**More or Less**

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| In this lesson, students will identify whether a quantity of objects in one group is greater than, less than or equal to a quantity of objects in another group. Students will use one-to-one correspondence (or other counting strategies) to answer the question:  *How many are in one group?* |

**NC Mathematics Standard(s):**

**Compare numbers**.

**NC.K.CC.6** Identify whether the number of objects, within 10, in one group is greater than, less than, or equal to the number of objects in another group, by using matching and counting strategies.

**Additional/Supporting Standards:**

**Count to tell the number of objects.**

**NC.K.CC.4** Understand the relationship between numbers and quantities.

* + - When counting objects, say the number names in the standard order, pairing each object with one and only one number name and each number name with one and only one object (one-to-one correspondence).
    - Recognize that the last number name tells the number of objects counted regardless of their arrangement (cardinality).
    - State the number of objects in a group, of up to 5 objects, without counting the objects (perceptual subitizing).

**NC.K.CC.5** Count to answer “How many?” in the following situations:

* Given a number from 1–20, count out that many objects.
* Given up to 20 objects, name the next successive number when an object is added, recognizing the quantity is one more/greater.
* Given 20 objects arranged in a line, a rectangular array, and a circle, identify how many.
* Given 10 objects in a scattered arrangement, identify how many.

**Standards for Mathematical Practice:**

1. Reason abstractly and quantitatively
2. Construct viable arguments and critique the reasoning of others

6. Attend to precision

8. Look for and express regularity in repeated reasoning.

**Student Outcomes:**

* I can identify whether the number of objects in one group is greater than, less than or equal to the number of objects in another group.
* I can use one-to-one correspondence (or other counting strategies) to answer the question: How many are in one group?
* I can count to identify a quantity of objects arranged in a line, array, circle or scattered configuration.
* I understand the number of objects in a quantity does not change even when the objects are moved or rearranged.

**Materials:**

* Each student will need a bag with 2 dice and 24 manipulatives (counters, beans, buttons, bears, square tiles, etc

**Advance Preparation**:

Materials Preparation:

* Each student will need a bag of 2 dice and 24 manipulatives.

Thinking Preparation:

* Review standards for mathematical practice and select those that you will focus on during this lesson.
* Anticipate misconceptions listed below.

**Directions:**

1. Gather student leaders at the carpet.
2. Teacher will choose a student leader to model rolling two dice and counting the pips to identify the total number of pips rolled. (This can be done by using two dice, SMART board or a document camera.)
3. Student leader will then use manipulatives to create a representation of the quantity rolled on the board, SMART board or document camera.
4. Teacher will choose another student leader who will roll the two dice again. The student leader will count to identify how many pips were rolled and then build a representation of the quantity beside the first quantity.
   1. Note for teacher: You may want to have student leaders use manipulatives of two different colors so groups can easily be distinguished. (example: One student can use red and the other can use blue.)
5. As a group students will answer: Which group has more? Which group has less? How do you know? (Equal may need to be reviewed due to the chance students could roll the same number twice.)
6. Teacher can continue to have student leaders model rolling dice, identifying how many pips were rolled, building the two groups and identifying which group has more and less as needed.
7. Teacher will then pass out the bag of dice and manipulatives to each student.
8. Students will work for five to seven minutes to practice rolling the dice, identifying how many pips were rolled, building a group and then repeating to make a second group. Students will then be able to identify which group has more and which group has less.
   1. Teacher note: While students are creating quantities, the teacher is circulating and making note of students’ abilities and strategies.
   2. While observing, identify students who can share when the class is brought back together. Decide the order for students to share with the group based on use of strategies.
9. Students clean up materials and are brought back together. Pre-select students will share examples they completed during their working time. Teacher will use questions below to facilitate as students discuss which group has more and which group has less.

**Questions to Pose:**

Before:

* How can you determine how many you need in your group?
* Which of the two groups has more?
* Which of the two groups has less?
* How do you know?

During:

* Which group has more? How do you know?
* Which group has less? How do you know?
* What strategies can you use to determine which group has more or less?

After:

* Which group has more? How do you know?
* Which group has less? How do you know?
* What strategies can you use to determine which group has more or less?

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| **Possible Misconceptions** | **Suggestions** |
| Students have difficulty accurately identifying how many pips (or dots) are on the dice. | Use a teacher created dice in which the pips are larger for students to touch each one as counted. Students could use subitizing cards instead of dice. |
| Students have difficulty identifying which group is more and which is less. | Teacher can introduce student to matching strategy:   * I know I have more because I lined up my set and my partner’s set. Since I have one extra, I have more.” * I put my counters in a pile. I put my partner’s counters in a pile. Every time I took one away from mine, I took one away from my partner’s until my partner’s pile was empty. I had a leftover, so I have more. |

**Solutions:**

* Students will identify how many pips (dots) were rolled on the dice.
* Of the two groups, students will identify which group has more and which group has less.