180 Days of
Number Sense Routines
Grade 3
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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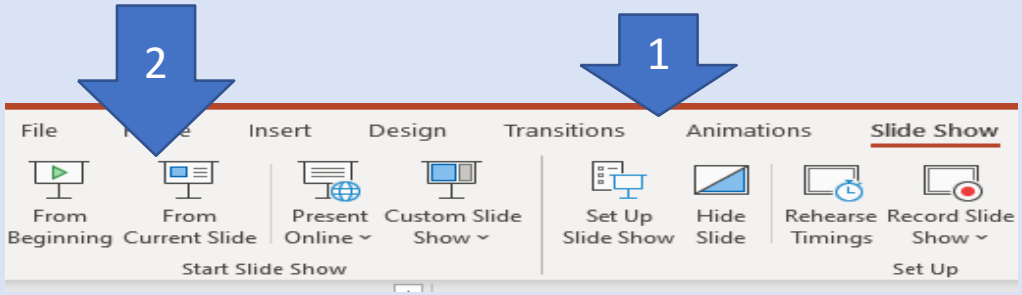
HOW TO RUN POWERPOINT IN SLIDE SHOW MODE:

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

Adding Quarters

Day 121

- Today we will begin with two dollars and twenty-five cents
- Show $2.25 on the chart (next slide)
- We will add one quarter at a time to get the next number.
- Remember, we are Choral Counting, so be sure to count slowly altogether as I write the numbers on the chart.
- Start at $2.25 and imagine that we are adding a quarter each time. Think about how much money we will have as we add the next quarter.
- Chart the responses.

- Once you finish counting and charting, allow students to discover the PATTERNS by asking them to look for patterns and to think about WHY those patterns occur. Discuss.
  - Each column (up/down) has the same amount of change.
  - Each row (left/right) has three of the same dollar then the last dollar digit increases by 1
  - Each column increases by exactly 1 dollar and you look down the column
  - The diagonal down to the right increases by 1.25
  - The diagonal down t the left increases by 0.75
  - The dollar amount in each column increases by 1

  IF we made 5 columns instead of 4, how would the patterns be the same? How would they be different? -- this should lead to a discussion about 4 quarters = 1 dollar which is why each number is exactly 1 dollar more than the amount above it. If we change to 5 columns, the amount would be 5 quarters more, or $1.25, than the number above.

CHORAL COUNTING

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Adding Quarters

Day 121

CHORAL COUNTING

$2.25 _____ _____ _____

_____ _____ _____ _____

_____ _____ _____ _____

_____ _____ _____ _____

_____ _____ _____ _____

*** If we made 5 columns of numbers instead of 4, how would the patterns be the same? How would they be different?**

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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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How many pencils?

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 want to use paper and pencil to keep track of the possible solutions.

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Adapted from template by Steve Wyborney

Clue #1

The number is less than

15 x 10

Clue #2

The number is more than

13 x 10

Clue #3

Two of the digits

are the same

Clue #4

There are only

four possibilities left

Clue #5

It's the one with a 4

in the ones place value

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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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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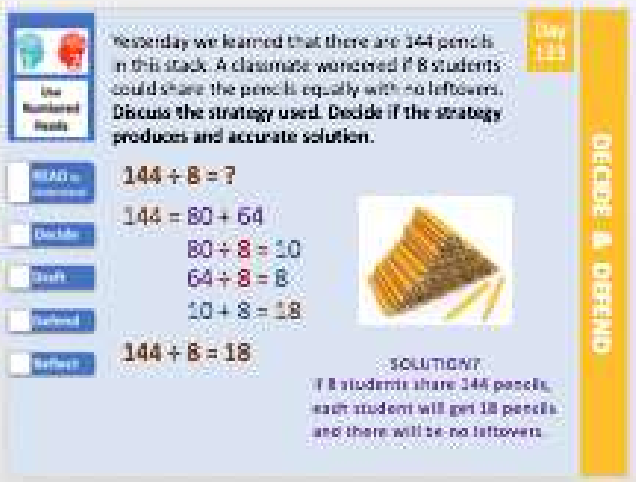
DECIDE & DEFEND

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



The larger number was decomposed to make dividing by 8 easier.
The distributive property (or partial product strategy) was used.
The math is correct.
18 x 8 = 10x8 + 8x8 = 60 + 64 = 144

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Use Numbered Heads

READ to Understand

Decide

Draft

Defend

Reflect

Day 123

DECIDE & DEFEND

Yesterday we learned that there are 144 pencils in this stack. A classmate wondered if 8 students could share the pencils equally with no leftovers. **Discuss the strategy used. Decide if the strategy produces and accurate solution.**

144 ÷ 8 = ?

144 = 80 + 64

80 ÷ 8 = 10

64 ÷ 8 = 8

10 + 8 = 18

144 ÷ 8 = 18

Is this the correct SOLUTION?

If 8 students share 144 pencils, each student will get 18 pencils and there will be no leftovers.

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Day 123

Reflect on Learning

- A new math idea I learned today is…
- After today's discussion, I am better able to explain….

DECIDE & DEFEND

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365 + 47
138 + 92
168 + 54
299 + 39

Day 124

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

Decomposing to Find an Adding Shortcut

- 365 + 47 --- 300 and 60 + 40 and 5 + 7 = 300 + 100 + 12 = 412
  decompose to add place values
- 138 + 92 --- 130 + 8 + 92 = 130 + 100 = 230
  decompose to create friendly number
- 168 + 54 --- 100 and 60 + 50 and 8 + 4 = 100 + 110 + 12 = 210 + 12 = 222
  decompose to add place values
- 299 + 39 --- 299 + 1 + 38 = 300 + 38 = 338
  decompose to create friendly numbers

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

Discuss the shortcut strategy of decomposing numbers to either add place values or to create friendly numbers.
Focus on the idea that sometimes one is a much better strategy than the other based on the numbers that are given.
For example 365 + 47 does not become friendly numbers as easily as 299 + 39.

365 + 47

Day 124

NUMBER TALK

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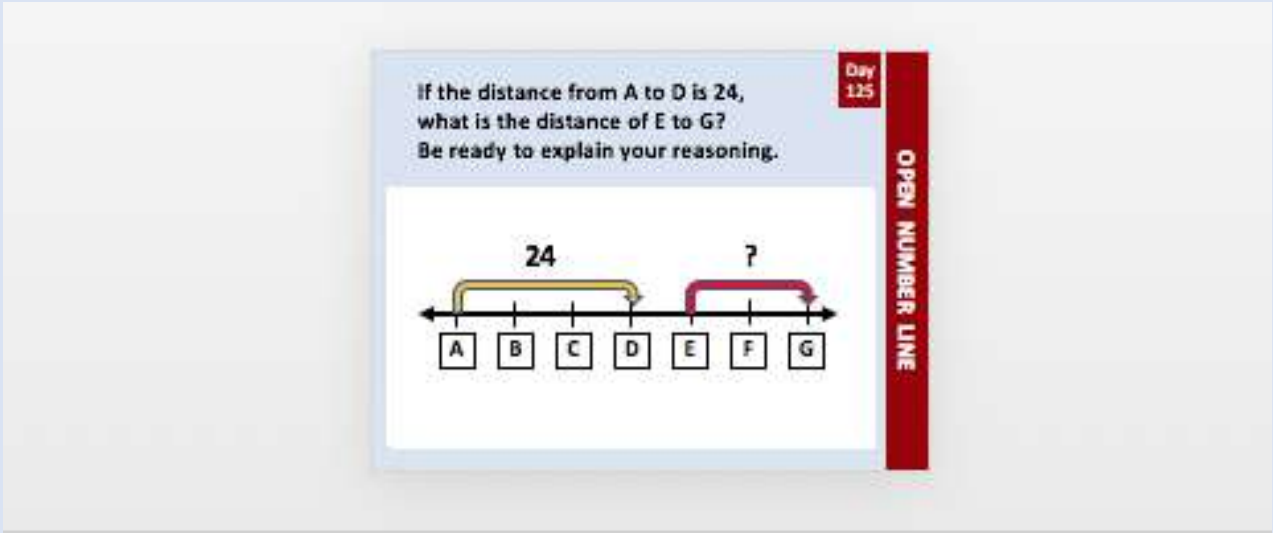
Use the NEXT SLIDES with students.

Teacher Notes

Day 125

OPEN NUMBER LINE

IMPORTANT NOTE: Students can misinterpret the graph from A to D as stretching across 4 intervals since there are 4 letters. Help students to recognize that the intervals are the SPACES between the hash marks, not the hash marks themselves.



The distance is 16

- A to D stretches across 3 equal intervals, so 24 ÷ 3 = 8.
- Each interval is 8.
- E to G stretches across 2 equal intervals, so 8 x 2 = 16

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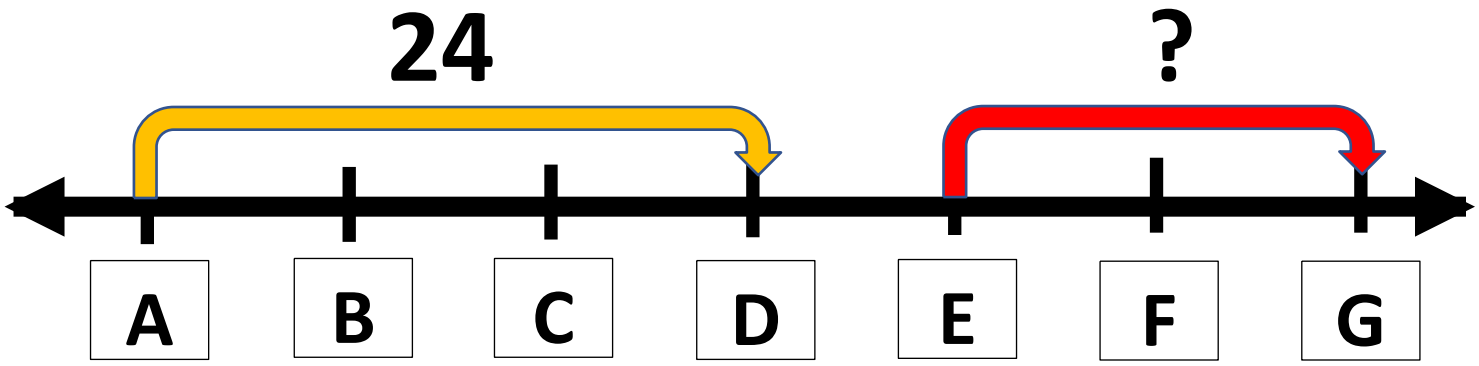
Day 125

If the distance from A to D is 24, what is the distance of E to G? Be ready to explain your reasoning.



OPEN NUMBER LINE

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Directions for QUICK COUNT routines

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

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

Day 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 **button HOLES**?

What counting shortcut did you use?

QUICK COUNT

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I noticed ____ so I _____

(They) noticed ____ so they___

Day 126

QUICK COUNT

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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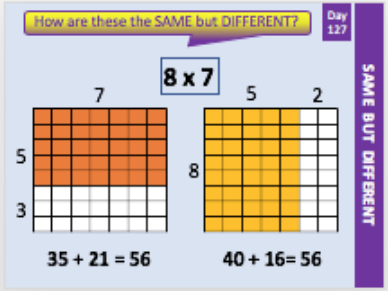
Day 127

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….”



The goal is for student to recognize that numbers can be decomposed and calculated as partial quotients to make make difficult facts easier to calculate. There are several effective and efficient ways to calculate partial quotients (which is an application of the Distributive Property).

POSSIBLE RESPONSES

- Both are models of 8x7 but they are decomposed differently.
- The orange model decomposed the 8. The yellow model decomposed the 7.
- Yes, the colors are different, but that has no mathematical significance. Acknowledge and challenge students to consider mathematical similarities and differences.
- The orange uses the equation 35+21. The yellow used 40+16. Both equal 56.
- If students that one is cut horizontally and the other vertically, ask if we rotate one so they are cut the same way, does it change the math that was used (it does not).

SAME BUT DIFFERENT

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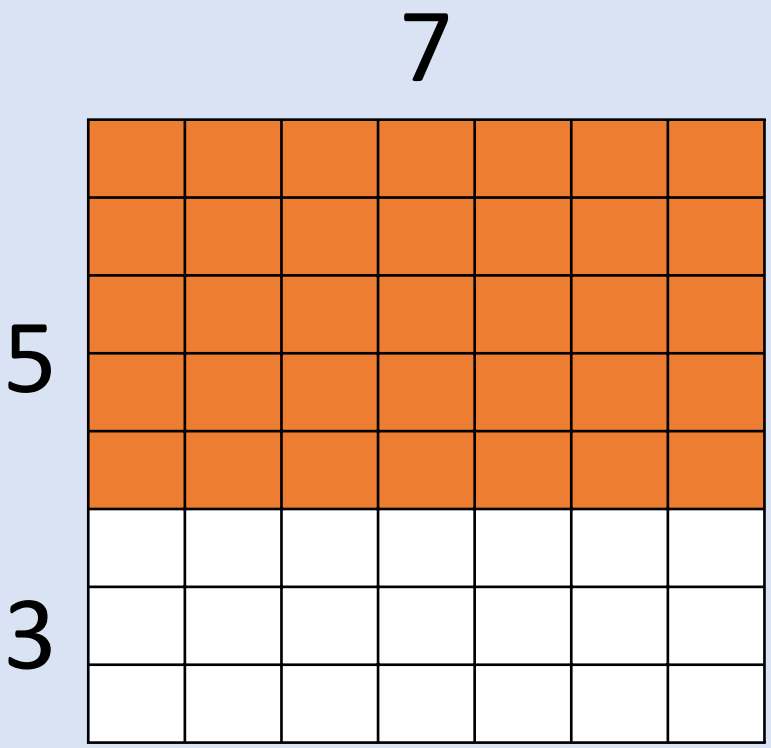
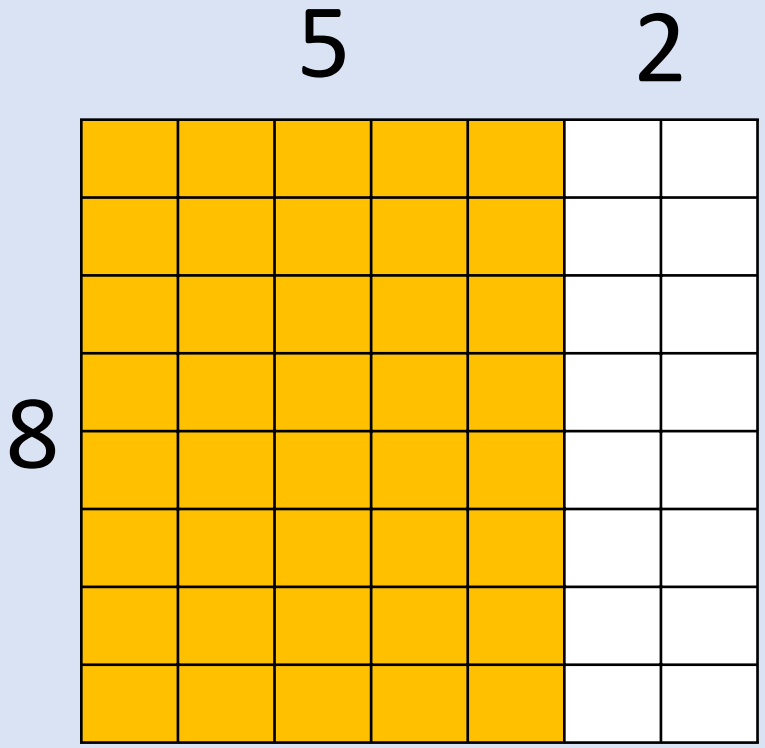
How are these the SAME but DIFFERENT?

Day 127

SAME BUT DIFFERENT





35 + 21 = 56

40 + 16= 56

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Wh

What can we learn from this set of dots?

Wha the value of the hidden shapes? How do you know?

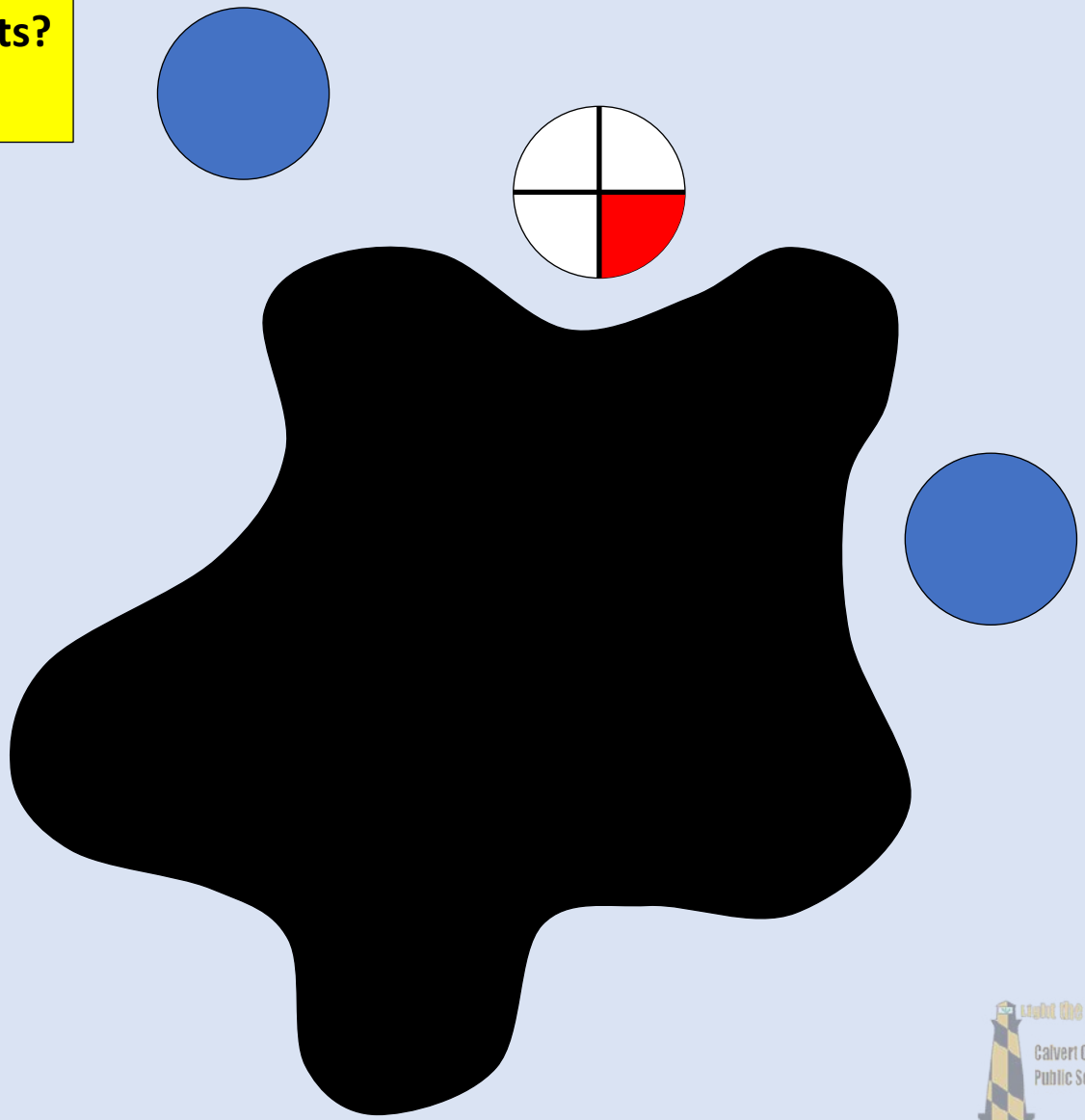
How else could you know?

What might the hidden shapes look like?

Let's look under the splat to see what is hiding.

4

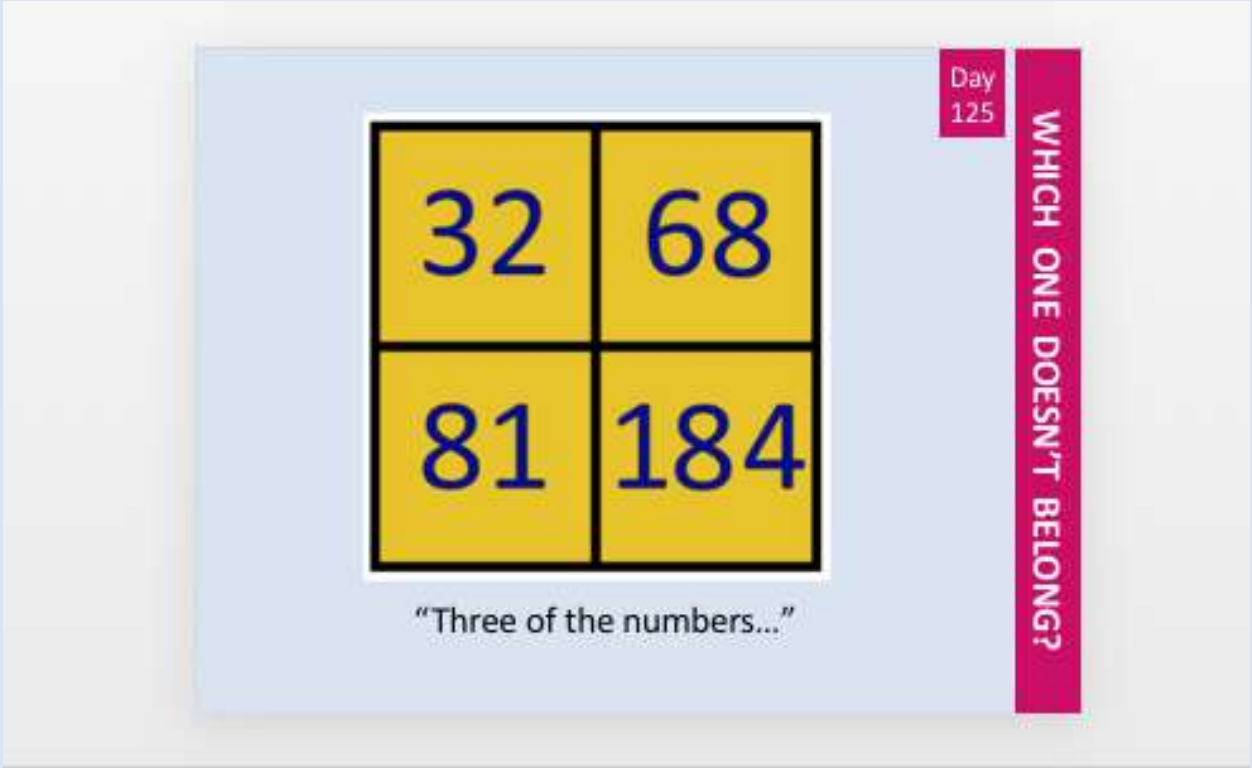
Day 128



SPLAT!

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 contain the digit 8. 32 does not contain an 8.
- Three of the numbers have a tens place value that is greater than the ones place value. 68 does not have a larger value in the tens place.
- Three of the numbers are even numbers. 81 is not an even number.
- Three of the numbers are 2-digit numbers. 184 is not a 2-digit number.

WHICH ONE DOESN'T BELONG?

Day 129

WHICH ONE DOESN'T BELONG?

32	68
81	184

"Three of the numbers…"

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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
  - **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 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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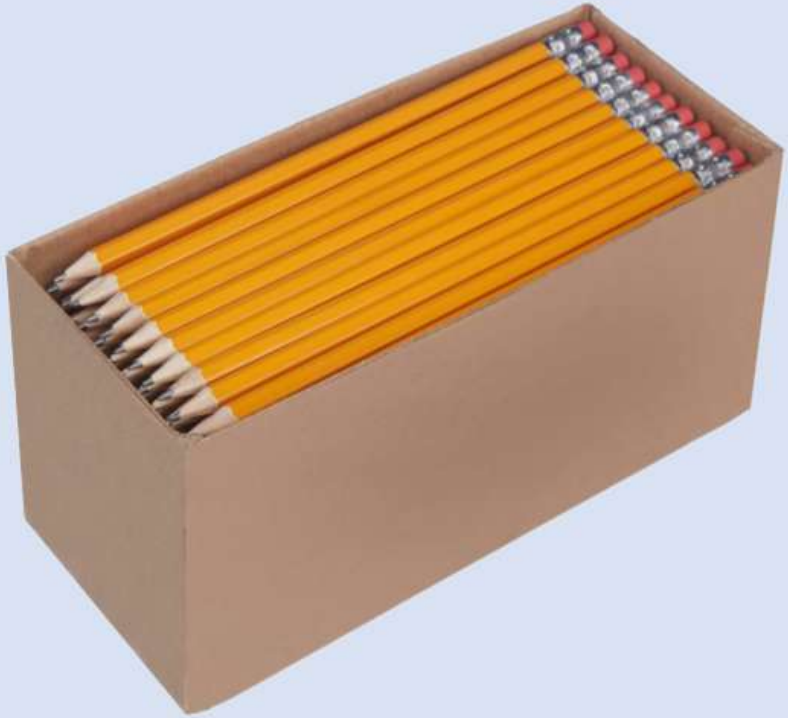
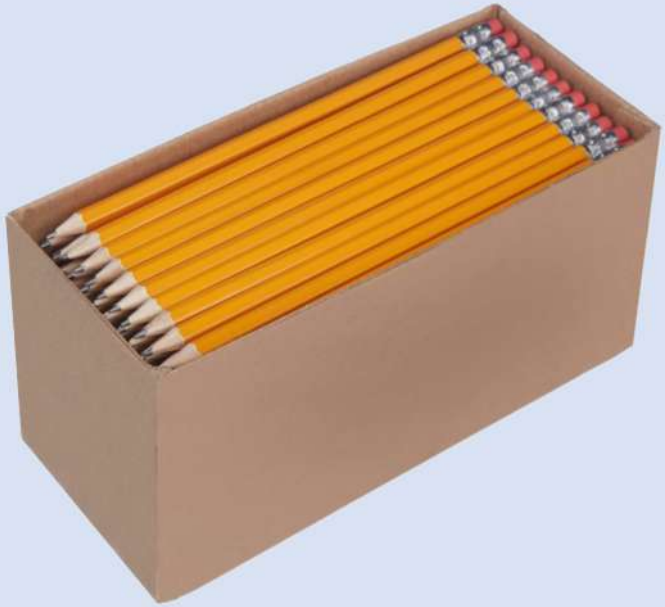


How many pencils are in the box?

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 want to use paper and pencil to keep track of the possible solutions.



101	102	103	104	105	106	107	108	109	110
111	112	113	114	115	116	117	118	119	120
121	122	123	124	125	126	127	128	129	130
131	132	133	134	135	136	137	138	139	140
141	142	143	144	145	146	147	148	149	150
151	152	153	154	155	156	157	158	159	160
161	162	163	164	165	166	167	168	169	170
171	172	173	174	175	176	177	178	179	180
181	182	183	184	185	186	187	188	189	190
191	192	193	194	195	196	197	198	199	200

Clue #1

The number is a multiple of 10

Clue #2

It is more than 100

Clue #3

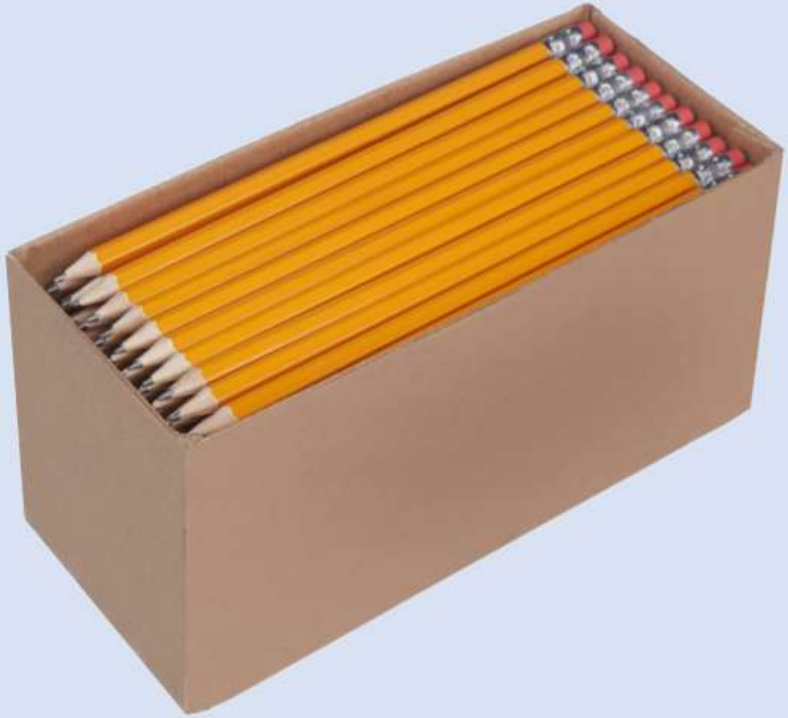
It is less than 17 x 10

Clue #4

You should only have 6 possible solutions

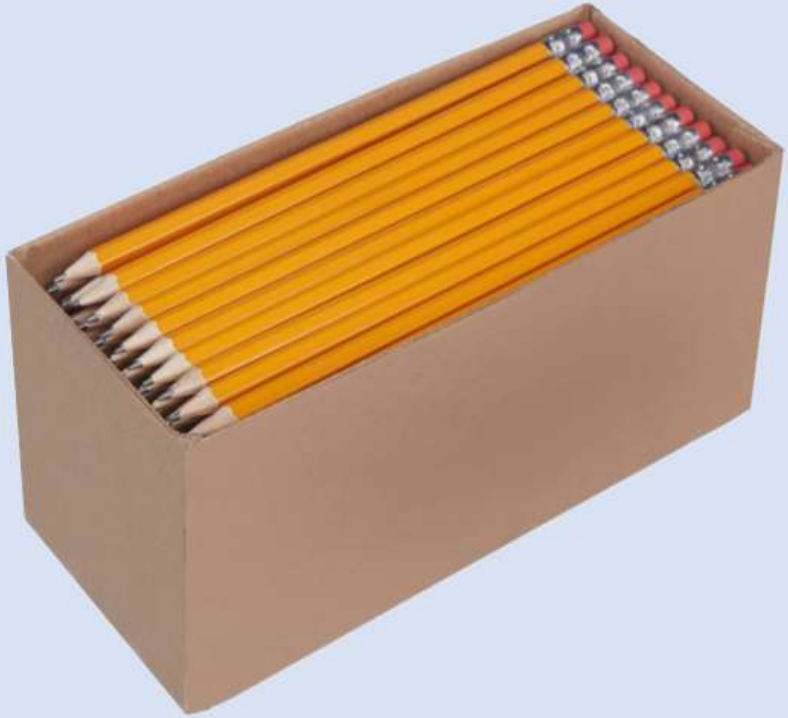
Clue #5

In coins, you can make this number using just quarters



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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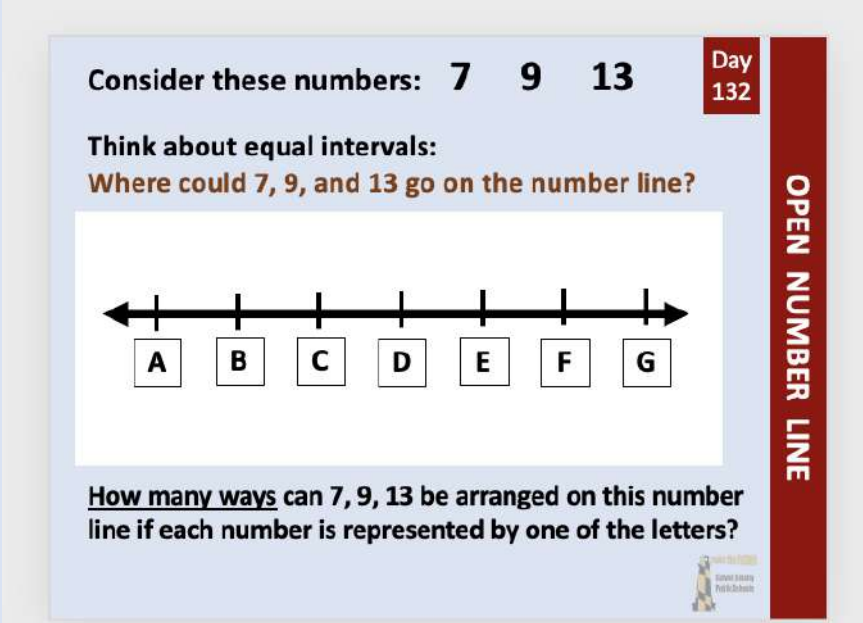
Day 132

OPEN NUMBER LINE

Use the NEXT SLIDE with students.

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



There are several variations:

- 7=A, 9=B, 13=D if the intervals are 2
- 7=A, 9=C, 13=G if the intervals are 1
- 7=B, 9=C, 13=E if the intervals are 2
- 7=C, 9=D, 13=F if the intervals are 2
- 7=D, 9=E, 13=G if the intervals are 2

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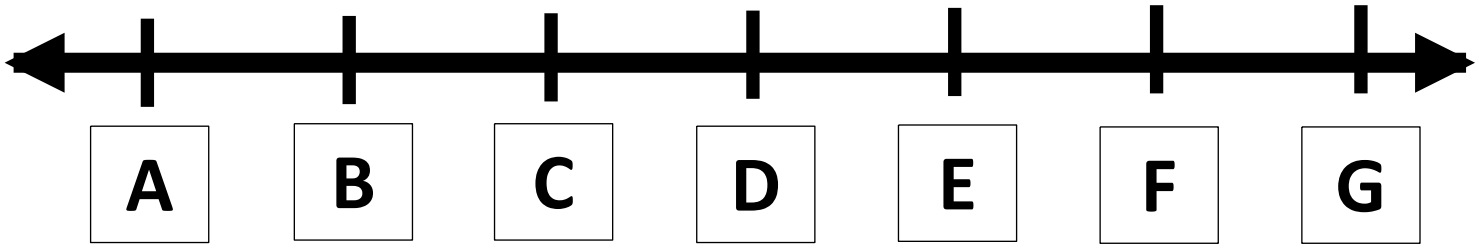
Day 132

OPEN NUMBER LINE

Consider these numbers: 7 9 13

Think about equal intervals:

Where could 7, 9, and 13 go on the number line?

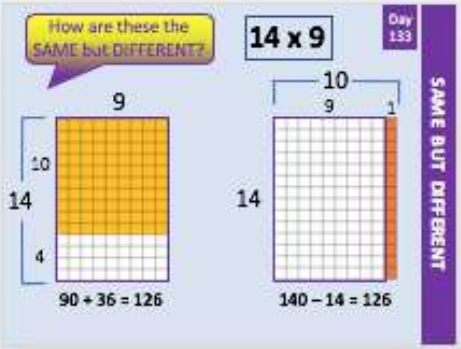


<u>How many ways</u> can 7, 9, 13 be arranged on this number line if each number is represented by one of the letters?

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 a model to find the product of 14 and 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.
- Yellow model decomposed 14 into 10 and 4. Orange model composed 10 using the 9 and 1 more.
- Yellow model uses an addition model. Orange model used a subtraction model of the Distributive Property.

Day 133

SAME BUT DIFFERENT

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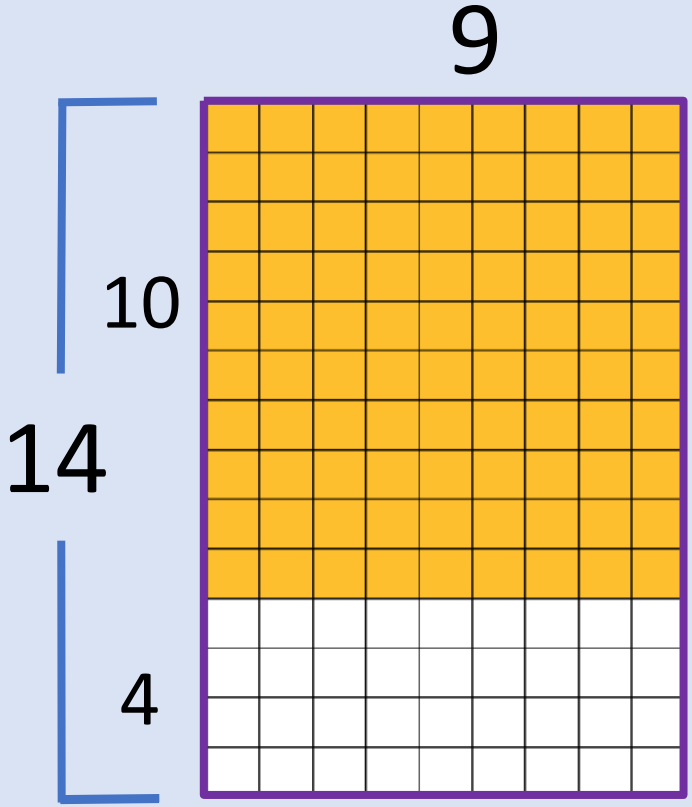
How are these the SAME but DIFFERENT?

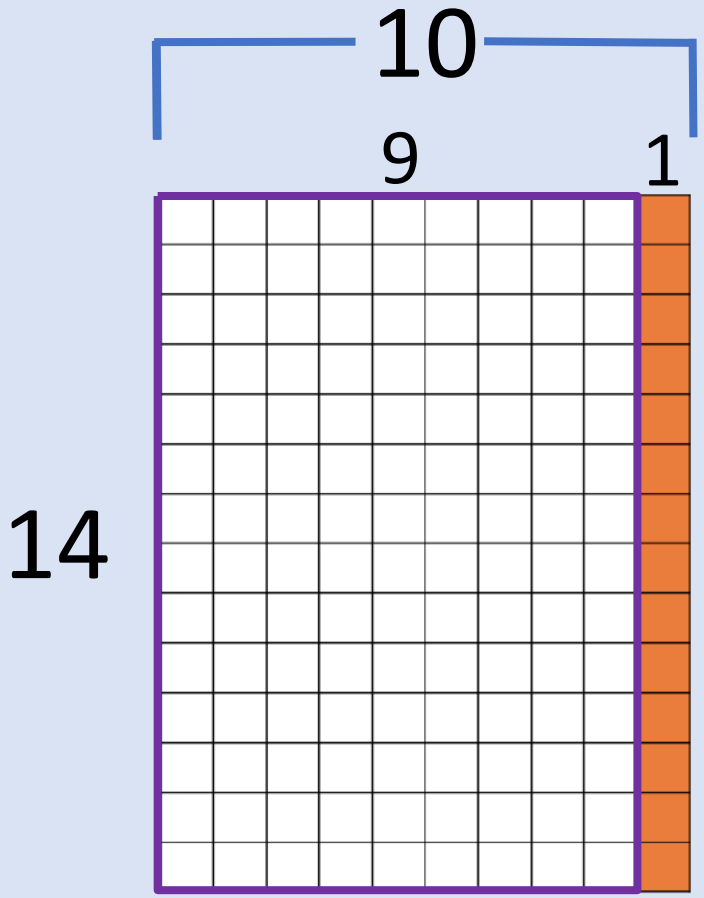
14 x 9

Day 133

SAME BUT DIFFERENT



90 + 36 = 126



140 – 14 = 126

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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 134

WHICH ONE DOESN'T BELONG?

Possible responses:

- Three of these coins sets are silver colored coins. The pennies are not silver-colored.
- Three of these coins sets equal 10 cents. The quarter does not equal 10 cents.
- Three of these coins sets show old/dirty coins. The nickels do not look old/dirty.
- Three of these coins sets show the heads of the coin. The dime does not show the heads side of the coin.

Day 134

WHICH ONE DOESN'T BELONG?

"Three of these coin sets…"

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Day 135

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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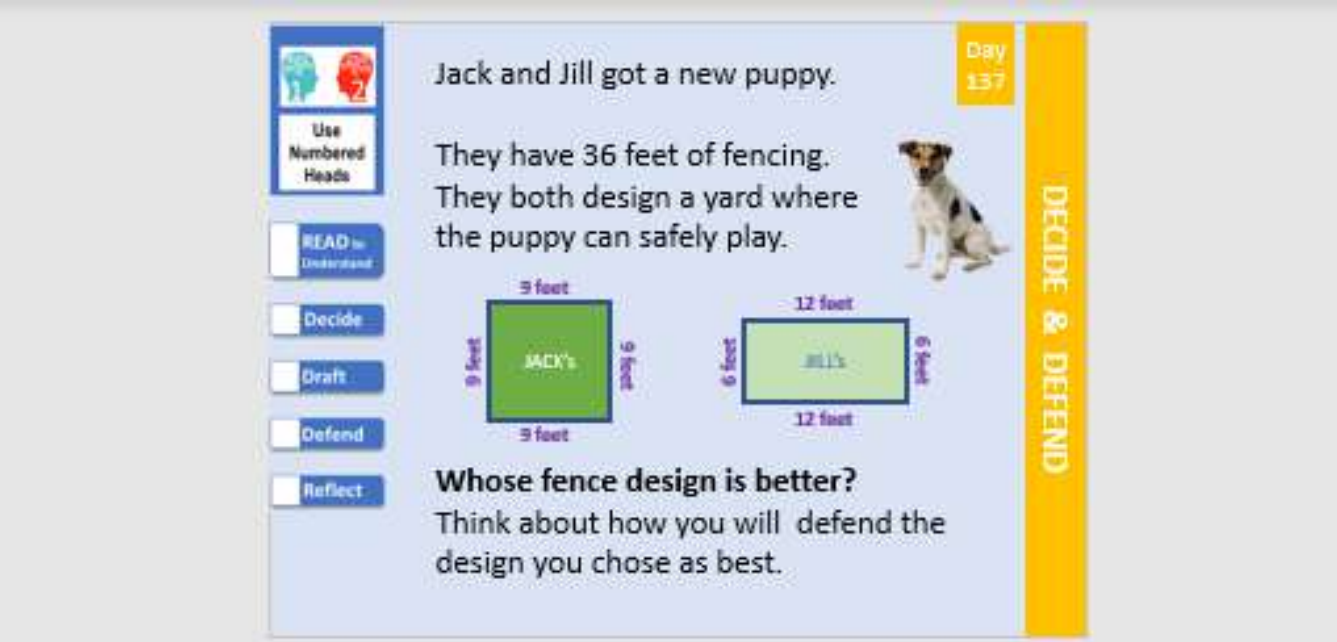
DECIDE & DEFEND

Use the NEXT SLIDE with students.

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

Day 135

DECIDE & DEFEND



Both used all 36 feet of the fencing.
Jack's design has a perimeter of 36 feet and an area of 81 sq.ft.
Jill's design has a perimeter of 36 feet and an area of 72 sq.ft.
The new puppy will have 9 sq. ft. more room to run if they use Jack's design.
Students may present the logic that Jill's design lets the puppy run a longer length. This is acceptable provided they recognize that the AREA is actually smaller but they think the dog want to run longer distances.

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Use Numbered Heads

READ to Understand

Decide

Draft

Defend

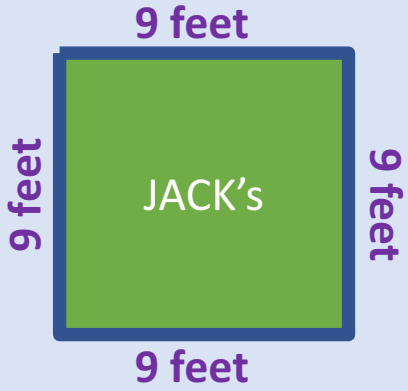
Reflect

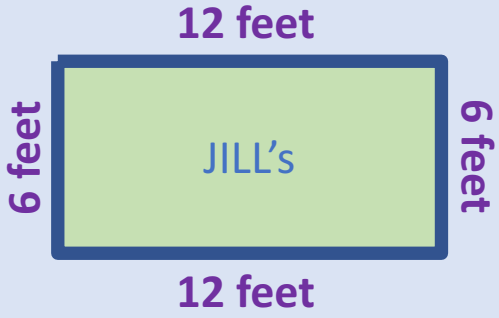
Day 135

DECIDE & DEFEND

Jack and Jill got a new puppy.

They have 36 feet of fencing. They both design a yard where the puppy can safely play.





Whose fence design is better?

Think about how you will defend the design you chose as being better.

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Day 135

Reflect on Learning

- A new math idea I learned today is…
- A math concept I understand better is ….

DECIDE & DEFEND

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Day 136

127 + 315
295 + 126
817 + 133
535 + 295

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

Decomposing to Find an Adding Shortcut

- 127 + 315 --- 100 + 300 and 20 + 10 and 7 + 5 = 400 + 30 + 12 = 442
  decompose to add place values
- 295 + 126 --- 295 + 5 + 121 = 300 + 121 = 421
  decompose to create friendly number
- 817 + 133 --- 800 + 100 and 10 + 30 and 7 + 3 = 900 + 40 + 10 = 950
  decompose to add place values
- 535 + 295 --- 530 + 5 + 295 = 530 + 300 = 830
  decompose to create friendly numbers

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

Discuss the shortcut strategy of decomposing numbers to either add place values or to create friendly numbers.
Focus on the idea that sometimes one is a much better strategy than the other based on the numbers that are given.
For example 127 + 315 does not become friendly numbers as easily as 295 + 126.

NUMBER TALK

Day 136

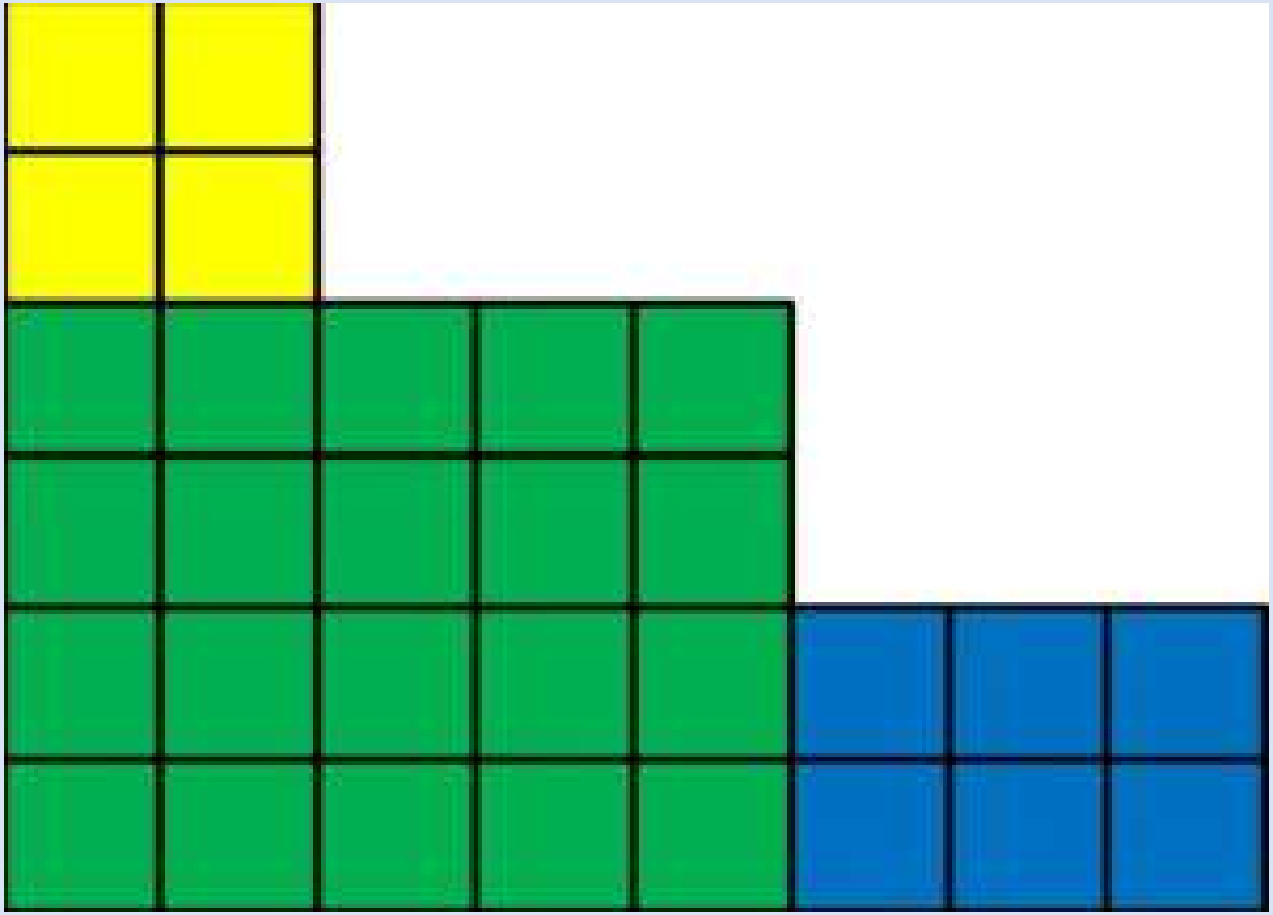
127 + 315

NUMBER TALK

Calvert County Public Schools

Day 137

What do you NOTICE?



QUICK COUNT

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Day 137

QUICK COUNT

What did you NOTICE?

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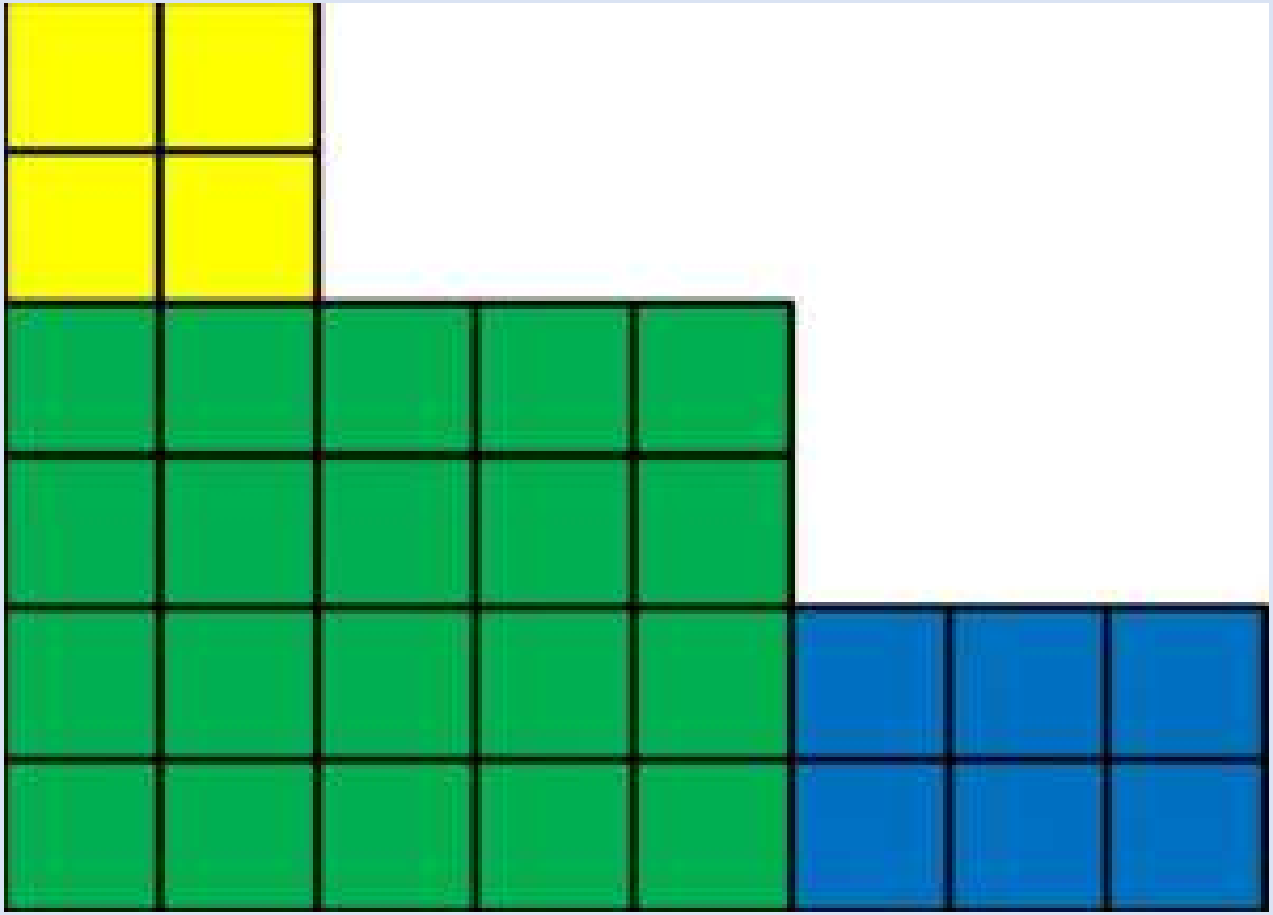
Day 137

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

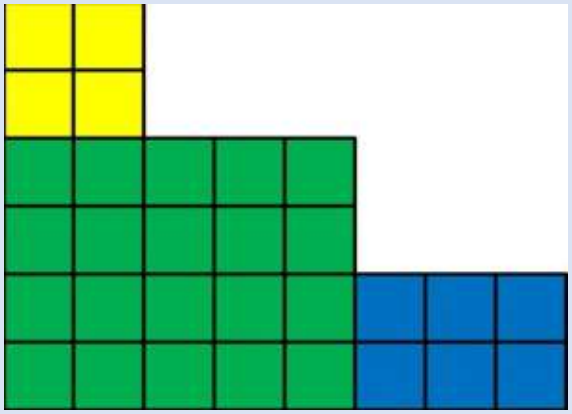


QUICK COUNT

Calvert County Public Schools

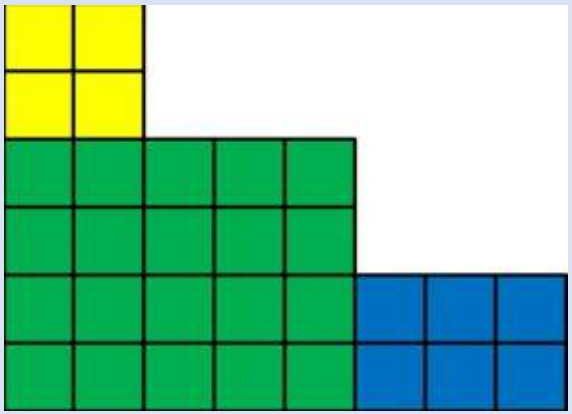
Day 137

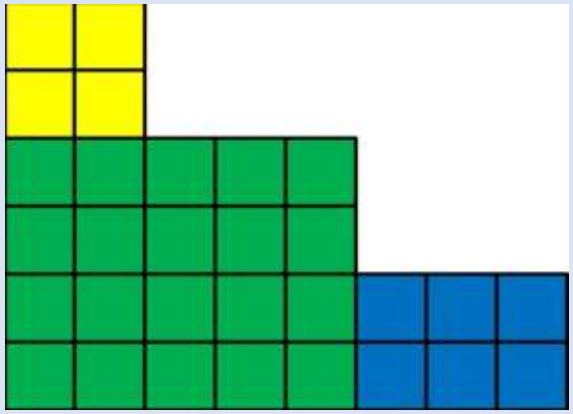
QUICK COUNT



(They) noticed ____ so they _____

I noticed ____ so I _____





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Day 137

Reflect

What was mathematically important?

QUICK COUNT

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What value is hiding?

How else could you know?

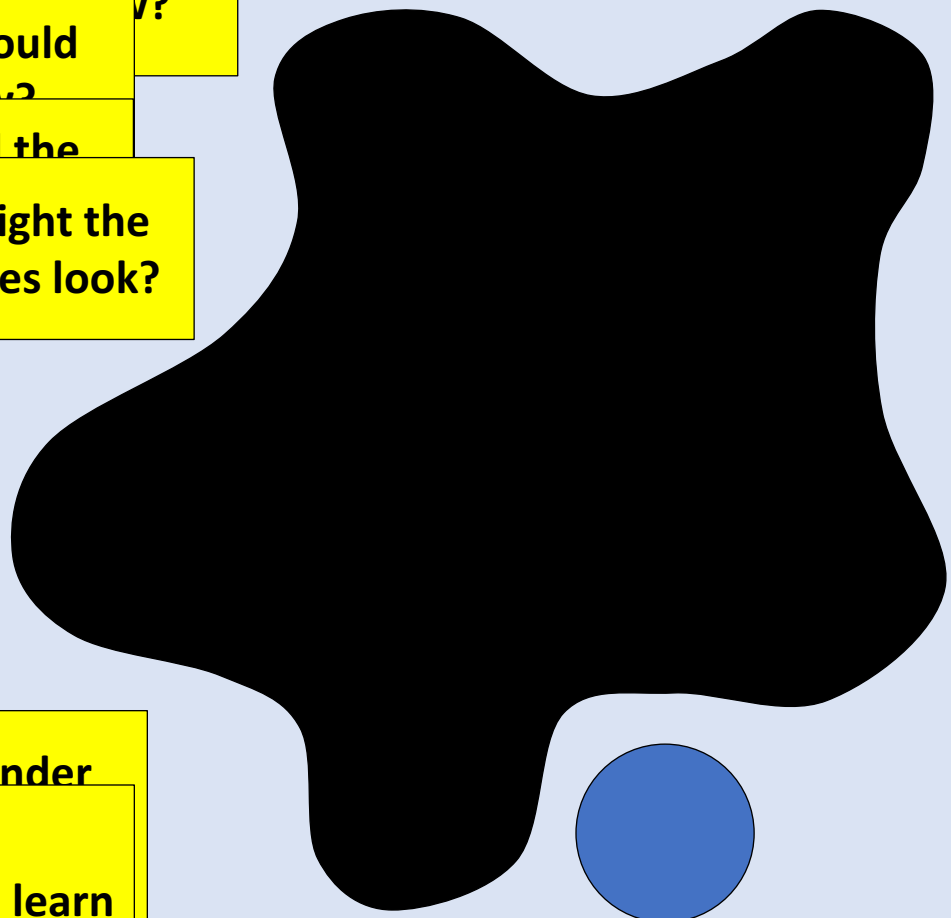
What could the

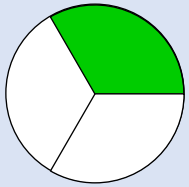
How else might the hidden shapes look?

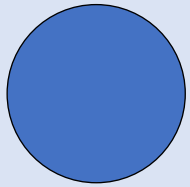
5

Day 138

SPLAT!







Let's look under

What can we learn from this picture?

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Day 139

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 buttons?

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 want to use paper and pencil to keep track of the possible solutions.

Light the Future
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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

Clue #1

There are less than 15 x 3

(use a shortcut strategy)

Clue #2

There are more than 2 dozen

(a dozen equals 12)

Clue #3

The tens digit is smaller than the ones digit

Clue #4

If you add the two digits of the number, you will get 7

Clue #5

There are two solutions left. Which do you think it is?

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

The Reveal
Click to see the answer.

Day 140

8 x 10
11 x 8
12 x 8
8 x 13
14 x 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

Using a known fact to calculate a larger product

- Since 8 x 10 is 80, then 11 x 8 is 80 plus 8 to equal 88
- Since 8 x 10 is 80, then 12 x 8 is 80 plus 2 more groups of 8 to make 80 + 16 = 96
- Since 8 x 12 is 96, then 8 x 13 must be 96 + 8 = 104
- Since 10 x 8 = 80, then 14 x 8 is 80 and 4 more groups of 8 to make 80 + 32 = 112 (or 104 + 8 or double of 7x8)

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

Discuss the shortcut strategy of decomposing numbers so we can multiply values we know and then add (this is using the Distributive Property of Multiplication)

NUMBER TALK

Day 140

NUMBER TALK

8 x 10

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