Distributing with Multiplication

Purpose

Students will use the distributive property in numerical equations and expressions.

Materials

For the teacher: chalk, chalkboard
For each student: copy of Black Line Master (BLM) *Distributing with Multiplication,* pencil

Activity

A. Introduction

1. Write the expression "3(4)" on the board. Tell students that the expression is a multiplication sentence. Explain to students that there is an understood multiplication sign between the 3 and the 4 because of the parentheses.
2. Write the expression "3(4 + 6)." Tell students to find the value of the expression. Ask students how they found the value.
3. Write the expression "3 × 4 + 3 × 6" on the board. Have students find the value of the expression. Remind students that the multiplication is performed before addition in a number sentence.
4. Ask students what they notice about the two expressions. Tell students that when multiplying a number sentence within parentheses by a number outside the parentheses, the number outside is "distributed" to both numbers inside. Write "3(4 + 6) = 3 × 4 + 3 × 6" on the board.
5. Demonstrate the distributive property for a few more examples with student assistance. Include some subtraction sentences in your examples.
6. Explain that if two numbers are multiplied by the same number in an expression (the numbers are "taking turns" being multiplied by the number), the expression can be rewritten using parentheses. Write "2 × 4 + 2 × 5" on the board and have students assist you in rewriting the expression using parentheses [2(4 + 5)]. Have students find the value of the expression. Allow students to explain their methods for finding the value.

(continued)

connecting across the curriculum

English/ Language Arts

In their math journals, have students write about which method of calculating seems simpler – using the order of operations method or the distributive property. Ask students to explain their answers.

MEETING INDIVIDUAL NEEDS

For students who finish quickly, have them rewrite equations such as $3(x + 2) = 18$ using the distributive property and find the value of x.

Standards Links
5.2.1, 5.7.2

Activity (continued)

B. Practice Activity

1. Tell students the following scenario:
   You and two friends each have $7. You go to the movies and each spends $5 on a ticket. You would like to share a bucket of popcorn that costs $4. Do the three of you together have enough left to share a bucket of popcorn?
2. Write the following word equation on the board:
   Number of people ($$ each person began with – Cost of tickets) = $$ left over
3. Have students assist you in filling in the correct numbers in the word equation. Instruct students to solve the equation. Ask students if they will have enough money to share a bucket of popcorn.
4. Hand each student a copy of the BLM *Distributing with Multiplication* and have them complete it.

Questions for Review

Basic Concepts

While students are completing the BLM, ask the following questions:

- Rewrite the expression $10 \times 12 + 10 \times 9$ using parentheses.
- Rewrite the expression $5(10 + 7)$ so that the numbers inside the parentheses "take turns" being multiplied by the number outside the parentheses.

Name: _____

Distributing with Multiplication

Rewrite the expressions below using the "taking turns" method. Find the value of each expression.

1. 8(5 + 12) =

2. 9(6 + 10) =

3. 14(2 + 2) =

4. 3(4 + 11) =

Rewrite the expressions below using parentheses. Find the value of each expression.

5. 6 × 7 + 6 × 4 =

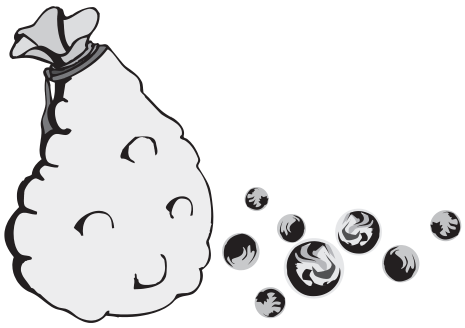
6. 9 × 2 + 9 × 9 =

7. 4 × 16 + 4 × 4 =

8. 27 × 4 + 27 × 6 =

9. Write an expression using parentheses that represents the story problem below. Rewrite the expression using the distributive property and answer the question at the end of the story problem:

Albert and Charles each had 2 bags of marbles. Albert had 30 marbles in each of his bags and Charles had 25 marbles in each of his. How many marbles did the boys have altogether?



Taking Turns with Multiplication

Teacher Directions

Distribute one copy of the BLM *Taking Turns with Multiplication* to each student.

Have the students use the distributive property to rewrite the expressions and solve the story problem. Instruct students to find the value of the expressions and answer the question at the end of the story problem.

Answer Key

1. $8 \times 5 + 8 \times 12$; 136
2. $9 \times 6 + 9 \times 10$; 144
3. $14 \times 2 + 14 \times 2$; 56
4. $3 \times 4 + 3 \times 11$; 45
5. $6(7 + 4)$; 66
6. $9(2 + 9)$; 99
7. $4(16 + 4)$; 80
8. $27(4 + 6)$; 270
9. $2(30 + 25)$; $2 \times 30 + 2 \times 25$; 110