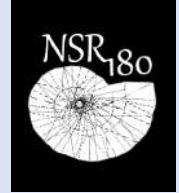# 180 Days of
Number Sense Routines
## Grade 5
Days 21-40

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.
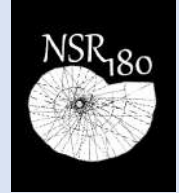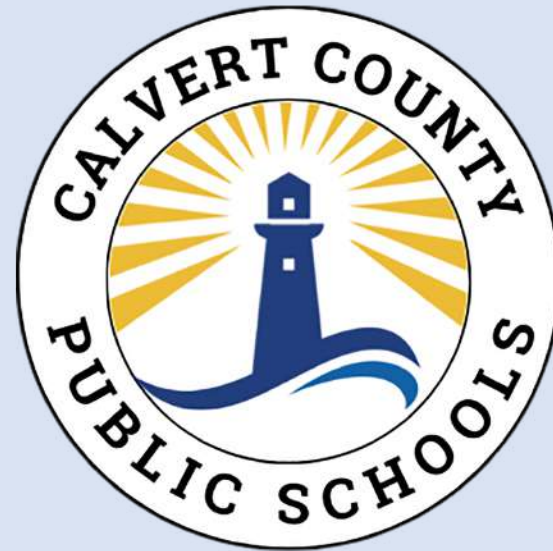
180 Days of
Number Sense Routines

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.
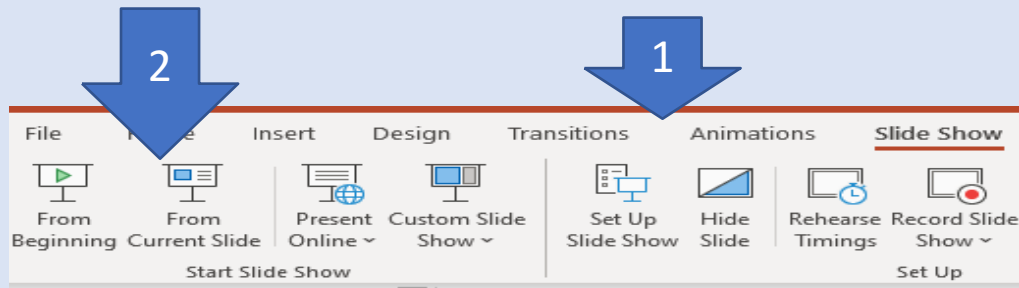
180 Days of
Number Sense Routines

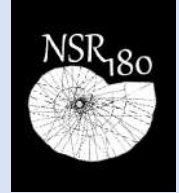**HOW TO RUN POWERPOINT IN SLIDE SHOW MODE:**
Slides with animation features, must run in Slide Show mode of PowerPoint for the animations to work correctly.

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

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Directions for the CHORAL COUNT routine

Choral Counting is an activity in which the teacher leads children in counting aloud together by a given number. As the class calls out each number, the teacher records the count on the board, pausing the count at strategic moments.

To begin, the teacher decides on a number for the students to skip count by, whether to count forwards or backwards, and what number to start and end the count on. Different numbers lend themselves well to surfacing different mathematical ideas.

The goal of this activity is not just to practice rote counting, but to engage children in reasoning, predicting, and justifying. To do this, teachers record the count so that patterns within the numbers are readily noticeable and pause during the count to ask questions like, "What do you think will come next? How do you know?"

– Tedd.org

Want to see a Choral Counting routine in action?
Click the image.

CHORAL COUNTING

Teacher: *Click the image to the left to see this routine in action before trying it with your students. Notice how the teacher charts the count to help make the patterns more visible to students.*

A blank grid for charting is on the next slide.

Common Core Math:
Choral
Counting

Count by 200s – starting on 5000

BEGIN WITH NUMBER: 5000

COUNTING RULE: Add 200

GOAL:
- Find PATTERNS within the counted numbers.
- Use those patterns to PREDICT numbers that will appear later in the counting sequence.

4.OA.C.5

Count by 200s – starting on 5000

BEGIN WITH NUMBER: 5000
COUNTING RULE: +200
GOAL:

- Find PATTERNS within the counted numbers.
- Use those patterns to PREDICT numbers that will appear later in the counting sequence.

5,000   _____   _____

5,200   _____   _____

_____   _____   _____

_____   _____   _____

_____   _____   _____

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 <u>decide</u> which solution is correct (note: partners may not agree and that is fine provided they can justify their own thinking).

- **DRAFT**: Students <u>draft</u> 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 <u>defend</u> their reasoning with the whole group. Encourage active listening and <u>accountable talk</u>.

- **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!

Choice A is more.
A: 800 + 580 + 17 = 1397
B: 900 + 440 + 27 = 1367

Which Is More?

Choice A
8 Hundreds

58 Tens

17 Ones

Choice B
9 Hundreds

44 Tens

27 Ones

4.NBT.A.2
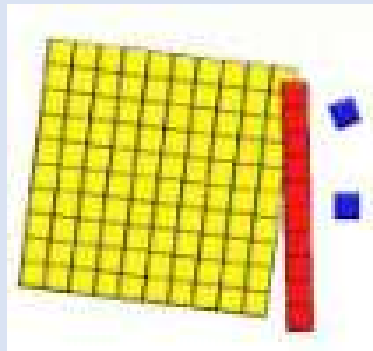
Reflect on Learning

- 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

Estimation Activity

Have you already watched the teacher information video?

When you are ready to use this activity,
use the PowerPoint platform in Slide Show mode
so the slides work properly.

PROMPT: **How many dice are in the glass?**

5.R.1

How many dice are being held by the cup?

The Reveal

28 dice

The Reveal

The Reveal

The Reveal

Steve Wyborney

www.stevewyborney.com

200 + 200
199 + 199
198 + 199
198 + 198

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
Doubles and Near-Doubles
The Talk is designed to help students build on what they know about doubles and to purposefully look for opportunities to use that information is related contexts. Remember that students will come

Example: 199 + 199
              $(200 - 1) + (200 - 1)$
              $400 - 2$
              398
              so 199 + 199 = 398 (be sure to conclude by bringing the routine full circle back to the ORIGINAL problem presented and its
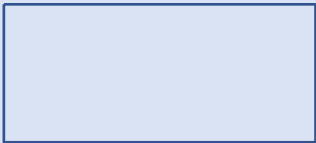solution)

Example: 198 + 199
              $(200 - 2) + (200 - 1)$
              $400 - 3$
              397
              so 198 + 199 = 397 (conclude by bringing the routine full circle back to the ORIGINAL problem presented and its solution)

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

200 + 200

Directions for OPEN NUMBER LINE routines

If you have never watched, or haven't watched it recently, we encourage you to watch the video that models how to use and interactive number line.
https://www.youtube.com/watch?v=p8nssffnHkM&feature=youtu.be

Teacher Note: You may want to create an interactive number line in your classroom for some of the Open Number Line routines. The slides provided can be used as teacher reference or used interactively if this file is "printed" as a Smart Notebook file.

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

Use the NEXT SLIDE with students.

Here is are some possible responses. This list is not all-inclusive.
Additional ideas encouraged!
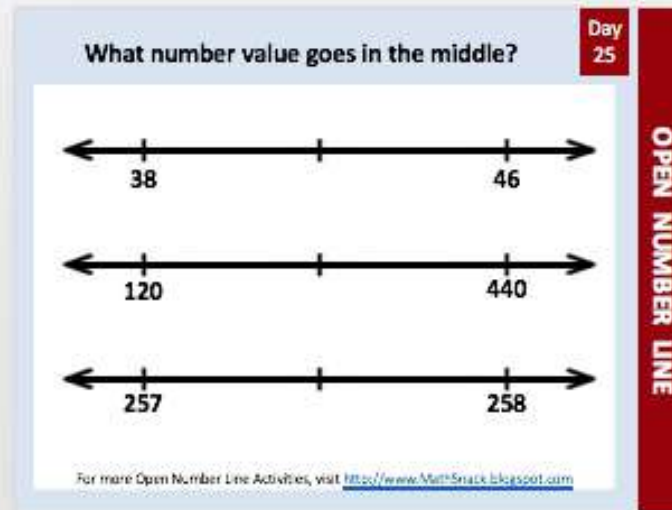
NOTE: Use the screen shade on Smart Notebook to cover the number lines and reveal just one number line at a time.
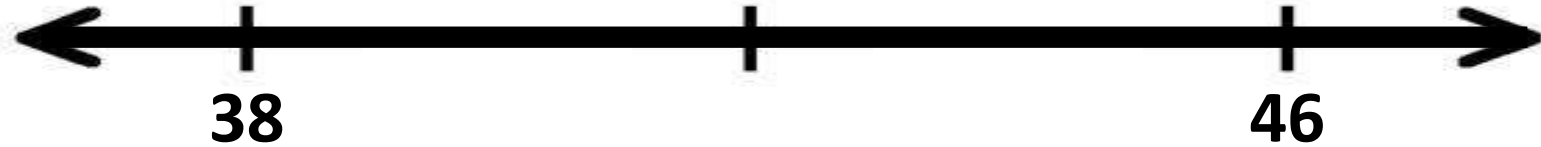
Have students find the midpoint on the number line and share their reasoning.
Example: The midpoint of 38 and 46 is . The difference between 38 and 46 is 8. Half of 8 is 4. 38+4=42 and 46-4=42.

What number value represents the midpoint?
What strategy did you use to determine the midpoint?

38   46

120   440

257   258

4.NBT.B.4
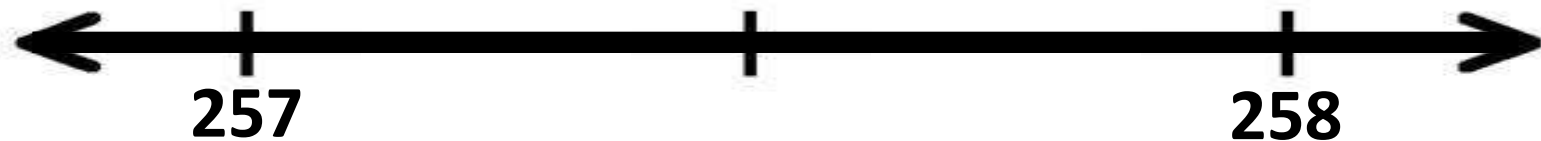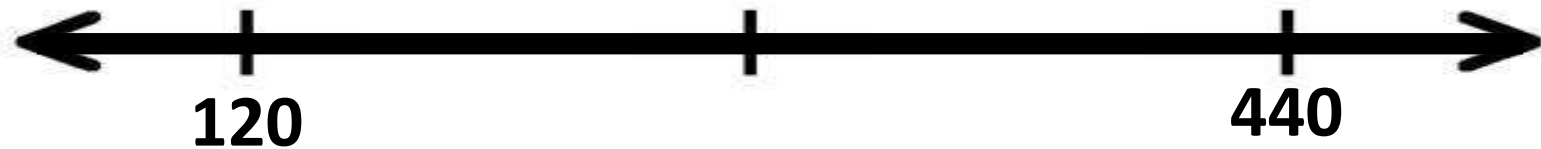
Directions for QUICK COUNT routines

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"
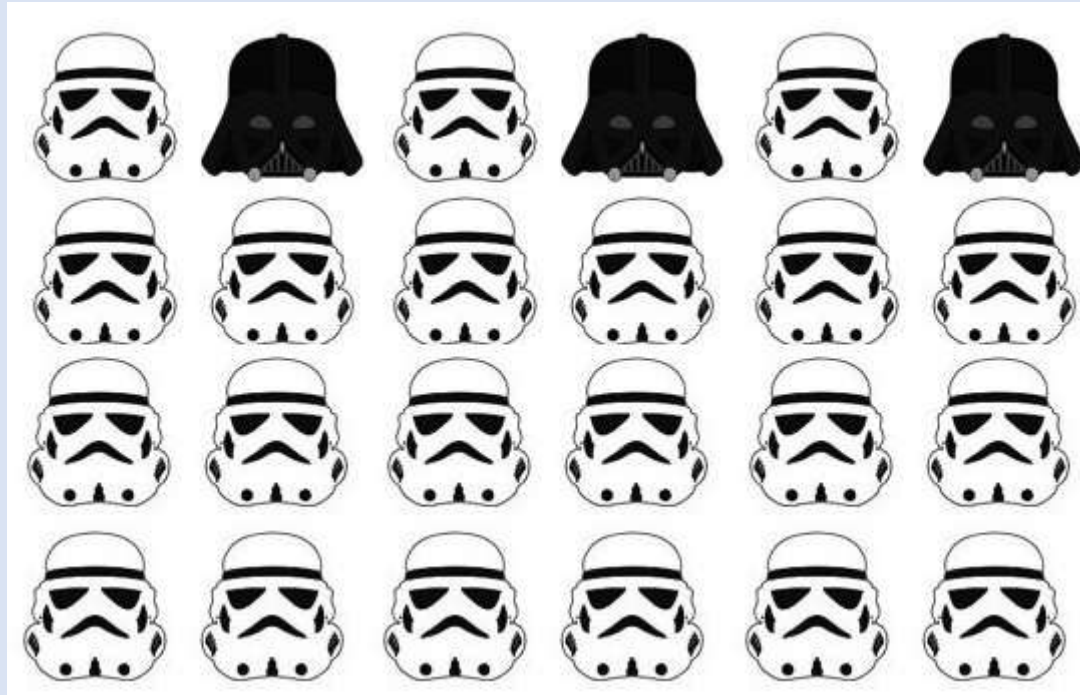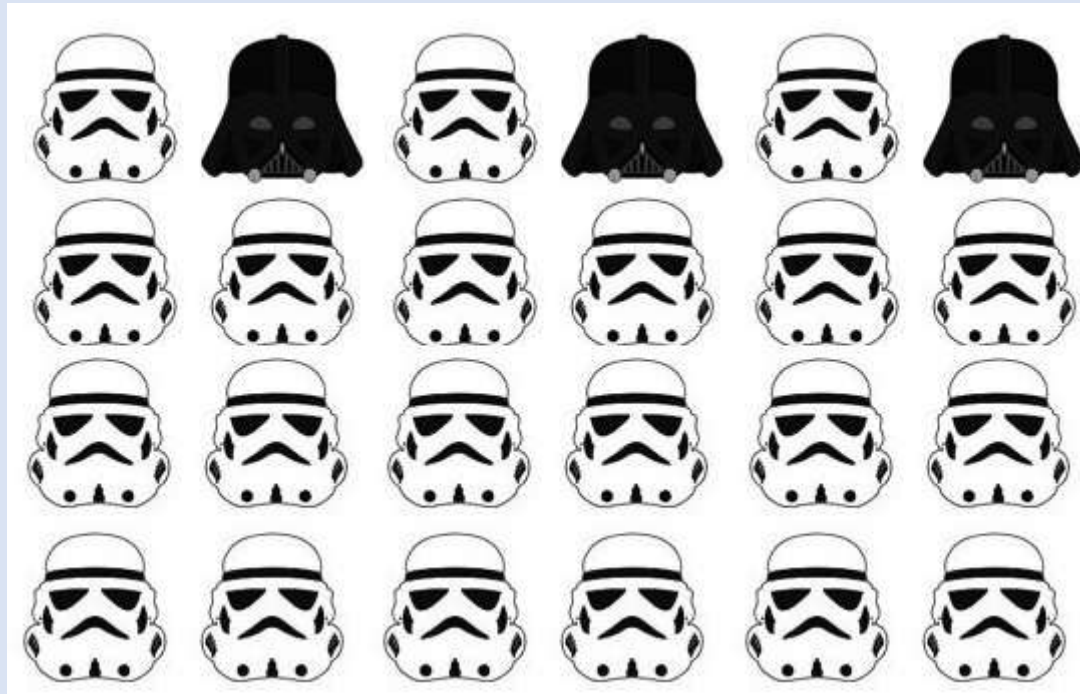
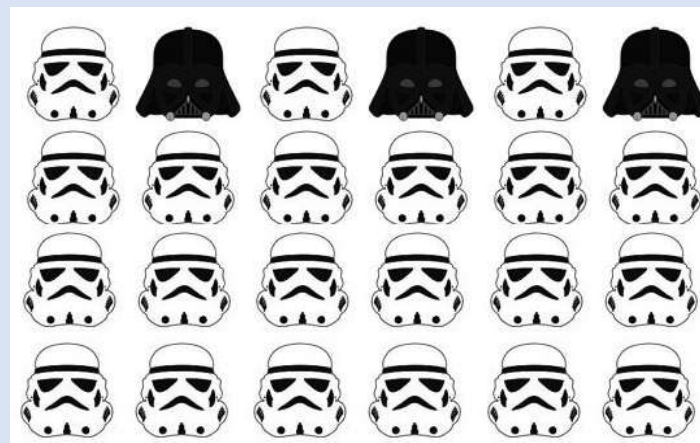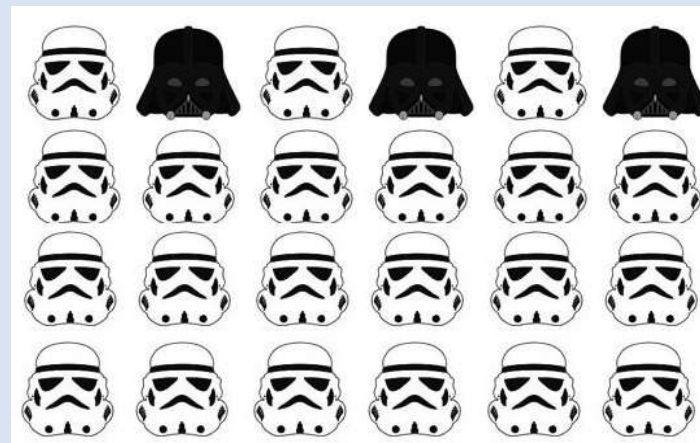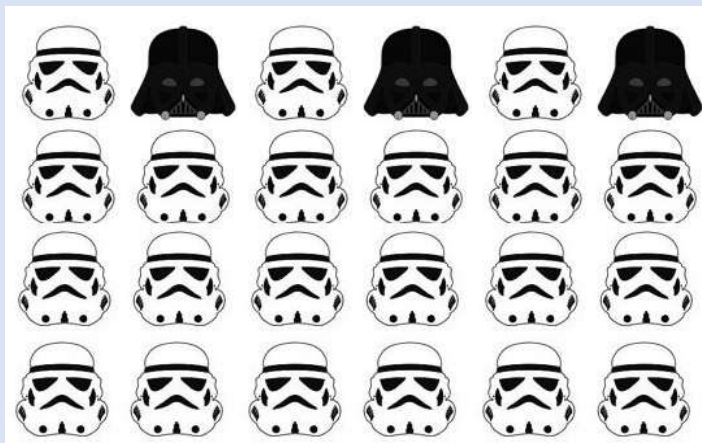# What do you NOTICE?

What did you NOTICE?

How many **white helmets**?
What counting shortcut did you use?

I noticed _____ so I _____

(They) noticed _____ so they____

Reflect

What was mathematically important?

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 <u>both</u> how they are the same <u>and</u> 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 <u>both</u>***. 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.

SAME BUT DIFFERENT

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…."

How are these the SAME but DIFFERENT?

Day 27

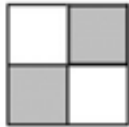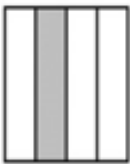9 x 20   18 x 10

SAME BUT DIFFERENT

POSSIBLE RESPONSES

- They are the same because both equal 180, but they do not use the same factors
- Students may notice that the factors in the first expression are just doubled and halved to create the second expression
- Some students may notice that both expressions are multiplied by a factor of 10 (x20 and x10)
- Both are multiplication expressions

How are these the SAME but DIFFERENT?

9 x 20

18 x 10

SAME BUT DIFFERENT

4.OA.B.4
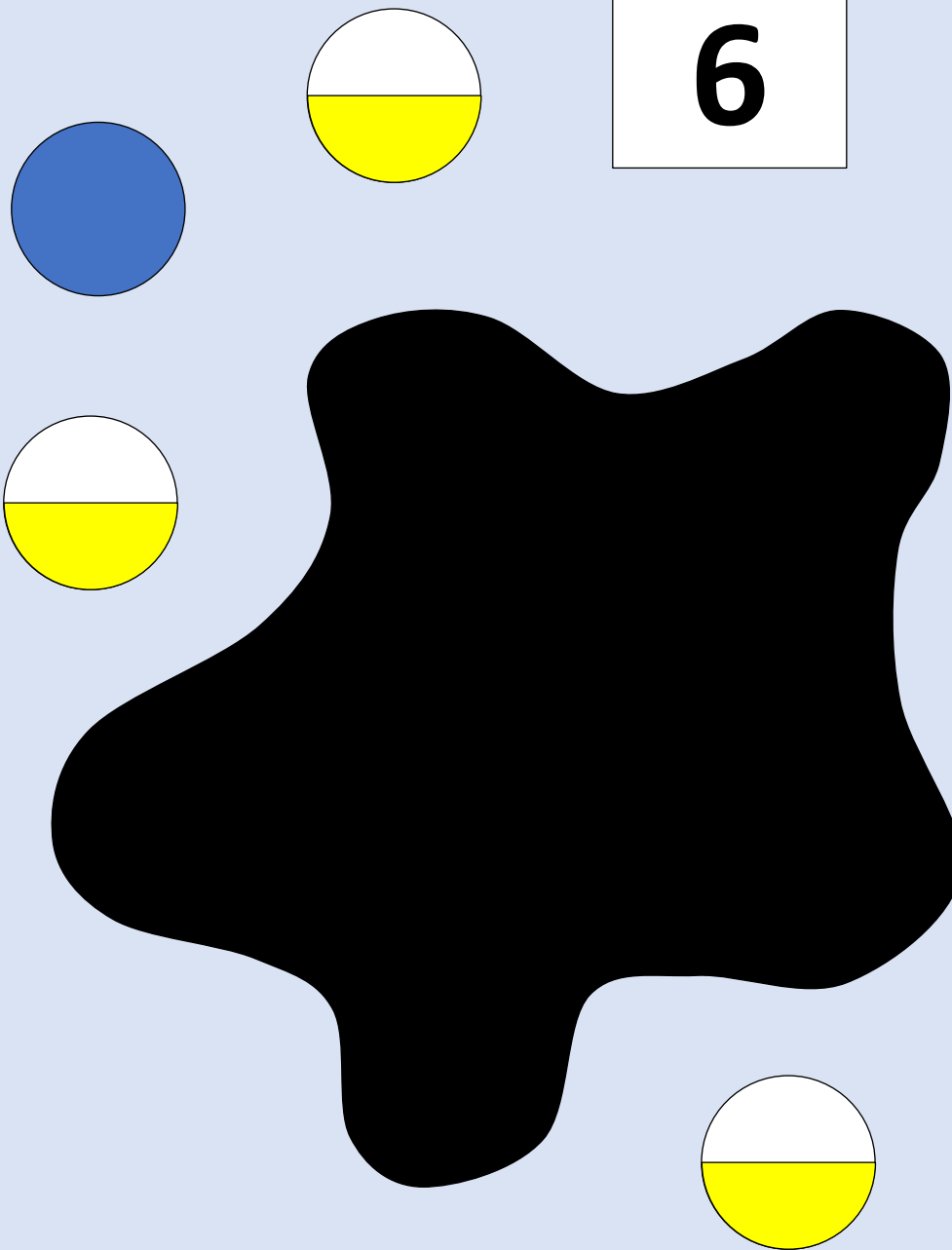
Use the NEXT SLIDE with students.

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

Encourage the use of the sentence starter "Three of the _____...."

Possible Responses:
- Three of the images show one section (NOT one-fourth) shaded. Image A shows two parts shaded
- Three of the images have a square as the whole. For Image B, the whole is not a square
- Three of the images are shaded in gray. Image C is not shaded using gray coloring
- Three of the images are divided into fourths. Image D is not equally partitioned, so it is not in fourths
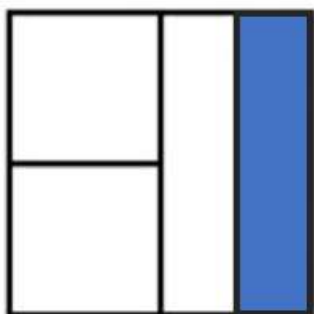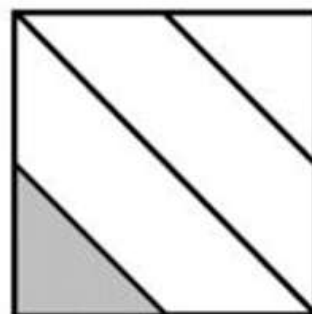
A
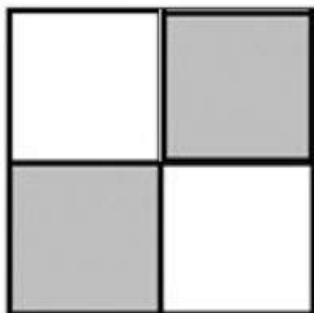
B
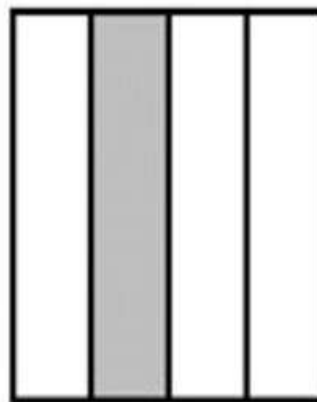
C

D

"Three of the images _____...."

5.R.1

Count by TENTHS – starting on 0.56

BEGIN WITH NUMBER: 0.56
COUNTING RULE: +0.1
GOAL:

- Find PATTERNS within the counted numbers.
- Use those patterns to PREDICT numbers that will appear later in the counting sequence.

CHART: As students choral count, chart their responses – this will give them a visual while counting AND will prompt great discussion when finished counting.
Be sure to write the numbers aligned as shown below to make the patterns more visible.

Encourage correct number names (fifty-six hundredths, one and six hundredths, etc.)
Practice saying the number names, if needed.

Ask: What patterns do you notice when you look at the numbers that we counted?

					0.56	0.66	0.76	0.86	0.96
1.06	1.16	1.26	1.36	1.46	1.56	1.66	1.76	1.86	1.96
2.06	2.16	2.26	2.36	2.46	2.56	2.66	2.76		

**NOTE: You may not be able to write small enough on the lines provided on the next slide. It is important that numbers are charted 10 across for students to easily see the pattern; use your whiteboard or chart paper turned lengthwise if needed.

Count by tenths – starting on 0.56

BEGIN WITH NUMBER: 0.56
COUNTING RULE: Add one-tenth
GOAL:

- Find PATTERNS within the counted numbers.
- Use those patterns to PREDICT numbers that will appear later in the counting sequence.

0.56 ____ ____ ____

____

___ ___ ___ ___ ___ ___ ___ ___ ___ ___

___ ___ ___ ___ ___ ___ ___ ___ ___ ___

___ ___ ___ ___ ___ ___ ___ ___ ___ ___

CHORAL COUNTING

5.NBT.A.1

Esti-Mystery

Estimation Activity with clues!

NOTE: This Estimation routine contains a number chart. Have students determine which numbers should be eliminated BEFORE clicking to reveal the number chart after each clue.

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: Use a number chart in a dry erase sleeve for students to track the numbers that are/are not possible.

How many dominoes are in the glass?

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.

5.NBT.A.1

Clue #1
The answer is between 20 and 50.

Clue #2
The answer is an EVEN number.

Clue #3
The answer does NOT
have a 4 in the TENS PLACE.

Clue #4
The answer does, however, have
a 4 in the ONES PLACE.

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

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.

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

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!

How are these two number lines the SAME?
How are they DIFFERENT?
What number would go on the empty hash mark?

Day 39

OPEN NUMBER LINE

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

Have students share their reasoning.

Possible responses:
SAME
- both begin at zero
- Both have an empty hash mark between zero and the first shown value
- Both represent equal intervals

DIFFERENT
- Different ending points shown
- Intervals are different
- Blank hash mark represents different numbers
  - Halfway between 0 and 50 is 25
  - Halfway between 0 and 20 is 10

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

How are these two number lines the SAME?
How are they DIFFERENT?
What number would go on the empty hash mark?

0   50   100

0   20   40
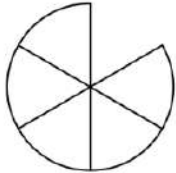
Use the NEXT SLIDE with students.

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

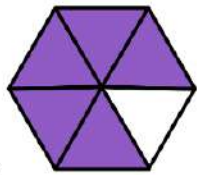- Students may simply recognize a component that makes them the "same" OR "different"
- Some students may state a same/different relationship and say that they are the "same because…. But different because…."

POSSIBLE RESPONSES

- Both use the digits 1245 but the first one only has a whole number of 1. The second has a whole number of 1245
- The second number is 1000 times larger than the first
- The 1 is in the ones place vs. the 1 is in the thousands place
- The 245 represents a decimal value in the first number
- Many other possibilities in regard to place value
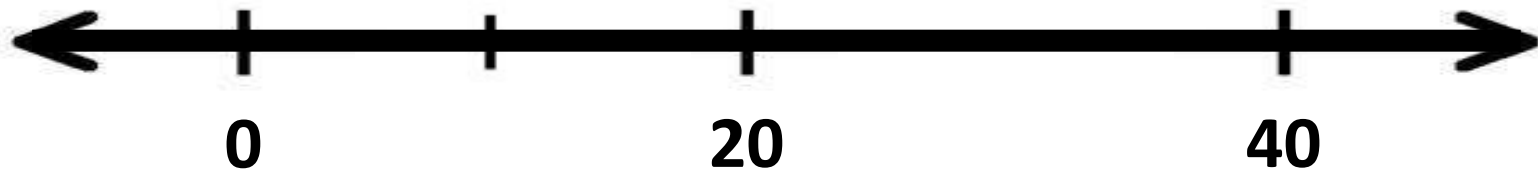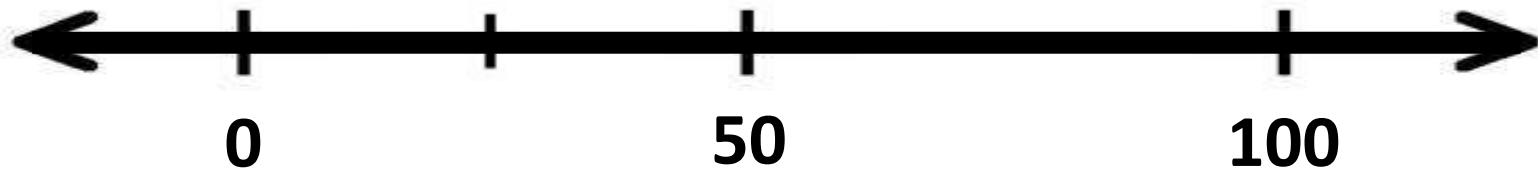
How are these the SAME but DIFFERENT?

1.245   1,245

SAME BUT DIFFERENT

5.NBT.A.3

Use the NEXT SLIDE with students.

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

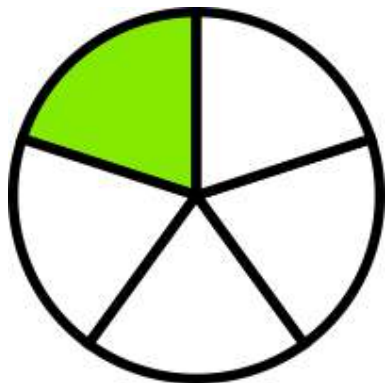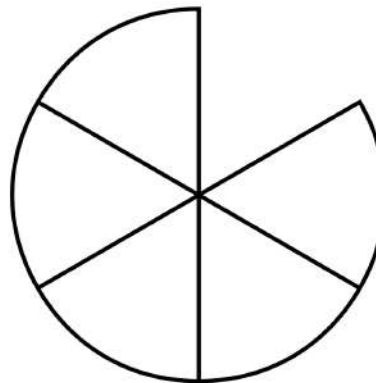Encourage the use of the sentence starter "Three of the _____...."

Possible Responses:
- Three of the images represent sixths (A shows fifths)
- Three of the images are common geometric shapes with the fraction represented by shaded and unshaded parts (B is not a complete geometric shape. The fraction is represented by parts present and absent from a geometric shape)
- Three of the images represent a fractional part using a circle (C uses a hexagon)
- Three of the images can be described in terms of a unit fraction where 1 is the numerator (D can only be expressed as 2/6 or 4/6 but not as a unit fraction of 1/6)
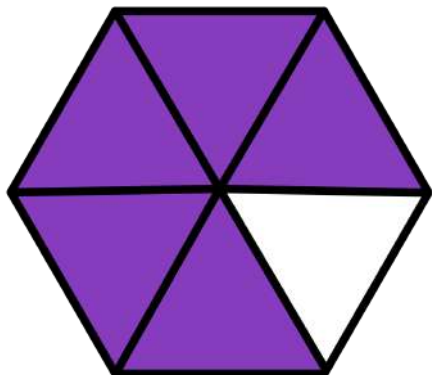
WHICH ONE DOESN'T BELONG?
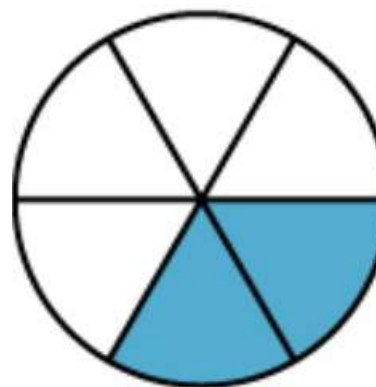
A

B

C

D

"Three of the images _____...."

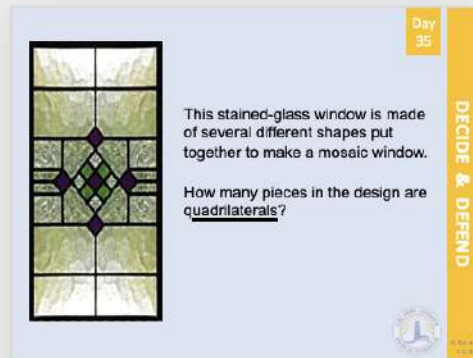3.NF.A.1

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!

This one has proven to generate great discussions.
Do not be tempted to jump in too soon.
Allow students time to really grapple with it.
If asked, we are looking at the smaller shapes that make the larger shape.
Composite quadrilaterals should not be counted.
In other words, do NOT combine smaller shapes to create additional quadrilaterals.
A quadrilateral has just 4 sides.
- There are only 4 large rectangles
  - two on top/two on bottom (the 4 others large shapes have 5 sides – look closely!)
- There are 4 smaller rectangles on the outside edges of the middle section
- There are 4 trapezoids (2 on the left and 2 on the right)
- There are 4 green parallelograms
- There are 4 small clear parallelograms
- There are 5 red parallelograms

$4 \times 5 + 5 = 20 + 5 = 25$

DECIDE & DEFEND

This stained-glass window is made of several different shapes put together to make a mosaic window.

How many pieces in the design are quadrilaterals?

DECIDE & DEFEND

Reflect on Learning

- What was mathematically important in the problem?

- What new math idea did you learn today?

- What suggestions can you offer someone who is trying to convince others of his/her mathematical ideas?

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238 + 184
361 + 292
515 + 127
209 + 136

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
Breaking Each Number into Its Place Value
Example: 238 + 184
                    200 + 100 = 300
                    30 + 80 = 110
                    8 + 4 = 12
                    300 + 110 + 12
                    410 + 12
                    422
                    so 238 + 184 = 422 (be sure to conclude by bringing the routine full circle back to the ORIGINAL problem presented and its solution)
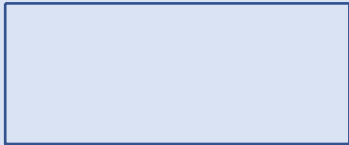
Example: 361 + 292
                    300 + 200 = 500
                    60 + 90 = 150
                    1 + 2 = 3
                    500 + 150 + 3
                    650 + 3
                    653
                    so 361 + 292 = 653 (be sure to conclude by bringing the routine full circle back to the ORIGINAL problem presented and its solution)
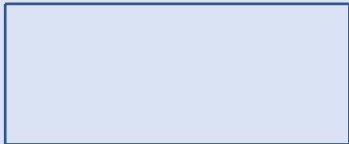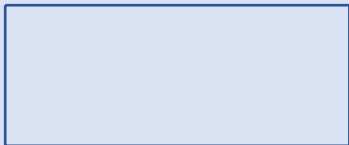
AFTER
After doing the Number Talk String, be sure to highlight this strategy and encourage students to "look for" places they can use it throughout the day.
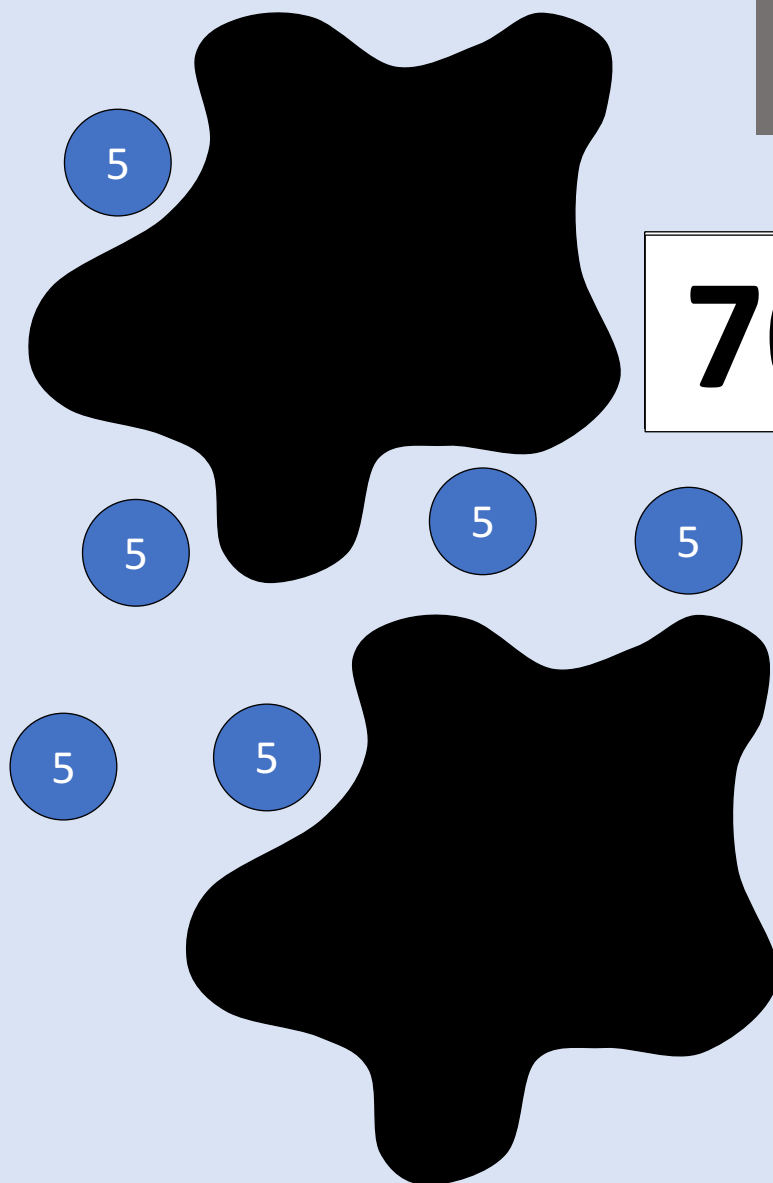
238 + 184

Using the DECIDE & DEFEND routine

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- **DRAFT**: Students <u>draft</u> 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 <u>defend</u> their reasoning with the whole group. Encourage active listening and <u>accountable talk</u>.

- **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!

Decide on a value for the ★ and the ▮ to make the equation true.

$$\bigstar + \bigstar + \bigstar + \blacksquare = 18$$

How many combinations of numbers can you find?

Is there a way to use number patterns to efficiently find all of the possible number combinations?

There are MANY combinations. Encourage a discussion about the PATTERNS noticed and the process used.
SOME of the possible solutions:
- 1+1+1+15
- 2+2+2+12
- 3+3+3+9
- Etc.....
- And… some students may recognize that the combinations become endless if we include decimal values for the stars/box.

DECIDE & DEFEND

Decide on a value for the ⭐ and the 🟦 to make the equation true.

$$\star + \star + \star + \blacksquare = 18$$

How many combinations of numbers can you find?

Is there a way to use number patterns to efficiently find all of the possible number combinations?

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

Which answer is
As Close as it Gets?

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

- Students should use **mathematical <u>reasoning</u>** 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: *To calculate volume, we must multiply the length x width x height. For this figure, the height is not given.*

*9 x 4 = 36, so the height would have to be about 10 feet for 368 to be accurate. This figure does not appear to be taller than the 9 feet shown for the length, so 368 is too large leaving us with <u>**168 as the best choice**</u>. At 168, the height would need to be a little taller than 4 feet which makes sense with this image.*

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Which answer is

As Close as it Gets?

9 feet

4 feet
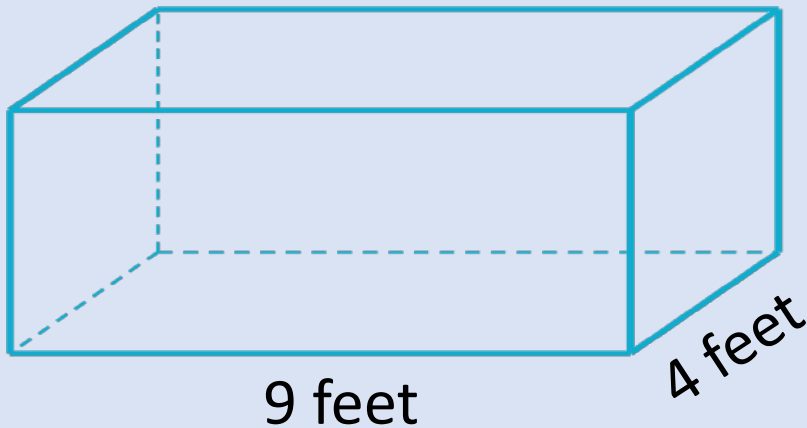
168 ft³

368 ft³

568 ft³

768 ft³

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

5.MD.C.5b
5.R.1

QUICK COUNT

What do you NOTICE?

QUICK COUNT

What did you NOTICE?

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