**Combining Like Terms with Algebra Tiles**

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| **Key** | **Rule to Remember** |
|  = 1 = *x* = *x*2  = -1 = -*x* = -*x*2 | 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 4*x*2 + 2*x* + 2 + 2*x*2 + 3*x* + *x*2 + 1 using algebra tiles.

First represent each term with algebra tiles.

 4*x*2 2*x* 2 2*x*2 3*x* *x*2 1

Then group the similar tiles together and state the result.

 7*x*2 5*x* 3

 The resulting expression is 7*x*2 + 5*x* + 3.

1. Use algebra tiles to model the expression and combine like terms.
2. 4*x* + 1 + *x* + 5
3. 2 + 3*x* + 5*x* + 4*x* + 1
4. 2 + *x*2 + 3*x* + 2*x*2 + 2
5. 2*x* + 3*x*2 + 3*x* + 2*x*2 + 2 + *x*2 + *x*2 + 1
6. *x*2 + 2*x* + *x*2 + 1 + *x*2 + *x* + 1 + *x*2 + 2
7. *x*2 + 2*x* + *x* + 2*x*2 + *x*2 + 3 + 3*x* + 1 + *x*2 + 3*x*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.

 2*x*2 – 2*x* 3 *x* – *x*2

Group the similar sized tiles together.

Remove pairs that equal zero.

 zero zero

Show the result.

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

1. Use algebra tiles to model the expression and combine like terms.
2. $3x-2-2x+4$
3. $x+3-2x-2-x$
4. $1-x^{2}+2x+2x^{2}-2$
5. $x^{2}-2x-2x^{2}+x^{2}-3+3x+1$