180 Days of
Number Sense Routines
Grade 3
Days 61-80

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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.

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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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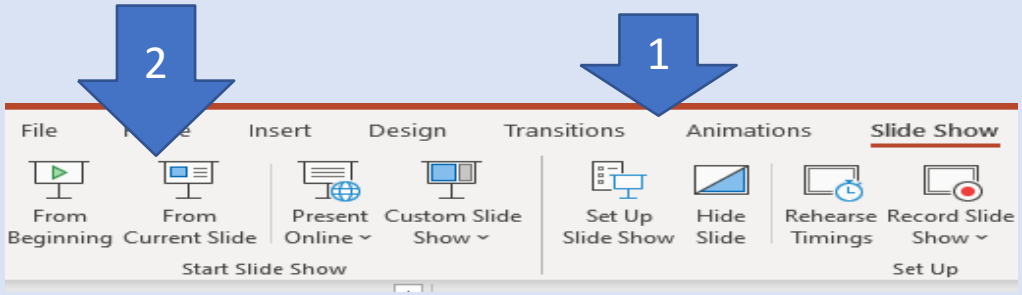
HOW TO RUN POWERPOINT IN SLIDE SHOW MODE:

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

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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 61

CHORAL COUNTING

Possible Patterns Noted:

- The tens place decreases by 1 ten each time to create a pattern of 4,3,2,1,0,9,8,7,6,5,4,3…
- The ones place remains the same (discuss WHY this happens – if we add/subtract just tens it does not affect the ones place)
- ASK: If the ones place is not affected by subtracting a ten, WHY is the hundreds place sometimes affected when we subtract a ten.
- Look across the row. What do you notice? (increases by 100) Why does this happen? (because we made our list in groups of 10 and ten tens equal 100)
- Help students recognize the many predictable patterns within the Base Ten system of numbers that we use around the world.

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Count backwards by 10s

Day 61

Today we are counting backwards from 10 beginning with number 346.
I will chart the numbers as we count together, so let's count slowly.
Watch the numbers I am writing to see if there are any PATTERNS developing.

346	_____	_____
336	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	
_____	_____	
_____	_____	
_____	_____	

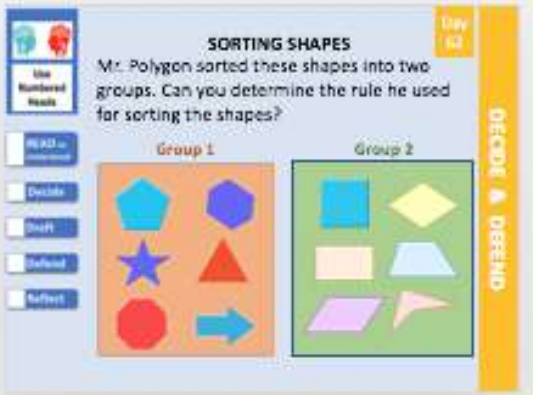
CHORAL COUNTING

Use the NEXT SLIDE with students.

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

Day 62

DECIDE & DEFEND



Give students plenty of time and space to notice and discuss these shapes with their partners.
As they grapple with solving the sorting rules, the discussions they have will be the most valuable part of the activity. Listen as students talk and take notes on interesting ideas that are shared. When you come back to whole group discussion, call on the students whose ideas will generate thinking and reasoning.

Group 1: None of these shapes are quadrilaterals, but they are all polygons
Group 2: All of these shapes have exactly 4 sides that are straight and connected (quadrilaterals)

Challenge/Extension: Are there any shapes that might not fit into either group? (possibly: shapes that are not polygons, such as circles, or shapes that are not closed figures MIGHT fit into Group 1). It is possible that Group 1 must be polygons that are not quadrilaterals, in which case, circles and figures that are not closed will not fit into the category.

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Use Numbered Heads

READ to Understand

Decide

Draft

Defend

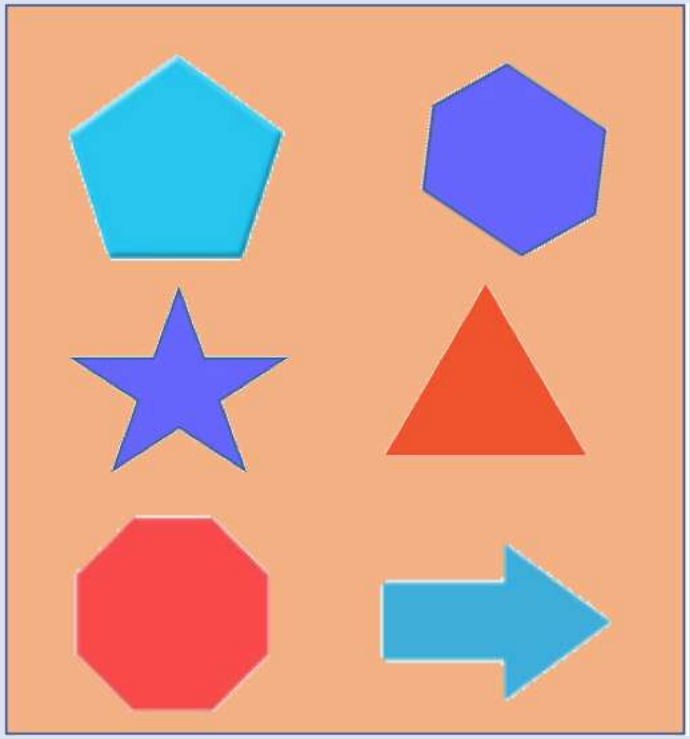
Reflect

Day 62

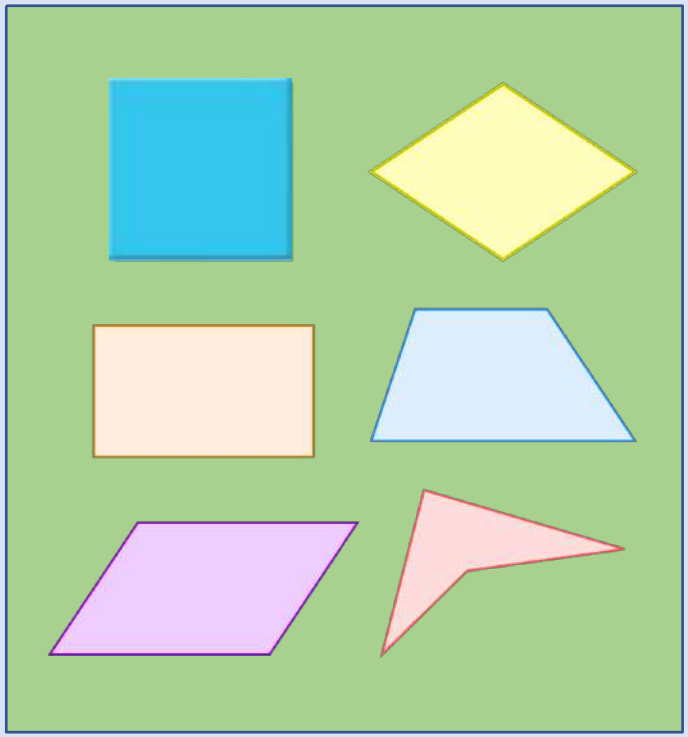
SORTING SHAPES

Mr. Polygon sorted these shapes into two groups. Can you determine the rule he used for sorting the shapes?

Group 1



Group 2



DECIDE & DEFEND

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Day 62

Reflect on Learning

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

DECIDE & DEFEND

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Day 63

Esti-Mystery

Estimation Activity with clues!

Students use clues to solve the estimation mystery. After all 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.

PROTIP: Allow students to use scratch paper or dry erase as they reason through this one.

BE PATIENT. Give TIME & SPACE for thinking and calculations ☺

ESTIMATION

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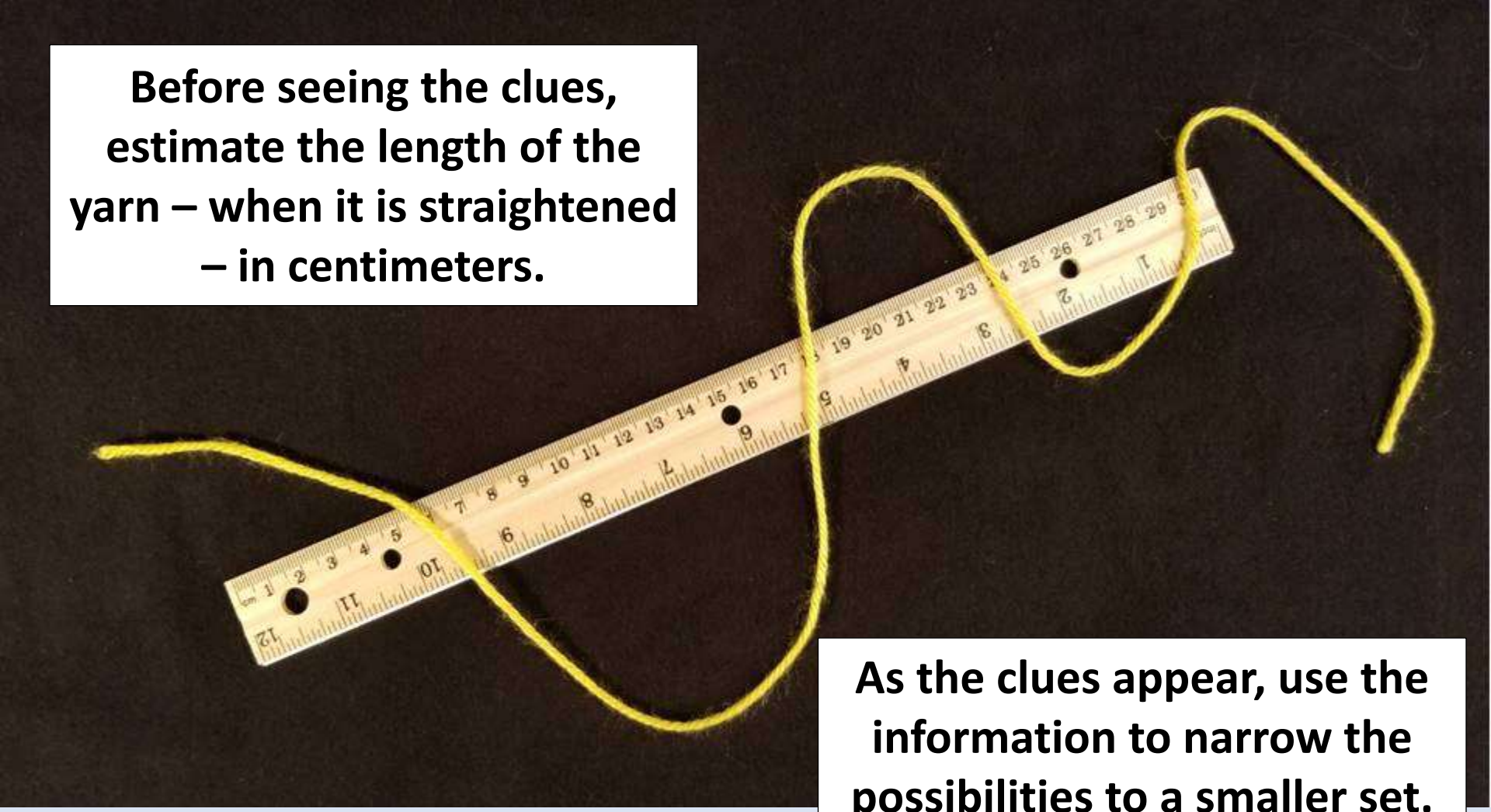
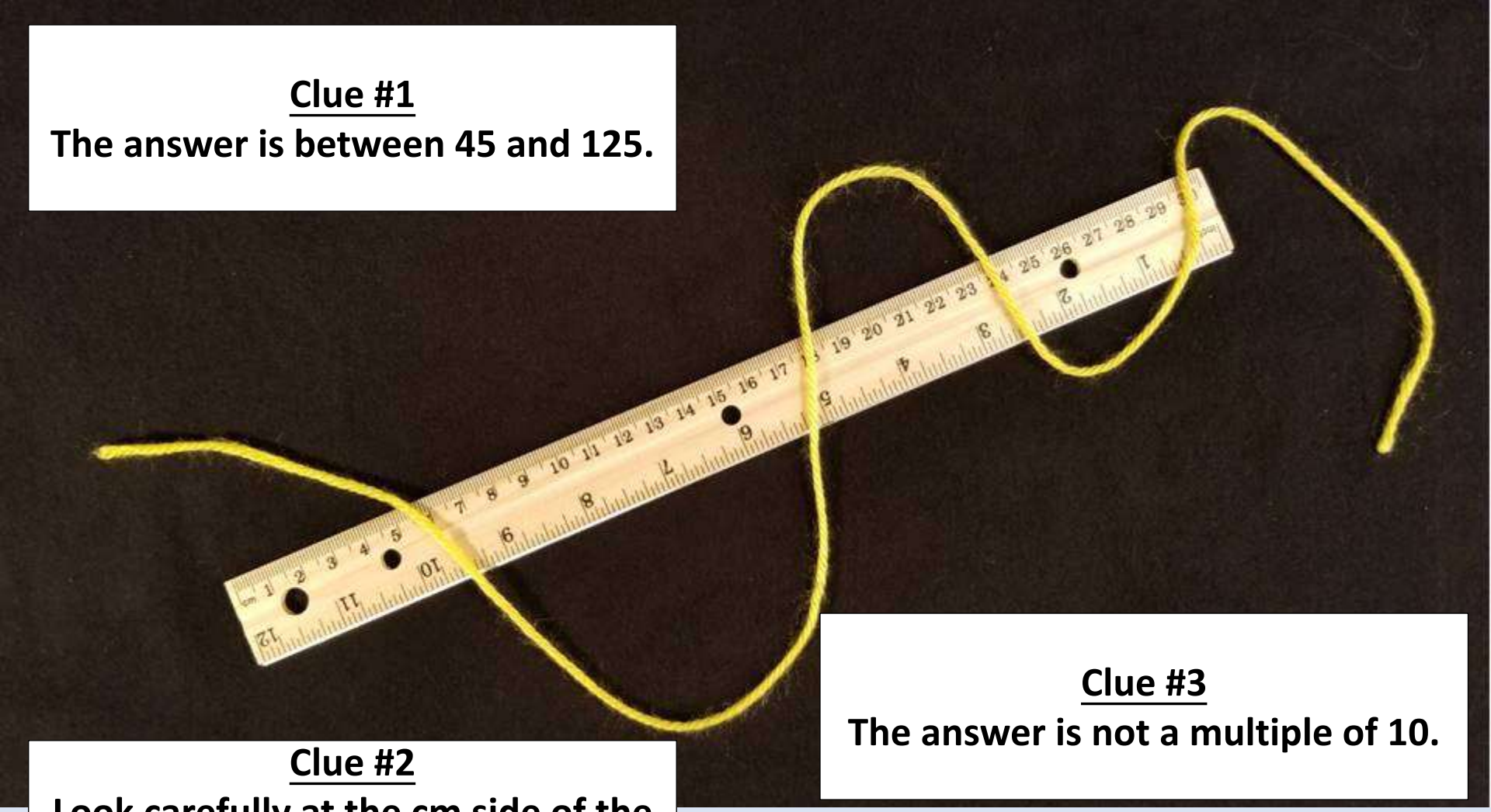
Before seeing the clues, estimate the length of the yarn – when it is straightened – in centimeters.



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.



Clue #1

The answer is between 45 and 125.

Clue #2

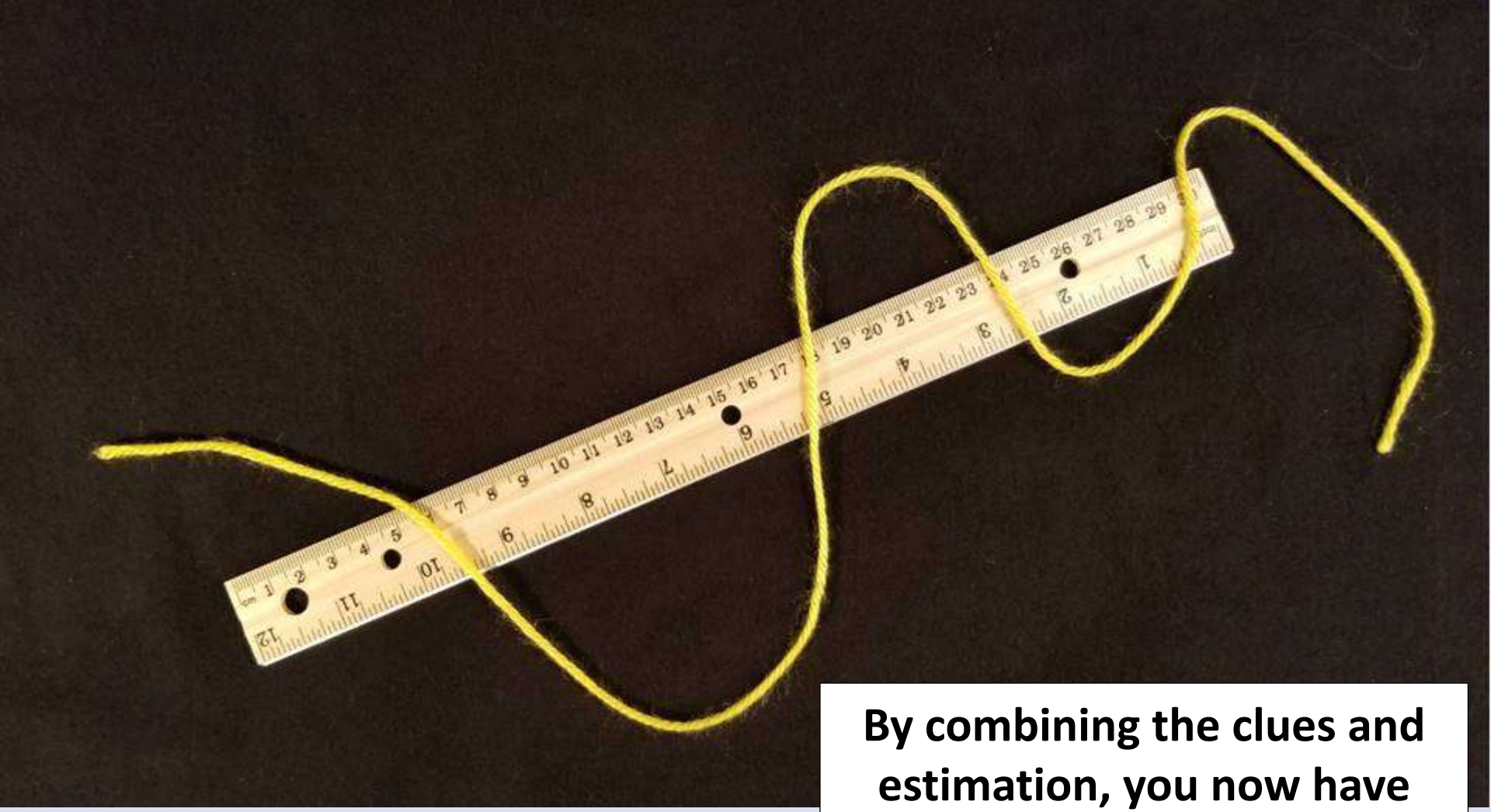
Look carefully at the cm side of the ruler. The yarn is touching a pattern of numbers – except it missed a number in that pattern. The answer is a multiple of the missing number.

Clue #3

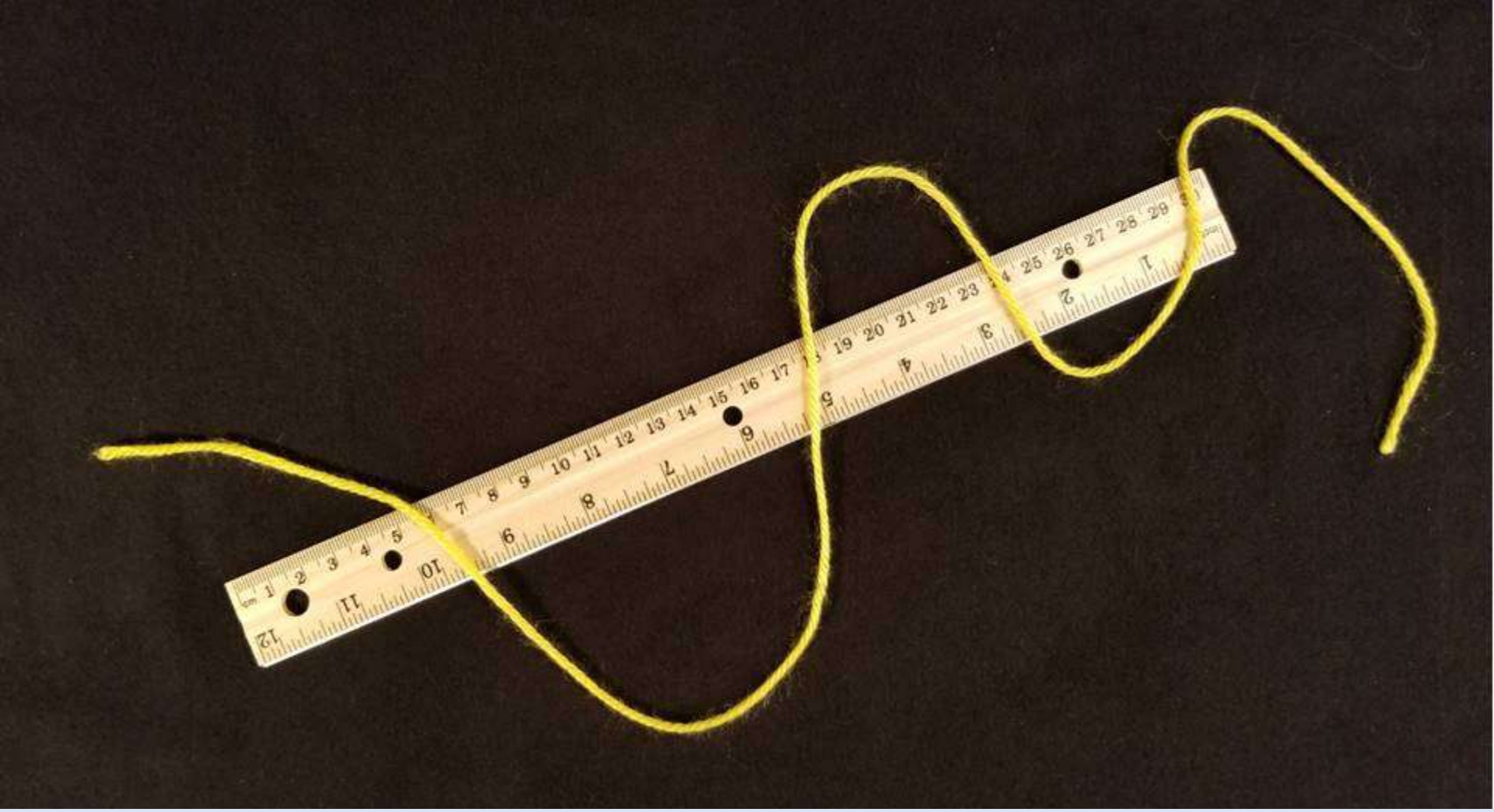
The answer is not a multiple of 10.

Clue #4

The answer does not include the digit 4.



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 64

125 + 125
124 + 126
126 + 127
124 + 128

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

Doubles/Near-Doubles

The following number talks use doubles with two-and three digit numbers..

Example: *124 + 128 can be easier to solve by adding near doubles.*
Student might add hundreds place value 100 + 100 = ***200*** *then, tens place doubles 24 + 24 =* ***48****. Student should remember the* ***4*** *in the ones place remaining which can be decomposed to (2) and (2). Next add the value of the tens and ones place for the sum* ***200 + 48 +2 + 2 = 252****.*

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

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

NUMBER TALK

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125 + 125

Day 64

124 + 126

126 + 127

NUMBER TALK

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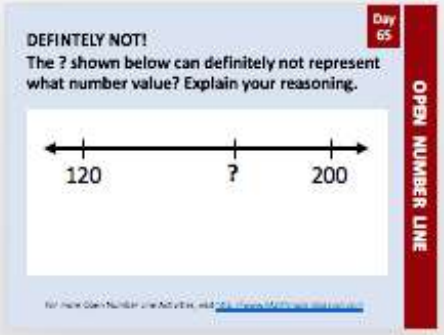
Use the NEXT SLIDE with students.

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

Day 65

OPEN NUMBER LINE



Hopefully students will state these "obvious" truths about the unknown value.

- The ? is definitely not greater than 200
- The ? is definitely not less than 120
- The ? is definitely 160 because that is the midpoint value (120 + 40 or 200 – 40)
- The ? is definitely not less than 160 because it is to the right of the midpoint so it must be greater than the midpoint

The object of today's activity is NOT to determine the exact value of the ? – we are working to build our Number Line Number Sense.

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

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Day 65

DEFINTELY NOT!

The ? shown below can *definitely not* represent what number value? 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"

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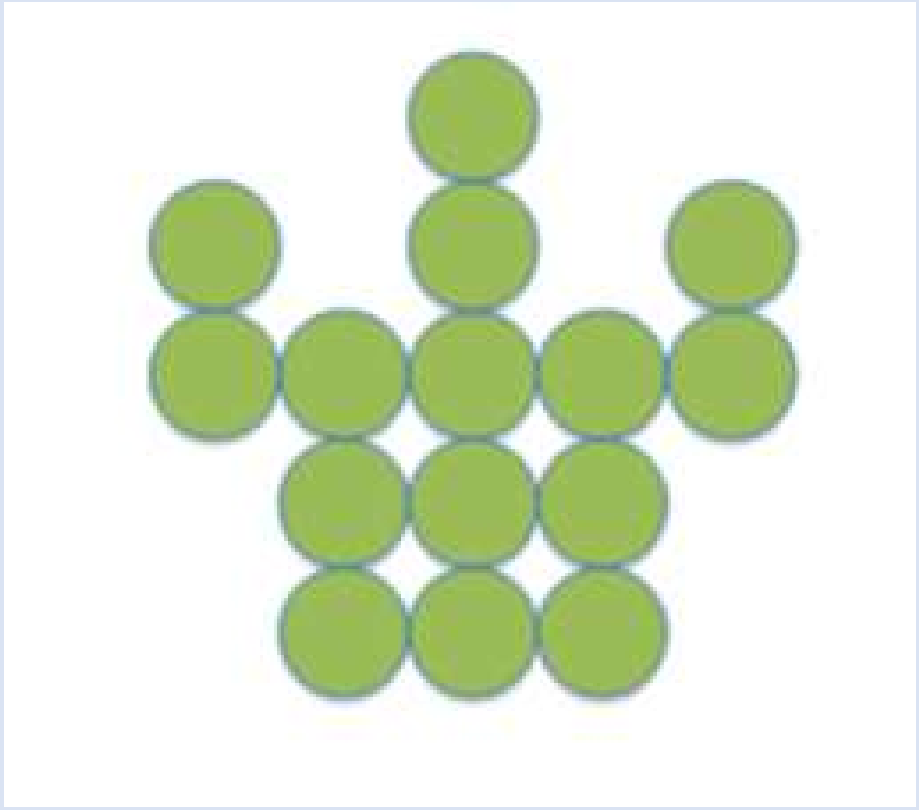
Day 66

QUICK COUNT



What do you NOTICE?

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Day 66

QUICK COUNT

What did you NOTICE?

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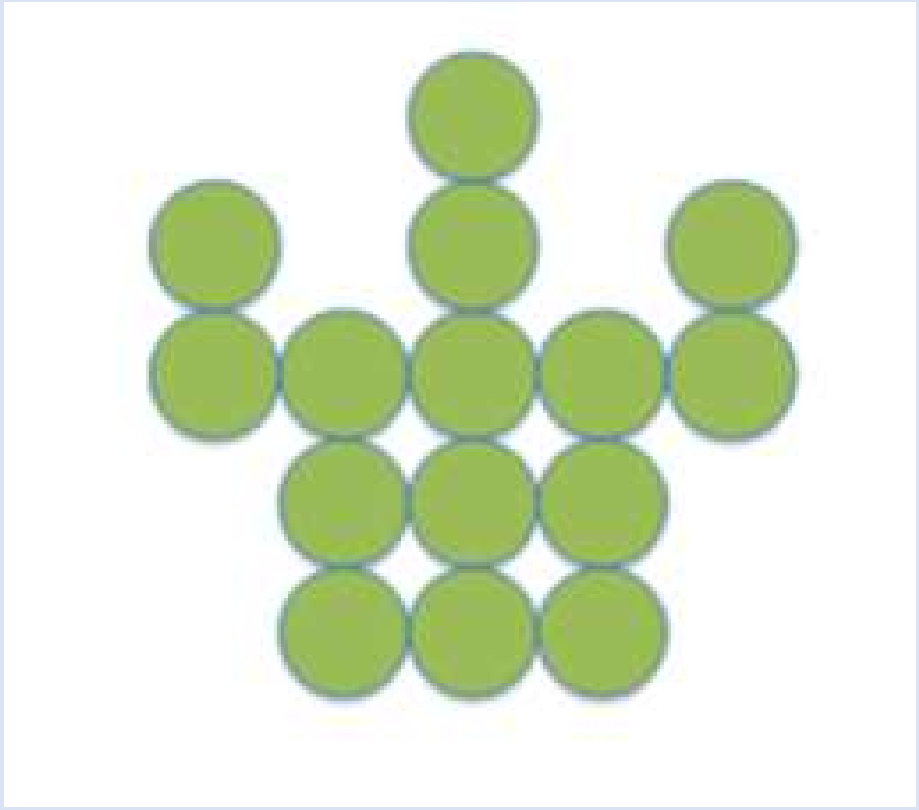
Day 66

QUICK COUNT



How many do you see?

What counting shortcut did you use?

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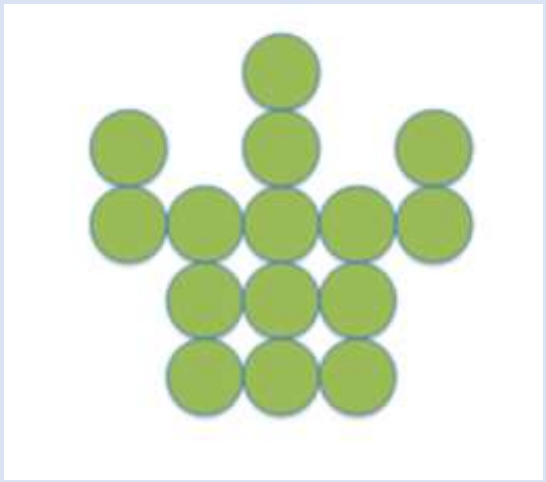
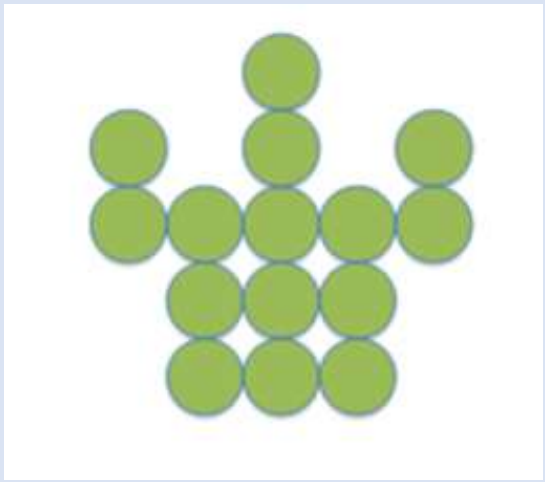
I noticed ____ so I _____

(They) noticed ____ so they___

Day 66

QUICK COUNT





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Day 66

Reflect

What was mathematically important?

QUICK COUNT

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Intro

SAME BUT DIFFERENT

About the SAME BUT DIFFERENT Routine

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

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

Source: www.samebutdifferent.net.com/about

Facilitating the SAME BUT DIFFERENT Routine

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

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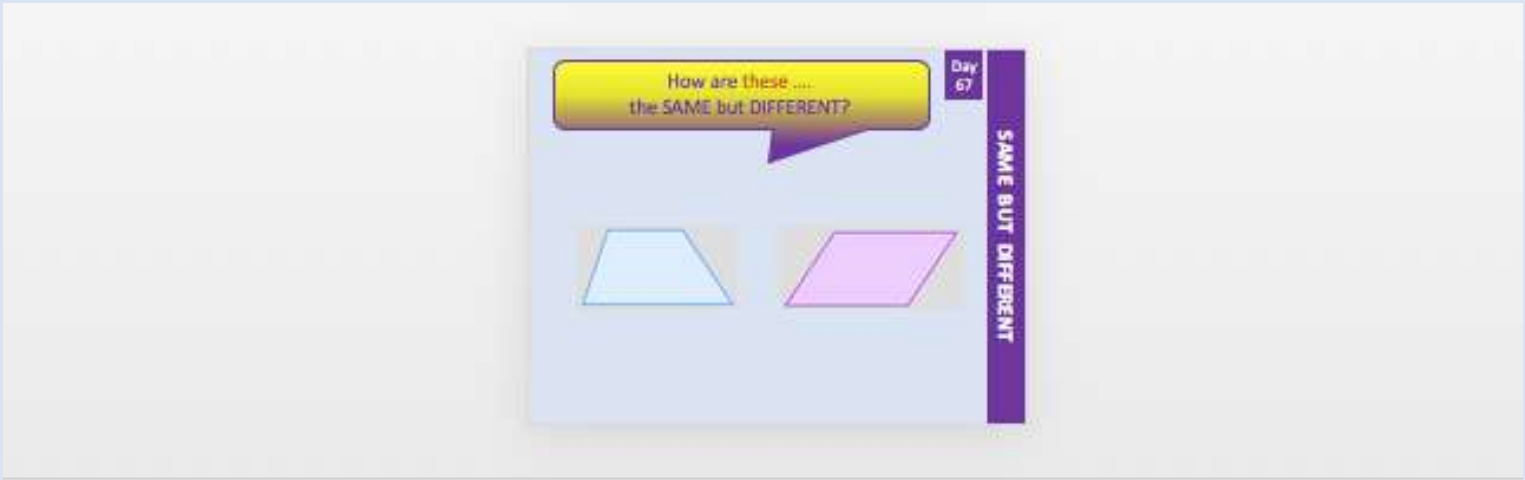
Use the NEXT SLIDE with students.

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

Day 67

- 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 polygons (closed shapes created with straight edges)
- Both are quadrilaterals (shapes with exactly 4 sides)
- Both can actually be categorized as a TRAPEZOID (using the inclusive definition used by MSDE on the MCAP and the general mathematics community) since they both have at least on pair of parallel sides.
- Only the PURPLE figure can also be referred to as a parallelogram (opposite sides are parallel)
- Only the PURPLE figure has opposite sides that are the same length.
- Both figures have two acute (less than 90 degrees) and two obtuse (greater than 90 degrees) angles.

SAME BUT DIFFERENT

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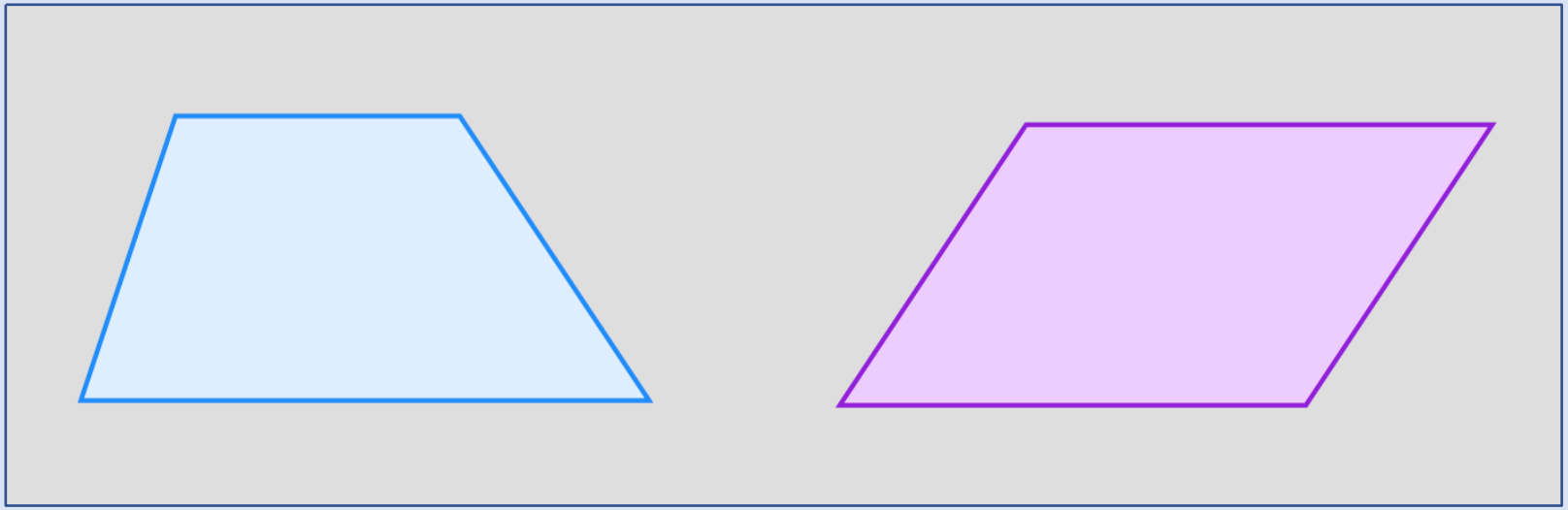
How are these the SAME but DIFFERENT?

Day 67



SAME BUT DIFFERENT

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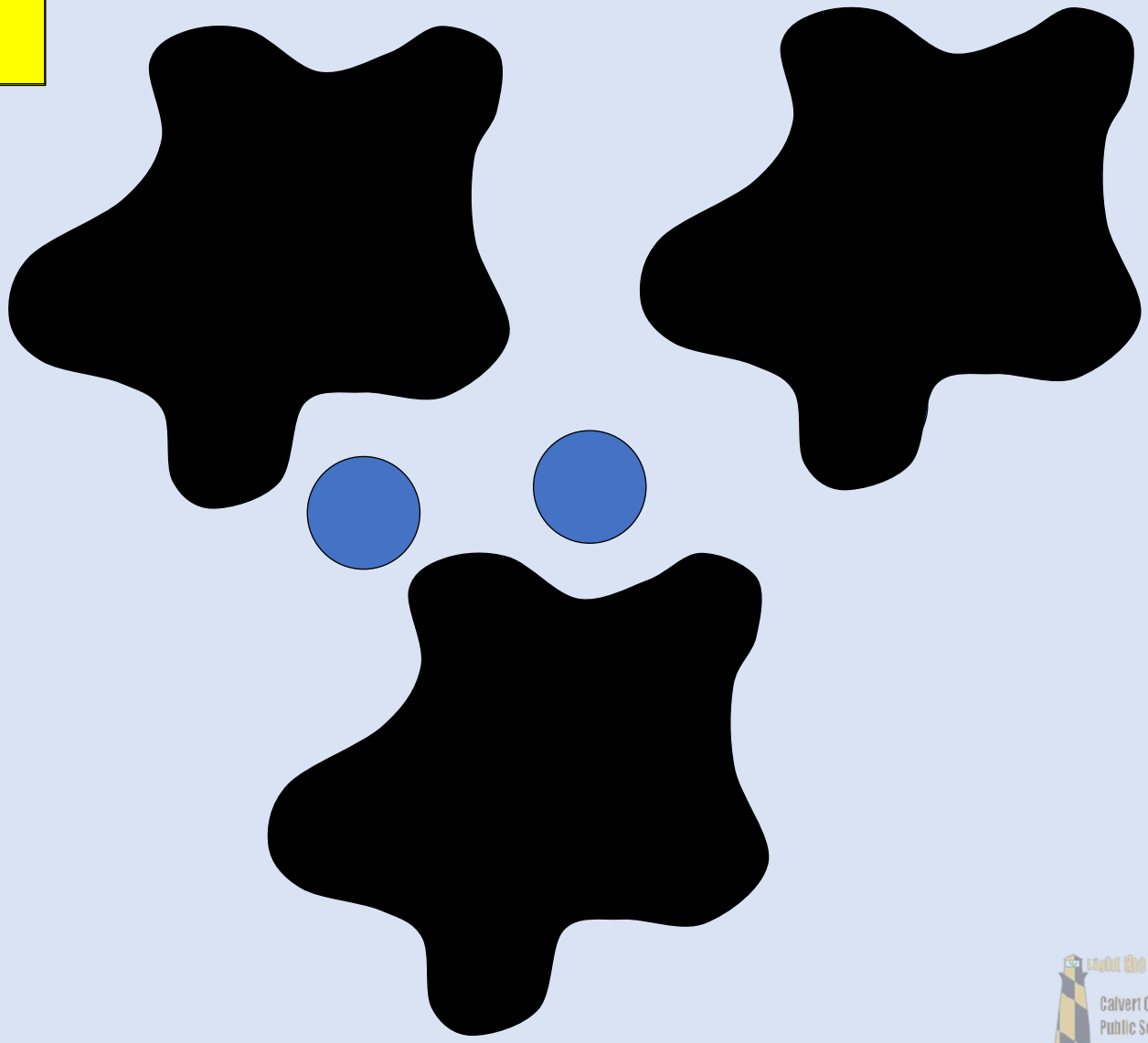
What can we learn from this picture?

14

Day 68



SPLAT!

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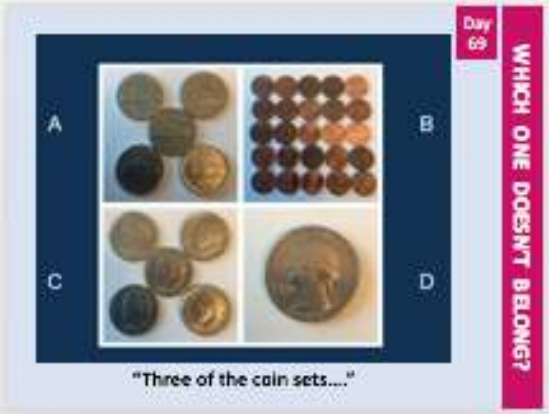
Use the NEXT SLIDE with students.

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

Day 69

WHICH ONE DOESN'T BELONG?



Possible Responses:

- 3 of the coin sets have the coins face up. A is the only one that has the coins facing TAILS UP
- 3 of the coin sets are silver colored coins. B is the only one that uses coins that are NOT SILVER
- 3 of the coin sets add up to 25 cents. C is the only one that does NOT add up to 25 cents
- 3 of the coin sets use multiple coins to represent the total. D is the only one that does not use multiple coins

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Day 69

WHICH ONE DOESN'T BELONG?

"Three of the coin sets…."

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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 70

CHORAL COUNTING

20	220	420
40	240	440
60	260	460
80	280	480
100	300	500
120	320	520
140	340	540
160	360	560
180	380	580
200	400	600

Possible Patterns to Notice:

- The number to the right is 200 more than the row to the left (discuss WHY – b/c we counted by 20s and recorded 10 numbers in each row and 20x10=200)
- The ones place is always a zero, because we are adding two groups of tens and zero ones, so the ones remain the same
- The hundreds place increases by 1 hundred after every 5th number (if you include 0 at the beginning of the series)
- There is a pattern of 20, 40, 60, 80, 00 when looking at the tens/ones places

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Count by 20s

Day 70

Today we are skip-counting by 20.
As we count, think about how this is similar to counting by 2s.
I will chart the numbers as we count together, so let's count slowly.
Watch the numbers I am writing to see if there are any PATTERNS developing.

20	_____	_____
40	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	
_____	_____	
_____	_____	
_____	_____	

CHORAL COUNTING

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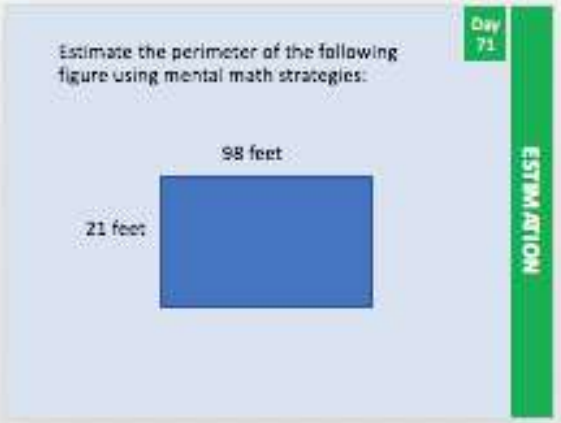
Use the NEXT SLIDE with students.

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

Day 71

ESTIMATION



Encourage students to share a variety of strategies

- For example, 98 is almost 100 and 21 is close to 20
  - 100 + 100 = 200
  - 20 + 20 = 40
  - so we can think 200 + 40 = 240, so the perimeter is about 240

End the discussion by helping students to recognize that precise solutions are not always necessary. For example, if I was buying fencing for this "garden" and the fence was sold in 200-foot sections or 300-foot sections, then I could estimate to determine that the 200-foot section is not enough, but the 300-foot section is enough.

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Day 71

ESTIMATION

Estimate the perimeter of the following figure using mental math strategies:

98 feet

21 feet

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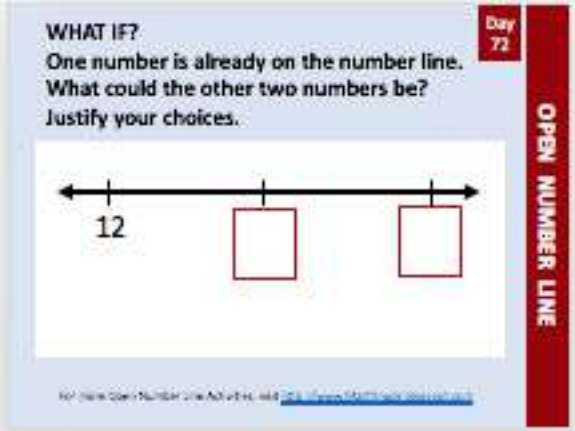
Use the NEXT SLIDE with students.

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

Day 72

OPEN NUMBER LINE



If the first number is 12, the next two numbers can literally be ANY value greater than 12 BUT once one of the other numbers is determined, the second unknown number must follow the same interval pattern.

SOME of the possible solutions:
12, 13, 14
12, 14, 16
12, 112, 212
12, 12½ , 13

At the conclusion, help students to make the generalizations that were noted above.

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

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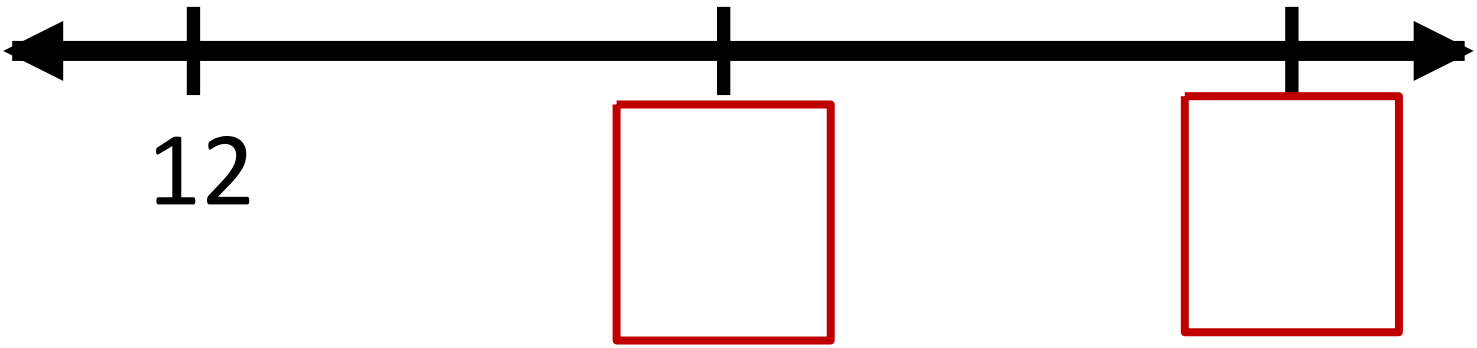
Day
72

WHAT IF?

One number is already on the number line.
What could the other two numbers be?
How do you know?



OPEN NUMBER LINE

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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 73

DECIDE & DEFEND

The goal of this task is to find EFFICIENT ways to find the sum of the coins.
Be sure to have students explain their reasoning.
Highlight strategies that were more efficient (i.e. combined a nickel with a quarter to make 30 cents, etc.)
Also, help students to recognize that it is often more efficient to begin with coins of largest value when adding.

NOTE: Students MAY choose the stack with the LESSER amount provided they identify that they are selecting the lesser amount and state WHY they are making that choice (i.e. does not like to carry a lot of coins around)

Stack A = 94 cents
Stack B = 92 cents

Calvert County Public Schools

Use Numbered Heads

READ to Understand

Decide

Draft

Defend

Reflect

Day 73

Would you rather have the coins in group A or the coins in group B?

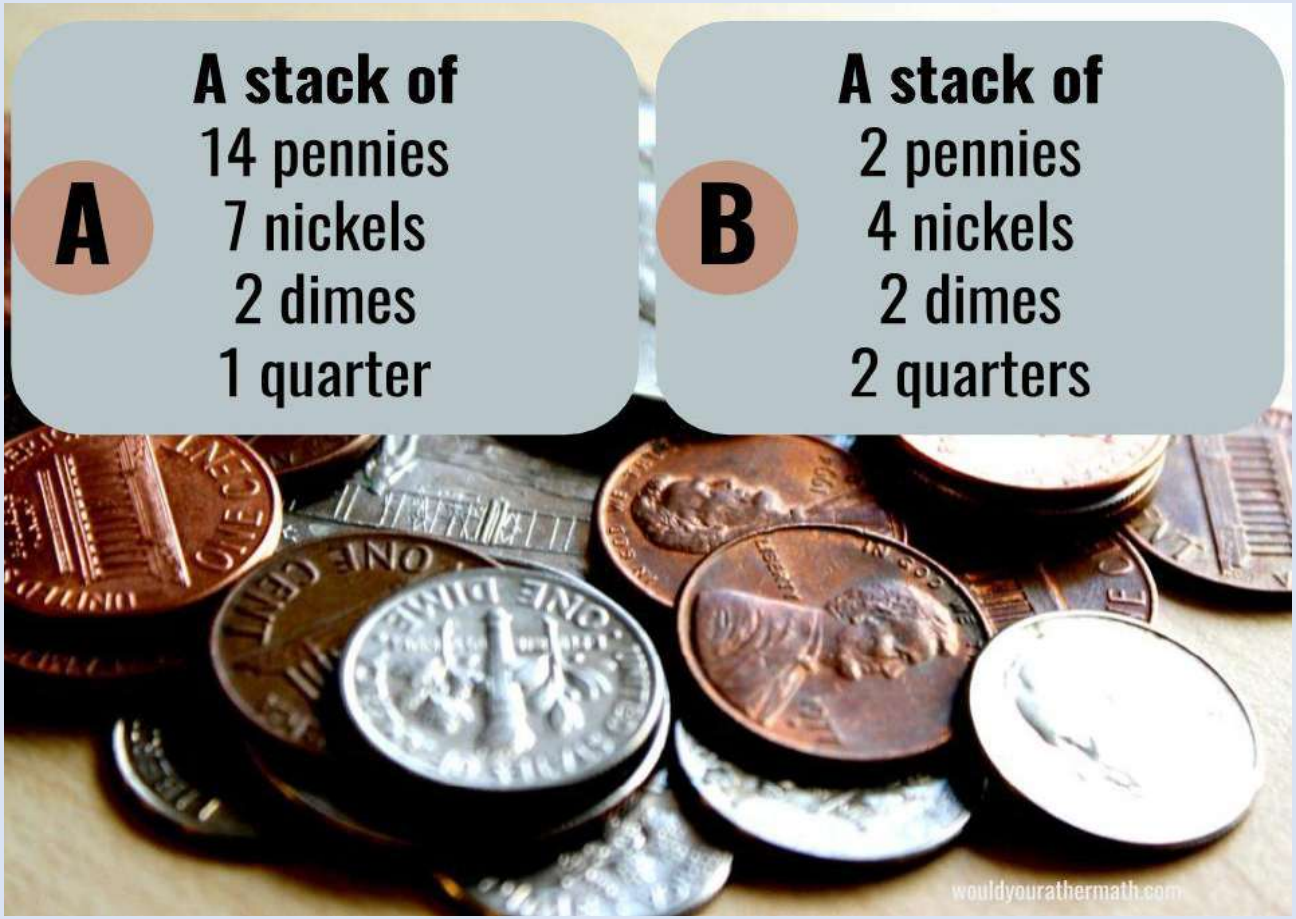


Image Source: wouldyourathermath.com

DECIDE & DEFEND

Calvert County Public Schools

Day 73

Reflect on Learning

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

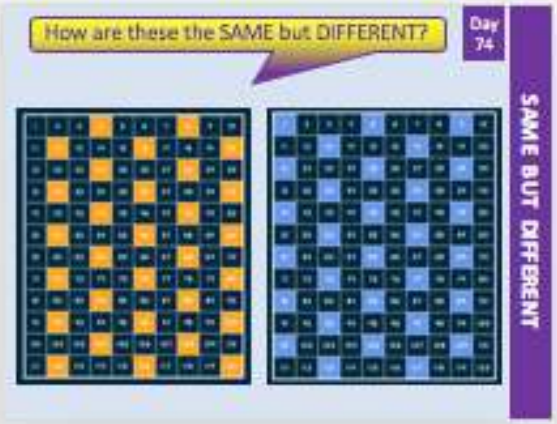
DECIDE & DEFEND

Calvert County Public Schools

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 skip-count by 4 but the orange chart begins on 4 and the blue chart begins on 1.
- Both have a color then three dark numbers then a color then three dark numbers but the orange chart has EVEN numbers shaded and the blue chart has ODD numbers shaded
- Both have entire columns that have no colored boxes but they are different columns
- Both have a pattern of 2/3/2/3/2/3 colored boxes on each row BUT it is a reversed pattern on the blue chart 3/2/3/2/3

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How are these the SAME but DIFFERENT?

Day 74

SAME BUT DIFFERENT

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

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

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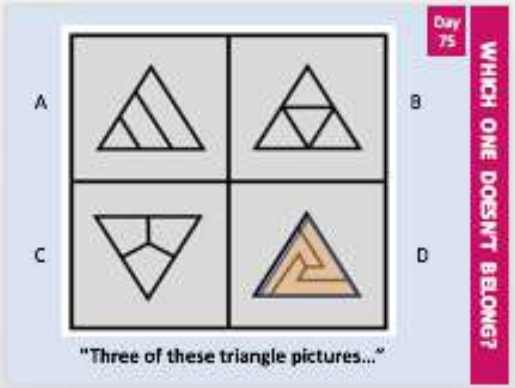
Use the NEXT SLIDE with students.

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

Day 75

WHICH ONE DOESN'T BELONG?



Below are SOME of the possible responses (yes, there are other possible responses)

- Three of these triangle pictures are partitioned into equal sized parts. Figure A does not have equal sized parts.
- Three of these triangle pictures are partitioned into 3 parts. Figure B is partitioned into 4 parts.
- Three of these triangle pictures are oriented so a flat side in at the bottom. Figure C has one of its vertices at the bottom (by the way, there is NO SUCH THING as an upside-down triangle!)
- Three of these triangle pictures are not shaded (or shaded gray). Figure D is shaded orange (or whatever color is seems to be on your screen).

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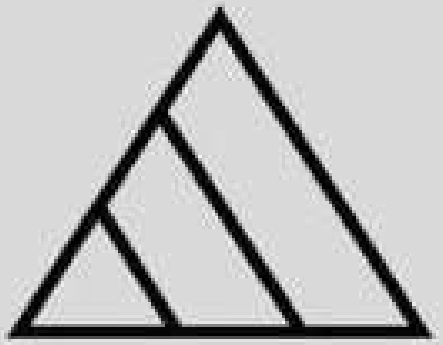
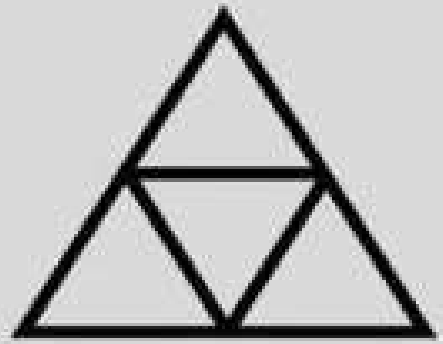
Day 75

WHICH ONE DOESN'T BELONG?

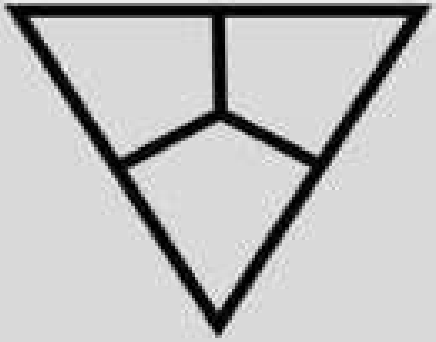
A



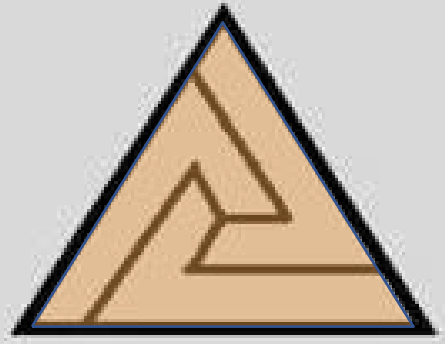
B



C



D



"Three of these triangle pictures…"

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Day 76

18 + 31
23 + 14
37 + 12
32 + 25

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

Breaking Each Number into its place value

The following number talks consist of two- and three digit numbers, some of which require regrouping.

Example: *32 + 25 can be easier to solve by using place value addition. Student should add tens place value 30 + 20 = 50 then, ones place value 2 + 5 = 7. Next add the value of the tens and ones place for the sum 50 + 7 = 57.*

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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18 + 31

Day 76

NUMBER TALK

23 + 14

37 + 12

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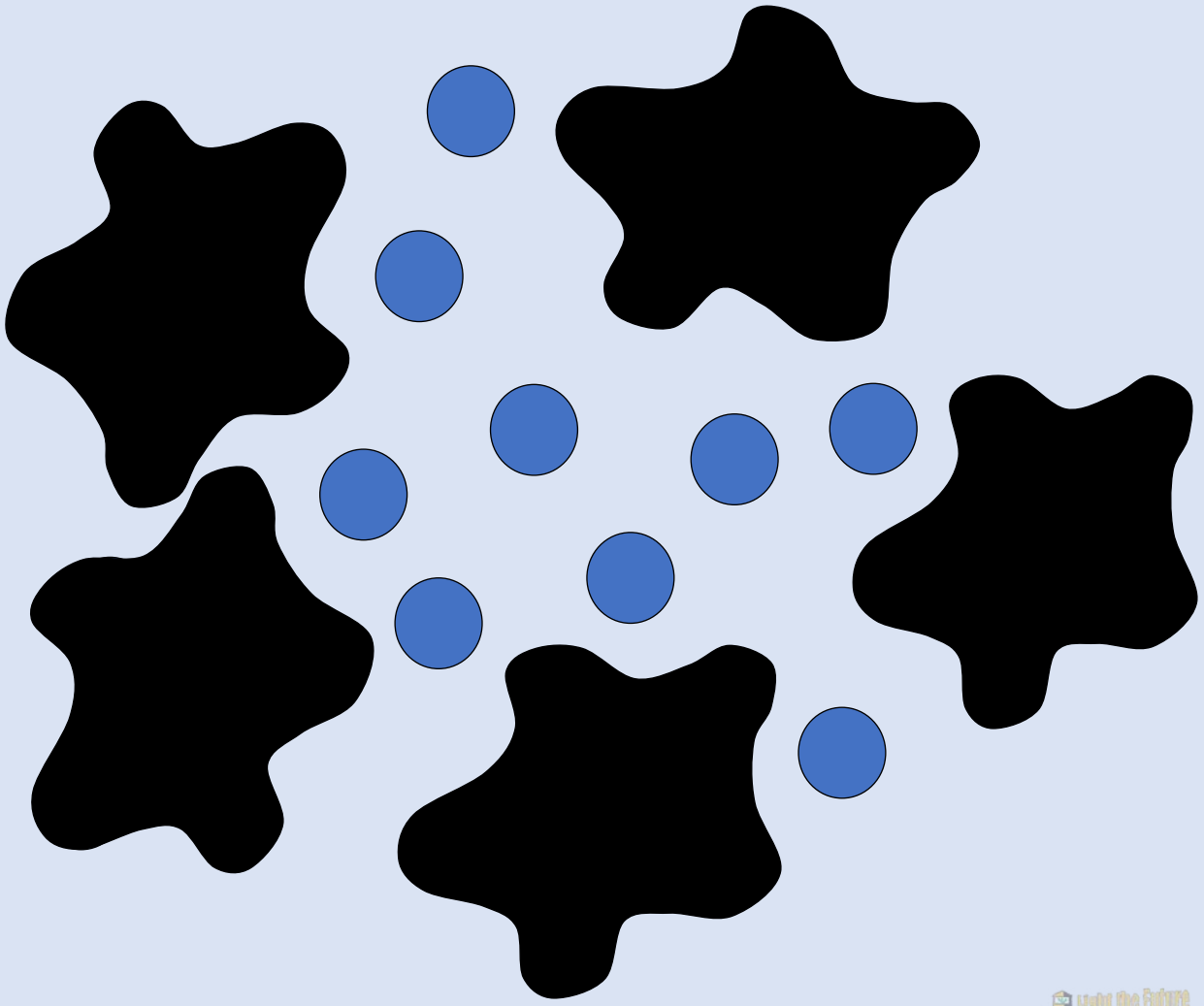
What can we learn from this picture?

24

Day 77



SPLAT!

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www.stevewyborney.com

Day 78

QUICK COUNT

What do you NOTICE?

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Day 78

QUICK COUNT

What did you NOTICE?

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Day 78

QUICK COUNT

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

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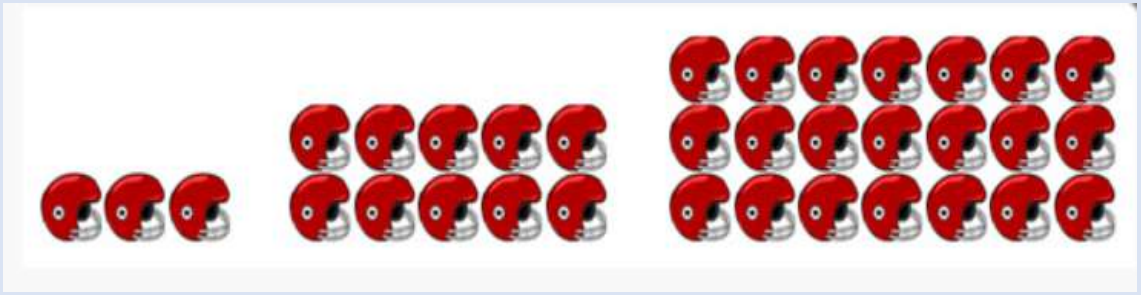
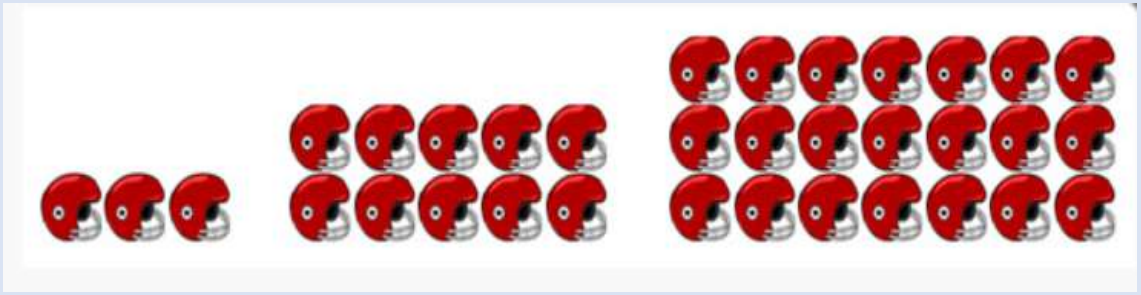
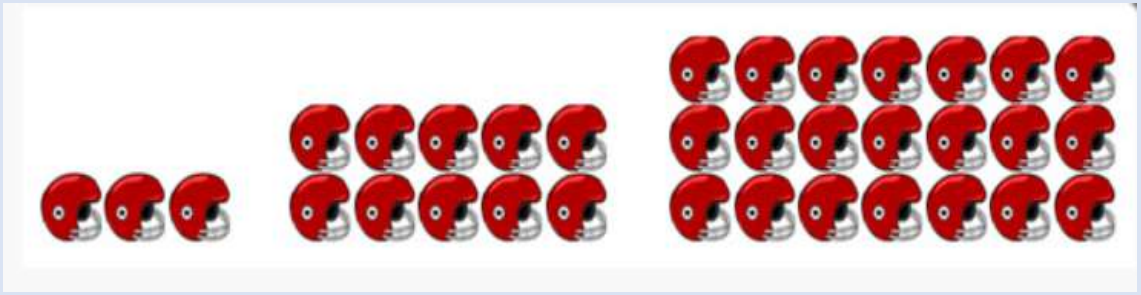
I noticed ____ so I _____

(They) noticed ____ so they___

Day 78







QUICK COUNT

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Day 78

Reflect

What was mathematically important?

QUICK COUNT

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27 + 36
58 + 65
74 + 47

Day 79

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

Breaking Each Number into its place value

The following number talks consist of two- and three digit numbers, some of which require regrouping.

Example: *74 + 47 can be easier to solve by using place value addition. Student should add tens place value 70 + 40 = 110 then, ones place value 4 + 7 = 11. Next add the value of the hundreds and tens place for the sum 110 + 11 = 121.*

******Number Talks Pg. 198; Module 4***

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.

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Day 79

27 + 36

NUMBER TALK

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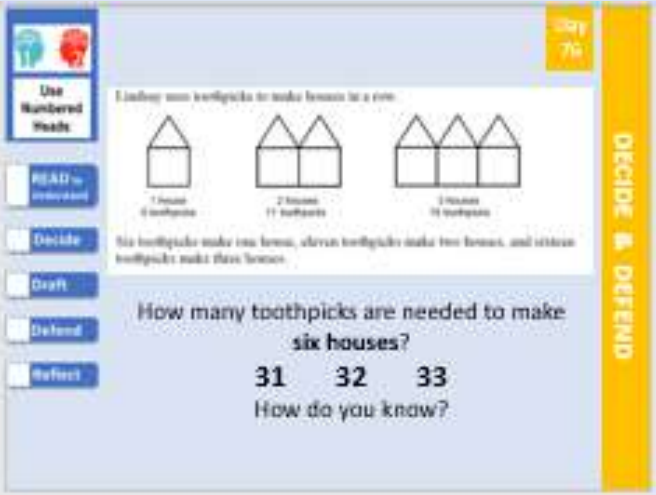
Day 80

Use the NEXT SLIDE with students.

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



31 toothpicks are needed. There are several strategies possible to determine this.
Students may mistakenly double the amount needed for 3 houses.
This does not take into account that houses SHARE toothpicks.
Each house needs a floor and a 3 pieces to make the roof.
THEN the row of houses requires just 1 vertical wall more than the number of houses.
6 houses = 6 floors, 18 roof pieces, 7 walls = 31 toothpicks total

DECIDE & DEFEND

Calvert County Public Schools

Use Numbered Heads

READ to Understand

Decide

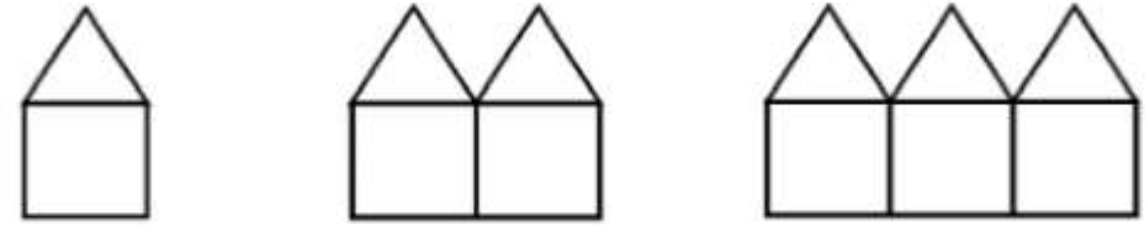
Draft

Defend

Reflect

Day 80

Lindsay uses toothpicks to make houses in a row.



1 house
6 toothpicks

2 houses
11 toothpicks

3 houses
16 toothpicks

Six toothpicks make one house, eleven toothpicks make two houses, and sixteen toothpicks make three houses.

How many toothpicks are needed to make **six houses**?

31 **32** **33**

How do you know?

DECIDE & DEFEND

Calvert County Public Schools

Day 80

Reflect on Learning

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

DECIDE & DEFEND

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