**Number Talk: Using Number Sentences to Make Ten and Add More**

|  |
| --- |
| In this lesson, students build addition fluency with equations by making ten and adding more.  |

**NC Mathematics Standard:**

 **Add and subtract within 20.**

 **NC.1.OA.6** Add and subtract, within 20, using strategies such as:

• Counting on

• Making ten

• Decomposing a number leading to a ten

• Using the relationship between addition and subtraction

• Using a number line

• Creating equivalent but simpler or known sums

**Additional/Supporting Standards:**

 **Understand and apply the properties of operations**.

 **NC.1.OA.3** Apply the commutative and associative properties as strategies for solving addition

 problems.

**Add and subtract within 20.**

**NC.1.OA.9:** Demonstrate fluency with addition and subtraction within 10.

**Standards for Mathematical Practice:**

1. Make sense of problems and persevere in solving them

2. Reason abstractly and quantitatively

4. Model with mathematics

6. Attend to precision

7. Look for and make use of structure

8. Look for and express regularity in repeated reasoning

**Student Outcomes:**

* I can use the make ten strategy to solve number sentences.

**Math Language:**

|  |  |  |
| --- | --- | --- |
| additionaltogetheraddnumber sentence | addendssumequal/same amount | joincombinetotalcompose |

**Materials:**

* series of equations to solve
* chart or board to record students’ responses and markers

**Advance Preparation**:

* Before beginning the first number talk, establish number talk norms. Students gather in a common meeting area near the chart or board. No paper or pencil is needed for students with this activity. Teachers pose a problem and students mentally solve the problem in whatever way makes sense to them. When students have a solution, and can describe their strategy, they show a “thumbs up” quietly at their chests to communicate with the teacher they are ready to share. During wait time, students are encouraged to think of different strategies and hold up additional fingers to show the number of solution strategies they have.

**Launch:**

1. Posing the Problem (1 minute)
* The teacher displays the number sentence and ask students: *What is the sum of the numbers? Explain how you know? How did you see the numbers in your head?*

 9 + 1 = \_\_\_

**Explore:**

1. Solving the Problem (1-2 minutes)
	* Give students quiet think time to solve the problem mentally. Then they hold up their thumb to indicate when they have a solution and can share their strategy. Giving ample wait time is imperative.

**Discuss:**

1. Sharing Our Thinking (5-7 minutes)
	* Once most of the students have indicated they have a solution and strategy, the teacher calls on a few students to share their thinking. The teacher listens and asks clarifying questions to ensure that students’ thinking is accurately represented. *What did you see in your head?* Both correct and incorrect strategies are recorded without judgement for students to consider. For example, a student may explain *I know 9 + 1 is 10 because 9 is only one number away from 10* or *I know that one less than 10 is 9.* Then the teacher could record the equations 10 – 1 = 9 so 9 + 1 = 10 to represent the students’ thinking. Another student may miscount and say the sum is 11. This discussion may lead the teacher to represent students’ thinking on number lines or tens frames on the board. It really depends what students say they ***see*** in their heads when they solved.
	* Once a variety of solutions and strategies are shared, the teacher makes sure all students’ answers are represented by asking a question such as *Did anyone get a different answer than 10, or 11? Did anyone see it a different way?*
	* Students should carefully consider the solutions and strategies presented. Help make connections between strategies by asking questions such as *How is Sally’s strategy like John’s strategy?* or *How is Sally’s strategy different from John’s strategy?* Also, help students learn to view incorrect answers as learning opportunities as misconceptions are identified and addressed.
* Make students agree that the sum is 10—that we made a 10.
* Repeat this process (Launch, Explore, and Discuss) with the following number sentences:

9 + 3 + 1 = \_\_\_ 9 + 5 + 1 = \_\_\_

* Ideally, students will discover that they can make a ten and then add on what is left as an efficient strategy for solving. It may take many experiences with this concept before students are proficient.

**General questions to promote class conversation about strategies:**

*• Who would like to share how many dots they see?*

*• I heard you say \_\_\_\_\_, did I hear correctly?*

*• Did anyone see it a different way?*

*• Can someone explain how \_\_\_\_ saw it in their own words?*

*• Raise your hand if you understand what \_\_\_\_ just shared.*

**Evaluation of Student Understanding**

**Informal Evaluation:** Observation

Observe during the number talk for the following: *What strategies do students share? Who participates? What do they say? How do they explain their thinking?*

Make note of students’ names and target next steps in whole group and small group number talks. If the strategy you are hoping to elicit does not surface, continue to use similar number sentences in subsequent number talks. If most students can see and understand the idea of making a ten as an efficient strategy using these number sentences, change the focus of your number talks (possibly to a series of equations where making a ten could be useful, but is less obvious).

**Next Steps Based on Informal Observations:**

|  |  |
| --- | --- |
| **Whole Group**This number talk was chosen to highlight fluency by bringing notice to numbers that make ten and adding what is left to determine the sum.  | **Small Group**Instruction may focus on combinations of 10 to increase fluency with recognizing numbers that make 10. Using counters and a tens frame or tens frame cards could be helpful. |
| Teacher may repeat the lesson using three different number sentences to fluently make ten or move to a new concept once most of the students have mastered this skill. | If students are having trouble with combinations of ten, instruction may focus on combinations of smaller numbers. |

**Possible Misconceptions/Suggestions:**

|  |  |
| --- | --- |
| **Possible Misconceptions** | **Suggestions** |
| Students may think there is only one way to solve the number sentences. They may not realize that the addends can be combined or grouped together in any order due to the commutative and associative properties of addition.  | Model equations with cubes to help students realize that the sum is the same no matter what order the addends are put together. Elicit and record multiple strategies that can be applied to the number talk. Ask questions such as *Does anyone see it in a different way?*Continue to use similar equations in subsequent number talks. As students become comfortable with mental math and talking about their strategies, they will become more flexible in their thinking.  |

*Adapted from* Parrish, S., & Parrish, S. (2014). *Number talks: Helping children build mental math and computation strategies, grades K-5*. Sausalito, CA., USA: Math Solutions.