Relationship Between Addition and Subtraction—Grade 1

Lesson 6: True or False Sort

Rationale: This lesson prepares students for the ongoing work of balancing equations. Students will see the equal sign not as signaling "the answer" but as a symbol meaning that both sides of the equation have the same value. Recognizing the value on either side of the equal sign, and whether or not those values are equivalent, is a critical step before asking students to provide a missing value to balance a given equation.

Objective: I can determine whether an equation is true (same value on both sides of the equal sign) or false (different values on each side of the equal sign).

Vocabulary: add, subtract, true, false, equal, "is the same as", equivalent, equation

Materials: Magnetic counters, demo and activity equation strips, student tools as needed

1. Display the first demo equation strip, but hide the expression to the right of the equal sign with a sticky note or magnet.

$$2 + 2 = \boxed{}$$

2. Ask students, "Who can predict what will be hiding under here when I remove this cover?" Encourage use of a tool such as fingers, counters, rekerek, etc. as needed, and provide the wait time necessary for using those tools. Continue this throughout the lesson. During the wait time, encourage students who are ready to think whether there is anything else that might be hiding in addition to their first answer.

3. Choose a student to share their prediction. Ask who agrees and who disagrees or has a different possibility. Most commonly all students will say 4 and agree that has to be correct.

4. Say to the students "What if I told you that you are all wrong? It is actually not the number 4 hiding." They will be surprised and confused and insist that it must be a 4. Encourage discussion about why they think it must be a 4.

5. Record their thinking by using magnetic counters to show 2 and 2 makes a total of 4, but keep it on the left side of the equation. You can also draw a number bond around the two 2s and add a circle for the whole and write 4 inside. Praise their explanations and proof and agree that 2 + 2 =4, but emphasize that is not what is covered. What else could be under there?

6. Take new predictions if students have any, and then finally reveal what's under the cover. Students will likely insist that it is wrong. Let those students explain why they believe that and ask if anyone can see why it is actually a true number sentence.

$$2 + 2 = 1 + 3$$

7. Using counters and the number bond notation like before, help students see that both sides of the equation have a value of 4. That's what the equal sign actually means: "is the same as" not "the answer is".

8. Repeat steps 1-7 with a few other strips. Once students catch on they will start to offer many correct possibilities for what is underneath. Emphasize that many predictions could be correct even if that's not what's actually hiding.

9. Tell students they will use what they've been practicing to work on a true/false challenge with a group. Show a strip you've already used as demo and any of the "false" strip from the activity set. Ask students to explain what's different about the two equations. Sort each strip under the correct true/false heading on the board and discuss why it belongs there. Distribute an equal number of strips to each pair or group and ask them to use tools as they determine whether the equation is true or false and bring it up to the board to sort. Early finishers can write their own true or false equations while they wait for other groups.

10. As a wrap up bring the group back together and ask everyone to check the true and false sort to see if they agree or if they see anything that needs to be moved.