180 Days of
Number Sense Routines
Grade 5
Days 61-80

180 Days of
Number Sense Routines

WHY IS DEVELOPING NUMBER SENSE IMPORTANT? Number Sense is the foundational building block for all strands of mathematics. Students who struggle in mathematics do not lack mathematical ability, but rather, they simply do not have a strong number sense on which to build their knowledge. Just as we are not born knowing how to read, we are not born with Number Sense. It must be developed and nurtured over time through a progression of understandings about numbers and their relationships to one another. With time and focused practice, students come to understand that numbers are meaningful, and outcomes are sensible and expected. Number Sense development encourages students to think flexibly and promotes confidence with numbers.

WHAT IS A NUMBER SENSE ROUTINE? A routine is an activity or event that occurs on a regular basis over time. Routines provide a framework for our day to support both the teacher and students. Routines help to build community and create a safe learning environment for students. Routines build a sense of belonging, ownership, and predictability which make the classroom a place to take risks. We learn through risk-taking; we take risks when we feel safe; we feel safe in a supportive learning environment; we create supportive learning environments through routines. Just as we have established routines for bus dismissal and fire drills, we must also establish routines that build mathematical thinking and discourse.

180 Days of
Number Sense Routines

HOW WILL THESE NUMBER SENSE ROUTINES BENEFIT ME AND MY STUDENTS? What teachers do and how they do it is critically important and has a profound impact on the quality of the educational experience of our students. Effective pedagogy, the art and science of teaching, is a key element in the learning process. The Number Sense are models of effective pedagogy and ensure that the critical Number Sense instruction we provide is equitable to all our students regardless of geography, teacher experience, or student circumstance. As we prepare our students to be mathematically proficient in their lives beyond the classroom walls, these Number Sense routines will help to lay the critical foundation for all future mathematical endeavors.

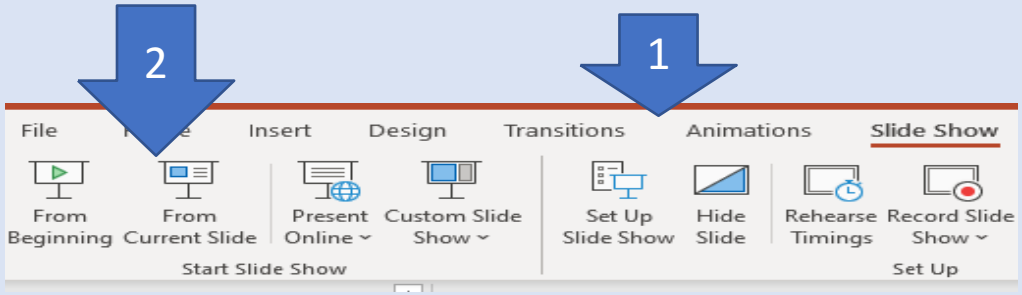
WHAT ARE THE CCPS IMPLEMENTATION EXPECTATIONS? Number sense routines have been developed for all 180 instructional days in grades 1-5. These routines are to be used every day, including early dismissal, late arrival, and field trip days. Because the routines do not require a specific order, it is permissible to trade routines among days within the week to best match the time available. Number Sense must be built over time. With consistency, we can build students' number sense creating a strong mathematical foundation. If students or the teacher is struggling with a routine, it is expected that the teacher collaborate with colleagues to build capacity in that routine – do not just choose to skip the routine. If additional help is needed, the teacher should seek the assistance of their content specialist or mathematics supervisor.

180 Days of
Number Sense Routines

HOW TO RUN POWERPOINT IN SLIDE SHOW MODE:

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

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



HOW TO ANNOTATE STUDENT THINKING ON THE SLIDE:

- With the slide in Slide Show mode, right click on the slide
- Select <Pointer Options> then choose <Pen>

180 Days of
Number Sense Routines

Acknowledgements

We are grateful to those who have inspired this project – and there have been many. These slide decks were designed for Grades 1–5 with custom-built daily routines for each grade level. The nine routines blend original creations, adaptations, and OER materials. We have made our work available in Open Educational Resources so that others may benefit as we have from the collaboration of other educators. Our deepest gratitude and respect to all those who helped move our work forward, and a special thank you goes to the following whose own work had such a tremendous impact on our 180 Days of Number Sense Routines:

- *Decide & Defend* and *Quick Count* routines were adapted from templates created by Grace Kelemanik and Amy Lucenta at http://FosteringMathPractices.com
- *Estimation Clipboard, Esti-Mysteries,* and *Splat!* templates created by www.SteveWyborney.com
- *Same But Different* discussion from Developing Grayscale Thinking by Looney Math Consulting at https://www.samebutdifferentmath.com
- *Which One Doesn't Belong* tasks adapted from http://wodb.ca by Mary Bourassa
- *As Close As It Gets* https://www.mathisfigureoutable.com/ascloseasitgets by Pam Harris

Day 61

Looking for Patterns: Skip Counting by 11's

PART 1: Count by 11s – this should be easy up to 99 then it may get difficult

- **SAY: "**We are going begin with the task of skip-counting by 11's. We'll begin with the number 11. As you count, I will circle the numbers on the chart (next page). Watch for patterns that occur as we count. Let's begin."
- **COUNT:** CHORAL COUNT. Circle numbers as students count them.
- **CHART:** Use a 120 chart (next page) to chart the counting pattern. As students choral count the numbers (slowly), circle the numbers.
- **DISCUSS:** The most important part of this routine is the discussion of the patterns. Students should notice a diagonal of circled numbers. Be sure to discuss WHY the pattern is a diagonal (if we add 10 more, it is directly under the previous number, so 11 more would be down one and to the right one creating a diagonal)

PART 2: Count by 11s beginning on 4. The pattern of circled numbers will be the same

- **SAY**: "Let's count again. We will count by 11s again, but this time let's start with the number 4. What number is 11 more than 4? (15) So we will count 4, 15, etc… It may seem a little trickier than our first counting routine, but I will chart the numbers once again. Watch for how the pattern of circled numbers is the same and how it is different from the first time we charted the numbers."
- **COUNT & CHART: ERASE the original charted numbers.** Use a 120 chart (next page) to chart the counting pattern. Start at the beginning and have students say their number again. This time, circle the number as students say them.
- **DISCUSS the patterns – the visual pattern will be obvious, but be sure to discuss the mathematical patterns, as well.**

CHORAL COUNTING

Looking for Patterns

Skip Counting by 11's

Day 61

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

CHORAL COUNTING

5.OA.B.3

Day 62

Using the DECIDE & DEFEND routine

- **READ to Understand:** Begin by having students discuss the question being asked. At this time, do NOT focus on the math calculations required or the answer. This step is designed for students to understand the context of the question (What is the gist of the question?)

- **DECIDE**: Pair or group students. Using a consistent pairing will make this routine more fluid so you do not have to take time to pair students every time you want them to discuss. Have students discuss the question and discuss the question and decide which solution is correct (note: partners may not agree and that is fine provided they can justify their own thinking).

- **DRAFT**: Students draft a statement about their ideas (either as a group or individually and it can be written or oral – teacher's choice)

- **DEFEND**: Students share their ideas and defend their reasoning with the whole group. Encourage active listening and accountable talk.

- **RELECT**: To further develop comprehension, have students use ONE of the sentence starters on the "Reflect on Learning" slide after they have discussed and listened to new ideas with classmates.

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

DECIDE & DEFEND

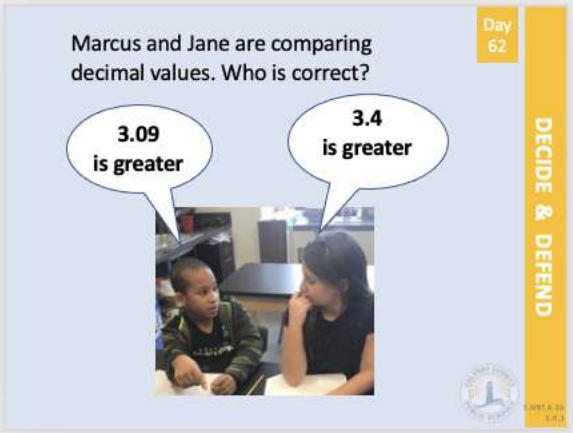
Use the NEXT SLIDE with students.

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

Day 62

DECIDE & DEFEND

IMPORTANT! Give students TIME & SPACE to discuss the ideas they want to defend with a partner before beginning a whole-class discussion. Allow them to grapple with the concepts.



Common error: 9 is greater than 4 without considering the place value

The whole number equal, so we then look to the decimal part of the numbers.
We must consider that the 9 is 9 hundredths and the 4 is 4 tenths.
It is often easier to consider both in the same place value: 3.09 vs. 3.40
We can now see that 40 hundredths is more than 9 hundredths.

Day 62

Marcus and Jane are comparing decimal values. Who is correct?

3.09 is greater

3.4 is greater

DECIDE & DEFEND

5.NBT.A.3b
5.R.3

Day 62

Reflect on Learning

- A new math idea I learned today is….
- Next time I interpret someone else's work, I will…. *(ask myself, pay attention to,…)*
- When you are trying to convince someone of your mathematical ideas, it is important to….

DECIDE & DEFEND

Day 63

Esti-Mystery

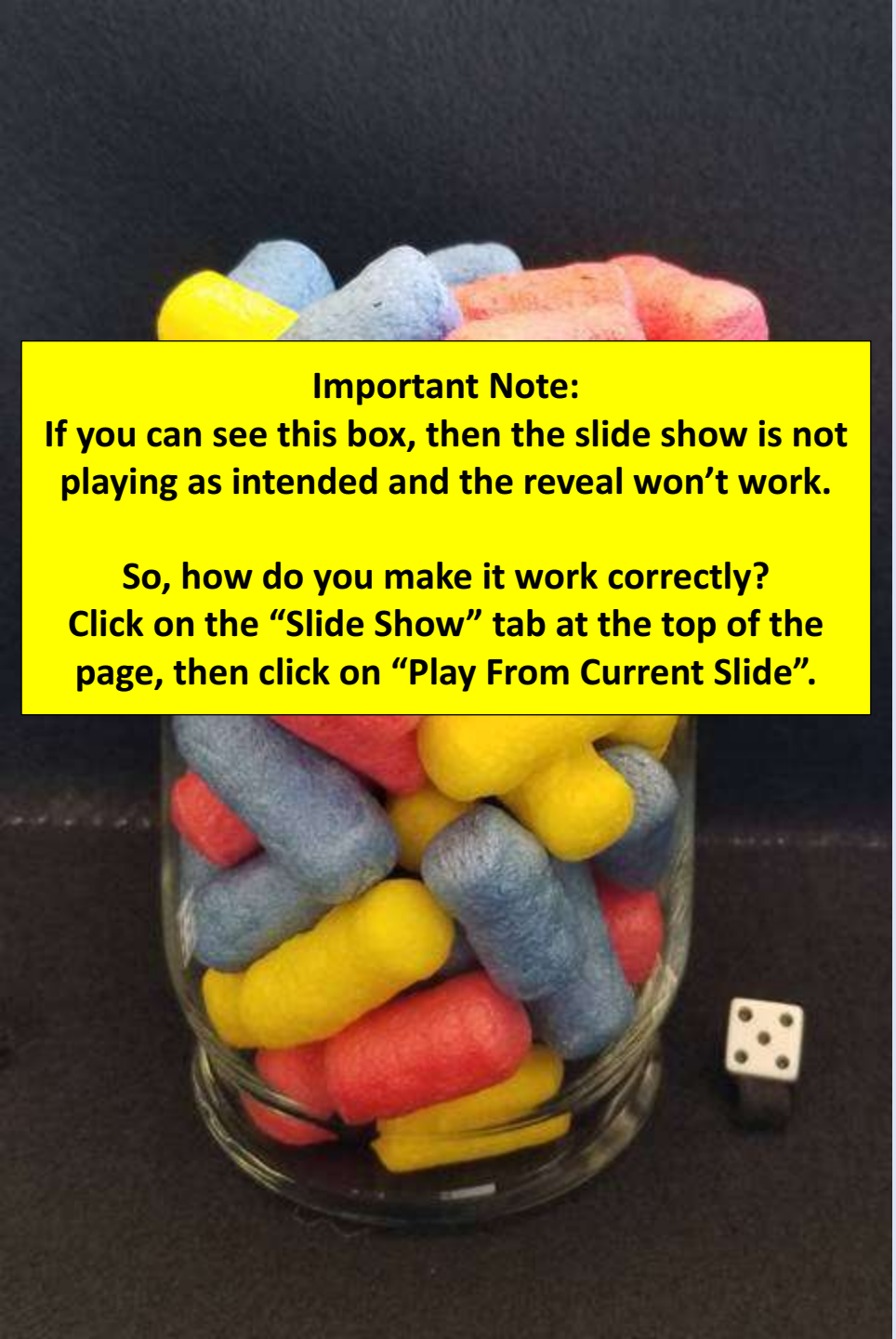
Estimation Activity with clues!

NOTE: Try using an individual or class number chart to help students chart and track the possible solution.

Students use clues to solve the estimation mystery. After all clues are revealed, students will have narrowed down the possible solutions. They will either have a single value remaining or a small list of values from which to choose and justify their final estimate before revealing the actual amount.

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.

ESTIMATION



Important Note:
If you can see this box, then the slide show is not playing as intended and the reveal won't work.

So, how do you make it work correctly?
Click on the "Slide Show" tab at the top of the page, then click on "Play From Current Slide".

How many packing peanuts are in the vase?

As the clues appear, use the information to narrow the possibilities to a smaller set.

After each clue, eliminate numbers that are no longer possible.

If needed, make a new estimate based on the new information after each clue is revealed.

This Esti-Mystery is complex, so have paper and pencil or dry erase materials handy to help you think through each clue.

How many packing peanuts are in the vase?

In this Esti-Mystery, there will be a bonus challenge after the answer has been revealed at the end.

Let's begin with the question, "How many packing peanuts are in the vase?"

Adapted from slides by Steve Wyborney

Clue #1

The answer is between 50 and 70, but it is not a multiple of 7 nor does it include the digit 7.

Clue #2

The answer is not a multiple of 5. Nor does it include the digit 5.

Clue #3

Both digits are even numbers.

Clue #4

The answer is not a square number. It is not two less than a square number either.

Clue #5

The answer is a composite number with 2 different digits.

After seeing the clues, you have narrowed the possibilities to a small set of numbers. Before you see the answer, select your final estimate. Write it down, and explain to someone why you chose that number.

The Reveal
Click to see the answer.

CHALLENGE: How many of each color?
There are 2 more blue objects than yellow objects.
There is 1 more red than blue.

The number of yellow packing peanuts.

The number of blue packing peanuts.

The number of red packing peanuts.

Day 64

1 x 0.5
10 x 0.5
10 x 0.05
10 x 0.005

TEACHER NOTES

BEFORE

This slide has the String of expressions that you will use for today's Number Talk. You can use Smart Ink, right click for PowerPoint Pen, or convert this slide to Smart Notebook so you can easily annotate on the slide. The annotation is an important part of the routine. The expressions should be presented one-at-a-time with skills building on one another. Remember, students will come with a wide variety of strategies. Allow student sharing of these strategies and work toward determining which of the ways were most efficient and brain-friendly.

DURING

Decimal Multiplication

Possible questions to ask:

1) 1x0.5 What do we know about multiplying ANY number by 1?
2) 10x0.5 Will multiplying by 10 increase or decrease the value?
3) Will the Product be larger or smaller than the factors? [The product will be smaller than 10 and greater than 0.5 – be sure to explore WHY this is true and then look to see if it becomes a pattern (it will). Multiplying by a decimal decreases the value; multiplying by a whole number increases the value – this is a very important pattern for students to discover and understand – help them to discover it, don't just tell them this little fact if you want it to be meaningful and to stick!].
4) 10x0.05 What do we know about the PATTERN of multiplying by 10?
5) 10x0.005 How is this multiplication expression just like the two expressions above it?

The Talk is designed to help students build on what they know about number patterns and skip counting/multiplication and to purposefully look for opportunities to use that information in related contexts. Remember, students will come with a wide variety of strategies. Allow student sharing of these strategies and work toward determining which of the ways were most efficient and brain-friendly.

AFTER

After doing the Number Talk String, be sure to highlight this strategy and encourage students to "look for" places they can use it throughout the day.

NUMBER TALK

Day 64

1 x 0.5

NUMBER TALK

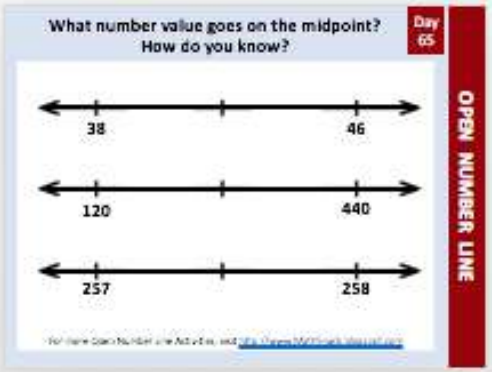
5.NBT.A.1

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

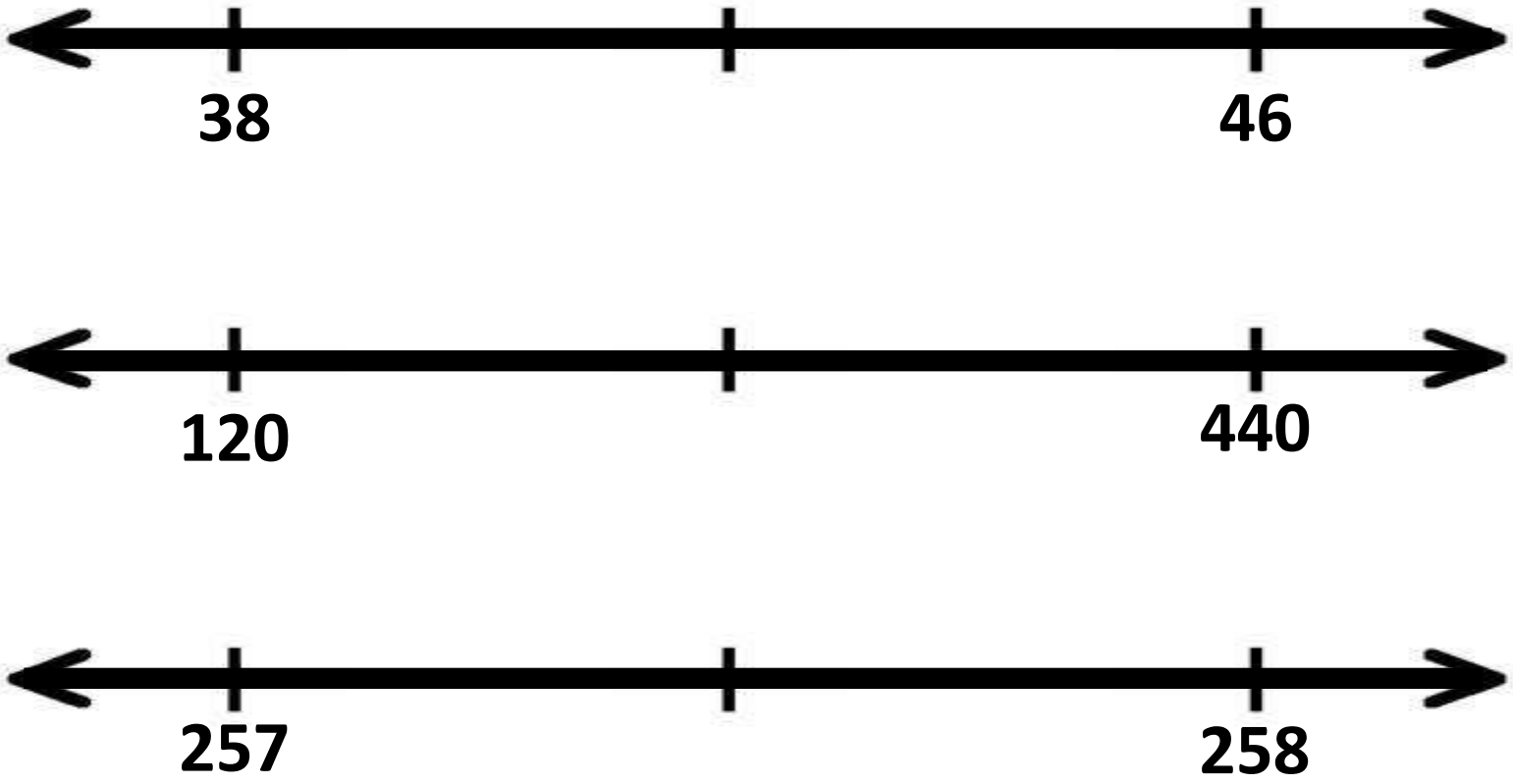


Recommendation: Use the SCREEN SHADE to only show ONE number line at a time so students can focus on each one.

- 38 – 42 – 46 (One approach: The difference from 38 to 46 is 8. Half of 8 is 4. 38 + 4 is 42)
- 120 – 280 – 440 (440 – 120 = 320 320 ÷ 2 = 160 120 + 160 = 280)
- 257 – 257.5 or 257½ – 258

What number value goes on the midpoint? How do you know?

Day 65



OPEN NUMBER LINE

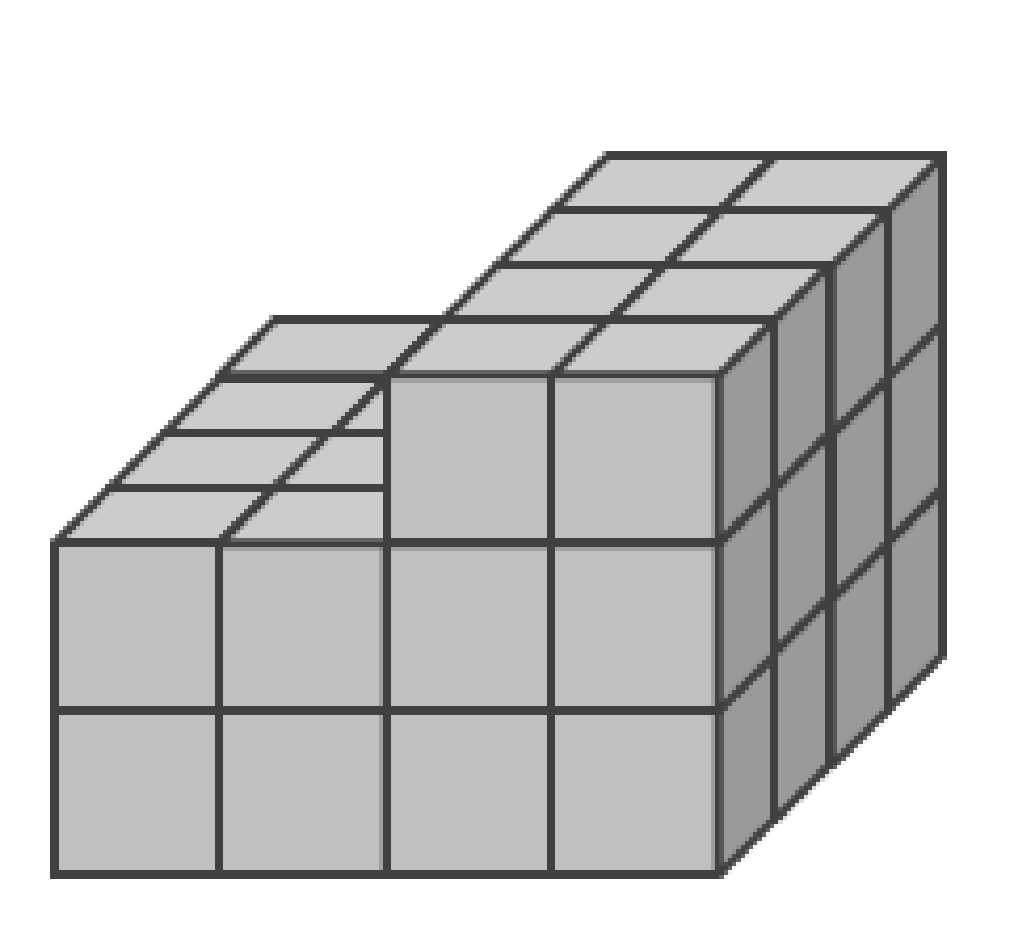
Directions for QUICK COUNT routines

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 different student-generated shortcut strategies.
10. End by asking students to explain what was "mathematically important"

Day 66

What do you NOTICE?



QUICK COUNT

5.MD.C.4

Day 66

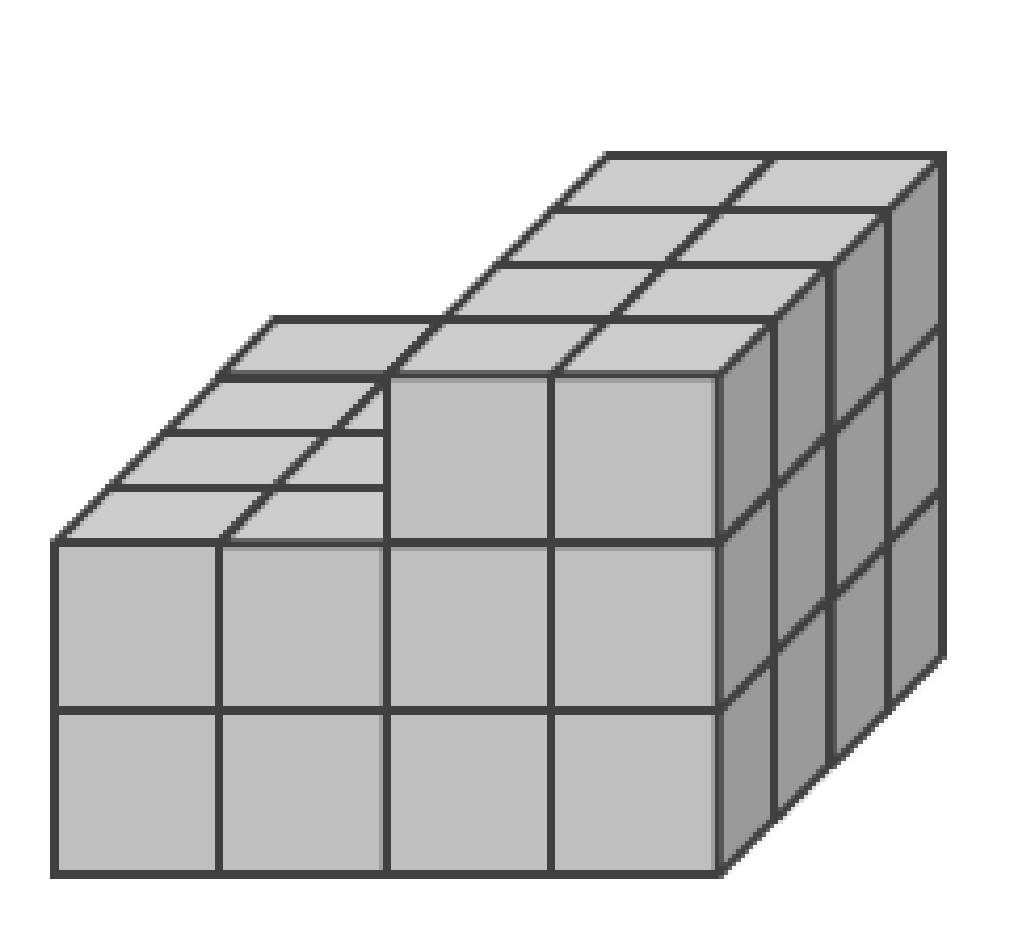
QUICK COUNT

What did you NOTICE?

Day 66

How many do you see?

What counting shortcut did you use?



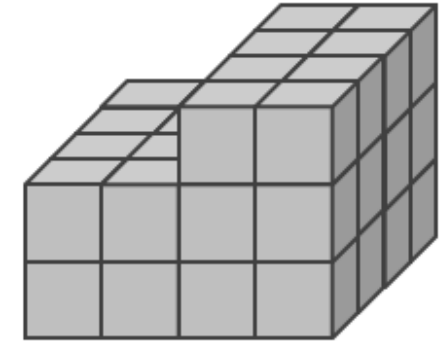
QUICK COUNT

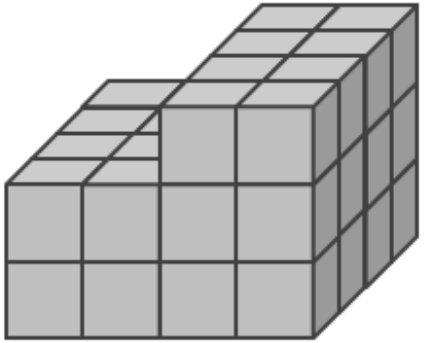
I noticed ____ so I _____

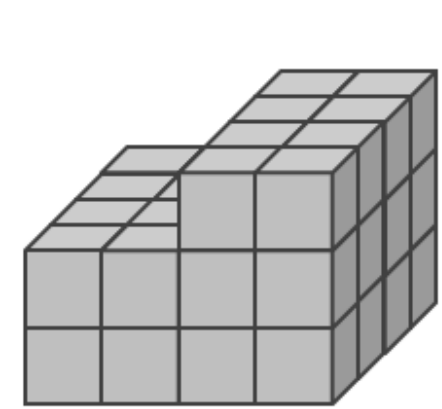
(They) noticed ____ so they___

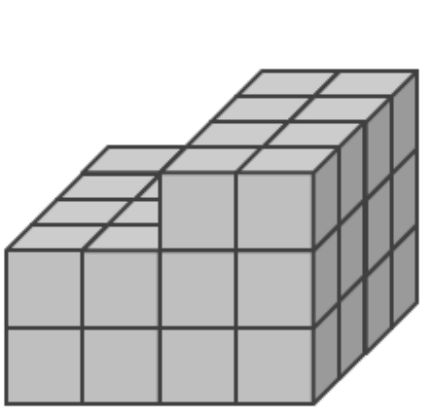
Day 66

QUICK COUNT









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Day 66

Reflect

What was mathematically important?

QUICK COUNT

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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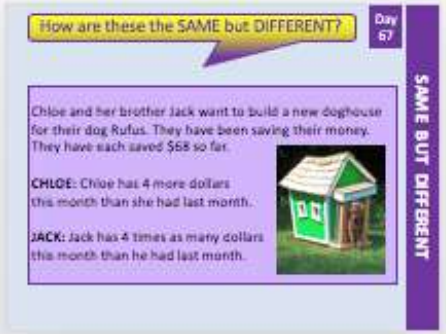
Use the NEXT SLIDE with students.

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

Day 67

SAME BUT DIFFERENT

- 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….”



GOAL: Understand the difference between multiplicative (as many times as) and additive (more) comparisons.

It is critical that students understand the difference between additive and multiplicative comparison.

CHLOE: Since Chloe has 4 dollars more (additive), we can determine how much she had last month with the equation 68 – 4. She had $64 dollars last month.

JACK: Since Jack has 4 TIMES as many dollars (multiplicative), we can figure out how much he had last month with the equation 68 ÷ 4. He had only 17 dollars last month.

They both saved $68 so far. Because Chloe's total is additive, we know she had $64 last month, but Jack's total is multiplicative, so he had only $17 last month.

If this trend continues, Chloe will have $72 next month (68+4), but Jack will have a whopping $272 dollars (68x4).

How are these the SAME but DIFFERENT?

Day 67

SAME BUT DIFFERENT

Chloe and her brother Jack want to build a new doghouse for their dog. They have been saving their money. They have each saved $68 so far.

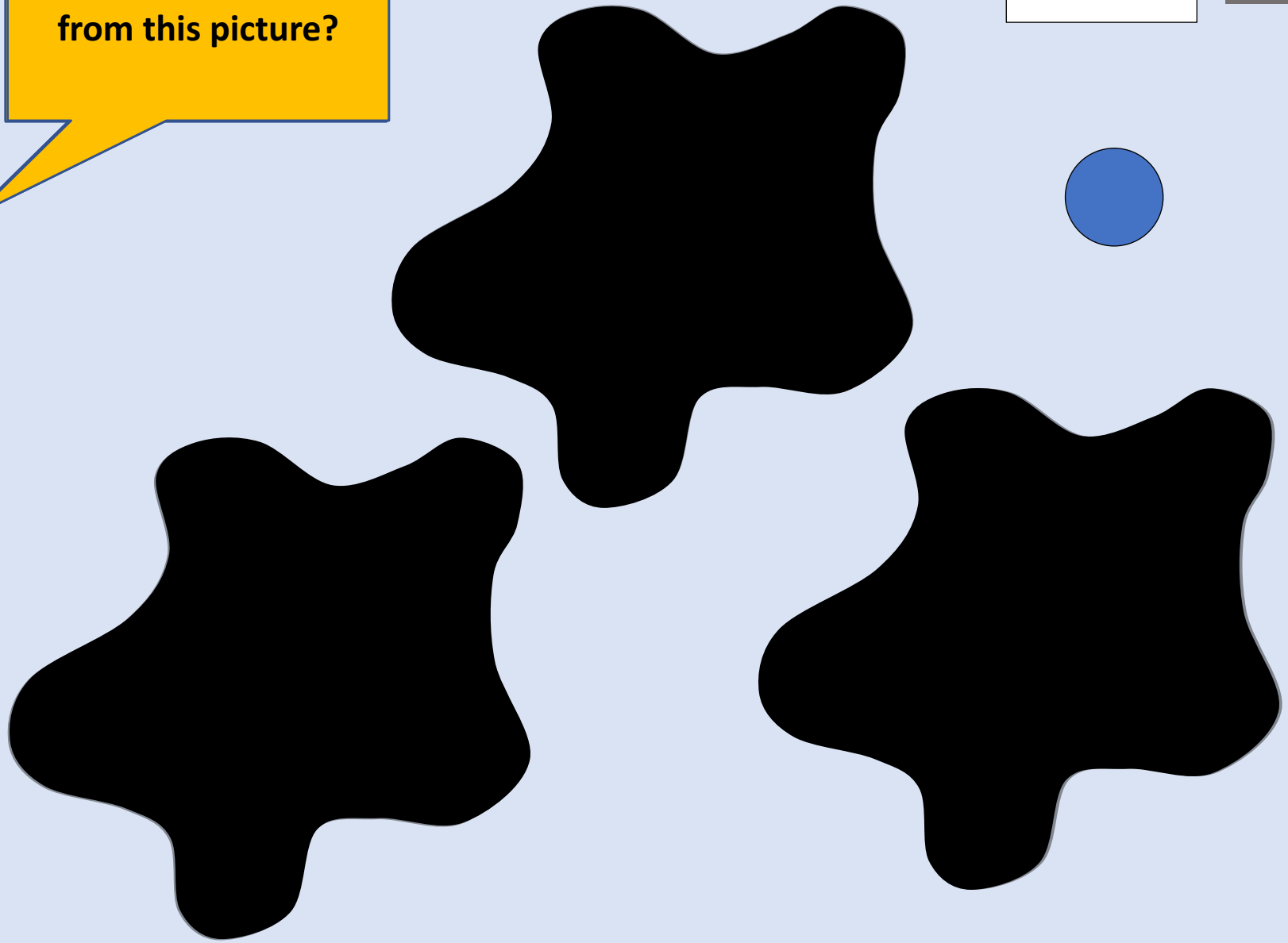
CHLOE: Chloe has 4 more dollars this month than she had last month.

JACK: Jack has 4 times as many dollars this month than he had last month.

What can we learn from this picture?

8

Day 68



SPLAT!

Day 69

ESTIMATION

Which answer is

As Close as it Gets?

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

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

Possible Reasoning: *9.12 – 4.6 could be started by considering the whole numbers 9 – 4 = 5. We then must look at the decimal value. Students may mistakenly think 12 – 6 = 6 as choose 5.5; however the decimal subtraction is 0.12 – 0.60 which means we must trade one of the whole numbers from the 9 to subtract leaving us with a little less than 5, not a little more.* ***The closest choice is 4.5***

Day 69

Which answer is

As Close as it Gets?

9.12 – 4.6

4	4.5	5	5.5

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

ESTIMATION

Day 70

Add 101

- **SAY: "**We are going choral count today by adding 101 to the previous number. Let's do a warm-up choral count by simply adding 100. Let's begin on lucky number 7."
- **COUNT:** CHORAL COUNT. Orally. Do not chart. 7, 107, 207, 307, 407, 507, 607 stop.
- **SAY:** "Okay, now that we are warmed up, think about adding 101 to a number.
  - Think about how it will be the same as adding 100.
  - How will it be different?
  - What strategy can we use to know the next number easily using mental math without paper and pencil?"
- Give some think time. Perhaps allow students to briefly discuss a strategy with a partner.
- **CHART:** Encourage students to count slowly and to look for patterns in the numbers. As students choral count, chart the numbers on the next page.

CHORAL COUNTING

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ADD 101

Day 70

7			
108			
209			

What patterns do you see?

What strategies did you use to make counting by 101 easier?

CHORAL COUNTING

5.OA.B.3
5.R.1

Day 71

Esti-Mystery

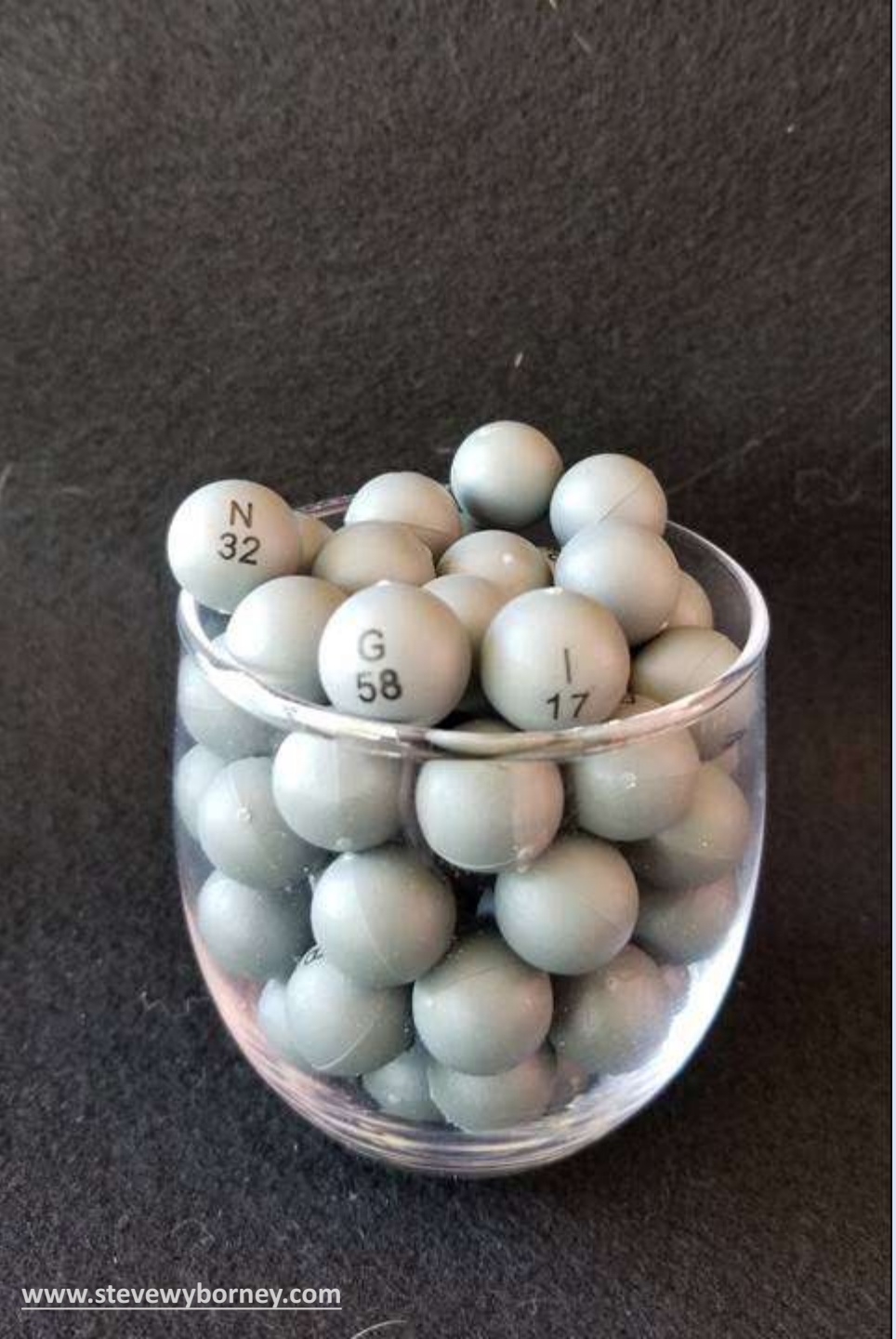
Estimation Activity with clues!

NOTE: Try using an individual or class number chart to help students chart and track the possible solution.

Students use clues to solve the estimation mystery. After all clues are revealed, students will have narrowed down the possible solutions. They will either have a single value remaining or a small list of values from which to choose and justify their final estimate before revealing the actual amount.

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.

ESTIMATION



How many objects are in the container?

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

Write down your first estimate. After each clue, you'll see if your estimate is still a possibility. After each clue, if it is no longer possible write down a new estimate – and be prepared to explain why you chose it.

Clue #1

The answer is a number between 60 and 80 but it is not a multiple of 11

Clue #2

Eliminate the numbers that are 2 less than any multiple of 6

Clue #3

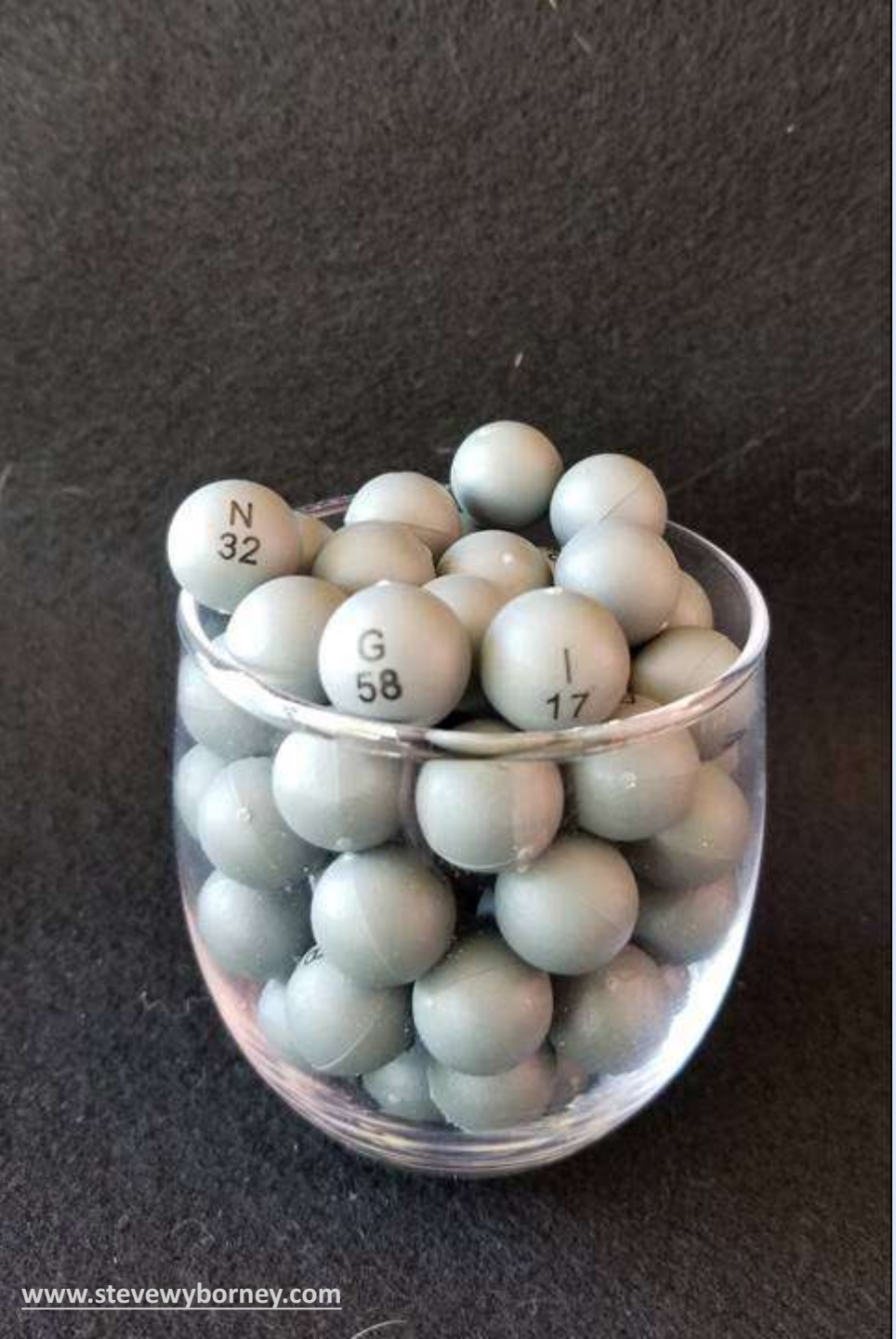
Eliminate the numbers that are 1 less than any multiple of 8

Clue #4

The answer only contains digits that can be seen on these Bingo balls

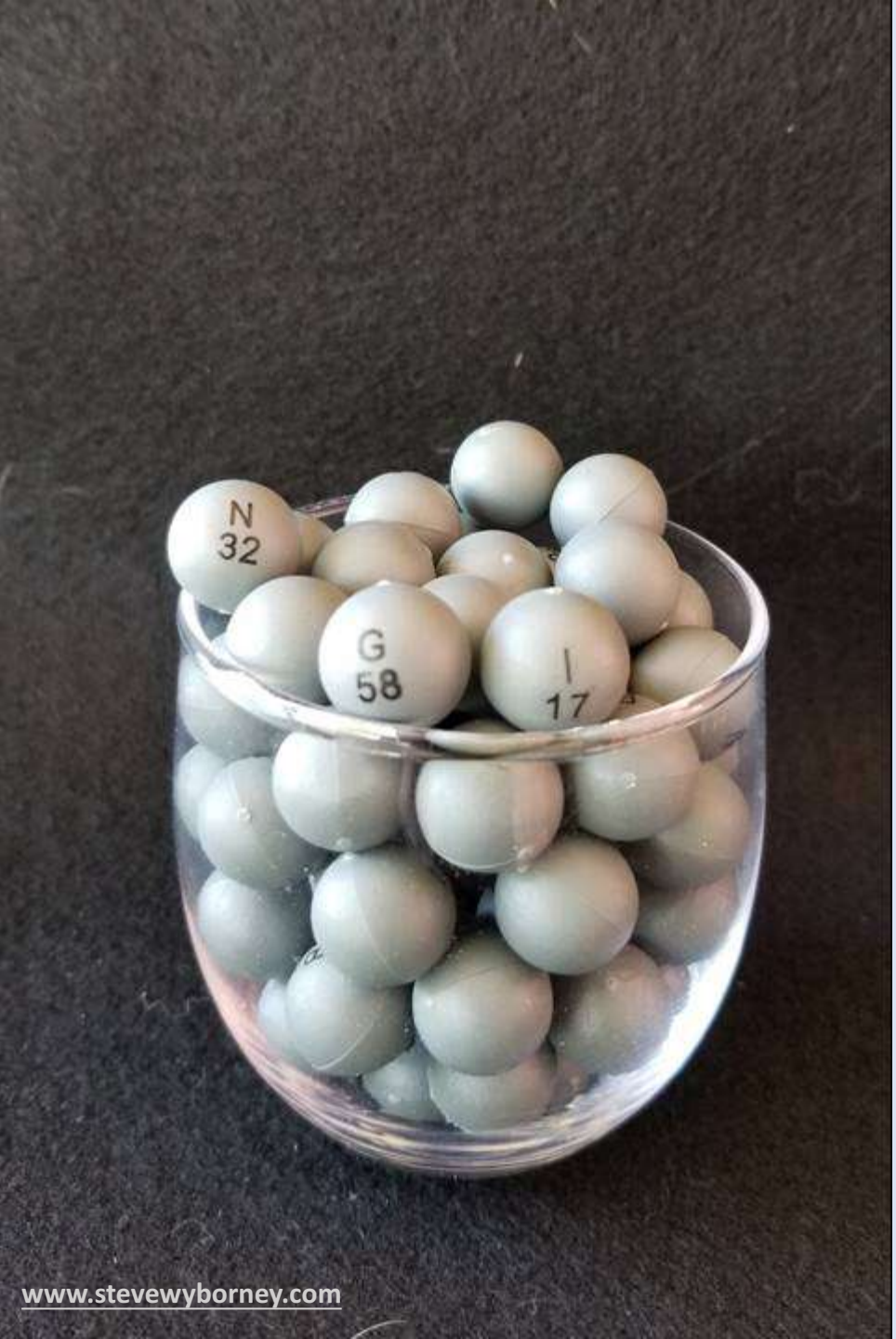
Clue #5

The answer is not a multiple of 3



**After seeing the clues,
you have narrowed the possibilities
to a small set of numbers –
you may even have just one
possibility remaining.**

**Before you see the answer,
decide on your final estimate.
Write it down, and explain how you
know that is the correct number of
Bingo balls in the container.**



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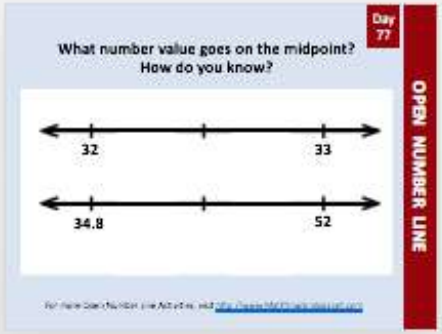
The Reveal
Click to see the answer.

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



Recommendation: Use the SCREEN SHADE to only show ONE number line at a time so students can focus on each one.

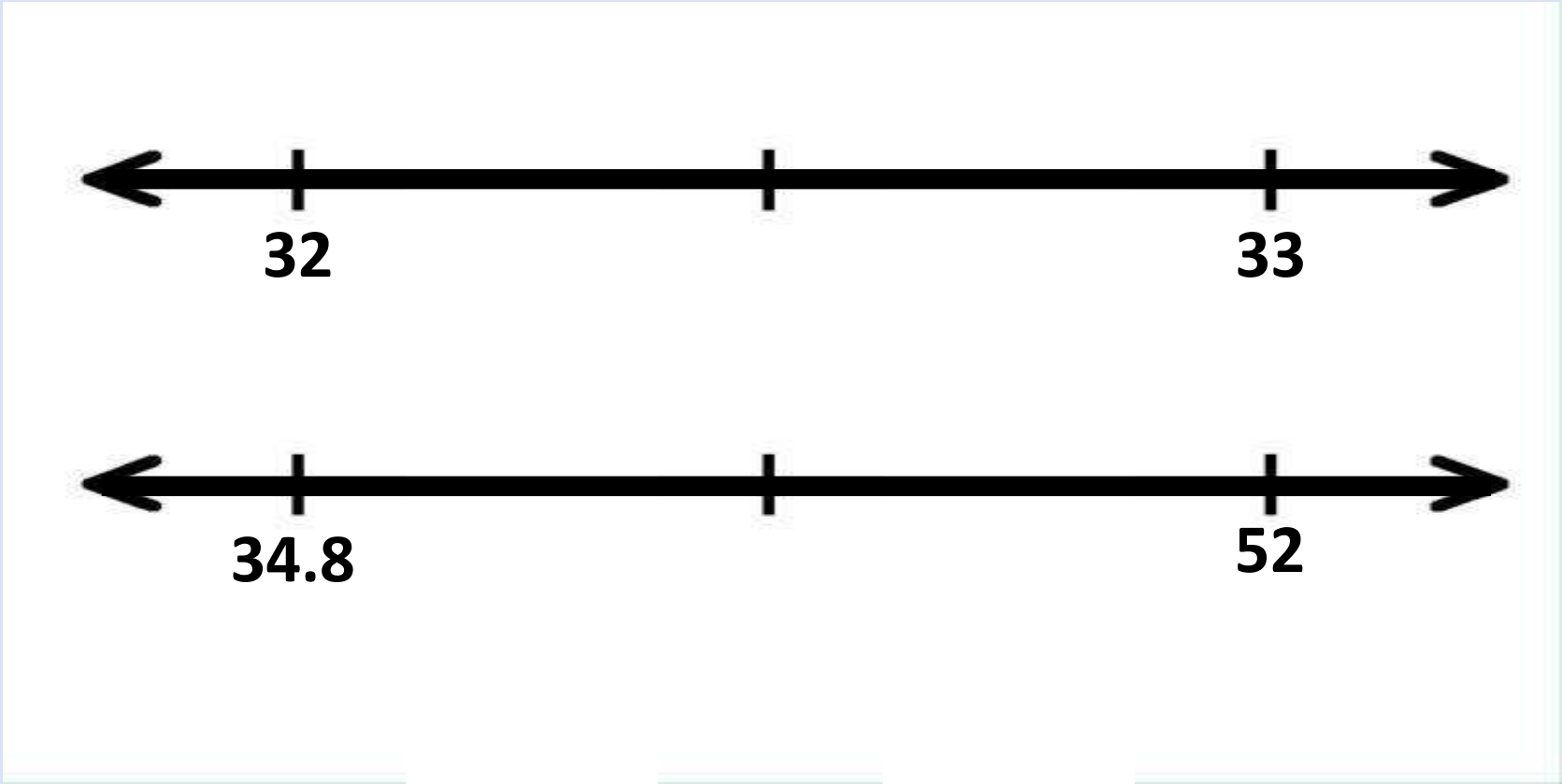
Students may express their solution in decimal OR fraction form.
Always be sure to ask them to justify.

1) 32.5 or 32½
2) 43.4 (the space is 17.2 --- half of that distance is 8.6 --- this value must be added to 34.8 or subtracted from 52 to yield a midpoint of 43.4)

CALVERT COUNTY PUBLIC SCHOOLS

Day 72

What number value goes on the midpoint? How do you know?



OPEN NUMBER LINE

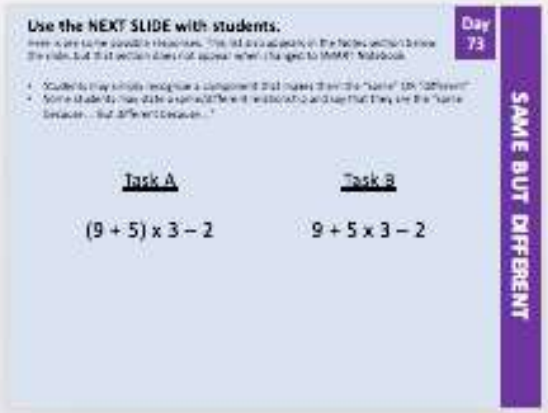
Use the NEXT SLIDE with students.

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….”

Day 73

SAME BUT DIFFERENT



Both Tasks use the same set of numbers (9, 5, 3, 2) and the same operations (– + x)
But Task A requires us to subtract 9-5 first and the Order of Operations requires us to multiply 3x2 first in Task B.

Task A = 14 x 3 – 2 = 42 – 2 = 40
Task B = 9 + 15 – 2 = 24 – 2 = 22

How are these the SAME but DIFFERENT?

Day 73

SAME BUT DIFFERENT

Task A	Task B
$(9 + 5) \times 3 - 2$	$9 + 5 \times 3 - 2$

Day 74

3 x 15
10 x 15
13 x 10
13 x 5
13 x 15

TEACHER NOTES

BEFORE

This slide has the String of expressions that you will use for today's Number Talk. You can use Smart Ink, right click for PowerPoint Pen, or convert this slide to Smart Notebook so you can easily annotate on the slide. The annotation is an important part of the routine. The expressions should be presented one-at-a-time with skills building on one another. Remember, students will come with a wide variety of strategies. Allow student sharing of these strategies and work toward determining which of the ways were most efficient and brain-friendly.

DURING

Multiplication

Possible questions to ask:

1) 3 x 15 How did you calculate the product as 45 without the use of paper or pencil (discuss a variety of mental strategies used by students)
2) 10 x 15 How does understanding multiplication by 10 make this product easy to find mentally?
3) 13 x 10 Same as above, just making use of the commutative property (130)
4) 13 x 5 Discuss various ways to use the PREVIOUS equations to solve (50 + 15 = 65 or perhaps a student simply took HALF of 130 from the previous equation)
5) 13 x 15 How can you use the previous equations to help you solve 13 x 15 (perhaps 10x15 + 3x15 added together –or– perhaps students used the 13x5 and tripled the value –or– perhaps students 13x10 + 13x5 – so many great ways to discover 13x15 more simply than just the standard algorithm!)

This number talk consist of multiplication problems designed to help students use the relationships from the sequence to solve the final 2 x 2-digit problem. The Talk is designed to help students build on what they know multiplication and part-part-whole relationships and to purposefully look for opportunities to use that information in related contexts. Remember, students will come with a wide variety of strategies. Allow student sharing of these strategies and work toward determining which of the ways were most efficient and brain-friendly.

AFTER

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

NUMBER TALK

3 x 15

Day 74

NUMBER TALK

Day 75

Use the NEXT SLIDE with students.

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

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

WHICH ONE DOESN'T BELONG?

Day 75

WHICH ONE DOESN'T BELONG?

"Three of the coin sets…."

Day 76

Using the DECIDE & DEFEND routine

- **READ to Understand:** Begin by having students discuss the question being asked. At this time, do NOT focus on the math calculations required or the answer. This step is designed for students to understand the context of the question (What is the gist of the question?)

- **DECIDE**: Pair or group students. Using a consistent pairing will make this routine more fluid so you do not have to take time to pair students every time you want them to discuss. Have students discuss the question and discuss the question and decide which solution is correct (note: partners may not agree and that is fine provided they can justify their own thinking).

- **DRAFT**: Students draft a statement about their ideas (either as a group or individually and it can be written or oral – teacher's choice)

- **DEFEND**: Students share their ideas and defend their reasoning with the whole group. Encourage active listening and accountable talk.

- **RELECT**: To further develop comprehension, have students use ONE of the sentence starters on the "Reflect on Learning" slide after they have discussed and listened to new ideas with classmates.

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

DECIDE & DEFEND

There are several ways to calculate values.
Find unit price or calculate for a like amount of shirts are two of the ways.

<u>One way to approach it</u>
GREEN: $2 each
RED: A little less than $2 each since 8x2=16
BLUE: 10 shirts costs $25, so 1 shirt costs $2.50
BLACK: 10 shirts costs $24, so 1 shirt costs $2.40

This means that the RED shirt is the least amount of money. It is not necessary to know the exact amount to answer this question since the other 3 colors are $2 or more.

<u>A Different Way</u>
GREEN: 24 = $48
RED: 24 = $45 (15x3)
So red is cheaper

BLUE: 20=$50
BLACK: 20=$48 (4x12)
So black is cheaper

Red vs. Black
RED 40=$75 (5x15)
BLACK 40=$96 (8x12)
So RED is the cheapest of all

No matter the method, red is the best price. Have students use math to prove this is true.

Day 76

Use the NEXT SLIDE with students.

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

DECIDE & DEFEND

CALVERT COUNTY PUBLIC SCHOOLS

Day 76

The high school field hockey team is ordering practice shirts with their team logo on it. Each color is priced differently.
Which color offers the best price?

24 green shirts cost $48
8 red shirts cost $15
20 blue shirts cost $50
5 black shirts cost $12

DECIDE & DEFEND

5.R.3

Day 76

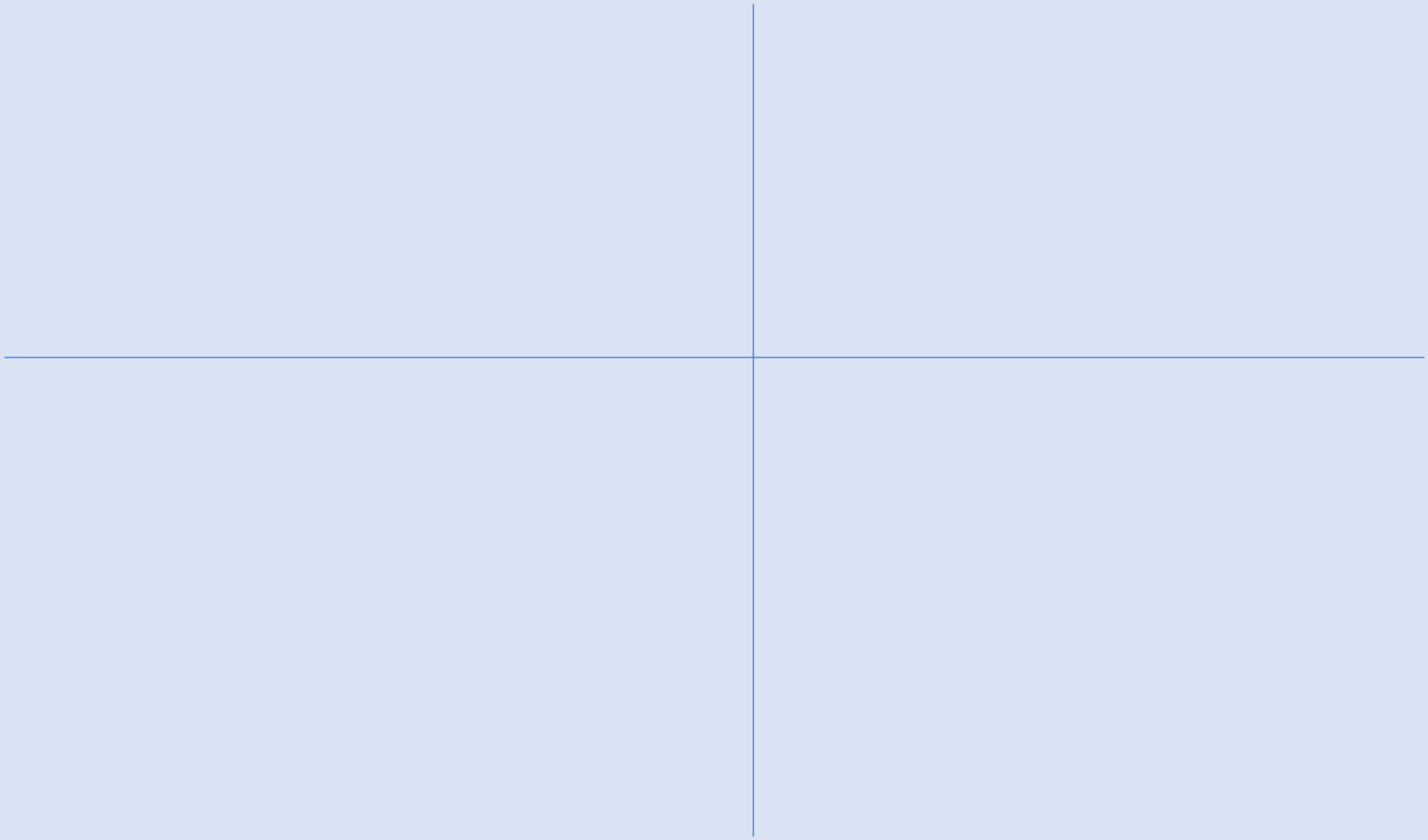
Jenna's field hockey team is getting custom order practice shirts with their team logo on it. Each color is priced differently. Which color offers the best price?

24 green shirts cost $48

20 blue shirts cost $50

8 red shirts cost $15

5 black shirts cost $12



DECIDE & DEFEND

Day 76

Reflect on Learning

- A new math idea I learned today is…
- Next time I interpret someone else's work, I will… *(ask myself, pay attention to,…)*
- To convince a skeptic, it's important to ….

DECIDE & DEFEND

Day 77

20 x 4
20 x 10
20 x 20
20 x 24

TEACHER NOTES

BEFORE

This slide has the String of expressions that you will use for today's Number Talk. You can use Smart Ink, right click for PowerPoint Pen, or convert this slide to Smart Notebook so you can easily annotate on the slide. The annotation is an important part of the routine. The expressions should be presented one-at-a-time with skills building on one another. Remember, students will come with a wide variety of strategies. Allow student sharing of these strategies and work toward determining which of the ways were most efficient and brain-friendly.

DURING

Multiplication

Possible questions to ask:

1) 20x4 How does understanding how to multiply by 10 help you to multiply by 20?
2) 20x10 How does knowing 2x10 help you to find the value of 20x10?
3) 20x20 How does knowing 2x20 help you to find the value of 20x20
4) 20x24 How can you use the products from the earlier equations to help you solve 20x24? What other ways could you have solved this?

The Talk is designed to help students build on what they know about multiplication and specifically multiplying by powers of 10 and then to purposefully look for opportunities to use that information in related contexts. Remember, students will come with a wide variety of strategies. Allow student sharing of these strategies and work toward determining which of the ways were most efficient and brain-friendly.

AFTER

After doing the Number Talk String, be sure to highlight this strategy and encourage students to "look for" places they can use it throughout the day.

NUMBER TALK

CALVERT COUNTY PUBLIC SCHOOLS

Day 77

20 x 4

NUMBER TALK

4.NBT.A.1

Day 78

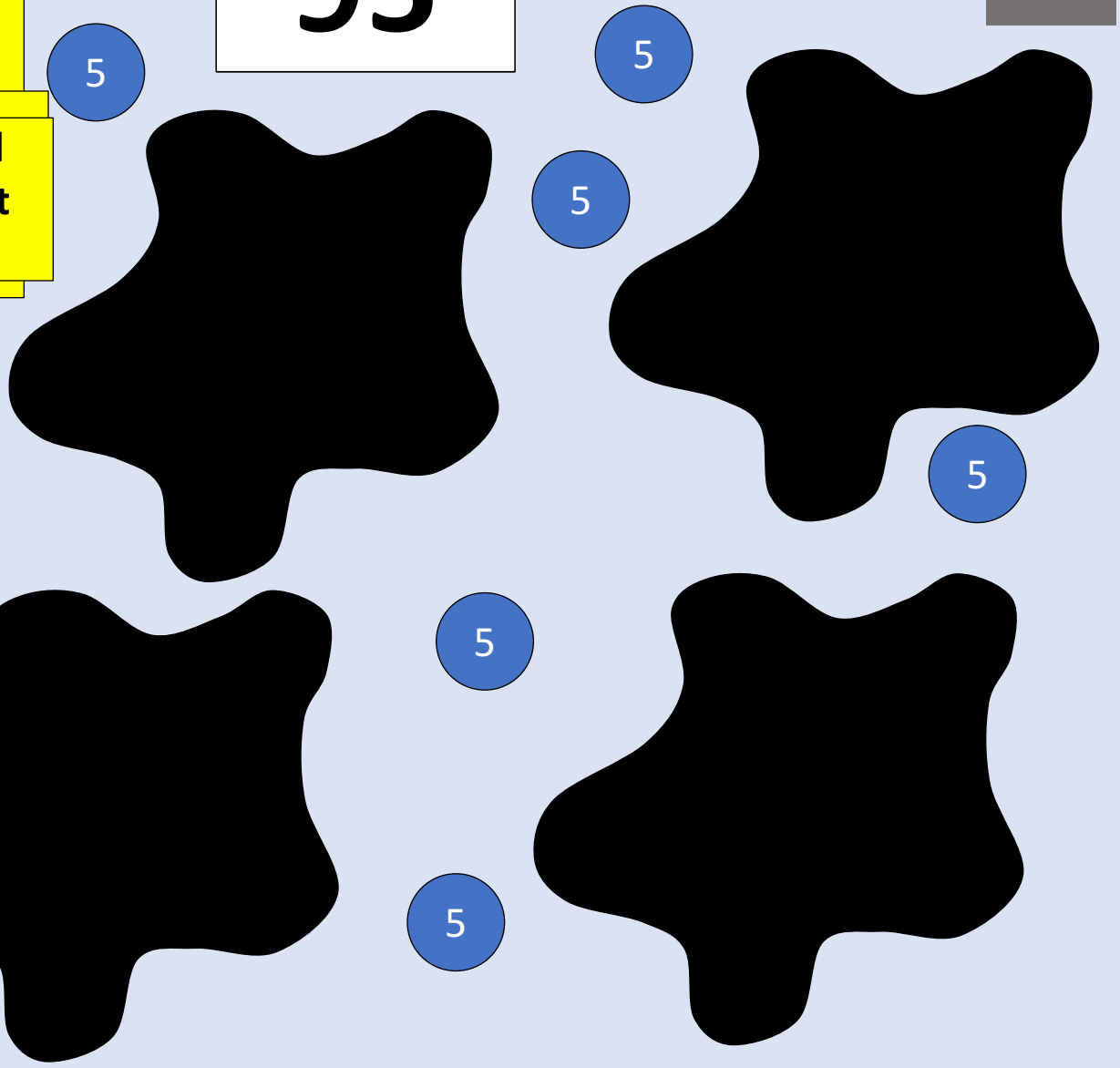
95

Let's take a peek under

What equation could we write to represent this model?

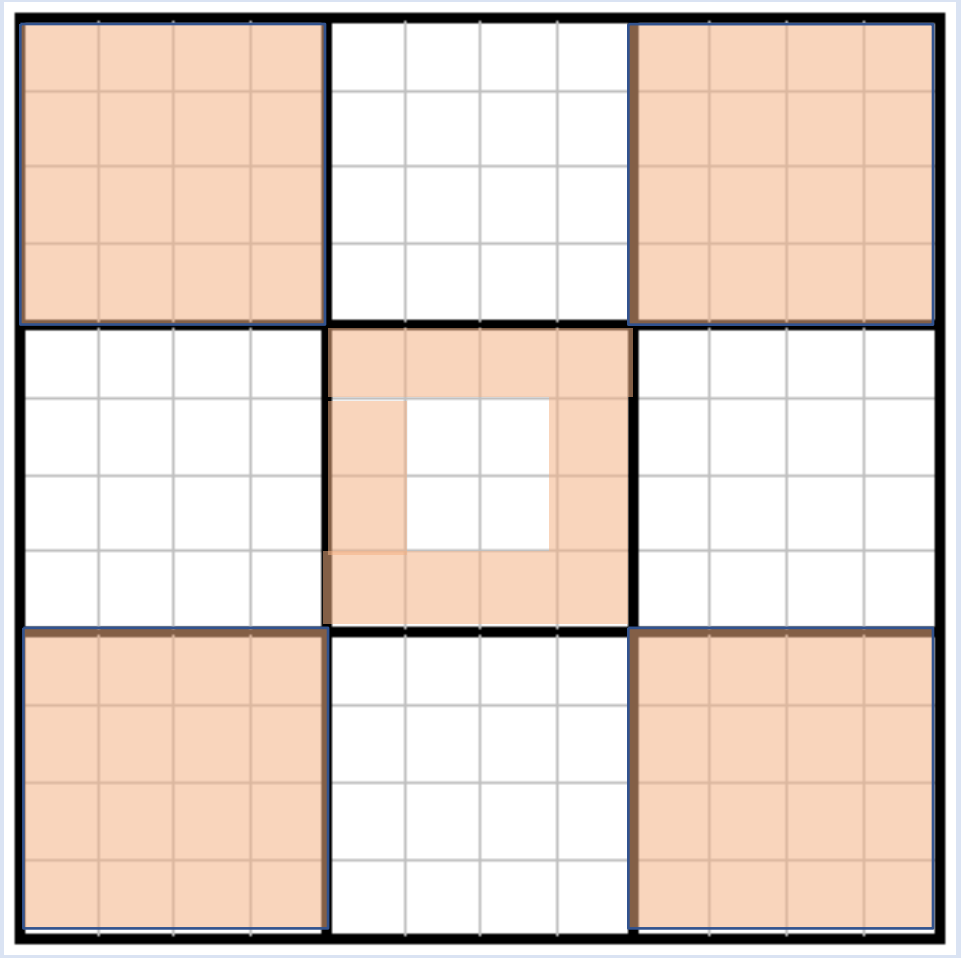
you know?

stify your idea with math.



SPLAT!

Day
79



What do you notice?

QUICK COUNT

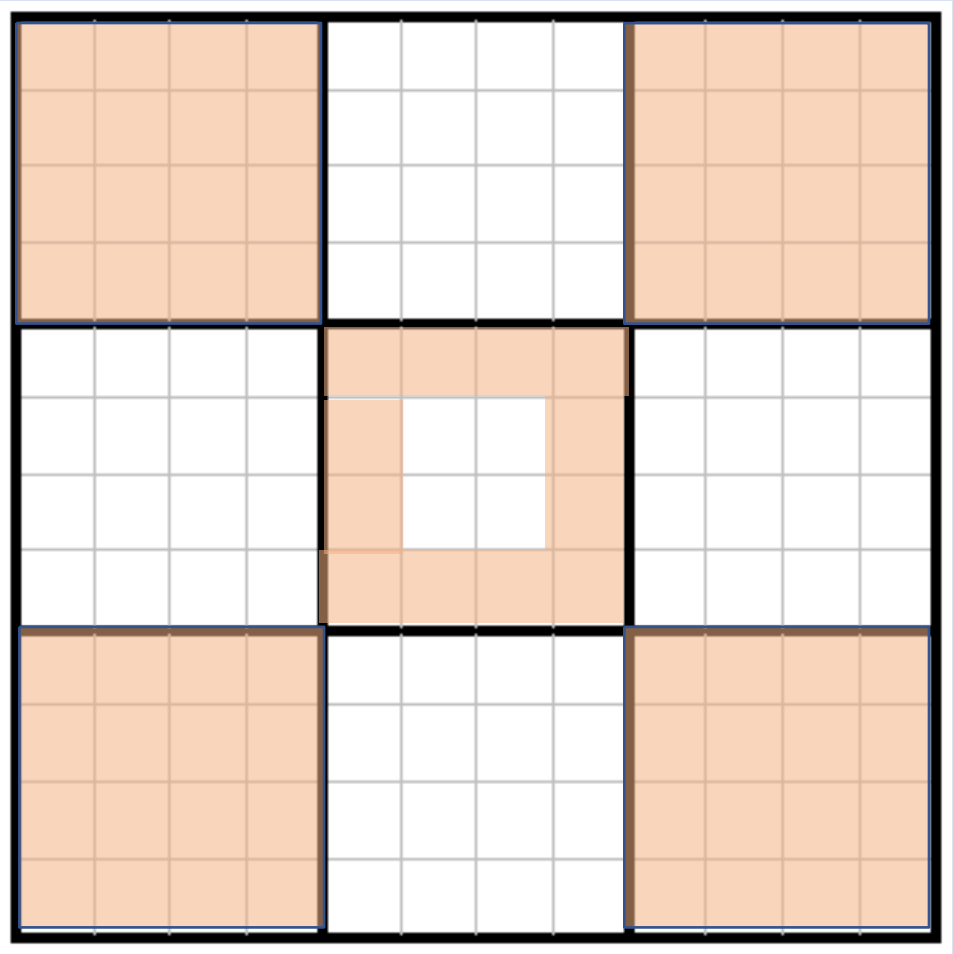
Day 79

QUICK COUNT

What did you NOTICE?

Day 79

QUICK COUNT



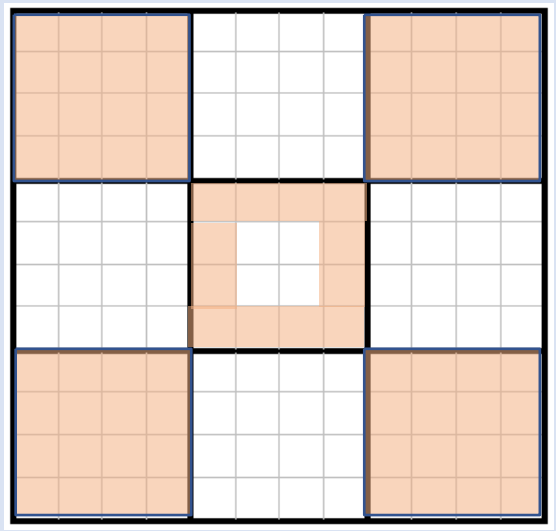
How many do you see?

What counting shortcut did you use?

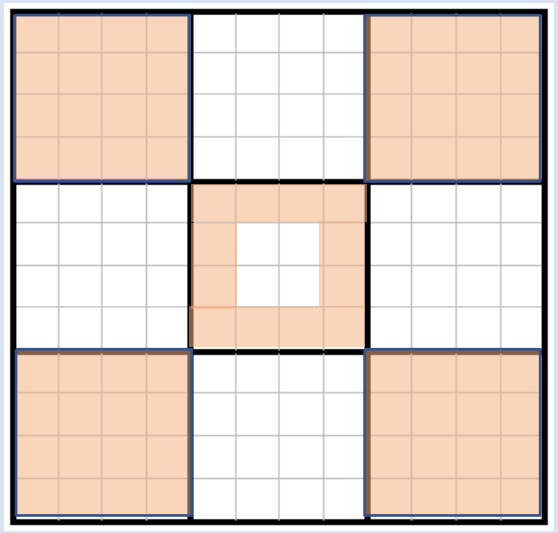
Day 79

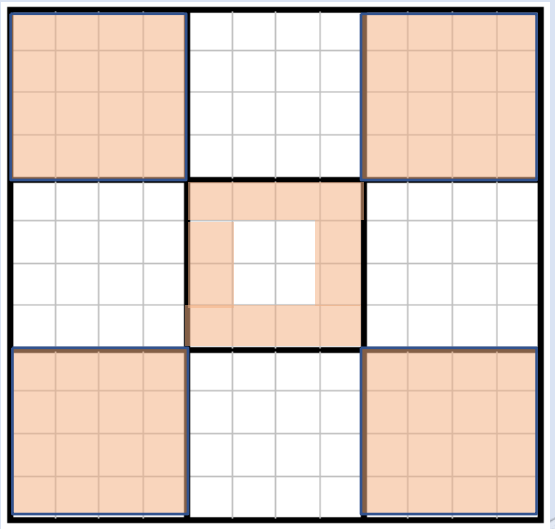
QUICK COUNT

I noticed ____ so I _____



(They) noticed ____ so they _____





Day 79

Reflect

What was mathematically important?

QUICK COUNT

Day 80

Using the DECIDE & DEFEND routine

- **READ to Understand:** Begin by having students discuss the question being asked. At this time, do NOT focus on the math calculations required or the answer. This step is designed for students to understand the context of the question (What is the gist of the question?)

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

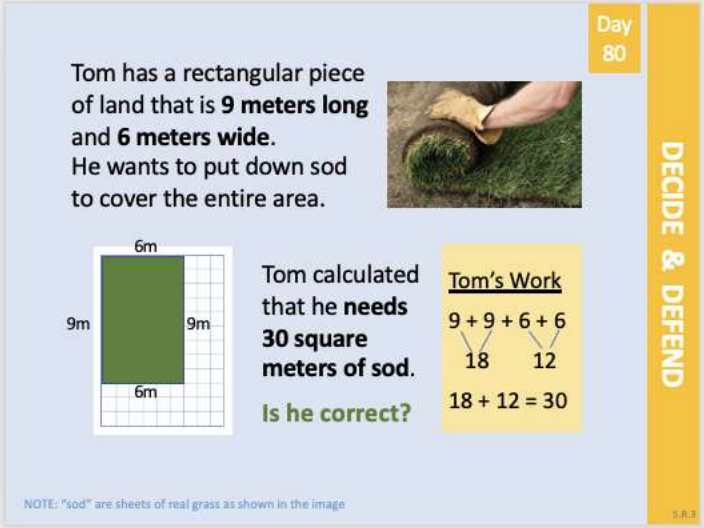
DECIDE & DEFEND

Use the NEXT SLIDES with students.

Here is are some possible responses. This list is not all-inclusive.

Day 80

DECIDE & DEFEND



This is an ERROR ANALYSIS task.
Give students Time & Space to grapple with the story and the work that Tom has done.
Do not intervene too early. Allow students to discuss with a partner.

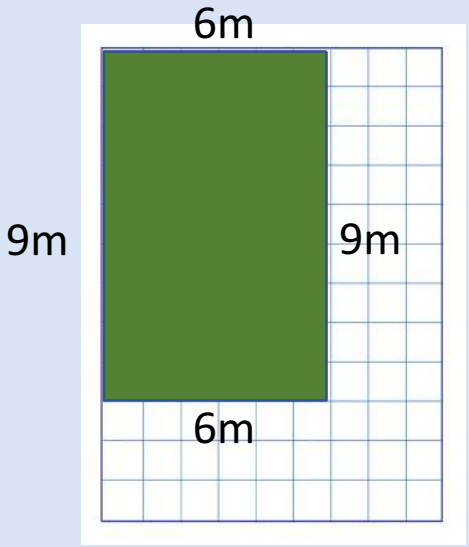
Tom has mistakenly calculated the perimeter of the area he plans to put sod.
Tom should have multiplied the length by the width of the area he plans to put sod.

6 x 9 = 54 square meters.
If Tom orders 30 square feet of sod, he will need an additional 24 square feet to cover the entire area.

Day 80

DECIDE & DEFEND

Tom has a rectangular piece of land that is **9 meters long** and **6 meters wide**.
He wants to put down sod to cover the entire area.



Tom calculated that he **needs 30 square meters of sod**.

Is he correct?

Tom's Work

9 + 9 + 6 + 6

18 12

18 + 12 = 30

NOTE: "sod" are sheets of real grass as shown in the image

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… because….

DECIDE & DEFEND