

# SIMPLIFYING EXPRESSIONS (ON AN EXPRESSION MAT) 2.1.3 – 2.1.5

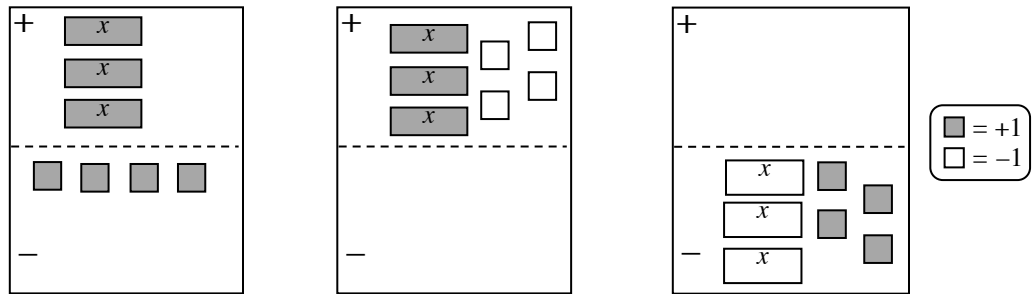
## Two Region Expression Mats

An Expression Mat is an organizational tool that is used to represent algebraic expressions. Pairs of Expression Mats can be modified to make an Equation Mat. The upper half of an Expression Mat is the positive region and the lower half is the negative region. Positive algebra tiles are shaded and negative tiles are blank. A matching pair of tiles with one tile shaded and the other one blank represents zero (0).

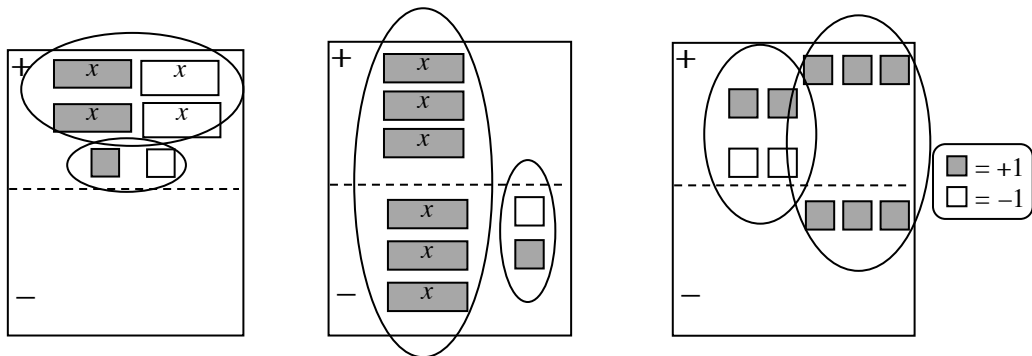
Tiles may be removed from or moved on an expression mat in one of three ways: (1) removing the same number of opposite tiles in the same region; (2) flipping a tile from one region to another. Such moves create “opposites” of the original tile, so a shaded tile becomes un-shaded and an un-shaded tile becomes shaded; and (3) removing an equal number of identical tiles from both the “+” and “-” regions. See the Math Notes box in Lesson 2.1.6 of the *Core Connections, Course 3* text.

### Examples

$3x - 4$  can be represented various ways.



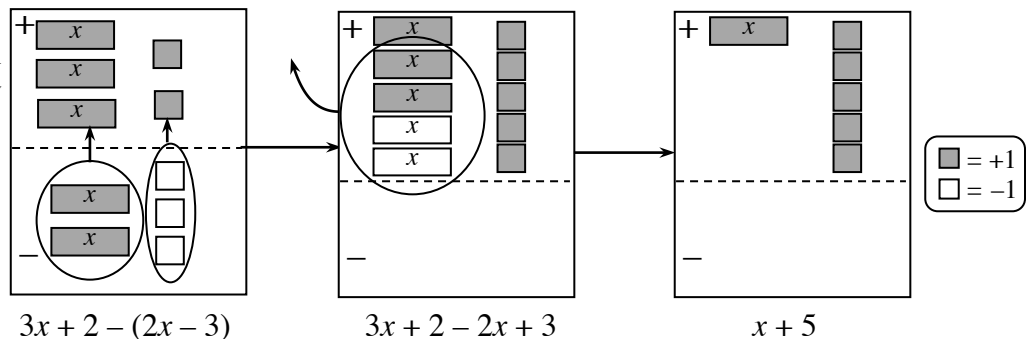
The Expression Mats at right all represent zero.



### Example 1

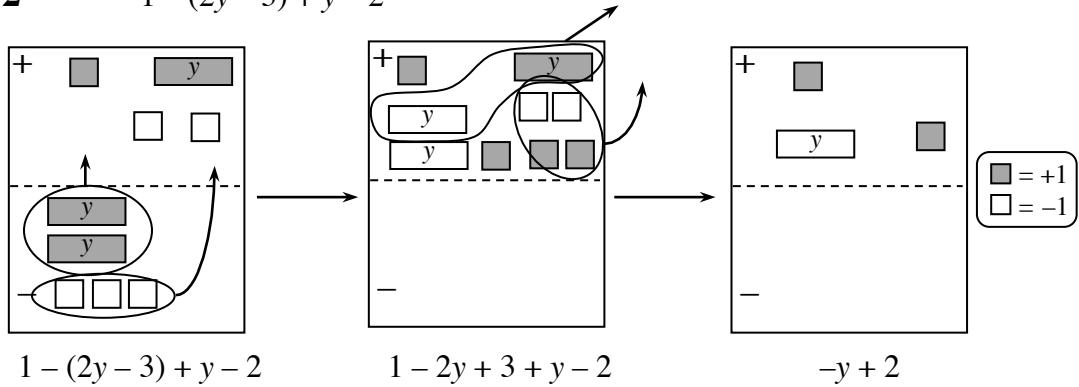
$$3x + 2 - (2x - 3)$$

Expressions can be simplified by moving tiles to the top (change the sign) and looking for zeros.



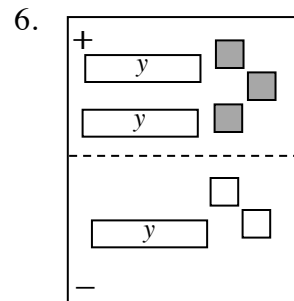
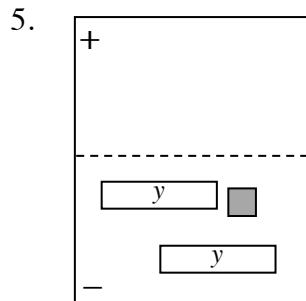
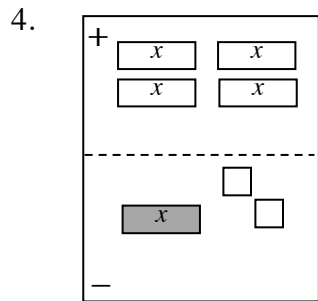
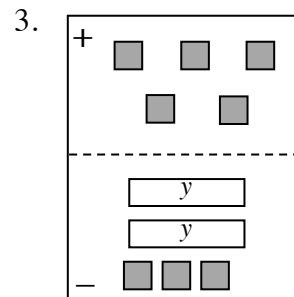
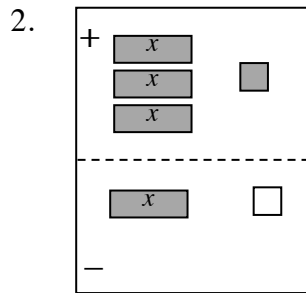
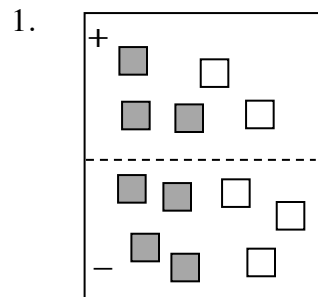
**Example 2**

$$1 - (2y - 3) + y - 2$$



**Problems**

Simplify each expression.



- |                          |                         |                              |
|--------------------------|-------------------------|------------------------------|
| 7. $3 + 5x - 4 - 7x$     | 8. $-x - 4x - 7$        | 9. $-(-x + 3)$               |
| 10. $4x - (x + 2)$       | 11. $5x - (-3x + 2)$    | 12. $x - 5 - (2 - x)$        |
| 13. $1 - 2y - 2y$        | 14. $-3x + 5 + 5x - 1$  | 15. $3 - (y + 5)$            |
| 16. $-(x + y) + 4x + 2y$ | 17. $3x - 7 - (3x - 7)$ | 18. $-(x + 2y + 3) - 3x + y$ |

## Answers

- |     |           |     |           |     |               |
|-----|-----------|-----|-----------|-----|---------------|
| 1.  | 0         | 2.  | $2x + 2$  | 3.  | $2y + 2$      |
| 4.  | $-5x + 2$ | 5.  | $2y - 1$  | 6.  | $-y + 5$      |
| 7.  | $-2x - 1$ | 8.  | $-5x - 7$ | 9.  | $x - 3$       |
| 10. | $3x - 2$  | 11. | $8x - 2$  | 12. | $2x - 7$      |
| 13. | $-4y + 1$ | 14. | $2x + 4$  | 15. | $-y - 2$      |
| 16. | $3x + y$  | 17. | 0         | 18. | $-4x - y - 3$ |