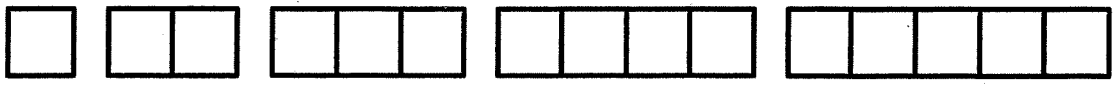
Teacher Notes.

Lesson 21: Writing and Evaluating Expressions—Multiplication and Addition

Classwork

Mathematical Modeling Exercise

The Italian Villa Restaurant has square tables that the servers can push together to accommodate the customers. Only one chair fits along the side of the square table. Make a model of each situation to determine how many seats will fit around various rectangular tables.



Number of Square Tables	Number of Seats at the Table
1	4
2	6
3	8
4	10
5	12
50	102
200	402
T	$2T+2$ or $2(T+1)$

Are there any other ways to think about solutions to this problem?

Regardless of the number of tables, there is one chair on each end, and each table has two chair opposite one another.

It is impractical to make a model of pushing 50 tables together to make a long rectangle. If we did have a rectangle that long, how many chairs would fit on the long sides of the table?

50 on each side, for a total of 100.

How many chairs fit on the ends of the long table?

2 chairs, one on each end

How many chairs fit in all? Record it on your table.

102 chairs in all

Work with your group to determine how many chairs would fit around a very long rectangular table if 200 square tables were pushed together.

200 chairs on each side, totaling 400, plus one on each end; grand total 402.

If we let T represent the number of square tables that make one long rectangular table, what is the expression for the number of chairs that will fit around it?

$2T+2$

Example

Look at Example 1 with your group. Determine the cost for various numbers of pizzas, and also determine the expression that describes the cost of having P pizzas delivered.

a. Pizza Queen has a special offer on lunch pizzas: \$4.00 each. They charge \$2.00 to deliver, regardless of how many pizzas are ordered. Determine the cost for various numbers of pizzas, and also determine the expression that describes the cost of having P pizzas delivered.

Number of Pizzas Delivered	Total Cost in Dollars
1	6
2	10
3	14
4	18
10	42
50	202
P	$4P+2$

What mathematical operations did you need to perform to find the total cost?

multiplication and addition

Suppose our principal wanted to buy a pizza for everyone in our class. Determine how much this would cost.

Answer vary – depending how many students in each class.

b. If the booster club had $400 to spend on pizza, what is the greatest number of pizzas they could order?

=99

99 x 4 = $396 and then $2 for delivery. The total bill is $398.00

c. If the pizza price was raised to $5.00 and the delivery price was raised to $3.00, create a table that shows the total cost (pizza plus delivery) of 1, 2, 3, 4, and 5 pizzas. Include the expression that describes the new cost of ordering P pizzas.

Number of Pizzas Delivered	Total Cost in Dollars
1	$8
2	$13
3	$18
4	$23
5	$28
P	5P+3