

CI 431 Midterm Activity

Names: Daniel Vicens, Sydney Newman

You and your group will work *collaboratively* to respond to each teaching scenario. Do not divide and conquer. There should be lots of interesting conversation happening!

You are encouraged to upload photos of work you do by hand or of manipulatives to illustrate your thinking. Feel free to use whiteboards. Put your responses in the blank rows below each question

Topic: Number Sense

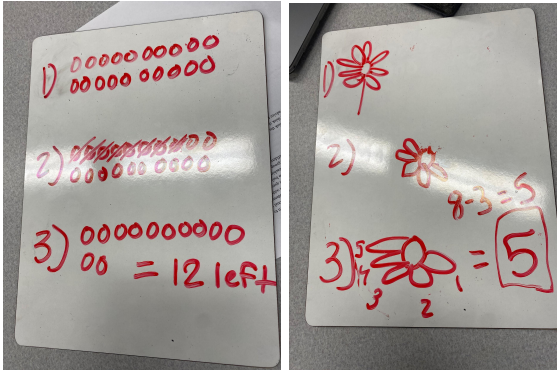
1. A very important goal that you have for your first graders is for them to be fluent in their “combinations of ten”.
 - a. Clarify what is meant by “combinations of ten” and give two examples
 - b. Describe an activity you could do with your students that helps them work with combinations of ten. The activity should incorporate manipulatives, involve writing equations, and have a fun context.
 - c. Your curriculum later mentions “benchmarking to 10”. Describe the difference between “combinations of ten” and “benchmarking to 10”. Why is “benchmarking to 10” important?
- a. Know what numbers add up to ten (Ex. $9+1$, $8+2$)
- b. Use a nine sided die and have each student roll and write down what number they got. Then they would need to figure out the other number that would make ten. The Teacher can set up the worksheet where it says $_ + _ = 10$. The fun context can be a story problem. Ex. Your friend and yourself are throwing a huge pizza party and you need 10 pizzas. You roll a die to decide how many each of you will be buying.
- c. Combinations of ten is a student being able to recognize what two numbers add up to ten. While, benchmarking to ten is knowing how far away a number is from 10. Ex. 9 is 1 away from 10. It can be helpful by giving students a strategy when solving problems that may deal with more complicated numbers. Ex. $5+7$; Student would know that 7 is 3 less than 10 and could make problem $5+10$ and then subtract 3 to get 12 as their answer.

Topic: Word Problem Structures

2. You have been working hard with your first graders on understanding addition and subtraction, and you are excited by their progress! You want to make sure that your students develop an understanding of several different types of story problems.
 - a. Write **two** “comparison” story problems, one with an unknown difference and one with an unknown smaller set. Use numbers within 20.
 - b. For each comparison story problem, show how students might use unifix cubes or drawings to find the solution. Include equations that align with each solution strategy.
 - c. Write a “part-part-whole” story problem with an unknown part. Use numbers within 20.
 - d. For your story problem, show how students might use unifix cubes or drawings to find the solution. Include equations that align with the solution strategy.
- a) Unknown difference: Jane has 12 red marbles and 8 blue marbles, How many more red marbles does she have?

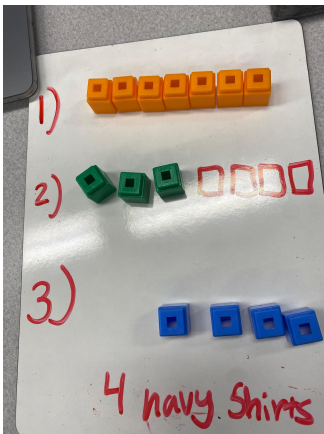
Unknown smaller set: Lailah and Jessica went to the flower shop to buy flowers. Lailah bought a

flower that had 8 petals while Jessica bought a flower with less petals. If Lailah's flower had 3 more petals than Jessica's, how many petals did Jessica's flower have?



b)

c) Randy has two colors of shirts, green and navy. In total Randy has 7 tshirts. If 3 of the shirts are green, how many navy shirts does he have?



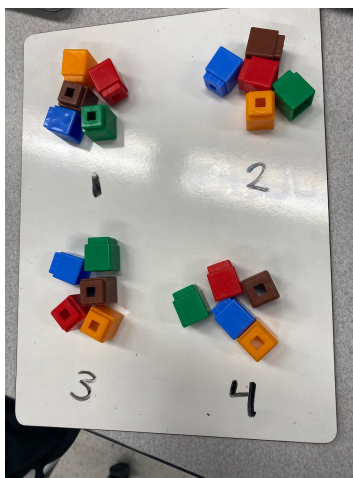
d)

3. In your fourth grade class, students seem to be developing a solid understanding of division as taking a given amount and sharing it equally amongst a given number of groups. You want to make sure that your students develop an understanding of other types of situations as well.

a. Using a context that might be relatable for upper elementary school children, write a measurement division story problem.

b. For your story problem, show one way a student might find the solution. Include an equation that aligns with the solution strategy.

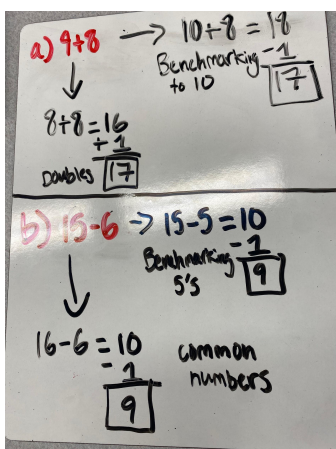
a. It is Randy's birthday and he decided to go laser tagging with 19 of his friends. They told Randy that to play laser tag, they need teams of 5. How many teams will there be for their laser tag game?



b.

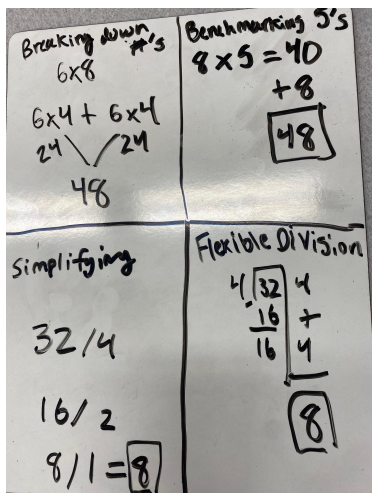
Topic: Basic Facts

4. Your second graders have been doing a great job using counting strategies to solve basic facts addition problems like $9 + 8$ and $15 - 6$. You are now preparing a unit that focuses on using reasoning strategies. You want to anticipate several different reasoning strategies that students might use. For **each** fact below, show/describe **2** different reasoning strategies that can be used.
- $9 + 8$
 - $15 - 6$



a.

5. Your third graders have a solid understanding of multiplication as equal groups and arrays. You are now preparing a unit that focuses on using reasoning strategies. You want to anticipate several different reasoning strategies that students might use. For **each** fact below, show/describe **2** different reasoning strategies that can be used.
- 6×8
 - $32 \div 4$



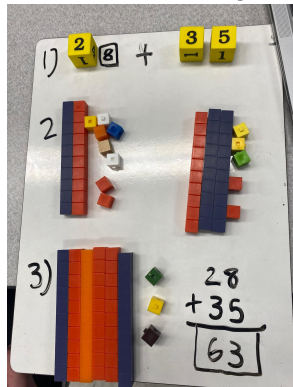
6. **Use the following scenario to answer the questions below:** At the beginning of the lesson, the teacher displays various sizes of cylinders and asks her students if they think there is a relationship between the distance across the circular base (diameter) and the distance around the circular base (circumference). After a bit of discussion, she states the goal of this lesson will be to investigate this relationship. The teacher then presents a drawn circle to the class and asks the class to recall how to measure the distance across the circle. She then discusses how to measure the length around the circle using a piece of string. She then does the same with a tin can she brought in. The class is then told to work in pairs and collect more measurements of at least 4 more circles they find or create. After the measurement phase of the lesson, the class came together and all the data was displayed. Individual students then presented and defended ideas to the class about the relationship between the diameter and circumference. By the end of the class, students agreed that the circumference was always a little more than three times the length of the diameter.
- This class has a few students with mild disabilities related to processing auditory information and organization of thoughts and written work. Give **two** possible accommodations for this lesson that could potentially support these students. (Consider revisiting [ideas from our book](#))
 - Suppose you are co-teacher in this class and want to suggest a [co-teaching strategy](#) to utilize for this lesson. What strategy will you suggest? Why?

- To accommodate for processing auditory information, the teacher can provide written directions or have a transcriber program for students to read. To help accommodate students with organization of thoughts, you can create a worksheet with the step by step instructions and clearly labeling where to write the circumference and diameter.
- We suggest one teach, one assist since they are not changing any of the content or how it's being taught. A general education teacher would be unaffected by the accommodations and can teach the lesson as they normally would.

Topic: Place Value

7. You've been teaching about place value to your second grade class, and the vast majority of your students are proficient at being able to tell you how many tens and ones there are in a given 2-digit number. For example, if you ask any of your students about the number "83" they will say "that's 8 tens and 3 ones." But, as you have started working on multi-digit addition, you've noticed that students don't seem to be applying their place value knowledge to this newer topic. Instead of using their knowledge of tens and ones to add numbers, you are finding that many students are counting up by ones to find the sum. You decide to plan an activity that will support your students to grow in their ability to use their knowledge of place value to add 2-digit numbers.
- Describe an activity you could do with your students that helps them use place value to add multi-digit numbers. The activity should incorporate manipulatives including a place value mat, and have a fun context.
 - Show how students would add $28 + 35$ while engaging in your activity.
 - Justify how your activity pushes students away from counting up by ones and towards thinking in groups of tens and ones.

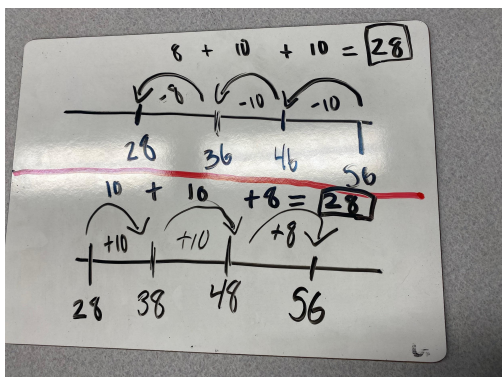
- a. Two Penguins, Randy and Jane want to build an Igloo. They roll dice to decide how many ice squares they each need to bring to build the igloo. By the end of the week they want to build 5 igloos. You and your partner will each roll two dice. The first partner will roll and create a 2 digit number with the numbers you rolled with base ten blocks. Then your partner will take their turn and repeat the same steps. Then you will add two numbers together to see your total number of ice cubes for that igloo. You will repeat 4 more times to create 5 igloos.



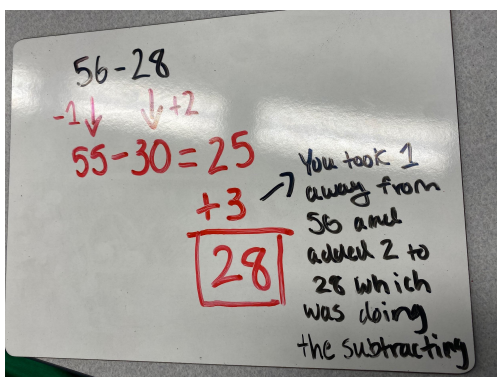
- b.
- c. When using the base 10 ten blocks, students can visualize the individual tens and ones in each number. Then students are physically adding them together and replacing one's with a 10's block when necessary.

Topic: Multi-Digit Operations

8. Your curriculum is asking students to make sense of subtraction problems like $56 - 28$ in a variety of ways..
- Show **2 different ways** you anticipate students might use an empty number line to find $56 - 28$.
 - Show/describe a compensation (rounding) strategy that could be used.
 - A student shares the standard algorithm for $56 - 28$ that their parents taught them. You ask them to explain their thinking and they say, "you have to cross out the 5 and put a 4 and put a 1 in front of the 6". When you ask them why they do that, they say "my mom said so". How can you help them understand the "why" behind these steps?



a.

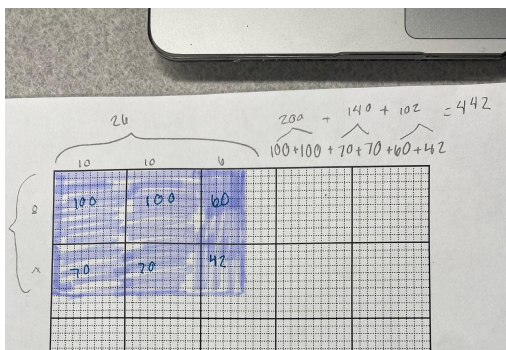


b.

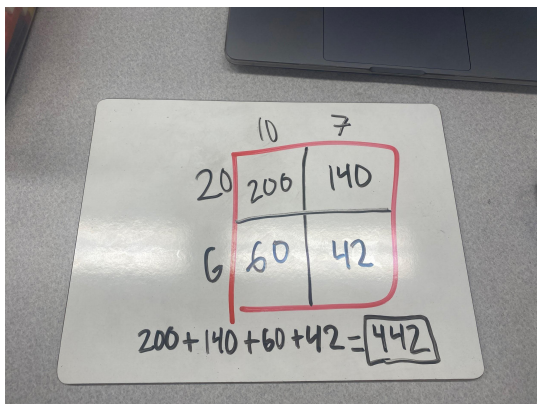
- c. In this problem we can't take 8 ones from 6 ones so we have to borrow from the tens place which is the five, meaning we would take away 1 ten from the 50 making it 40 and giving ten ones to the 6 making it 16 ones. We then are now able to subtract 8 ones from 16 ones and have 8 ones left over and then we would have 4 tens - 2 tens giving us 2 tens left over and overall our answer then becomes 28 or you could say 2 tens and 8 ones.

9. You are a new third grade teacher! You are spending some time reviewing some different forms of multiplication so that you feel confident teaching them. Using the problem 26×17 ...
- Write a story problem that could be used for 26×17 .
 - Write an example of what a "benchmark estimation" question could be for this problem and explain one way students might answer your question.
 - Show how the answer can be found using base ten grid paper.
 - Show the "box method" (a.k.a "break apart" or "open array")
 - Give two reasons why some curricula choose to have students use the "box" method rather than the "traditional multiplication algorithm" when first learning multi-digit multiplication.

- Your school is going on a trip to the zoo and there is 17 classes with 26 students in each class. How many students are going on the field trip?
- Your teachers making cupcakes for their classes and want to make sure they is enough for each student and teachers to have one. They decided to make 30 cupcakes for every class. If there is 17 classrooms, **Do you think they will make more or less than 500 cupcakes?**



c.



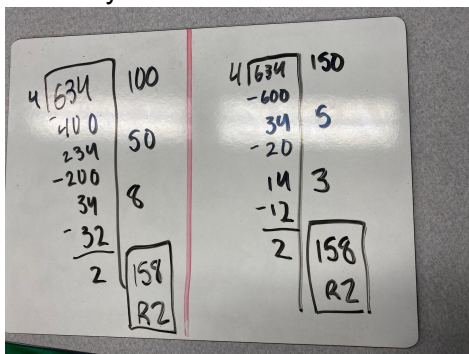
d.

- e. It is able to break up bigger numbers to smaller parts so they are easier to multiply together. Also it creates a visuals and makes it clear to students where to write their answers.

10. Your 5th grade students are working in multi-digit division problems.

- Write a story problem for $634 \div 4$.
- Show two different ways this can be solved using "flexible division" strategies.
- When working on "long division", you decide to use a money sharing context (Six \$100 bills, three \$10 bills, and four \$1 bills) to make sense of the steps. Practice explaining the steps to one another, then call Adam over. He will choose one person at random to talk through each step. (You don't need to answer the question in writing)

- a. A newspaper company printed 634 newspapers in 4 days, how many newspapers did they print each day.



b.

Topic: Classroom/Math Learning Environment

11. It's the first day of fifth grade! You are so excited to get the year started with a new group of students. In the morning, you play a lot of team building activities, and your students seem eager to learn and work together. After lunch, you project a sample daily schedule so that your students can see what a "normal" day will look like. When you get to math on the list, you hear a ton of groans! In the moment, you just keep going, but later that night you are thinking a lot about those groans and how to respond.
- Why do you think so many of your fifth graders groaned when you mentioned math? Think of a few reasons.
 - How do you want your students to feel about math class this year? What are some goals you have for your students in terms of their relationships with math?
 - What can you do in your classroom to help your students feel differently about math this year than they have in the past? How are you going to support your students in forming positive relationships with math? Name at least three specific ideas you want to implement in your classroom.
- a. Students may have had bad experiences with past teachers and not allowing them to use strategies that make sense to them. It can be seen as boring and confusing. Lastly, math can be harder to conceptualize than other subjects.
- b. We want them to have a positive relationship where they can choose strategies that make sense to them so they can feel confident in what they're doing. Also, be able to create fun games and story problems that they are able to relate to.
- c. Have them fill out a survey about what they likes and did not like about math in the past. Provide options for problem solving strategies and check-in with them individually.

Topic: Course Reflection

12. Thus far in our course, we have explored various beliefs, practices, and structures related to the teaching of elementary mathematics. We have also had discussions centered around meeting the needs of students including topics related to differentiation, modifications/accommodations, co-teaching strategies, and more. As a group, decide on "**Three Big Ideas**" about teaching and learning mathematics that you believe will be very important to remember in your future work with students. Briefly justify each key idea.

- Estimation and simplifying numbers is a key way to solving problems**
 - This is important because students can be very intimidated by bigger more confusing numbers and problems, and so giving students a key way of solving something by either breaking down a number or adding a little to it can help a student get a grasp on tough concepts and give them the help they need until they are ready to take on these more challenging problems.**
 - We as teachers need to make sure that we are conscious of what problems could be challenging to our students so that we can give them the option of estimation and simplifying.**
- Tactile experiences are important to student's learning**
 - Most students learn best through hands-on experiences and being able to physically visualize problems which increases their comprehension and understanding.**
- Don't limit students to one solution**

- **We have explored many reasoning strategies and problem solving skills and emphasizing the idea that all students will reason differently that best fits them to make the most sense. This helps create a healthy relationship between students and math. Math is not about memorizing one way of learning, it's about reasoning and problem solving skills that they feel most connected to.**