NSR 180

180 Days of
Number Sense Routines

Grade 4

Days 141-160

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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.

180 Days of
Number Sense Routines

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

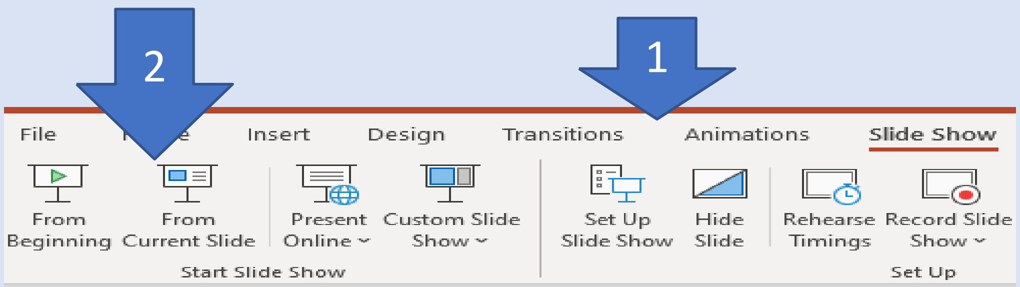
WHAT ARE THE CCPS IMPLEMENTATION EXPECTATIONS? Number sense routines have been developed for all 180 instructional days in grades 1-5. These routines are to be used every day, including early dismissal, late arrival, and field trip days. Because the routines do not require a specific order, it is permissible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

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

180 Days of
Number Sense Routines

Acknowledgements

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

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

Day 141

Esti-Mystery

Estimation Activity with clues!

Students use clues to solve the estimation mystery.
After all of the clues are revealed, students will have enough information to determine if their initial estimate was correct.

Clues are revealed one at a time with time to discuss and refine original estimates after EACH clue is revealed.
No one should be stuck with their original estimate – encourage mindful refinements.

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

ESTIMATION

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Photo D.Caine 2019

How many balls?

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.

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Clue #1
There are 3 more soccer balls than orange basketballs

Clue #2
The orange basketballs are equal to the black basketballs

Clue #3
There are 2 less four-square balls than total basketballs

Clue #4
The volleyballs equal 3 more than the soccer balls

Clue #5
Soccer balls + volleyballs = 19

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

The Reveal

Click to see the answer.

Using the DECIDE & DEFEND routine

As you do this routine with students, USE the CHECKLIST on the left side of the problem as a way to help organize the thinking process

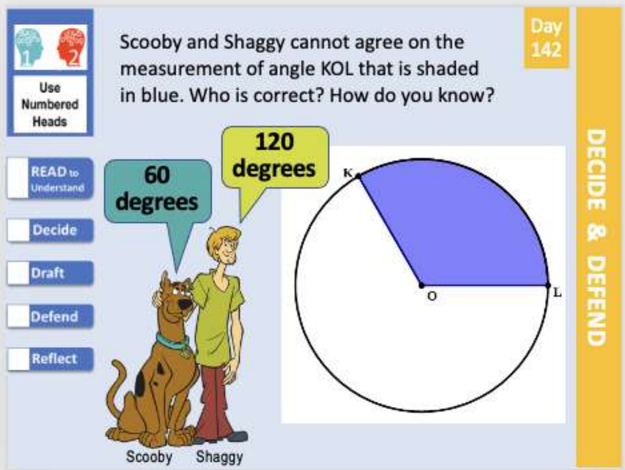
- **READ to Understand:** Begin by having students discuss the question being asked. At this time, do NOT focus on the math calculations required or the answer. This step is designed for students to understand the context of the question (What is the gist of the question?)
- **DECIDE**: Pair or group students. Using a consistent pairing will make this routine more fluid so you do not have to take time to pair students every time you want them to discuss. Have students discuss the question and discuss the question and decide which solution is correct (note: partners may not agree and that is fine provided they can justify their own thinking).
- **DRAFT**: Students draft a statement about their ideas (either as a group or individually and it can be written or oral – teacher's choice)
- **DEFEND**: Students share their ideas and defend their reasoning with the whole group. Encourage active listening and accountable talk.
- **RELECT**: To further develop comprehension, have students use ONE of the sentence starters on the "Reflect on Learning" slide after they have discussed and listened to new ideas with classmates.

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

Day
142

Use the NEXT SLIDE with students.

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



We do not need a protractor to determine the answer.
Encourage students to use logical reasoning.
This angle is clearly larger than a right angle which is 90 degrees, so 60 degrees is not possible.
Shaggy is correct.

DECIDE & DEFEND

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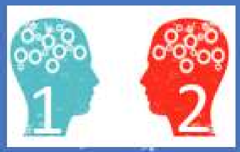
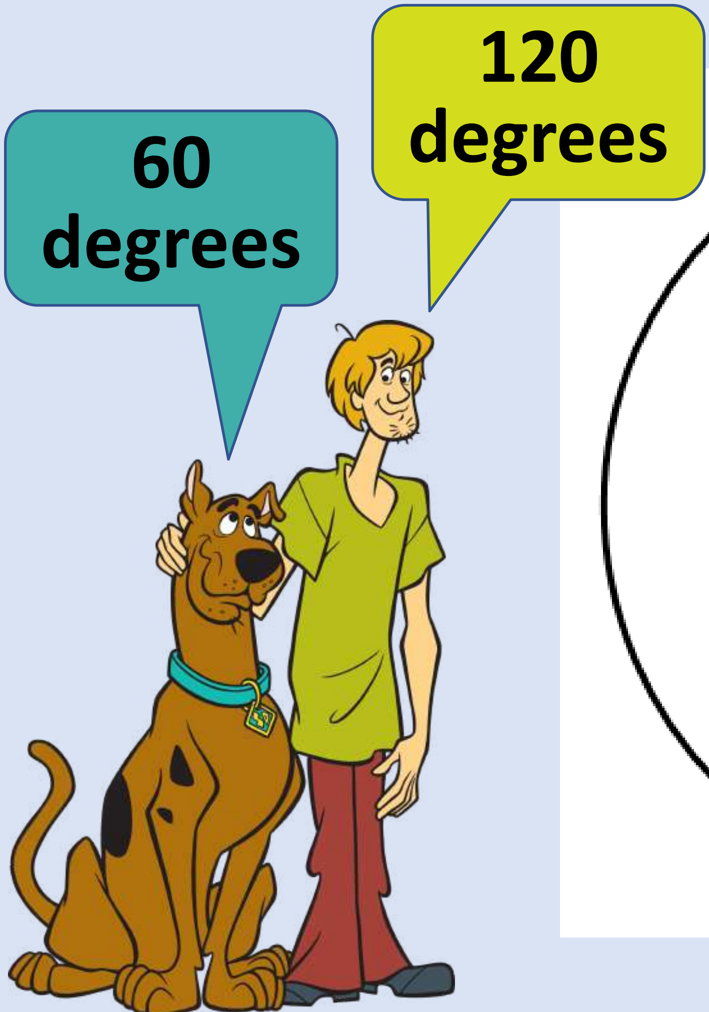
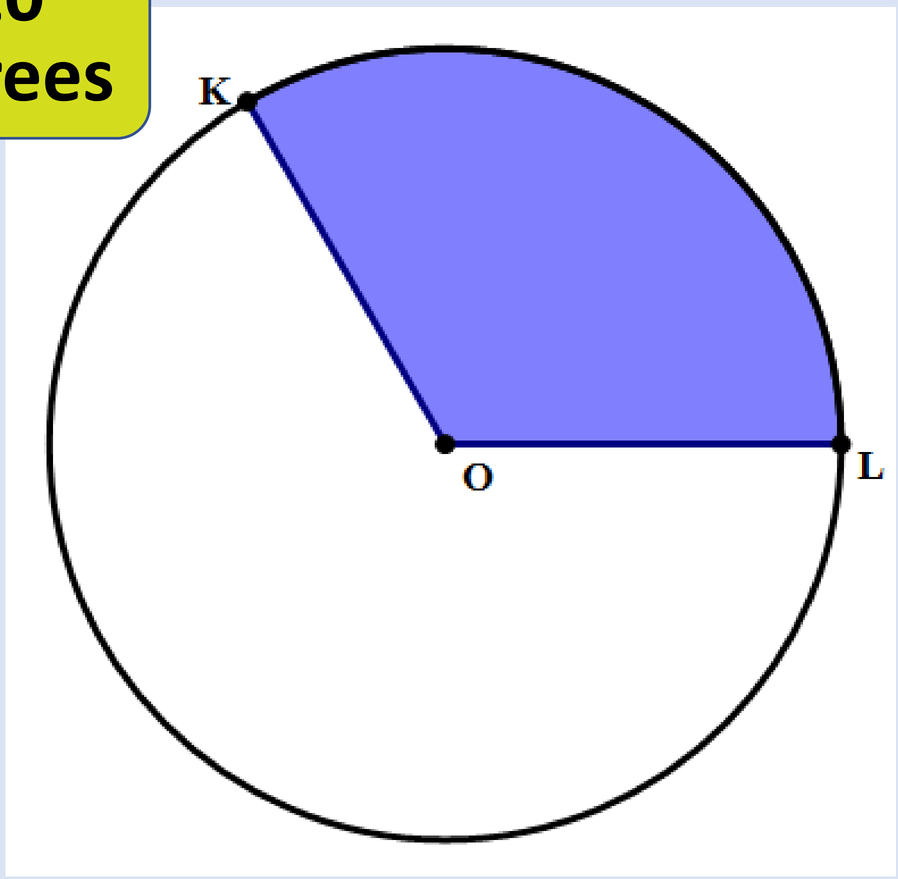


Use Numbered Heads

- READ to Understand
- Decide
- Draft
- Defend
- Reflect

Scooby and Shaggy cannot agree on the measurement of angle KOL that is shaded in blue. Who is correct? How do you know?



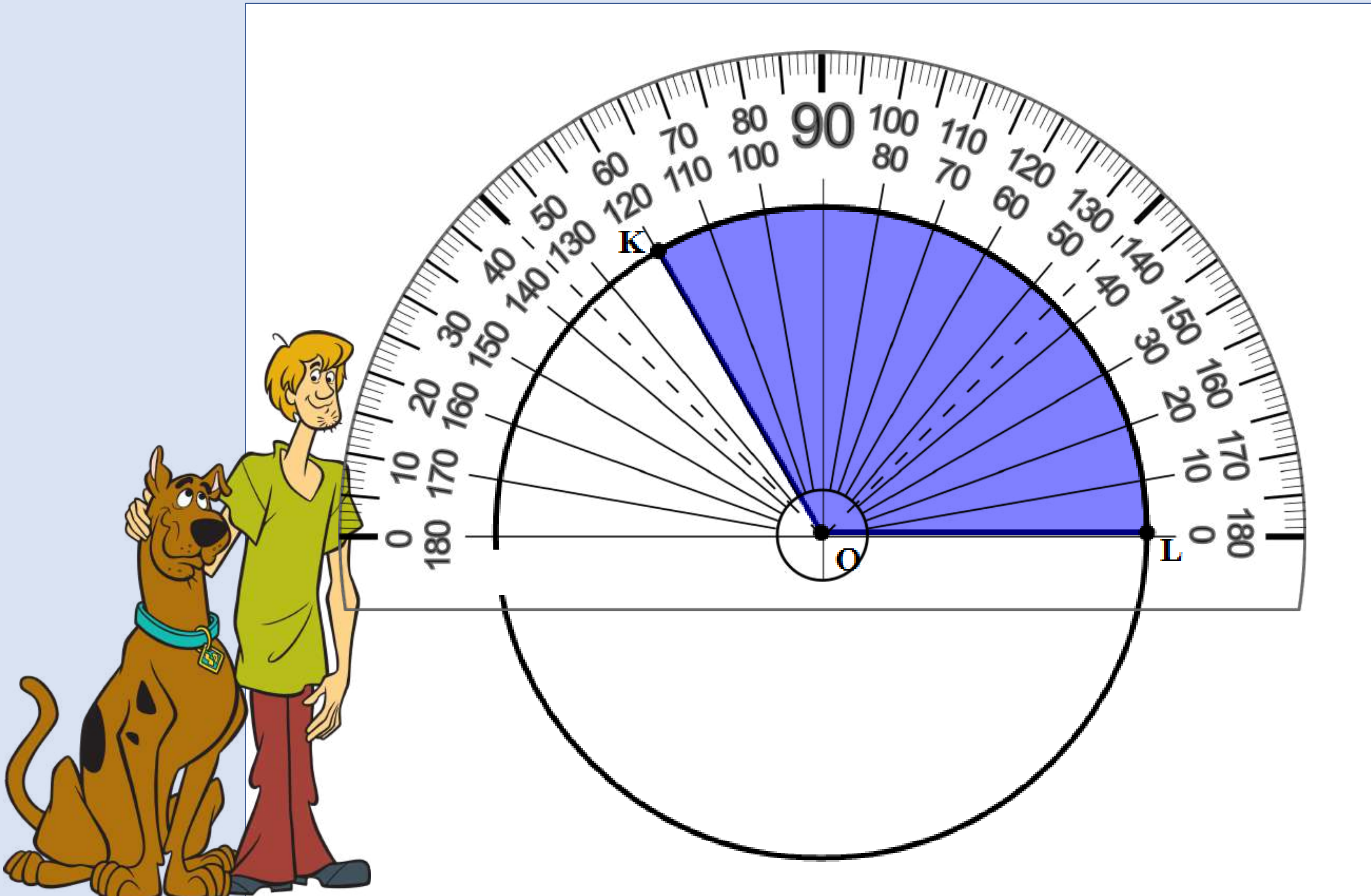


DECIDE & DEFEND

Day 142

Use this screen as an extension AFTER discussing student reasonings.

Scooby was not correct. What might have caused Scooby to think the angle was 60°?



DECIDE & DEFEND

Day 142

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

SPLAT!

What number does this represent?

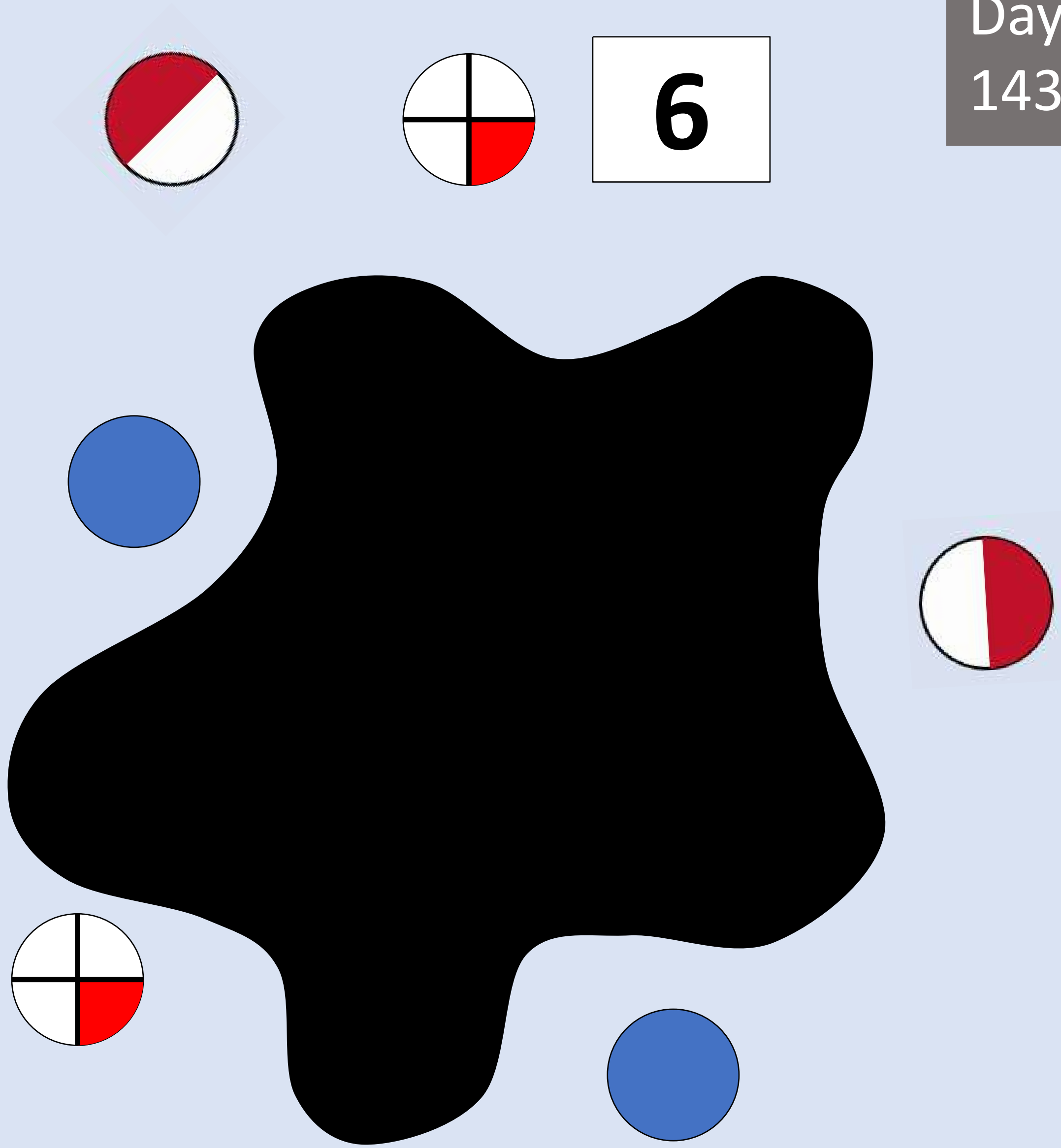
How do you know?

Splat!

What is the total under the splat?

How else could you know?

How can you prove that the value of the dots hiding under the splat is 2½?



Day 144

NUMBER TALK

$\frac{1}{2}$ x 8

$\frac{1}{4}$ x 8

$\frac{1}{4}$ x 16

$\frac{1}{8}$ x 16

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

Multiplying a Fraction by a Whole Number

Each expression in the string builds on the previous understandings.

- Most students will simply recognize that ½ of 8 is 4.
- If ½ of 8 is 4, then we can reason that ¼ of 8 must be 2. Some may visualize the 8 partitioned into 4 pieces others may build from their understanding of that ¼ is half as much as ½.
- ¼ of 16 is 4. Some may reason that if ¼ of 8 is 2, then ¼ of 16 must be 4 since 16 is double the value of 8. Others may imagine partitioning 16 into 4 equal parts.
- 1/8 of 16 is 2. Again, some may build from the previous question while others partition.

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

AFTER

Bring students attention back to the strategies that were highly efficient. Help students to recognize that there are various ways to calculate the product. Two ways include (1) partitioning into equal parts based on the denominator value or (2) using reasoning based on a known value such as ½ of the whole number and building understanding.

$\frac{1}{2}$ x 8

Day
144

NUMBER TALK

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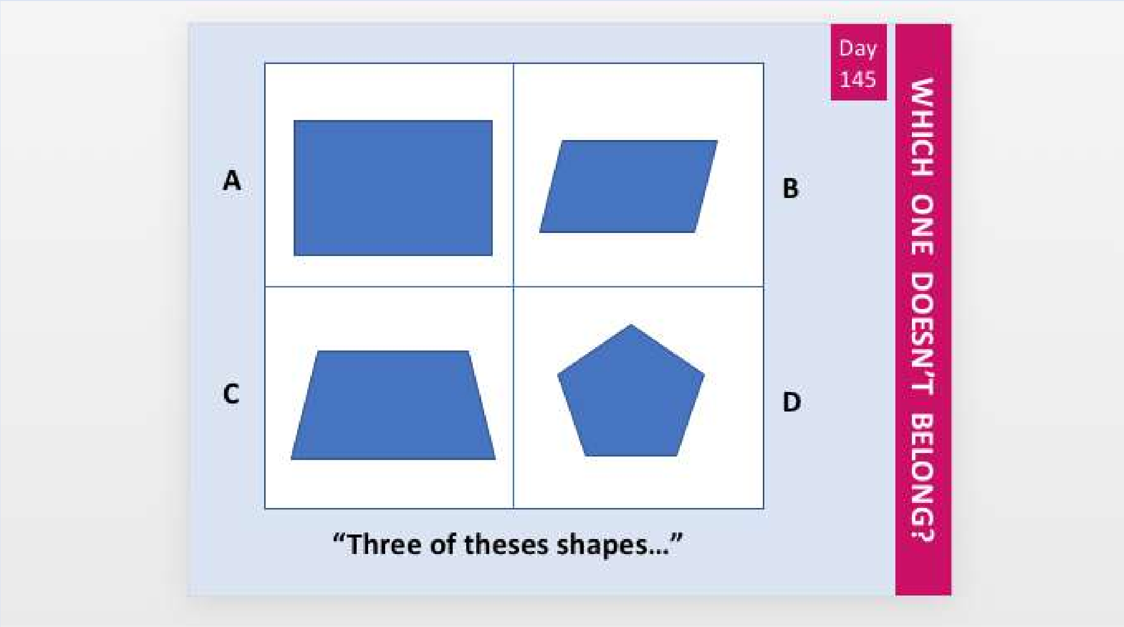
Use the NEXT SLIDE with students.

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



Possible Responses:

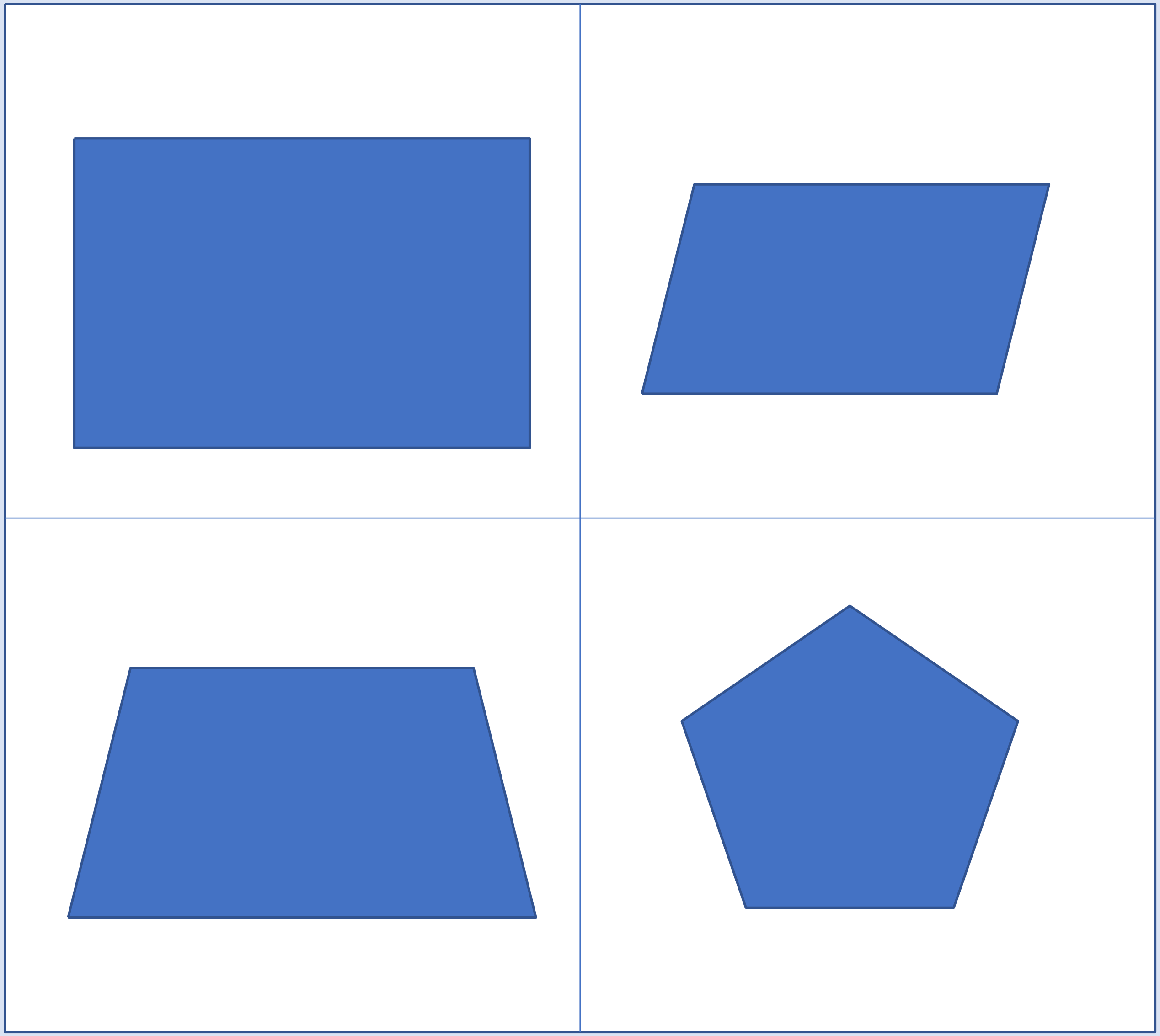
- Three of these shapes have angles that are not 90 degrees.
  Shape A has 90 degree angles.
- Three of these shapes have at least one line of symmetry.
  Shape B does not have a line of symmetry.
- Three of these shapes have at least TWO pairs of sides of equal length.
  Shape C has only ONE PAIR of sides with equal lengths.
- Three of these shapes are quadrilaterals.
  Shape D is not a quadrilaterals, it is a pentagon.

Day 145

WHICH ONE DOESN'T BELONG?

A

B



C

D

"Three of theses shapes…"

Directions for QUICK COUNT routines

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

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

Day 146

What do you NOTICE?

QUICK COUNT

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Day 146

What did you NOTICE?

QUICK COUNT

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Day 146

How many dot stickers?

What counting shortcut did you use?

QUICK COUNT

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I noticed ____ so I _____

(They) noticed ____ so they___

Day 146

QUICK COUNT

Reflect

What was mathematically important?

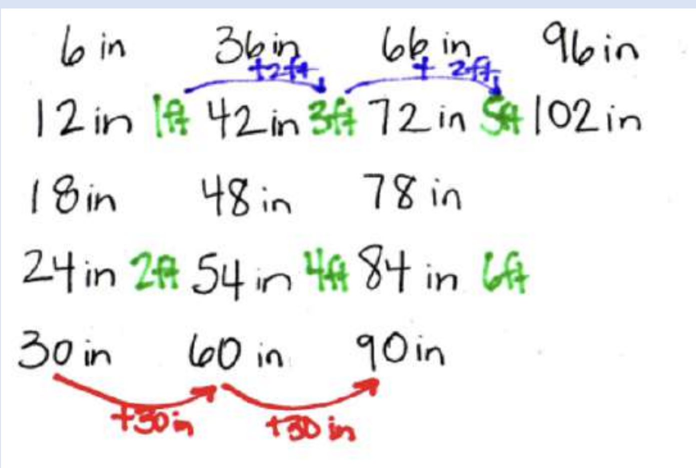
Day 147

Use the NEXT SLIDE with students.

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

Today, you will ask your students to choral count by 6 inches. Count from 6 up to about 102 inches. Yes, this is just like skip-counting by 6s, except you will continue the routine after you finish counting to discuss conversions to feet and patterns.

Have student look for the PATTERNS. These patterns (not the actual counting) are the power and beauty of this routine. Below are a few of the patterns that students may notice. Would these patterns have occurred if we organized the numbers in, let's say, columns with 6 values instead of 5?



Here's the real power of the routine: Explore the mathematical reasons WHY we see these patterns when we arrange the numbers in this way.

CHORAL COUNTING

Day
147

Counting by 6-inch Increments and Converting to Feet

6 inches	__________	__________	__________
12 in.	__________	__________	__________
__________	__________	__________	__________
__________	__________	__________	__________
__________	__________	__________	

CHORAL COUNTING

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Using the DECIDE & DEFEND routine

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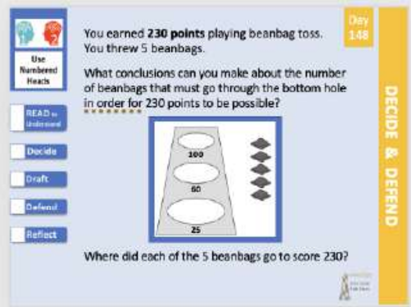
NOTE: This is the CCPS adaptation of the original Decide and Defend protocol

Day 148

Use the NEXT SLIDE with students.

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

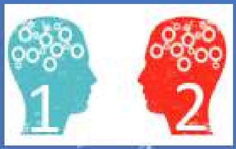


The bottom hole is worth 25 points.
This is an ODD number.
In order to score an even number of points (230), the number of bags that pass through the bottom hole must be an even number (0, 2, or 4)

- If 0 pass in the bottom, 230 points is not possible
- **If 2 pass in the bottom (50), we need 180 more points by throwing 3 in the middle hole**
- If 4 pass in the bottom hole (100), we need 130 more points, this is not possible

DECIDE & DEFEND

Day 148



Use Numbered Heads

READ to Understand

Decide

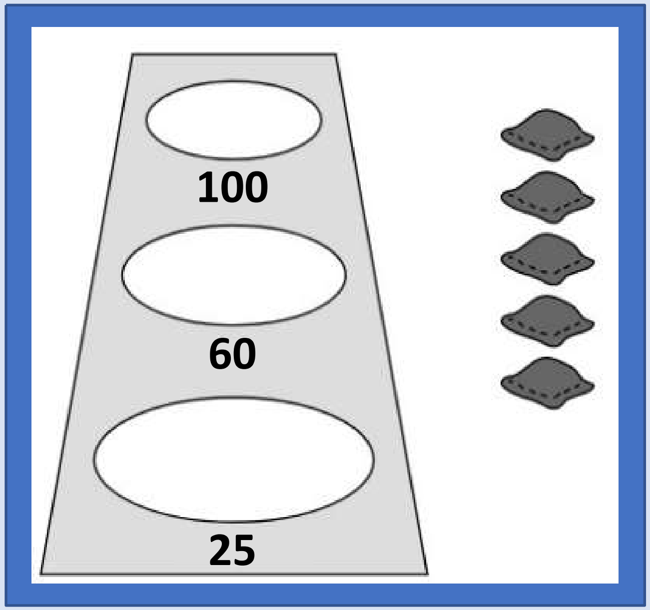
Draft

Defend

Reflect

You earned **230 points** playing beanbag toss.
You threw 5 beanbags.

How were 230 points scored with 5 beanbags?



What **generalizations** can you make about the **number of beanbags that must go through the bottom hole** for 230 points to be possible?

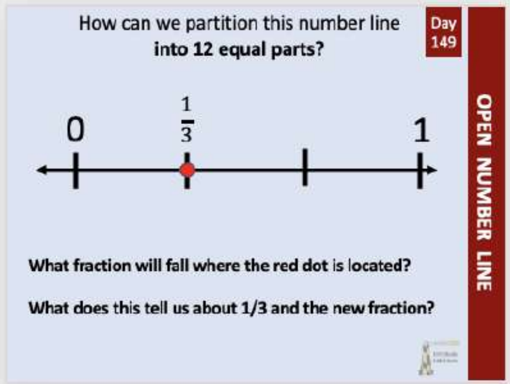
DECIDE & DEFEND

Reflect on Learning

- A new math idea I learned today is…
- Next time I plan to… because…

Use the NEXT SLIDE with students.

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



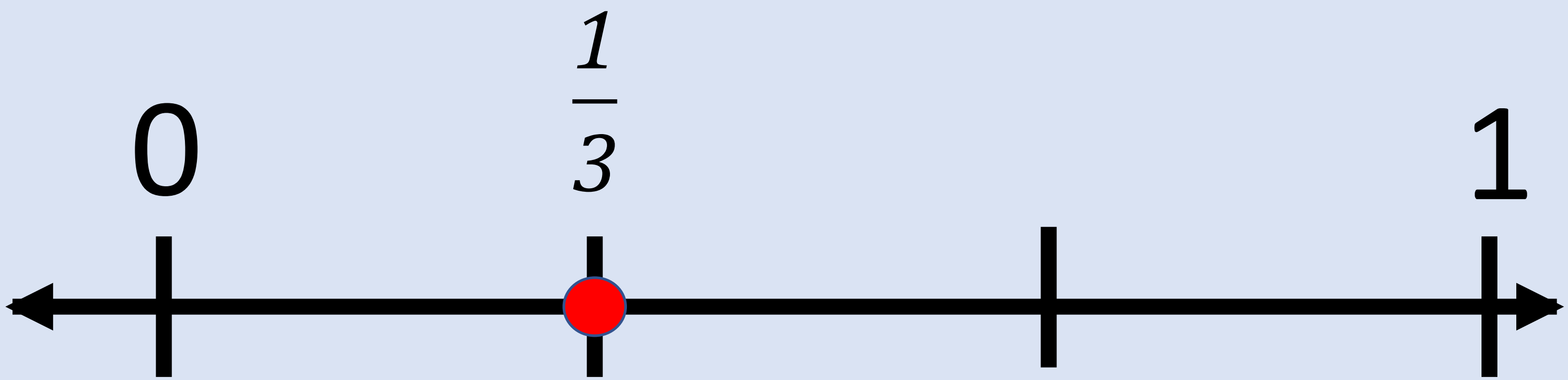
How can we easily partition this number line into 12 equal parts?
A: Divide each of the thirds into 4 equal parts. Teach students to use benchmarks such as halves to partition.

What fraction will fall where the red dot is located?
A: 4/12

What does this tell us about 1/3 and the new fraction?
A: 1/3 is equivalent to 4/12

Day 149

How can we partition this number line
into 12 equal parts?



What fraction will fall where the red dot is located?

What does this tell us about 1/3 and the new fraction?

OPEN NUMBER LINE

Day 150

SPLAT!

396

66

33

33

66

How did you calculate it?

How else could you calculate it?

What is the total?

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

What could those numbers be?

Are there other possible combinations?

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

Adapted from Steve Wyborney's SPLAT!

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What do you NOTICE?

Day 151

QUICK COUNT

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Day 151

What did you NOTICE?

QUICK COUNT

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

Day
151

QUICK COUNT

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Public Schools

I noticed ____ so I _____

(They) noticed ____ so they___

Day 151

QUICK COUNT

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

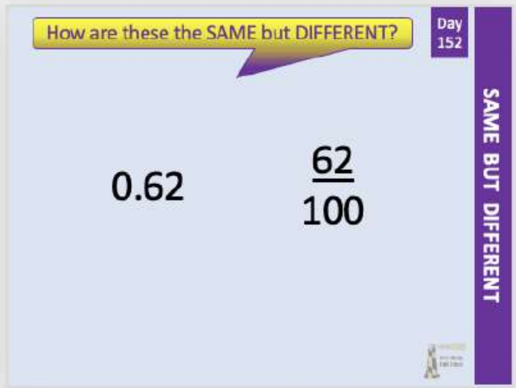
1. Present the slide
2. Ask students to THINK about how the two items are both the SAME AND DIFFERENT.
3. Do not allow conversation at this time -- give ample think time for students to consider the possibilities
4. After some time has been given (a minute or so), ask students to talk with their Number 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.

Day
152

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…."



- One is represented as a decimal, the other is a fraction
- Both represent 62-hundredths
- Both are values less than 1
- They both use the digits 6 and 2 but the decimal does not use the digit 1
- The model for both could look the same

SAME BUT DIFFERENT

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How are these the SAME but DIFFERENT?

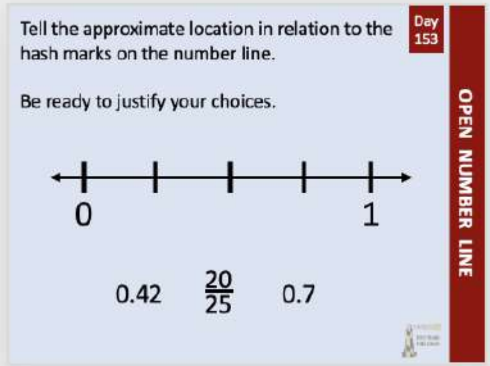
Day
152

SAME BUT DIFFERENT

$$0.62 \qquad \frac{62}{100}$$

Use the NEXT SLIDE with students.

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



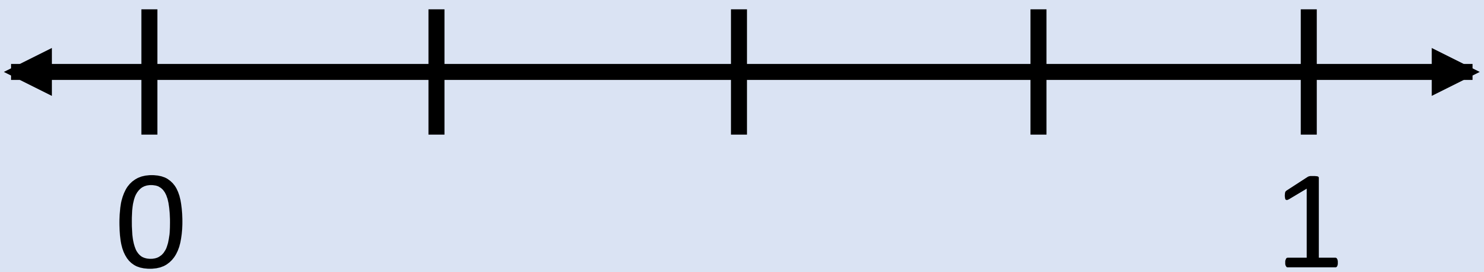
- The line is marked off into ¼ markings.
- 0.42=42/100 falls between 25/100 and 50/100, so 0.42 would fall between the 1/4 and 1/2 marks. It would be closer to the ½ mark since 42/100 is closer to 50/100 than 25/100.
- 20/25 is equivalent 80/100. ¾ is 75/100, so 20/25 would be just to the RIGHT of the third hash mark.
- 0.7 would be just to the LEFT of the third hash mark since ¾ is 75/100 and 0.7=0.70=70/100

Day 153

OPEN NUMBER LINE

Tell the approximate location in relation to the hash marks on the number line.

Be ready to justify your choices.



0.42 $\frac{20}{25}$ 0.7

Day 154

Estimation-Differences

This estimation routine is a little different than the types we have seen so far.
In this routine, you will ask students what they believe the DIFFERENCE is between the two cups of gems.

Show the image of the cups. Ask students, “What is the mathematical difference between the number of gems in the two cups?” (i.e. the value if we subtract)

Record the various ideas.

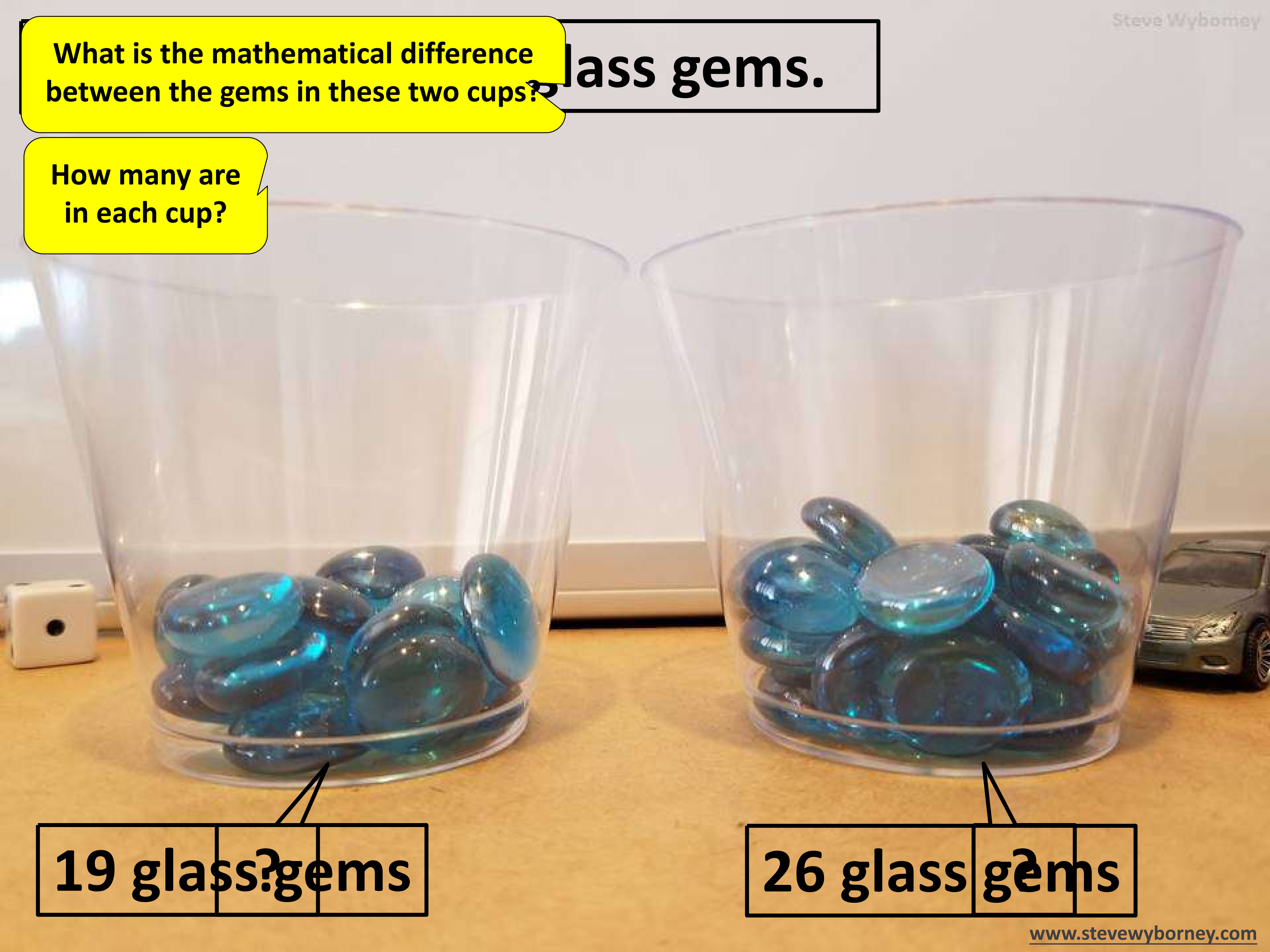
Reveal the difference between the two cups.

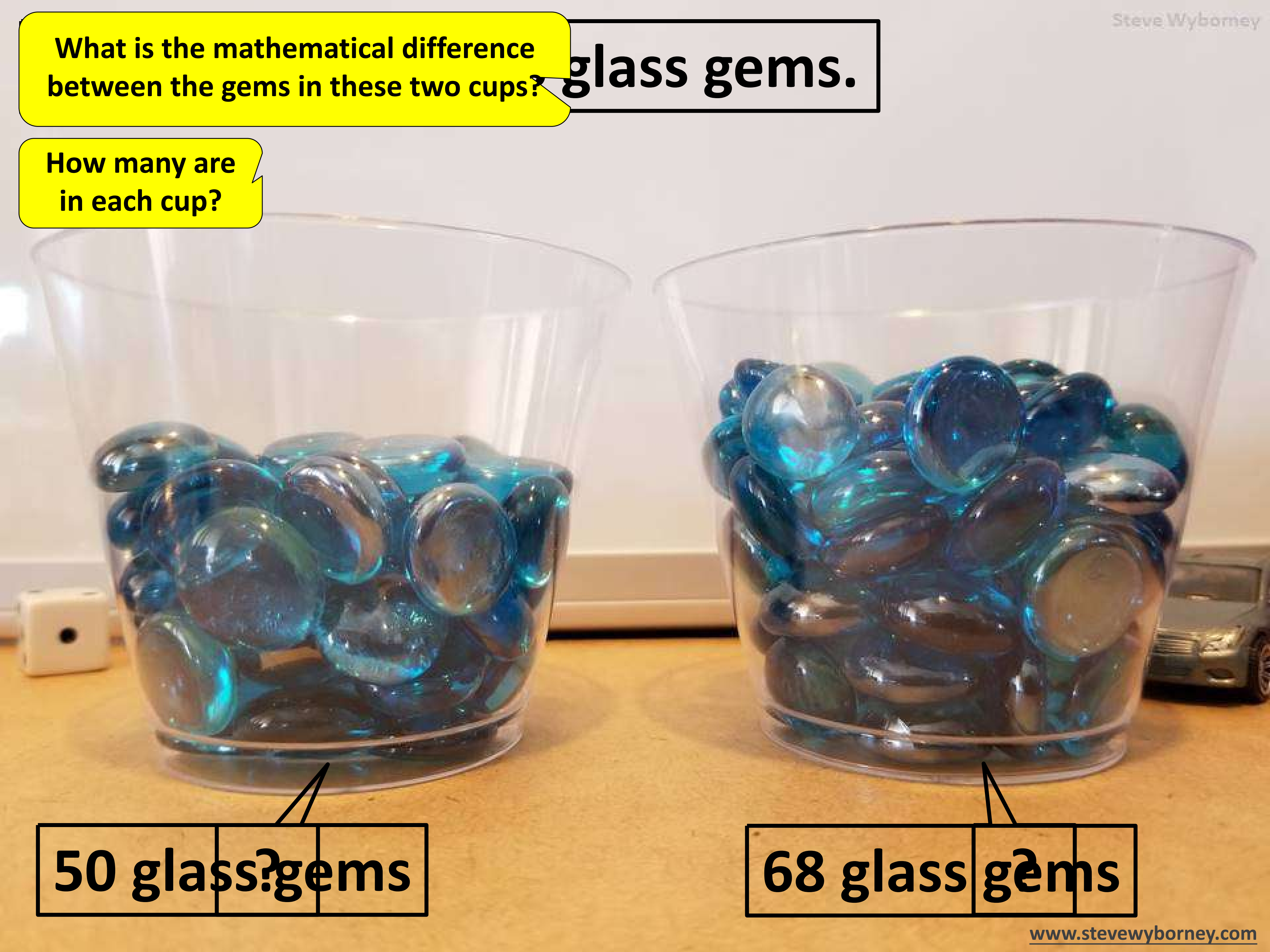
Now ask students how many gems they believe is in each cup. Students should give you a count for the first cup and a count for the second cup. The difference between the two counts should be equal to the revealed difference. Record ideas.

Encourage a variety of reasonable answers and discuss the answers offered.

Repeat with the second image. Encourage and expect more discussion.

ESTIMATION


What is the mathematical difference between the gems in these two cups?
lass gems.
How many are in each cup?
19 glass gems
?
26 glass gems
?
www.stevewyborney.com



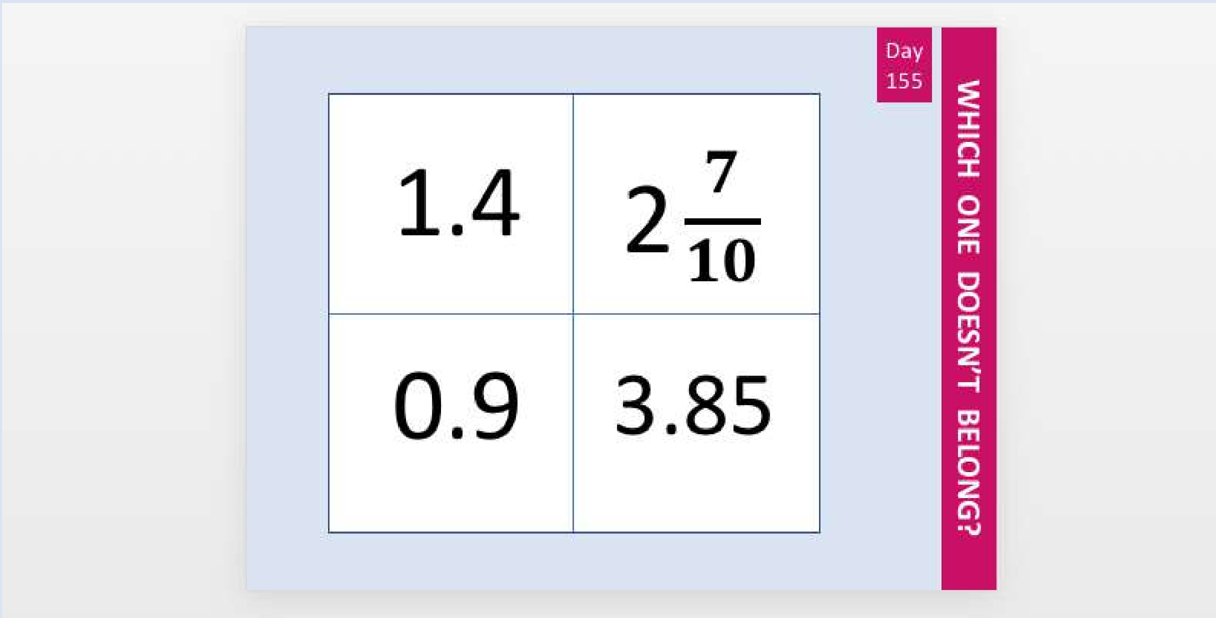
glass gems.
What is the mathematical difference between the gems in these two cups?
How many are in each cup?
50 glass gems
?
68 glass gems
?
Steve Wyborney
www.stevewyborney.com

Day 155

WHICH ONE DOESN'T BELONG?

Use the NEXT SLIDE with students.

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



Possible Responses:

- Three of these values have a fractional part that is greater than ½
  1.4 does not have a fractional part that is greater than ½
- Three of these values are written in decimal notation.
  2-7/10 is not written in decimal notation
- Three of these values have a value that is greater than 1
  0.9 does not have a value that is greater than 1 (does not have a whole number part)
- Three of these values are partitioned into tenths.
  3.85 is not partitioned into tenths, it is partitioned into hundredths

Day 155

WHICH ONE DOESN'T BELONG?

1.4	$2\frac{7}{10}$
0.9	3.85

4 x 25
8 x 25
8 x 75
16 x 25

Day 156

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

Multiplying

This strategy allows students to build on known facts to solve more complex problems.

- Many students will recognize that 4 x 25 = 100 based on their experiences with money (quarters). Some will rely on partial product strategies 80 + 20 = 100
- 8 x 25 --- the hope is that students will recognize that 8 x 25 is simply double the value of 4 x 25 since the 4 doubles to 8. Some may partition 8 into 4 + 4 and use the Distributive Property to multiply 4x25 + 4x25 = 100+100 = 200
- 8 x 75 can be built from 8 x 25. Since 75 is 3x the value of 25, the final product will be 3x larger --- 200 x 3 = 600
- 16 x 25 can again be built from 8 x 25. If students remember that 8 x 25 = 200, then 16 x 25 would be double that product since 16 is double of 8. 16 x 25 = 400

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

Give special attention to the strategies that build on the previous ones to help students recognize the patterns that exist --- when we double on of the factors, the product will double

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4 x 25

Day 156

NUMBER TALK

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Day 157

DECIDE & DEFEND

Using the DECIDE & DEFEND routine

As you do this routine with students, USE the CHECKLIST on the left side of the problem as a way to help organize the thinking process

- **READ to Understand:** Begin by having students discuss the question being asked. At this time, do NOT focus on the math calculations required or the answer. This step is designed for students to understand the context of the question (What is the gist of the question?)
- **DECIDE**: Pair or group students. Using a consistent pairing will make this routine more fluid so you do not have to take time to pair students every time you want them to discuss. Have students discuss the question and discuss the question and decide which solution is correct (note: partners may not agree and that is fine provided they can justify their own thinking).
- **DRAFT**: Students draft a statement about their ideas (either as a group or individually and it can be written or oral – teacher's choice)
- **DEFEND**: Students share their ideas and defend their reasoning with the whole group. Encourage active listening and accountable talk.
- **RELECT**: To further develop comprehension, have students use ONE of the sentence starters on the "Reflect on Learning" slide after they have discussed and listened to new ideas with classmates.

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

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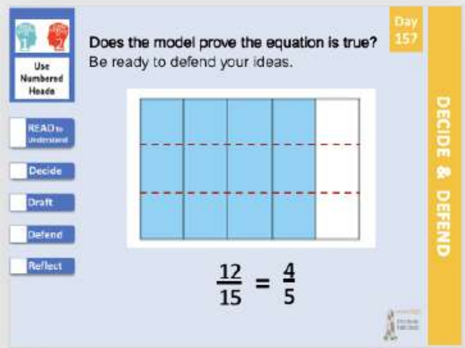
Day 157

Use the NEXT SLIDE with students.

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



The original model shows 5 parts with 4 of the parts shaded in blue.
The original was then partitioned into 3 equal sections.
We did not shade any additional parts, but we now see that 12/15 is the same as 4/5
Continue to remind students that ”parts” always need to be equal.

DECIDE & DEFEND

Use Numbered Heads

READ to Understand

Decide

Draft

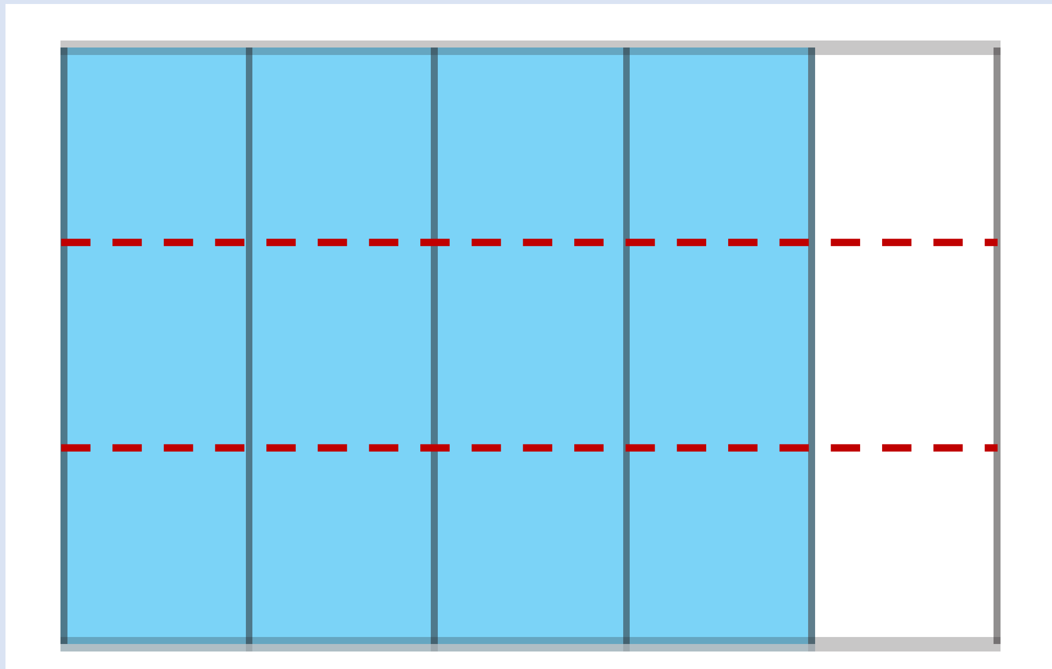
Defend

Reflect

Day 157

Does the model prove the equation is true?

Be ready to defend your ideas.



$$\frac{12}{15} = \frac{4}{5}$$

DECIDE & DEFEND

Day 157

Reflect on Learning

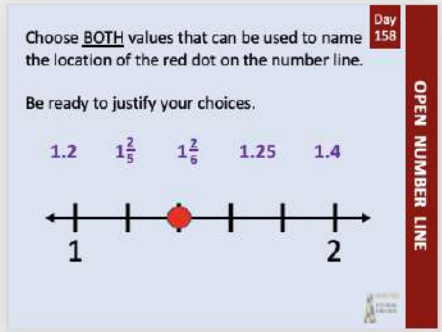
- What was mathematically important in the problem?
- What new math idea did you learn today?
- How is it possible that the 12 parts were equal to the 4 parts?

DECIDE & DEFEND

Day 158

Use the NEXT SLIDE with students.

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



The correct solutions include 1-2/5 and 1.4
Students should easily recognize the 1-2/5 since the red dot is on the second hash out of 5 partitions.
1.4 requires students to understand this as 1-4/10 which is equivalent to 1-2/5.
Students may also recognize 1.4 by skip counting by 0.2 --- 1.2, 1.4, 1.6, 1.8, 2.0 and seeing that the red dot lands on the 1.4 named marking.

- 1.2 is not correct because 0.2 means 2 out of 10 and this is 2 out of 5
- 1-2/6 is not correct because you do not count the starting hash mark over the 1. You count the spaces.
- 1.25 is not correct because the dot is located on the mark that is 2 out of 5, not .25

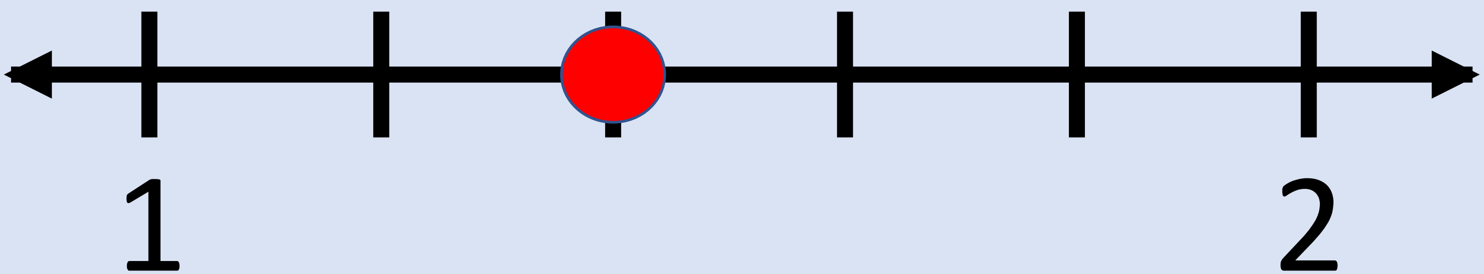
OPEN NUMBER LINE

Day 158

Choose BOTH values that can be used to name the location of the red dot on the number line.

Be ready to justify your choices.

1.2 **$1\frac{2}{5}$** **$1\frac{2}{6}$** **1.25** **1.4**



OPEN NUMBER LINE

What do you NOTICE?

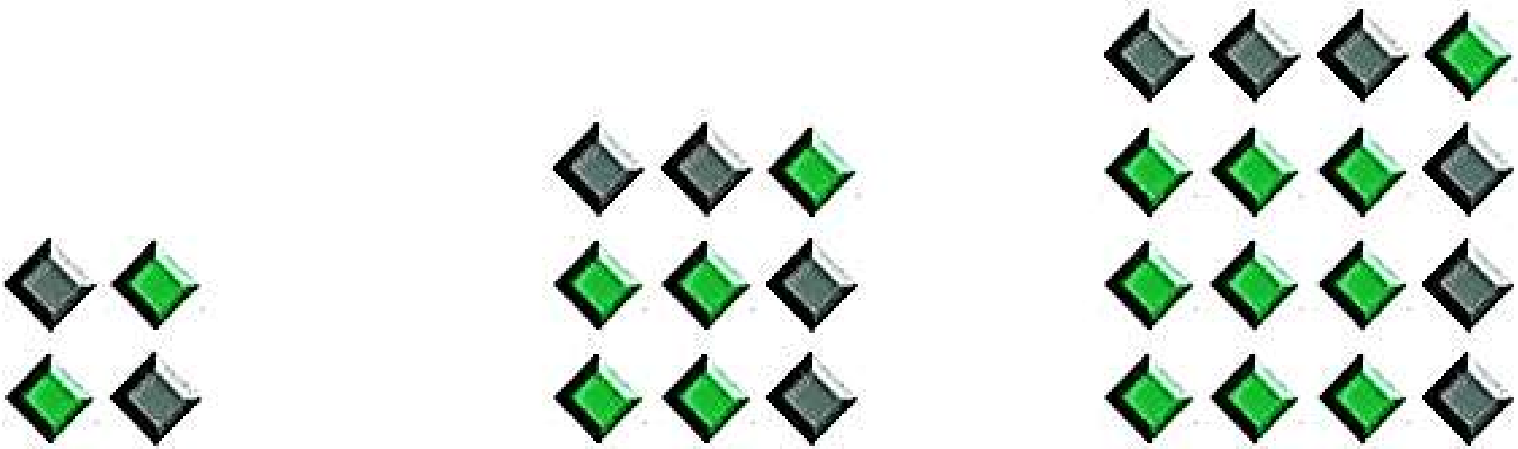


Figure 1 Figure 2 Figure 3

Day 159

What did you NOTICE?

QUICK COUNT

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Day 159

How many do you see?

What counting shortcut did you use?

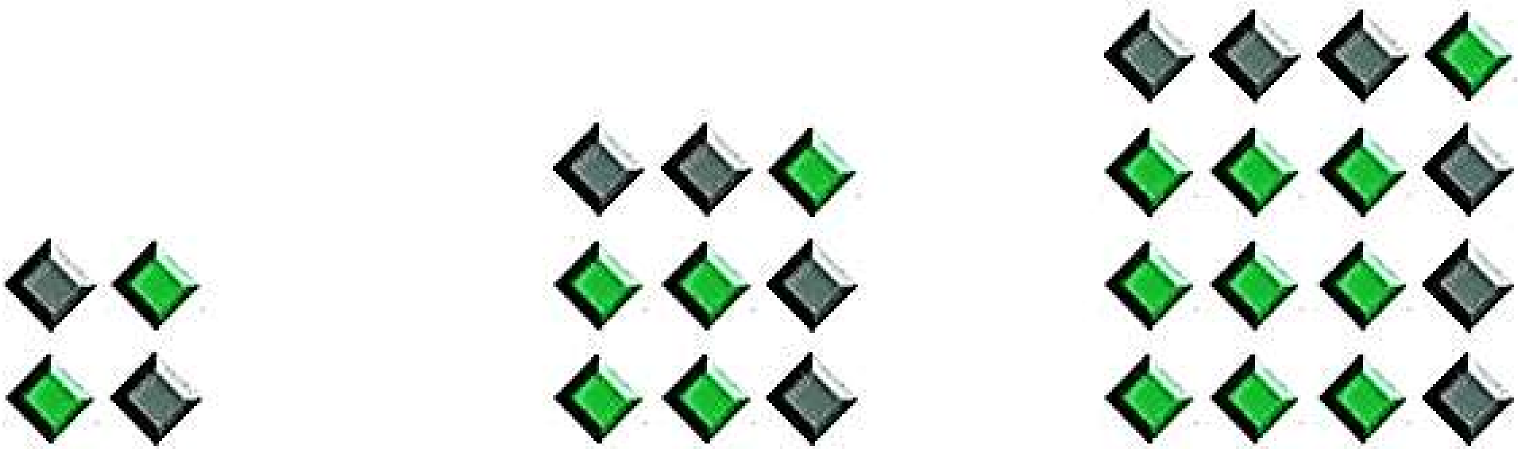

Figure 1 Figure 2 Figure 3

QUICK COUNT

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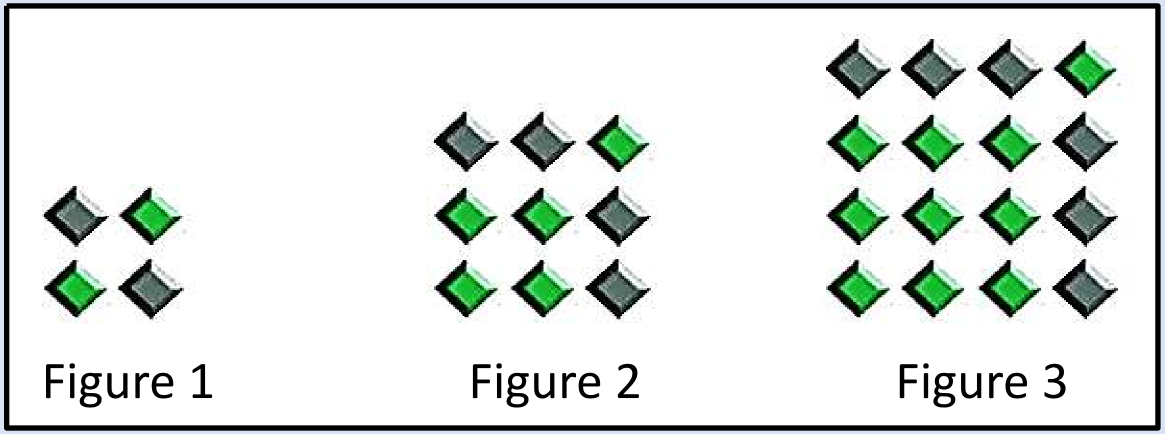
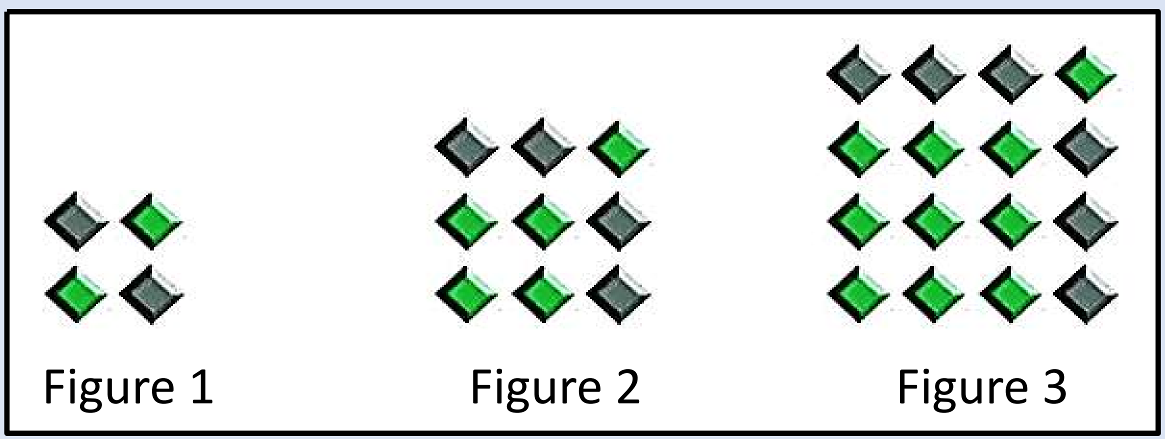
Day 159

QUICK COUNT

I noticed ____ so I _____

(They) noticed ____ so they___





Day 159

Reflect

What was mathematically important?

QUICK COUNT

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35 x 2
35 x 10
35 x 20
755 ÷ 35

Day 160

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. **It will be VERY IMPORTANT for you to do ALL FOUR of the expressions to build the mental calculation skill that is intended.**

DURING

Multiplying Up to Divide Using known Multiplication Facts

Possible reasonings:

- 35x2 – students may simply double 35 or may use partial product (60+10)
- 35x10 – students should immediately recognize this a 350 – very little discussion will be needed but it is a building block to the next expression
- 35x20 – some students may double the value of 35x10 and some may use partial product strategies to get 700
- If students recognize that 35x20=700, they should connect 700 ÷ 35=20 leaving 55 more. 55 ÷ 35=1 r.20 for a final quotient of 21 r.20

Remember, students will come with a variety of strategies. During a Number Talk, the students explain their way of thinking. When students find ways that are especially efficient, highlight those strategies in the reflection that should follow the Talk. 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

Help students recognize the strategy of using known multiplication facts to determine quotients.

Day
160

35 x 2

NUMBER TALK

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