

## Modeling Algebraic Expressions

**STRAND:** Patterns Functions and Algebra

**STRAND CONCEPT:** Algebraic Expressions

**SOL 8.14b**

### **Remediation Plan Summary**

Students use colored tiles and colored pencils to model expressions and build the foundation for combining like terms.

### **Common Misconceptions**

- Some students combine all terms only looking at the coefficient.
- When the distributive property is utilized, some students forget to distribute to the second term inside the parenthesis. Using the tiles to build the expression will help students see the connection that both terms are multiplied by the number outside the parenthesis.

### **Materials**

McDonald’s Order introductory activity handout, Colored Tiles and Expressions handout, colored pencils, colored tiles

### **Introductory Activity**

Hand each student a McDonald Order introductory activity handout. Have students complete it on their own. Once students complete their work, have students pair up and compare answers. Some students will write out the items and others will use letters to represent each one. Discuss whole class encouraging students to make connections between the words and variables used. If no students uses variables introduce the idea using the variable  $c$  for cheeseburgers and have a discussion.

### **Plan for Instruction**

1. Group students and hand each group a set of colored square tiles and colored pencils.
2. Hand each student a Colored Tiles and Expressions Handout.
3. Students should first use the tiles to model the original expression then combine the like terms to simplify each one.
4. Students should work as a group to model each expression then each member will be responsible for representing the expressions on their own paper.
5. Encourage students to circle each term using the color associated with it.
6. When groups are finished, conduct a whole class discussion about what they found.

### **Pulling It All Together (Reflection).**

Display the following expression on the board and have students model and Simplify the expression.

$$5x - 3(x + 3y) + 2y$$

Ask students to justify their answer.

**Note: The following pages are intended for classroom use for students as a visual aid to learning.**

**McDonald’s Order Introductory Activity**

Your mom is going to McDonalds for you and four of your friends. Below are the orders.

- You – one big mac, two orders of fries and a coke
- James – one cheeseburger, an order of fries and a coke
- Marvin – two cheeseburgers, an order of fries and a sweet tea
- Frank – one big mac, two orders of fries and a coke
- Tom – three cheeseburgers and a sweet tea

Write an expression to represent all of the orders put together.

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## Colored Tiles and Expressions

### Directions:

Using square color tiles, let:

- RED represent  $x$
- BLUE represent  $y$
- GREEN represent  $z$
- YELLOW represent  $xy$

Lay out the color tiles to represent the given expression. Combine like terms. Then draw the answer *and* write the answer algebraically.

1.  $3x + 2x + 4y$

2.  $3y + 3x + 2y + x$

3.  $2xy + 2x + 4x + 2xy$

4.  $2(2x + 3y) + 2y$

5.  $xy + 2xy + x + 3y$



