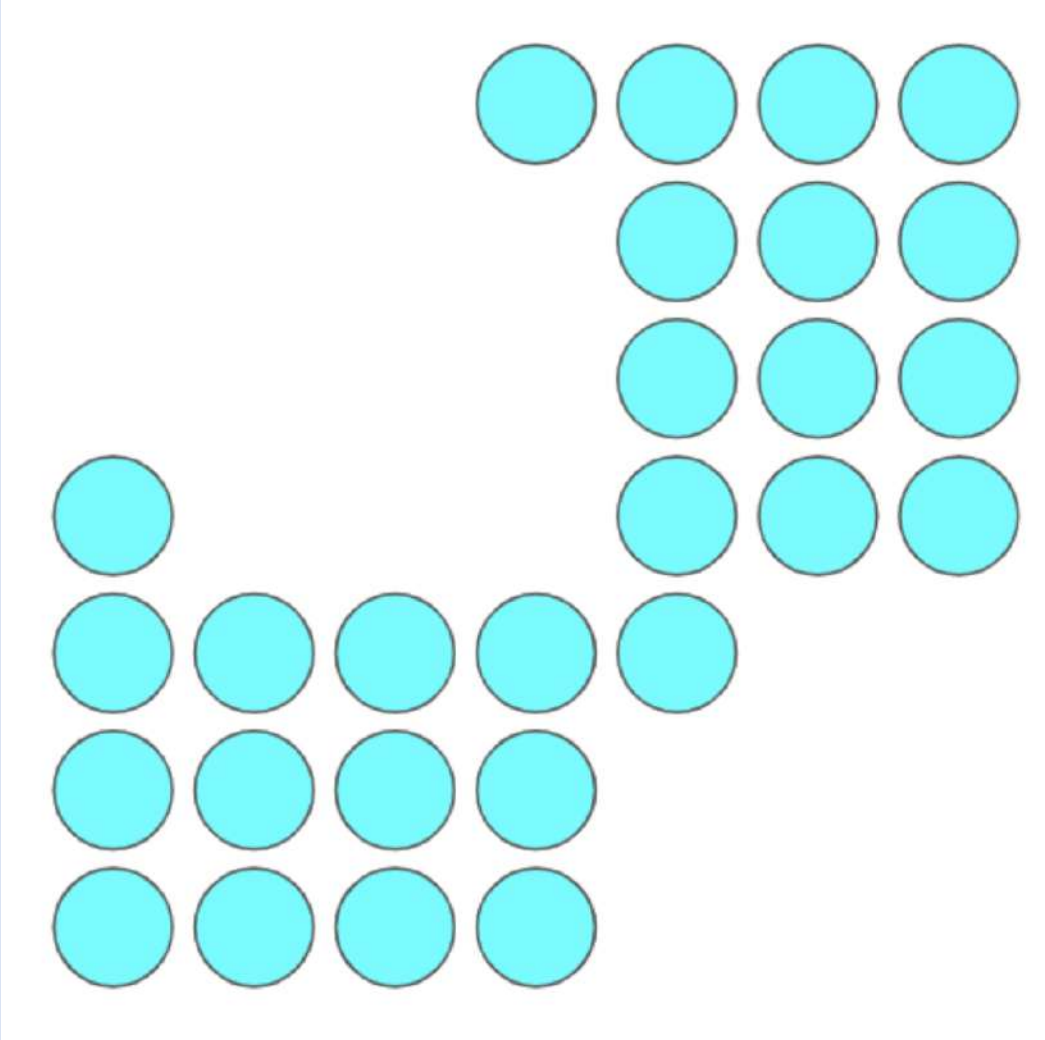
Directions for QUICK COUNT routines

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 126

What do you NOTICE?



QUICK COUNT

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Day 126

QUICK COUNT

What did you NOTICE?

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Day 126

How many **circles**?

What counting shortcut did you use?

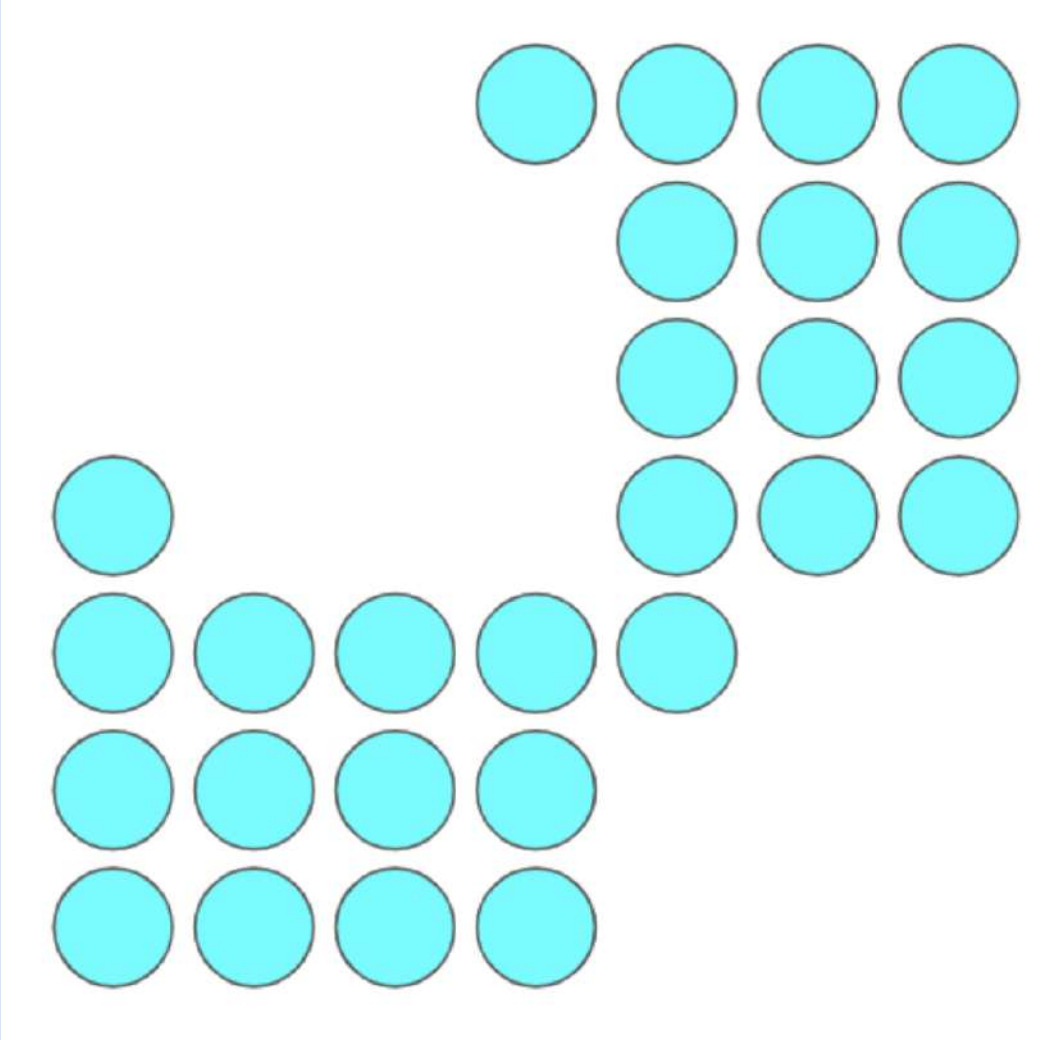

Image: Pattern #5 visualpatterns.org

QUICK COUNT

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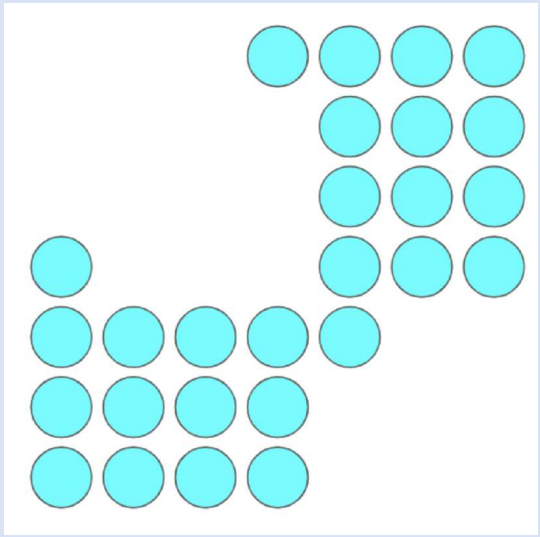
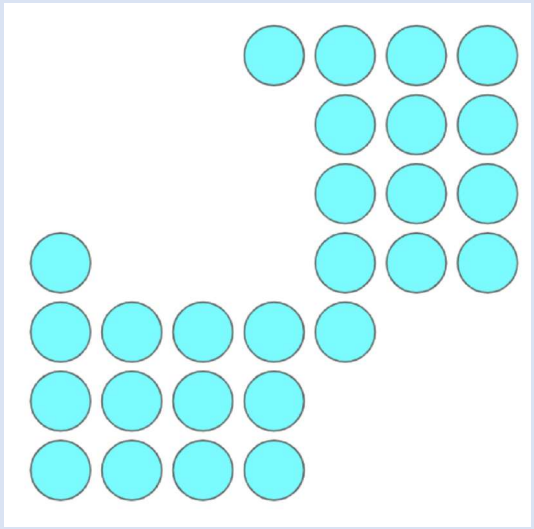
Day 126

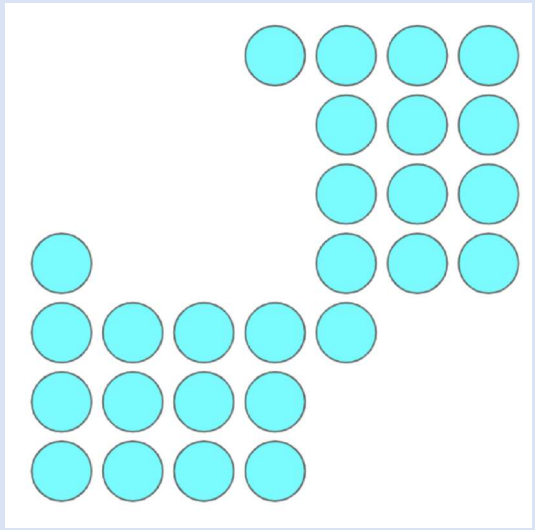
QUICK COUNT



I noticed _____ so I _____

(They) noticed _____ so they _____





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Day 126

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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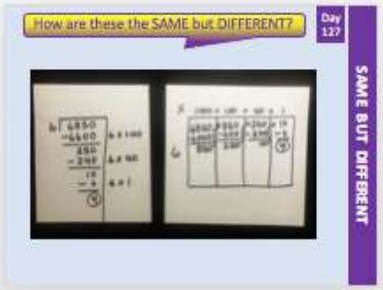
Use the NEXT SLIDE with students.

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….”



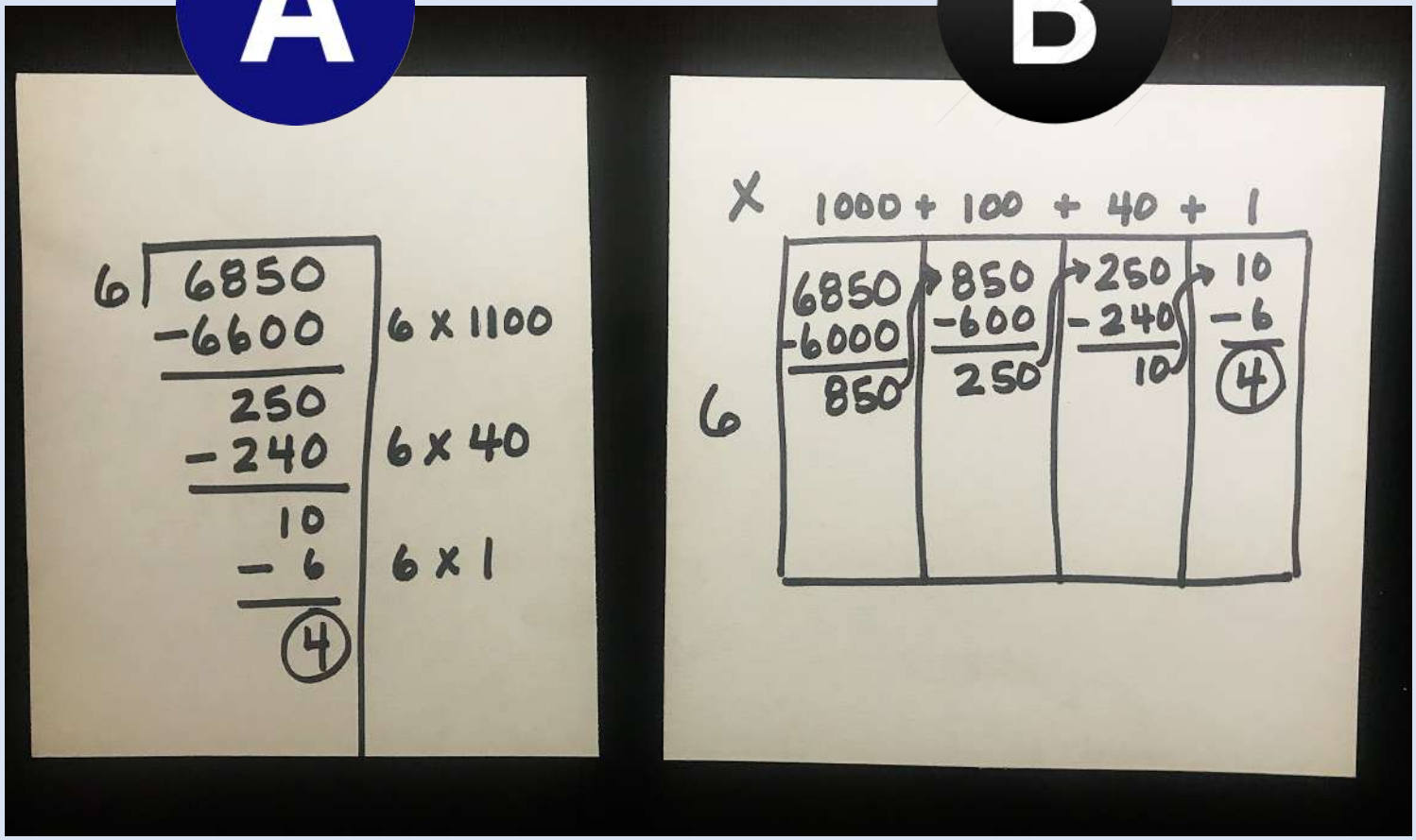
POSSIBLE RESPONSES

- Both represent a calculation for 6850÷6 but they are using different variations of a place value strategy
- Both are using a Partial Quotient strategy where they rely on known multiplication facts
- The first used a strategy referred to by several names: “Magic 7” or “Dutch Method” or “the Big 7” while the second used the Box Method of partial quotients
- The first used the multiplication fact 6x1100 while the second used the multiplication fact 6x1000
- Both found the quotient to be 1141r.4 but the first added 3 partial quotients and the second found the sum of 4 partial quotients
- Both have a remainder of 4

How are these the SAME but DIFFERENT?

Day 127

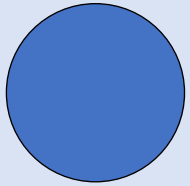
SAME BUT DIFFERENT

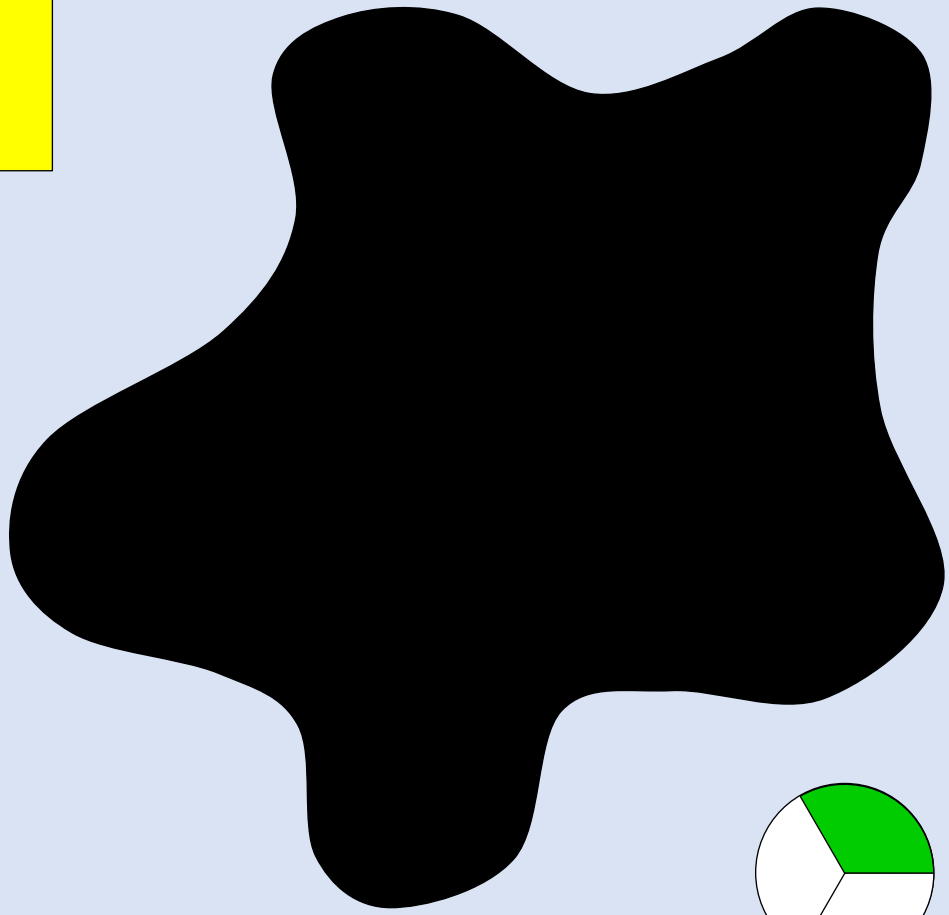


Day 128

SPLAT!

$4\frac{2}{3}$





What is the total value of the shapes

What is the value of the shapes hiding under the Splat?

How do you know?

W[illegible] MIGHT the hidden shapes look like?

What else could [illegible]

Let's look under the splat to see how many shapes

What can we learn from this picture?

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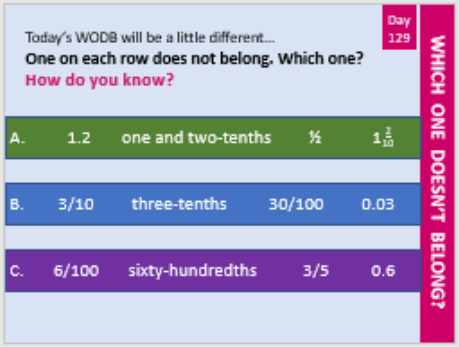
Use the NEXT SLIDE with students.

Day 129

Teacher Tip: Use the Screen Shade to reveal just one row at a time.



Row A: ½ does not belong because it does not have a value of one and two-tenths

Row B: 0.03 does not belong because the other three are equivalent to 3/10 (note 30/100 is equivalent to 3/10 by dividing the numerator and denominator each by 10)

Row C: 6/100 does not belong because the others are equivalent to six tenths

- 60/100 can be divided by 10/10 to get 6/10
- 3/5 can be multiplied by 2/2 to get 6/10
- 0.6 is simply a decimal representation of 6/10

WHICH ONE DOESN'T BELONG?

Today's WODB will be a little different: Each row has just one value that does not belong with the other three on the same row.

Day 129

WHICH ONE DOESN'T BELONG?

Which one does not belong on each row?

How do you know?

A.	1.2	one and two-tenths	½	$1\frac{2}{10}$
B.	3/10	three-tenths	30/100	0.03
C.	6/100	sixty-hundredths	3/5	0.6

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Skip count by 19

Day 130

CHORAL COUNTING

- Ask: Do you think skip-counting by 19 would be easy or challenging?
- Ask: What about skip-counting by 20 – easier or more challenging than skip-counting by 19?
- Discuss students' reasons for their answers (no right answer here, just exploring ideas).
- Ask: How is skip-counting by 20 similar to skip-counting by 2s? (discuss)
- Let's CHORAL count by 20
- Count: 20, 40, 60, 80, 100, 120, stop.
- Let's choral count by 20 again, but this time, let's begin with the number 7
- Count: 7, 27, 47, 67, 87, 107, 127
- Ask: How is skip-counting by 19 different than skip-counting by 20 (it is 1 less each time).
- Say: Let's challenge ourselves to skip-count by 19 – we will use what we know about skip-counting by 20 to make it easier and I will chart the numbers so we can see them as we count. Let's start on 7 again.
- Count and chart (use the chart on the next page)
  - **Say 7**
  - **Think 27** (7 + 20)
  - **Say and write 26** (7 + 20 - 1)
  - **Think 46** (26 + 20)
  - **Say and write 45** (26 + 20 – 1)

  Continue in this way

Yes, this will be slow and rigorous!

7	26	45	64
83	102	121	140
159	178	197	216
235	254	273	292
311	330	349	368

Yes, this will be worthwhile!

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Day 130

How can we use what we know about skip-counting by 20 to skip-count by 19?

7	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

CHORAL COUNTING

Day 131

Esti-Mystery

Estimation Activity with clues!

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.

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.

Students may benefit from using paper and pencil to work through possibilities or consider creating a class chart where possibilities are added and crossed off as each clue is revealed.

ESTIMATION

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How many Bar Pins?

Bar Pins are attached to the backs of buttons and other types of pins.

Use the clues to find out how many bar pins are in this package.

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Clue #1
The number is a multiple of 10

Clue #2
There are less than 6 dozen

Clue #3
There are more than 20

Clue #4
The number is NOT a multiple of 3

Clue #5
5, 8, and 10 are some of its factors

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

The Reveal
Click to see the answer.

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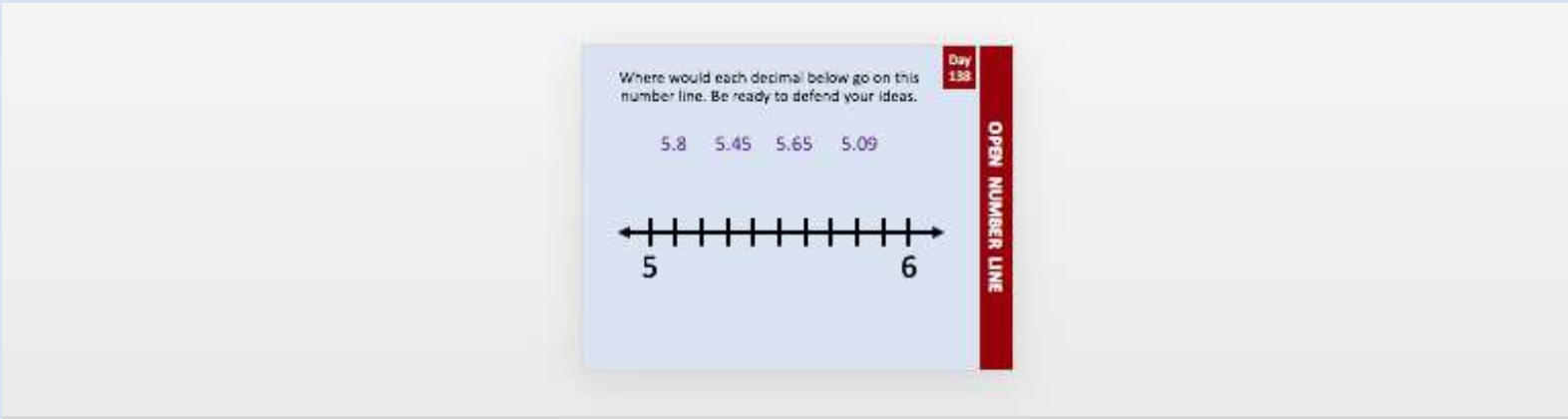
Use the NEXT SLIDE with students.

Day 132

Remember to give students plenty of individual Think Time and then give about a minute of partner discussion time before the class discussion.



5.8 would go on the 8th hash mark past 5
5.45 would go BETWEEN the 4th and 5th hash marks past 5
5.65 would go BETWEEN the 6th and 7th hash marks past 5
5.09 would go just barely to the right of 5 but not even ½-way to the next hash mark

OPEN NUMBER LINE

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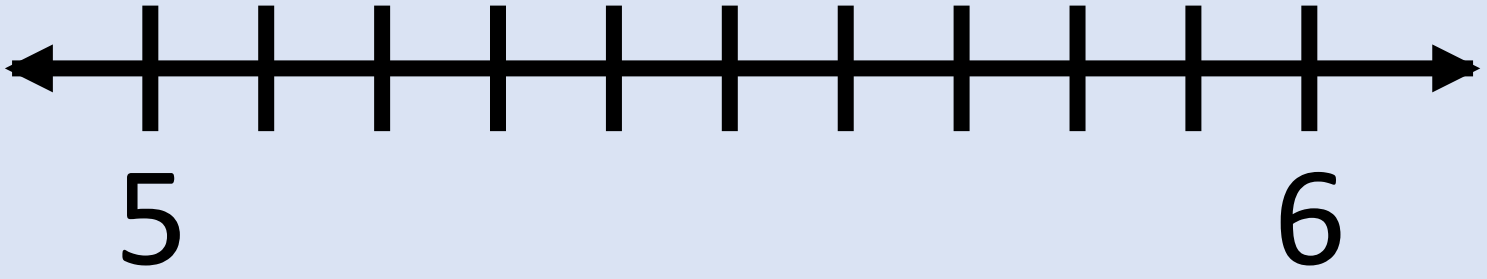
Day 132

Where would each decimal below go on this number line. Be ready to defend your ideas.

5.8 **5.45** **5.65** **5.09**



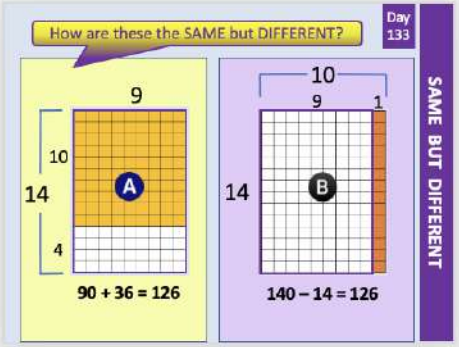
OPEN NUMBER LINE

Day 133

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

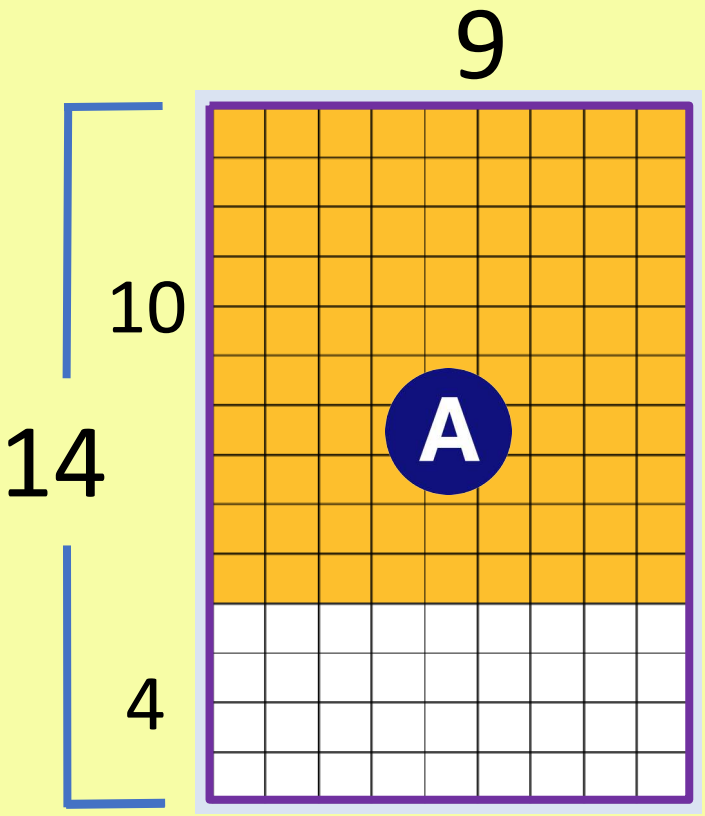
- Both are models representing 14 x 9
- Both have a product of 126.
- Both relied on “friendly numbers” to make the calculation simpler.
- Both use the Distributive Property to find the product of 14 x 9.
- A is decomposed 14 into 10 and 4. B is composed to make 10 using 9 and 1 more.
- A uses an addition model. B used a subtraction model of the Distributive Property.

SAME BUT DIFFERENT

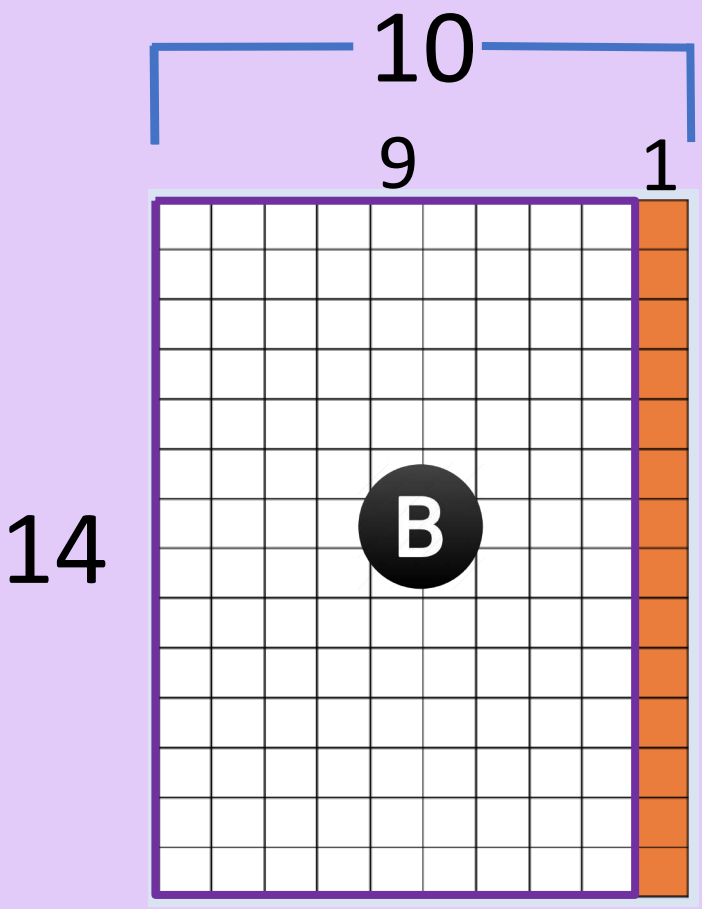
How are these the SAME but DIFFERENT?

Day 133

SAME BUT DIFFERENT



90 + 36 = 126



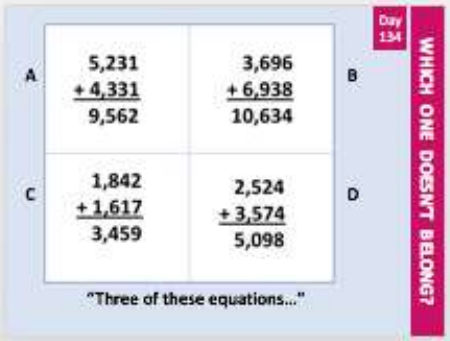
140 – 14 = 126

Use the NEXT SLIDE with students.

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

Day 134

WHICH ONE DOESN'T BELONG?



Possible Responses:

- Three of these equations require REGROUPING when adding.
  A does not require regrouping.
- Three of these equations have a sum that is in the THOUSANDS PLACE VALUE.
  B is in the ten-thousands place value.
- Three of these equations have a sum that is an EVEN number.
  C does not have a sum that is an even number.
- Three of these equation have a SUM THAT IS CORRECT.
  The sum of D is not correct (**6**,098)

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Day 134

WHICH ONE DOESN'T BELONG?

A 5,231 + 4,331 9,562	**B** 3,696 + 6,938 10,634
C 1,842 + 1,617 3,459	**D** 2,524 + 3,574 5,098

"Three of these equations…"

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Day 135

DECIDE & DEFEND

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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Use the NEXT SLIDE with students.

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

Day 135

DECIDE & DEFEND

- 5/2 means we need 2 pieces to make one whole. We have 5 pieces so we have enough to actually make 2 wholes and have 1 of the 2 parts needed leftover. 5/2 should have been circled.
- 199/500 looks like a large number, but it is actually less than ½ since 250/500 equals 1/2, so 199/500 should not have been circled.

Use Numbered Heads

READ to Understand

Decide

Draft

Defend

Reflect

Day 135

The directions said to circle all of the numbers that are GREATER THAN 1.

Was the work done correctly?

1.25	¾	$\frac{199}{500}$	$\frac{5}{2}$
0.62	1.001	$\frac{2}{5}$	0.999

DECIDE & DEFEND

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Day 135

Reflect on Learning

- A new math idea I learned today is…
- A math topic that I can explain better after today's discussion is…

DECIDE & DEFEND

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Day 136

40 ÷ 4
100 ÷ 4
116 ÷ 4
1016 ÷ 4

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.

DURING

Division: Partial Quotients (p. 258 and 288)

This strategy allows students to work their way toward the quotient by using friendly multipliers such as tens and multiples of ten. The problems here are purposefully ordered to help students build their knowledge from one problem to the next.

- Since 4x10 is 40, 40÷4 must be 10
- Think money: 100÷4 = 25
- 116 = **100 + 16** so 100÷4 + 16÷4 = 25+4 = 29
- 1016 = 1000 + 16 **since 100÷4=25 then 1000÷4 must be 250** so we know 250+4=254

Remember, students will come with a variety of strategies. Help students to understand a wide variety and guide them into understanding that some strategies work better in some situations, so knowing more than one way to solve an equation like this one is important so they can later choose the method that is most efficient.

AFTER

Bring students attention back to the strategies that were highly efficient. In this case, using Partial Quotients or thinking about values that are 10 or 100 times greater/less than the given value

Light the Future
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Day 136

NUMBER TALK

$40 \div 4$

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Day 137

What do you NOTICE?

QUICK COUNT

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Day 137

QUICK COUNT

What did you NOTICE?

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Day 137

QUICK COUNT

How many cans are in this display?

What counting shortcut did you use?

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Day 137

QUICK COUNT

I noticed ____ so I _____

(They) noticed ____ so they _____

Light the Future
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Day 137

Reflect

What was mathematically important?

QUICK COUNT

Day 138

SPLAT!

390

How did you calculate it?

How else could you calculate it?

What is the total?

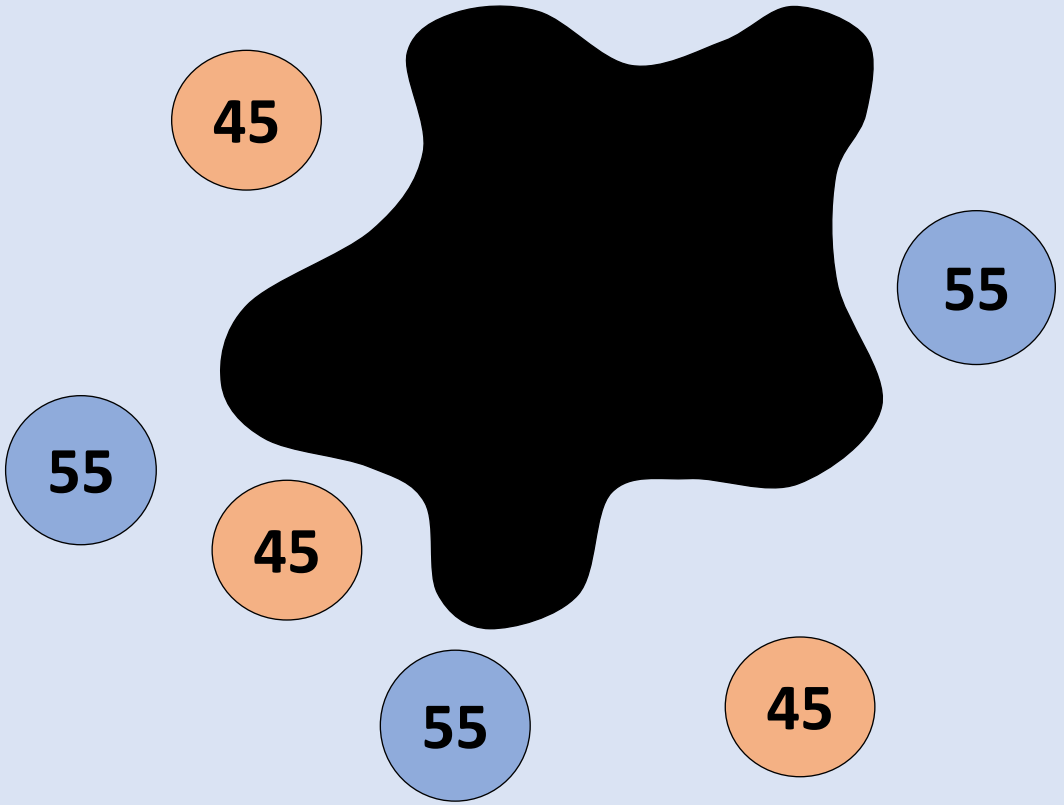
What is the sum of the numbers that are under the splat?

How do you know?

What could those numbers be?

Are there other possible combinations?

Let's look under the splat to see what numbers are there.



Adapted from Steve Wyborney's slide deck

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Day 139

NUMBER TALK

100 ÷ 4
200 ÷ 4
200 ÷ 8
1600 ÷ 8
1632 ÷ 8

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.

DURING

Division: Partial Quotients

This strategy allows students to work their way toward the quotient by using friendly multipliers such as tens and multiples of ten. The problems here are purposefully ordered to help students build their knowledge from one problem to the next.

- Since 100 ÷ 4 is 25 (think quarters), 200 ÷ 4 must be 50 – if we double the dividend, the quotient also doubles
- Since 200 ÷ 4 is 50, 200 ÷ 8 must be 25 – if we double the divisor, the quotient will be cut in half
- Since 16 ÷ 8 is 2, 1600 ÷ 8 must be 200
- Since 1600 ÷ 8 is 200 and 32 ÷ 8 is 4, 1632 ÷ 8 must be 200 + 4 = 204

Remember, students will come with a variety of strategies. Help students to understand a wide variety and guide them into understanding that some strategies work better in some situations, so knowing more than one way to solve an equation like this one is important so they can later choose the method that is most efficient.

AFTER

Bring students' attention back to the strategies that were highly efficient. In this case, using Partial Quotients or thinking about values that are 10 or 100 times greater/less than the given value

Day 139

NUMBER TALK

$100 \div 4$

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SPLAT!

Day 140

$7\frac{1}{3}$

Remember:
If the color of the Splats are different, then the hidden values are also different.

What value is hiding under the other Splat?