**Number Talk: Dot Cards**

|  |
| --- |
| In this lesson, students use dot cards as representations of numbers to build math language as well as fluency with decomposing numbers within 10. |

**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 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

**Standards for Mathematical Practice:**

2. Reason abstractly and quantitatively

3. Construct viable arguments and critique the reasoning of others

7. Look for and make use of structure

8. Look for and express regularity in repeated reasoning

**Student Outcomes:**

* I can explain how I see groups that make up numbers within 10.

**Math Language:**

add

add to

put together

take from

take apart

minus

subtract

equal to

count on

compare

equation

make ten

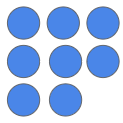
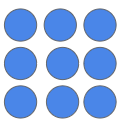
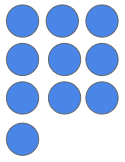
doubles

**Materials:**

* index cards, dot stickers, chart paper

**Advance Preparation**:

* Prepare Dot Cards
  + Create three cards that have similar patterns-- one with a total value of 8, then 9, then 10.

Example cards:   

* + Tape the first card to the chart paper on left side, leaving room to record what students say
* 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 first dot card and asks students: *How many dots do you see? How do you see them?*

**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 (5-10 minutes)
   * Ask students to share their answers. Teacher records all given answers.

For example, a student might explain *I see 6 plus 2 more, so it equals 8.*

You record 6 + 2 = 8.

* + Ask the students to describe WHERE and HOW they saw it. Answers will vary.
  + Ask who agrees. If someone disagrees, ask how they saw it. If all agree ask *Did anyone see another way?* The teacher decides how many volunteers should share. A suggestion at least three for each card. This can lead to rich discussion.
  + Repeat this process (Launch, Explore, Discuss) with the next cards.
  + As questions such as:
* *How are these images alike?*
* *How are these images different?*
* *Do you see the same groups or different groups?*
* *How did you use your thinking from the previous card to determine the total?*
* *Is there a strategy that is more efficient with this arrangement of dots?*

**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 representations in subsequent number talks. You may pose a question about a “student next door” who began their strategy by finding doubles and ask *Can you explain how this strategy could help you determine the total?* If most students can explain how they see the dot cards and see the connections to using doubles, then you may change the focus of your number talks.

**Next Steps Based on Informal Observations:**

|  |  |
| --- | --- |
| **Whole Group** | **Small Group- Intervention** |
| Students are exploring addition within ten. The teacher may repeat this number talk using dot cards with different amounts and/or patterns. | In small group use a Dot Card with between 2 and 6 dots. |

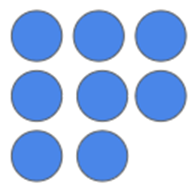
**Possible Misconceptions/Suggestions:**

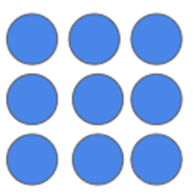
|  |  |
| --- | --- |
| **Possible Misconceptions** | **Suggestions** |
| Students may just say facts they know once they hear the total rather than using the visual model. | Make sure students are asked HOW they see it. They can come up to show how if needed.  Continue to use similar representations in subsequent number talks. As students become comfortable with mental math and talking about their strategies, they will become more flexible in their thinking. |

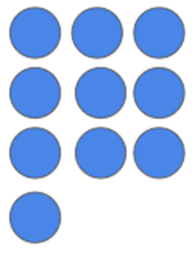
**Possible Solutions:**

Combinations that equal 8: 5+3, 4+4, 2+2+2+2, 3+3+2, etc.

Combinations that equal 9 and 10

****

****

****