Partners and Leftovers

Reporting Category	Number and Number Sense
Topic	Identifying and describing odd and even numbers
Primary SOL	5.3 The student will b) identify and describe the characteristics of even and odd numbers.
Related SOL	5.3a

Materials

- Colored tiles

Vocabulary

odd, even, sum, product

Student/Teacher Actions (what students and teachers should be doing to facilitate learning)

1. Explain to students that they will be investigating characteristics of certain types of numbers. Have students grab a handful of colored tiles and organize them into rows of two tiles each. Some students will have an extra tile, or "leftover."
2. Make two columns on the board, one for numbers of tiles that produced a "leftover" and one for numbers of tiles that did not (you might label this column "partner"). Have students call out the number of tiles they grabbed and whether or not they had a leftover. Record the numbers on the board in the appropriate column.
3. Ask students whether they notice any patterns in the numbers in the "partner" column. Explain to students that these numbers are referred to as even. Ask them to tell you what digits would be in the ones column in any even integer (2, 4, 6, 8, 0). Have students examine the numbers in the "leftover" column, and ask them to describe the patterns in these numbers. Explain to students that these numbers are referred to as odd. Ask them what digits would be in the ones column in any odd integer (1, 3, 5, 7, 9).
4. Have students solve the following problems as they explore even and odd integers. Have students use the tiles and drawings to explain why these sums occur.
   - Is the sum of two even numbers even or odd?
   - Is the sum of two odd numbers even or odd?
   - Is the sum of one odd number and one even number even or odd?
   - Is the product of two even numbers even or odd?
   - Is the product of two odd numbers even or odd?
   - Is the product of one odd number and one even number even or odd?

Assessment

- **Questions**
  - How do you know whether a number is even or odd?
  - Will the sum of two odd numbers be even or odd? The sum of two even numbers? The sum of one odd and one even?

    - Will the product of two odd numbers be even or odd? The product of two even numbers? The product of one odd and one even?
- **Journal/Writing Prompts**
    - Describe to your third-grade cousin the difference between even and odd numbers. Use drawings and symbols to help explain.
    - Explain in your own words the results of adding or multiplying two odd numbers. Explain the results of adding or multiplying two even numbers. Explain the results of adding or multiplying one even number and one odd number.

Extensions and Connections (for all students)

- Lead students in the exploration of subtracting evens and odds to see whether the outcomes will be the same as with addition.
- Lead students in the exploration of dividing evens and odds to see what happens when an even number is divided by another even, an odd by an odd, an even by an odd, and an odd by an even. Have students determine whether the results would be the same as with multiplication.

Strategies for Differentiation

- Have students complete these activities with a partner.
- Demonstrate arranging tiles.