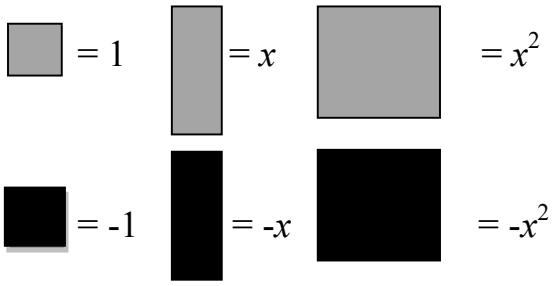
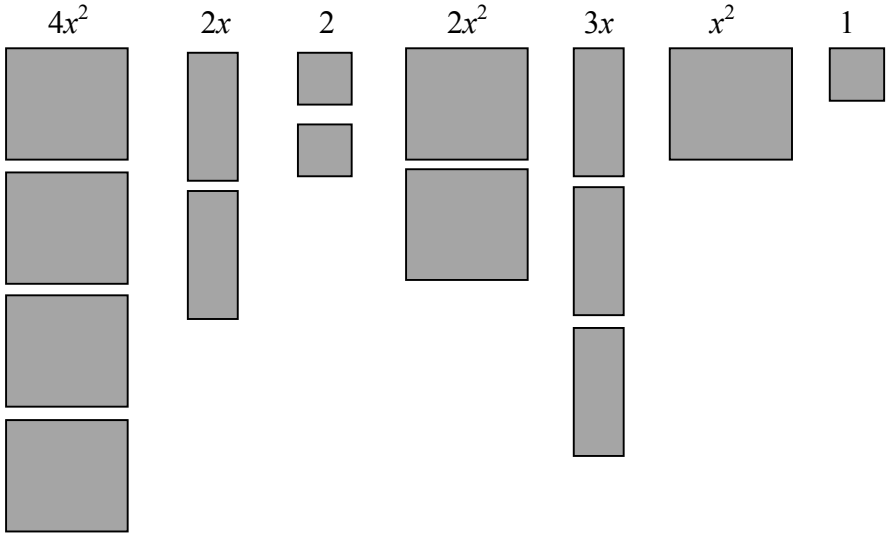
Combining Like Terms with Algebra Tiles

Key	Rule to Remember
	Like terms in an equation have the same variable and exponent. They do not need to have the same coefficient.

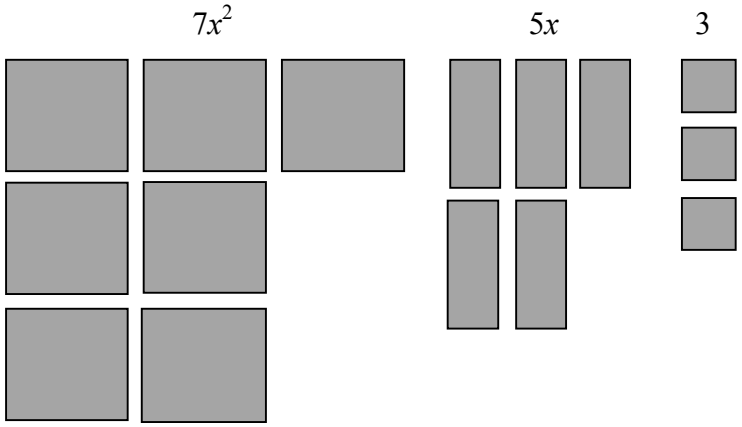
Algebra tiles can be used to model algebraic expressions and simplify expressions by combining like terms. Carefully look at the example below. Each term in Example 1 is positive.

Example 1: Simplify $4x^2 + 2x + 2 + 2x^2 + 3x + x^2 + 1$ using algebra tiles.

First represent each term with algebra tiles.



Then group the similar tiles together and state the result.



The resulting expression is $7x^2 + 5x + 3$.

1. Use algebra tiles to model the expression and combine like terms.

   a) $4x + 1 + x + 5$

   b) $2 + 3x + 5x + 4x + 1$

   c) $2 + x^2 + 3x + 2x^2 + 2$

   d) $2x + 3x^2 + 3x + 2x^2 + 2 + x^2 + x^2 + 1$

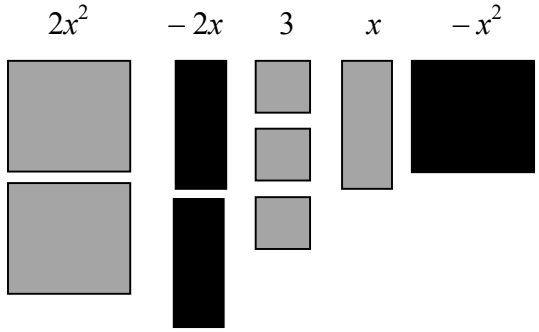
   e) $x^2 + 2x + x^2 + 1 + x^2 + x + 1 + x^2 + 2$

   f) $x^2 + 2x + x + 2x^2 + x^2 + 3 + 3x + 1 + x^2 + 3x^2$

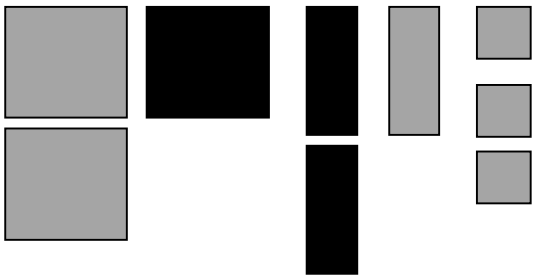
Algebra tiles can also be used when an expression contains negative terms. Black tiles represent the negative terms. Negative terms are terms that are being subtracted.

Example 2: Simplify $2x^2 - 2x + 3 + x - x^2$ using algebra tiles.

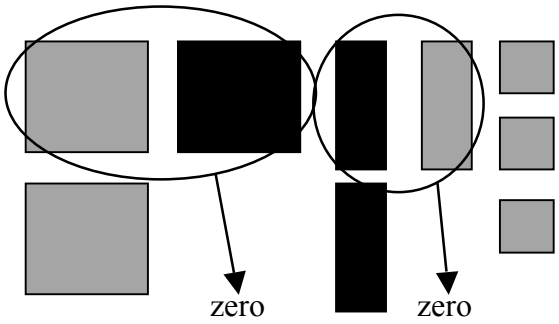
First represent each term with algebra tiles.



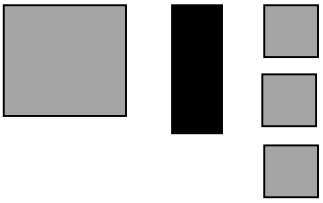
Group the similar sized tiles together.



Remove pairs that equal zero.



Show the result.



The resulting expression is $x^2 - x + 3$.

2. Use algebra tiles to model the expression and combine like terms.

a) $3x - 2 - 2x + 4$

b) $x + 3 - 2x - 2 - x$

c) $1 - x^2 + 2x + 2x^2 - 2$

d) $x^2 - 2x - 2x^2 + x^2 - 3 + 3x + 1$