

## SIMPLIFYING EXPRESSIONS (ON AN EXPRESSION MAT)

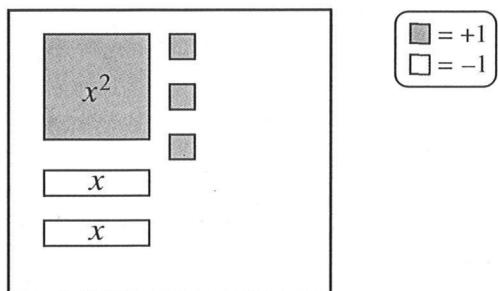
4.3.3

### Single Region Expression Mats

Algebra tiles and Expression Mats are concrete organizational tools used to represent algebraic expressions. Pairs of Expression Mats can be modified to make Expression Comparison Mats (see next section) and Equation Mats. Positive 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).

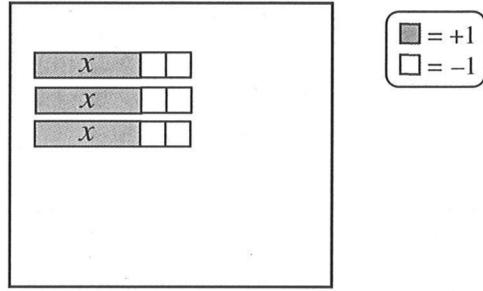
#### Example 1

Represent  $x^2 - 2x + 3$ .



#### Example 2

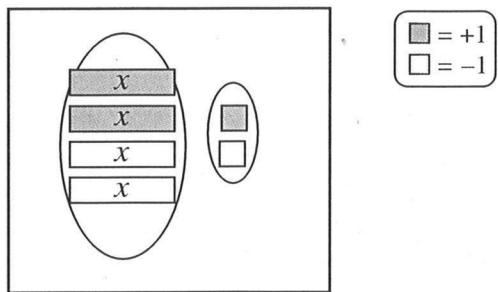
Represent  $3(x - 2)$ .



Note that  $3(x - 2) = 3x - 6$ .

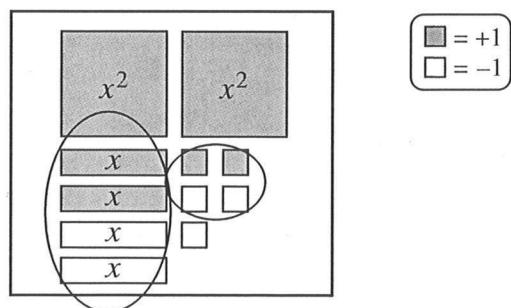
#### Example 3

This expression makes zero.



#### Example 4

Simplify  $2x^2 + 2x + 2 + (-2x) + (-3)$ .



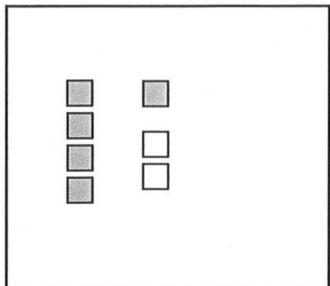
After removing zeros,  $2x^2 - 1$  remains.

## Problems

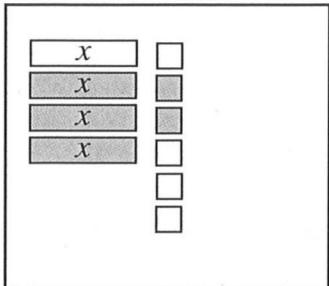
Simplify each expression.

$\blacksquare = +1$
$\square = -1$

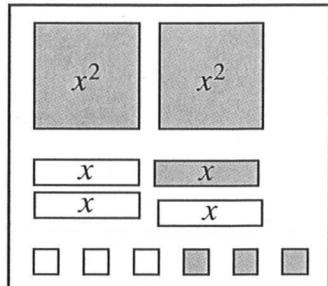
1.



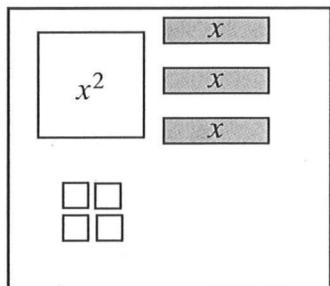
2.



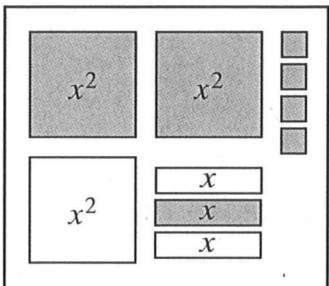
3.



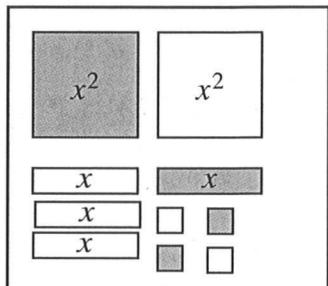
4.



5.



6.



7.  $2x - 3 + x + 1$

8.  $-3x + 2x + 4$

9.  $x^2 - 2x + 3 + 3x - 1$

10.  $x + (-3) + 5 - 2x$

11.  $-3 + 2x + (-1) - 4x$

12.  $3(x + 3) - 2x$

13.  $x^2 - 2x + 3 - 2x^2 + 1$

14.  $2(x - 2) + 3 - x$

15.  $2(x^2 + 3) + 2x - 1$

## Answers

1. 3

2.  $2x - 2$

3.  $2x^2 - 2x$

4.  $-x^2 + 3x - 4$

5.  $x^2 - x + 4$

6.  $-2x$

7.  $3x - 2$

8.  $-x + 4$

9.  $x^2 + x + 2$

10.  $-x + 2$

11.  $-2x - 4$

12.  $x + 9$

13.  $-x^2 - 2x + 4$

14.  $x - 1$

15.  $2x^2 + 2x + 5$