



Scaffolding Task: What's in the Bag?

Approximately 2 days

STANDARDS FOR MATHEMATICAL CONTENT

MCC2.OA.3.Determine whether a group of objects (up to 20) has an odd or even number of members, e.g., by pairing objects or counting them by 2s; write 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.
2. Reason abstractly and quantitatively.
3. Construct viable arguments and critique the reasoning of others.
4. Model with mathematics.
5. Use appropriate tools strategically.
6. Attend to precision.
7. Look for and make use of structure.
8. Look for and express regularity in repeated reasoning.

*****Mathematical Practices 1 and 6 should be evident in EVERY lesson*****

BACKGROUND KNOWLEDGE

(Information adapted from North Carolina DPI Instructional Support Tools)

Students should have had prior experiences and/or instruction with addition. They should begin to relate multiplication as repeated addition. Please see Units 2 and 4 for addition support. If you have not already done tasks where students have split a group of 20 (or fewer) items into two equal groups then this needs to be done before attempting this task. Provide several experiences where students are able to investigate all the numbers 0-20 to see which ones can be split into two equal groups. This is a good opportunity to review the concepts of “not bumpy” (even) and “bumpy” (odd) numbers and now build on the understanding of how this connects to repeated addition. Having students write addition equations for the even numbers they are able to split into two equal groups is a good way to introduce the concept of repeated addition. Students should recognize that all even numbers can be expressed using two of the same addends (ex. $2+2=4$, $3+3=6$, again focusing on equal addends sets the stage for repeated addition, leading into multiplication.)

This task will focus on the use of strategies; however, it is important to note the focus is on conversations as students engage in experiences with repeated addition. Initially, students apply base-ten concepts and use direct modeling with physical objects or drawings to find different ways to solve problems. They move to inventing strategies that do not involve physical materials or counting by ones to solve problems. Student-invented strategies likely will be based on place-value concepts, the commutative and associative properties, and the relationship between addition and subtraction. These strategies should be done mentally or with a written record for support. It is vital that student-invented strategies be shared, explored, recorded and tried by

others. Recording the expressions and equations in the strategies horizontally encourages students to think about the numbers and the quantities they represent instead of the digits. Not every student will invent strategies, but all students can and will try strategies they have seen that make sense to them. Different students will prefer different strategies.

ESSENTIAL QUESTIONS

- How do I determine if a number is odd or even?
- What strategies can I use to tell if a number is odd or even?
- What is odd? What is even?

MATERIALS

- Various manipulatives (counters, base-ten blocks, unifix cubes, beans in bags labeled A – J, 1 set per partner)
- Paper, crayons, pencils

GROUPING

Whole Group, Small Group

TASK DESCRIPTION, DEVELOPMENT AND DISCUSSION

Special Note: This task can be repeated several times in small groups or in a center.

Part I

Gather students together in class meeting area. Display the questions, “What is even? What is odd?” The teacher will need to guide discussion into mathematical talk and not story sharing. Be prepared to guide students thinking into conversations about something such as sharing carrot snacks between two friends.

Part II

Have two students come up and practice sharing the cubes the teacher has placed in front of them. For example, the teacher would place 6 cubes in front of 2 students and ask them if they can share the total evenly (fairly). As students are sharing, record each shared quantity on a chart labeled “We can share equally between 2 groups/ We cannot share equally between 2 groups.” After several student pairs share the cubes (different quantities each time), lead class in discussion about information on the chart. The conversation should be directed to build the understanding that groups shared evenly are called even numbers and ones which do not share evenly are called odd numbers. The chart can be relabeled as EVEN and ODD.

Part III

Students work in partners with of 10 different bags of items. These should be made in advance and could be shared between various partners. Each bag should be labeled A –J. Once students have determined which groups are odd and which are even, they will work together and create bar graph the number of odd and even draws they had with their partner. Students should be prepared to share their graph with others.

Part IV

Students individually will create their own number line from 0-20. The teacher calls out numbers and students first label the numbers as they teacher calls them out and then students labels as odd or even using red and blue crayons. Students will share with a table partner to check their labeling.

FORMATIVE ASSESSMENT QUESTIONS

- What strategies are you using to determine how many _____ are in your group?
- Can you show that answer in a different way?
- How can you demonstrate this with a picture?
- How could you write this in a number sentence?
- Do you have the same number of any of your objects? Why do you think this is the case?
- What information did you use to decide if a number of odd or even?

DIFFERENTIATION

Extension

- If students complete the task, allow them to determine whether or not they can come up with a rule for any number that would tell whether or not the number is odd or even. Have students record their rule on an anchor chart and present their even/odd rule to the class.

Intervention

- Some students will need to use manipulatives to help to determine or represent the number of objects in each group.
- Give the student a 0-20 chart to help them skip count to determine the number of objects in each group.