**Mathematicians Ask Questions**

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| This is lesson four in a series of six lessons focused around developing a mathematical community at the beginning of the school year. While this lesson introduces standard NC.2.OA.3, its primary goal is for students to become comfortable talking with peers, posing questions to each other, sharing in collaborative groups, and using existing community math norms. A secondary goal is to begin exposing them to even/odd numbers. |

**NC Mathematics Standards:**

**Operations and Algebraic Thinking**

**NC.2.OA.3 Determine whether a group of objects, within 20, has an odd or even number of members by:**

**● Pairing objects, then counting them by 2s.**

**~~● Determining whether objects can be placed into two equal groups.~~**

 **~~● Writing an equation to express an even number as a sum of two equal addends~~**

**Standards for Mathematical Practice:**

1. Make sense of problems and persevere in solving them.

4. Model with mathematics.

6. Attend to precision.

**Student Outcomes:**

* I can talk to my partner and ask questions to clarify.
* I can listen to my partner and restate what they shared with me.

**Math Language:**

* odd, even
* groups
* partners

**Materials:**

* Questions to ask students to discuss

**Advance Preparation**:

* create questions appropriate for class
* copy the T-chart

**Launch:**

1. Review the class norms for collaborative group work and the chart made about good listeners in lesson 3.
2. Introduce the game “Mingle.” Students walk around the room while the teacher says “*Mingle, mingle, mingle*.” The teacher will give a question for the group to discuss.
3. When the teacher calls out the number 3, students have to get in groups of that size (3 students).
4. What do we do when students do not fit in the group? If students are left out, come see the teacher and after discussing the odd/even concept for 3 (see step 5), have the extra students join an existing group for step 6.
5. “*Does everyone in your group of 3 have a buddy?*” “No.” There is an odd man out so 3 is an odd number.
6. Teacher will give them one prompt to discuss such as *“How many pets do you have?”* Students will take turns sharing. When everyone has shared they give some type of sign to show they are finished (ex: put hands on their heads).
7. For the next round of Mingle, call out the number 4. (again, have extra students come to the teacher if they cannot make a group of four. Ask the even/odd questions below and then move the extra students into existing groups.)
	* Once in groups of 4, ask students “*Does everyone have a partner*?” “Yes.”
	* *“Students do you have an odd man out in your group?”*
	* *“Since there is not an odd man out, do you think four is an even number or an odd number?”*
8. Teacher prompts them to answer: “*What is your favorite food?*”

**Explore:**

1. For the last round, call out the number 2. Students find a partner. Students have to create a question to ask their partner. The partner answers. Then they switch roles.
2. Have partners discuss what their experience was like talking in a group of 3 and 4 students. Partners will complete a T-chart of dos and don’ts of group work or talking in a group.
	1. Teacher prompts: *What did you notice worked well when you were sharing in your group? What are some things you would change? Was anything frustrating? What are some things you think should not happen when sharing in a group? What are some things that should always happen?*
	2. Observe and take notes on patterns in the individual T-charts so that you can reference them in the discussion. Select partnerships and/or examples that you want to discuss.

**Discuss:**

1. Bring students together on the carpet (they need their T-charts).
2. Ask students to share something they learned about one of the people they talked to today.
3. Allow students to share their dos and don’ts chart.
4. Discuss common themes and differences amongst the pairs.

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| **Sample Questions for group discussion** |
| * *What was something interesting you learned today about your classmates?*
* *Did you learn something about another classmate that surprised you?*
* *Guide them to see that they learned about their classmate because they LISTENED to the other person instead of talking over them, and they were able to restate something they learned about their partner.*
* *Did anyone feel nervous when sharing their thoughts?*
* *Guide them to see that sharing can be hard for some. Use this to build empathy and explain showing respect.*
* *Did you feel like one person talked too much and did not give time for others to share? How does it affect the group discussion if one person shares too much or doesn’t share? How do you assure equal time sharing?*
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1. Conclude the discussion by saying, *Think about what we did today, and what we learned about our classmates. Mathematicians ask questions and listen to other responses and we will be working on these two skills together all year.*

**Evaluation of Student Understanding:**

* Students are able to share something their partner told them.
* Students are able to reasonably share from their Dos and Don’ts Chart for collaborative work.

**Informal Evaluation:**

* Observe and ask questions as students are creating their T-charts related to group work.
* Students are able to identify correct behaviors for collaborative work.

**Interventions:**

* Some students (not proficient in English or extremely shy) may struggle with sharing and may need teacher support/prompting/question stems.

**Special Notes:**

* Teacher could create a class **Dos and Don’t Chart** for collaborative work or add to the chart made in Lesson 2 during the “Discuss” portion

Name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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| DO | DON’T |
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