3rd Grade Math Lesson: Multiplication Properties

Objective:

- Students will learn about and apply the key properties of multiplication: the Commutative Property, the Associative Property, the Identity Property, and the Zero Property.

1. Introduction to Multiplication Properties

Explain that properties of multiplication are rules that always apply when multiplying numbers. These rules help make solving multiplication problems easier and faster.

2. Key Multiplication Properties

1. Commutative Property of Multiplication

- **Definition:** The order of the numbers doesn't affect the product.
- **Example:** $3 \times 4 = 4 \times 3 = 12$
- **Explanation:** When multiplying two numbers, it doesn't matter if you switch their places—the answer will be the same.

Activity:

- Ask students to work with a partner. Have one student write down a multiplication fact (e.g., 5×7), and the other student reverses the order (e.g., 7×5). They should check that the answers are the same.

2. Associative Property of Multiplication

- **Definition:** Changing the grouping of numbers doesn't change the product.
- **Example:** $(2 \times 3) \times 4 = 2 \times (3 \times 4) = 24$
- **Explanation:** You can group numbers in different ways when multiplying three or more numbers, and the result will stay the same.

Activity:

- Give students three numbers to multiply (e.g., 2, 5, and 3). Have them first multiply two numbers and then multiply the result by the third. Then have them group the numbers differently and repeat. Both ways will give the same answer.

3. Identity Property of Multiplication

- **Definition:** Any number multiplied by 1 stays the same.
- **Example:** $6 \times 1 = 6$
- **Explanation:** Multiplying a number by 1 does not change the number.

Activity:

- Have students choose any number and multiply it by 1. Ask them to see if the product changes.

4. Zero Property of Multiplication

- **Definition:** Any number multiplied by 0 is always 0.
- **Example:** $9 \times 0 = 0$
- **Explanation:** When you multiply any number by zero, the product is always zero.

Activity:

- Ask students to pick a number and multiply it by 0. Discuss why this rule works no matter the number.

3. Guided Practice

Work through the following problems with the class, asking them to identify which property is being used in each:

1. **Problem:** $7 \times 8 = 8 \times 7$
   - **Solution:** Commutative Property
2. **Problem:** $(4 \times 5) \times 2 = 4 \times (5 \times 2)$
   - **Solution:** Associative Property
3. **Problem:** $9 \times 1 = 9$
   - **Solution:** Identity Property
4. **Problem:** $12 \times 0 = 0$
   - **Solution:** Zero Property

4. Independent Practice

Worksheet: Solve the following problems and identify which property is being used:

1. $6 \times 9 = 9 \times 6$
2. $(2 \times 3) \times 7 = 2 \times (3 \times 7)$
3. $10 \times 1 = 10$
4. $0 \times 8 = 0$
5. $(5 \times 4) \times 2 = 5 \times (4 \times 2)$
6. $3 \times 1 = 3$
7. $7 \times 0 = 0$
8. $8 \times 5 = 5 \times 8$

5. Conclusion and Review

Recap Key Points:

- **Commutative Property:** Changing the order of numbers does not change the product.
- **Associative Property:** Changing how numbers are grouped does not change the product.
- **Identity Property:** Any number multiplied by 1 stays the same.
- **Zero Property:** Any number multiplied by 0 is always 0.

Exit Ticket:

- Write your own multiplication sentence using one of the properties and explain which property you used.