Even or Odd

STRAND: Number and Number Sense

STRAND CONCEPT: Number Sets and Characteristics

SOL 5.3b

Remediation Plan Summary

Students will use manipulatives to understand the characteristics of even and odd numbers.

Common Misconceptions

- When you add 2 odd numbers the sum will be odd.
- When you add an even and odd number, the sum will be even.
- Students are unable to identify even numbers, when the number also has odd digits. For example, 78 students think this number is odd because of the digit 7 in the tens place.
- When you multiply an odd and even number, the product will be odd.

Materials

- Large bag of counters

Introductory Activity

Display a hundreds chart for the class. *What do you notice? Do you see any patterns?* Allow students to share their ideas and thoughts. Some students may already know the terms even and odd. Let students explore what they already know.

Plan for Instruction

1. Walk around the room with a bag full of counters. As you walk by each student (or pair of students), ask him/her to take a handful of counters from the bag. Ask the students to separate their counters into two groups with an equal number of counters in each group. Some students will have one counter left over. Ask those with a leftover to raise their hands, and then do the same for those with no leftover.
2. Make two columns on the board, one labeled "Numbers with a Leftover" and the other labeled "Numbers with No Leftover." Have each student call out the number of counters he/she took from the bag and whether or not there was a leftover when the counters put into two groups. Record each number on the board in the appropriate column.
3. After recording all the students' numbers, ask students whether they notice any pattern in the numbers in the "No Leftover" column. Explain that these numbers are referred to as *even integers*. Have students examine the integers in the "with a Leftover" column and describe the pattern in these numbers. Explain that these numbers are referred to as *odd integers.* You may wish to review the definition of *integer* at this time.

4. Ask the class to select a number not already on the board. Count out that many counters, and separate them into two groups with an equal number of counters in each group. If there is no counter leftover, add the number to the "No Leftover" column on the board. If there is a leftover, add the number to the "with a Leftover" column. Allow students to continue adding numbers to the board in this manner.

5. When you feel you have enough numbers to establish a pattern in the ones place, conduct a class discussion. Ask students leading questions to help them arrive at the conclusion that all of the numbers in the "No Leftover" (even integers) column end in 0, 2, 4, 6, or 8, while all the numbers in the "with a Leftover" (odd integers) column have a 1, 3, 5, 7, or 9 in the ones place.

6. Have the students work in pairs to explore the answers to the following questions. Have them use the counters and/or drawings to justify their responses.
    - Is the sum of two even numbers even or odd? (even)
    - Is the sum of two odd numbers even or odd? (even)
    - Is the sum of one odd number and one even number even or odd? (odd)
    - Is the product of two even numbers even or odd? (even)
    - Is the product of two odd numbers even or odd? (odd)
    - Is the product of one odd number and one even number even or odd? (even)

Pulling It All Together (Reflection)

Have students write the characteristics of even and odd integers, using drawings and/or symbols to explain their reasoning.