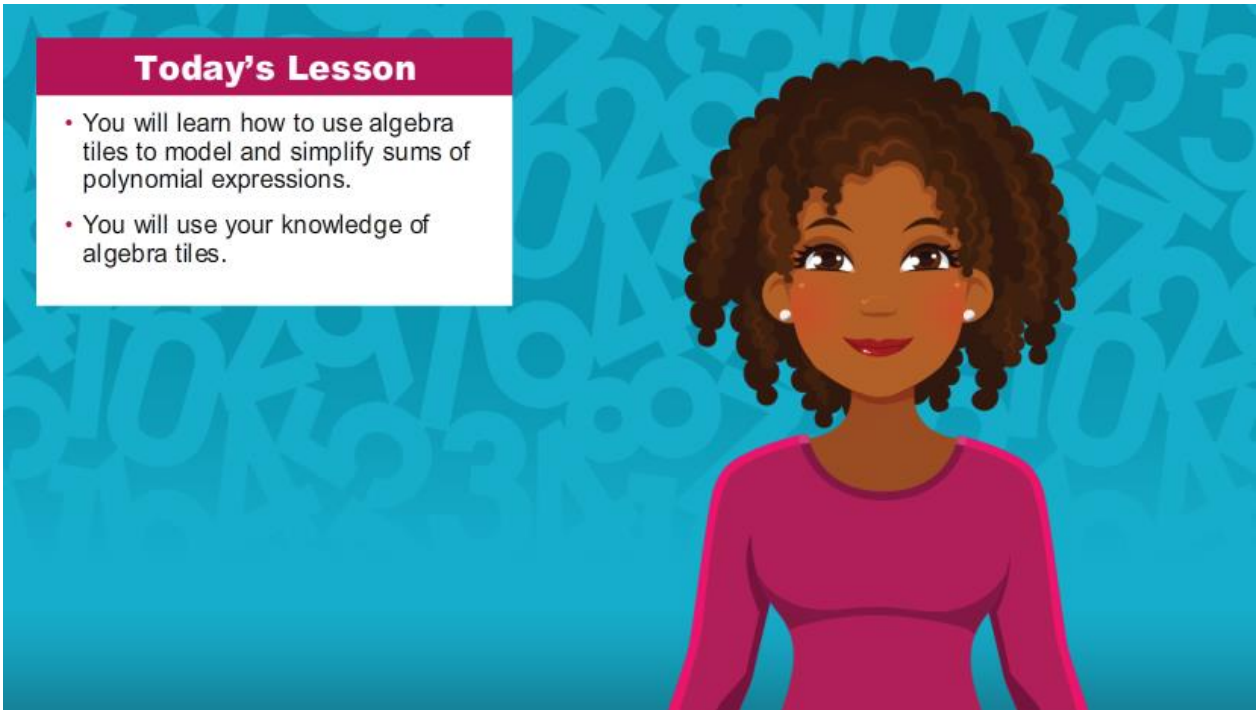
Module 3: Adding and Subtracting Polynomials

Topic 1 Content: Adding Polynomials – Algebra Tiles

Introduction

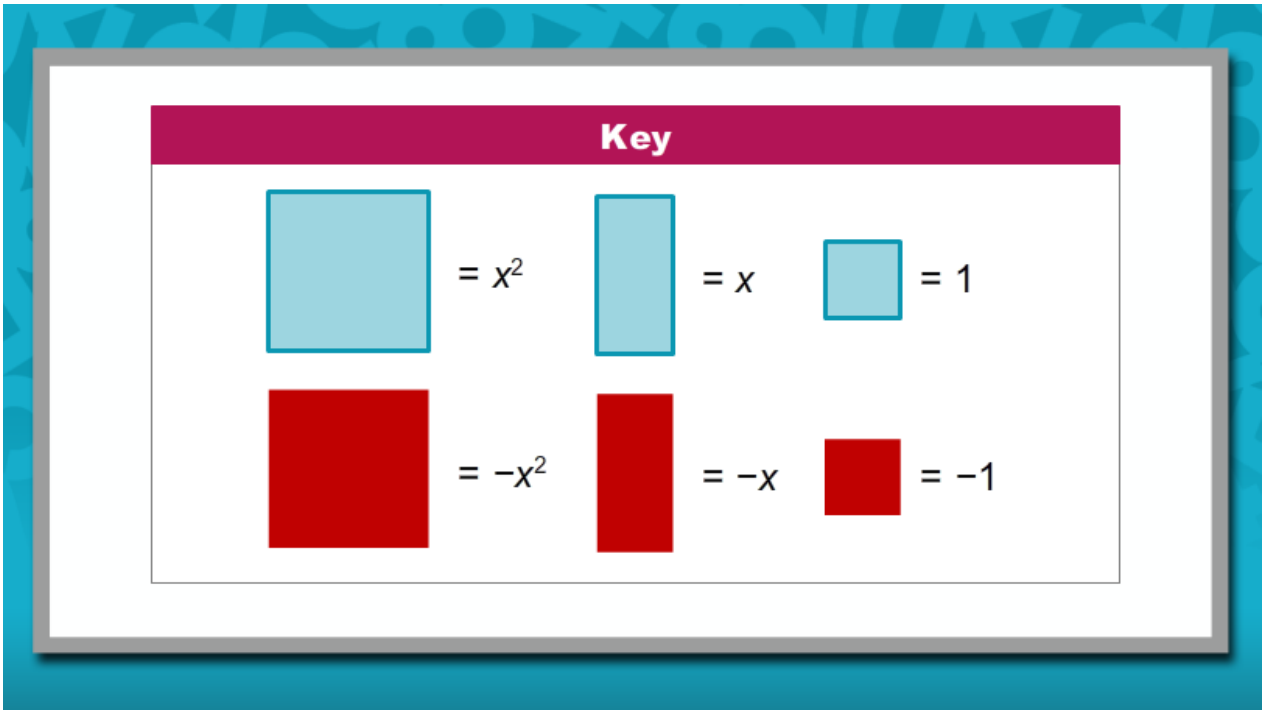


Hello and welcome! I'm so glad to have you here for this lesson in Algebra I, where you will learn how to use algebra tiles to model and simplify sums of polynomial expressions. Your knowledge of how to use algebra tiles to model integer operations will be a useful skill during this lesson.

Module 3: Adding and Subtracting Polynomials

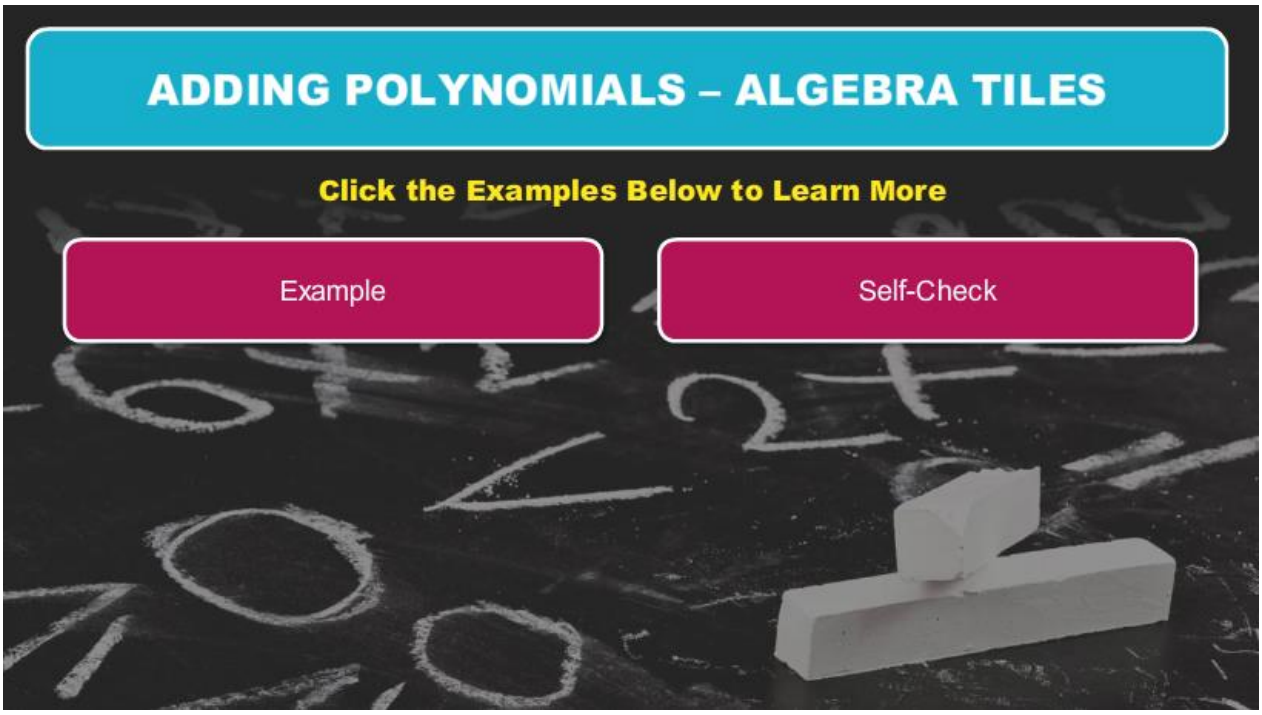
Topic 1 Content: Adding Polynomials – Algebra Tiles

Anticipatory Set



Take a moment to review what each algebra tile represents.

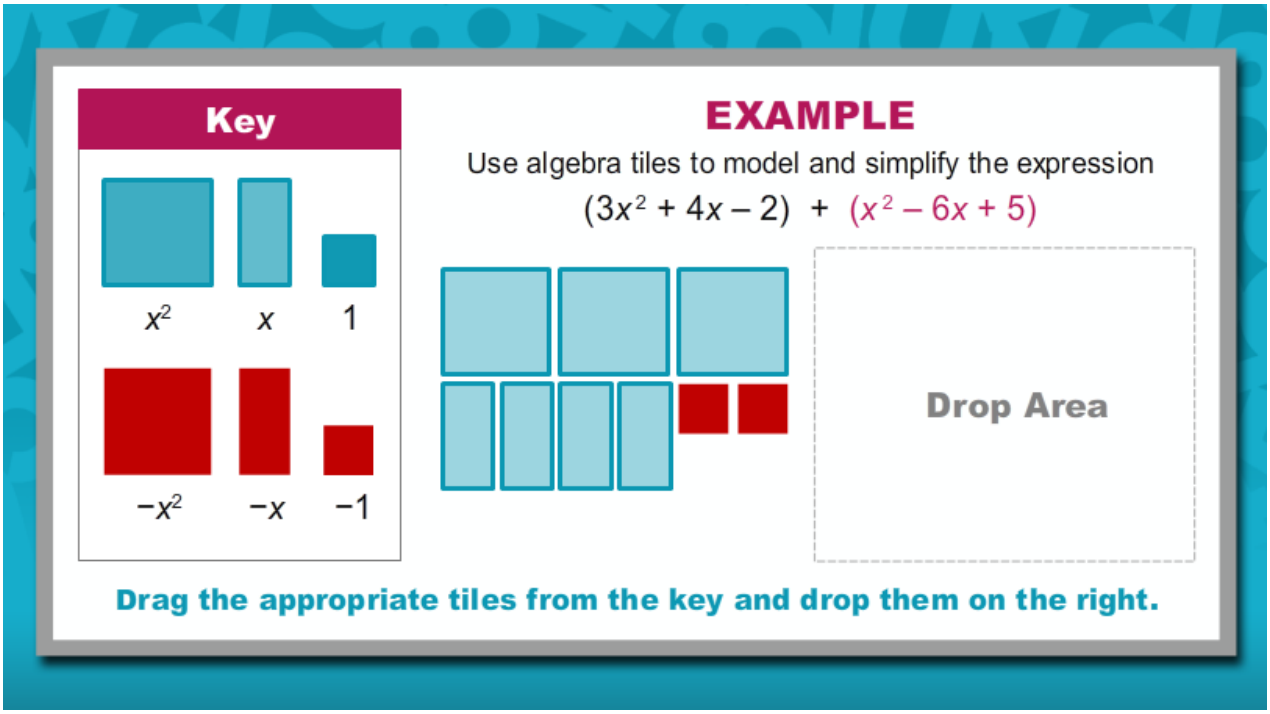
Adding Polynomials – Algebra Tiles



Click the examples below to learn more.

- Example
- Self-Check

Example



Use algebra tiles to model and simplify the expression below.

$$(3x^2 + 4x - 2) + (x^2 - 6x + 5)$$

To model this sum, begin by using algebra tiles to model the first polynomial: $3x^2 + 4x - 2$.

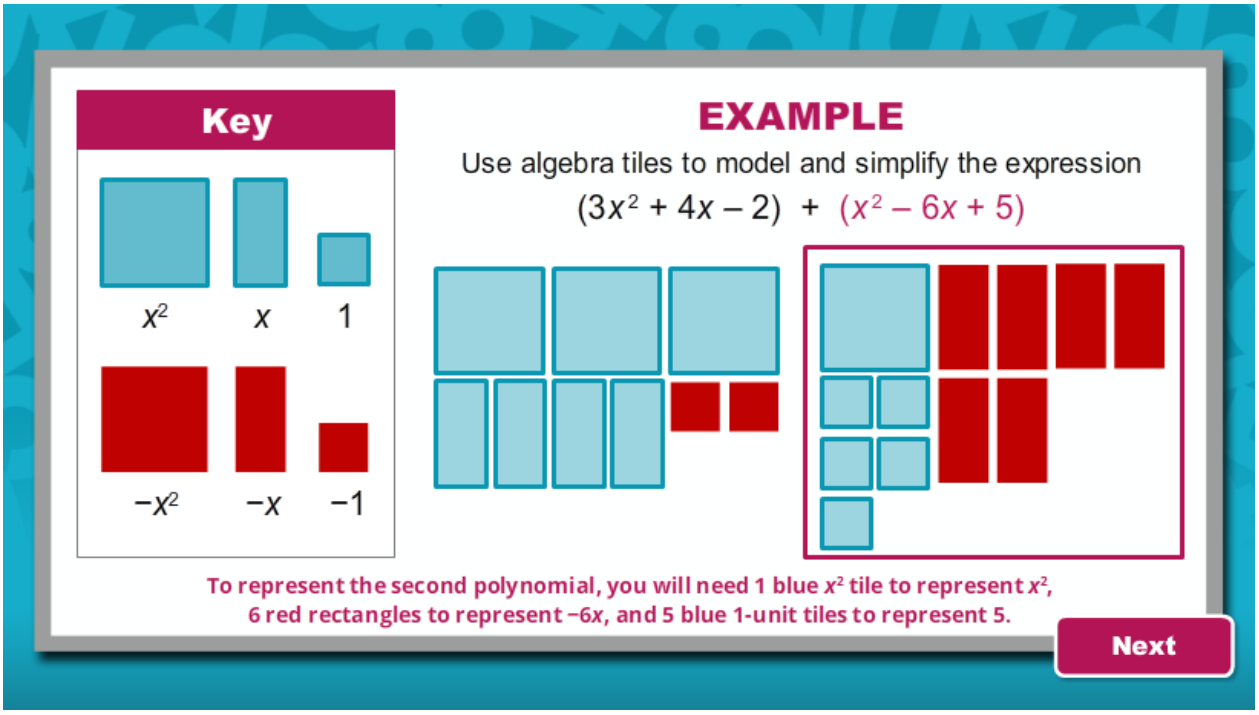
You will need:

- 3 blue x^2 tiles to represent $3x^2$
- 4 blue rectangles to represent $4x$, and
- 2 red 1-unit tiles to represent -2.

Now use algebra tiles to represent the second polynomial: $x^2 - 6x + 5$.

Drag the appropriate tiles from the key and drop them on the right.

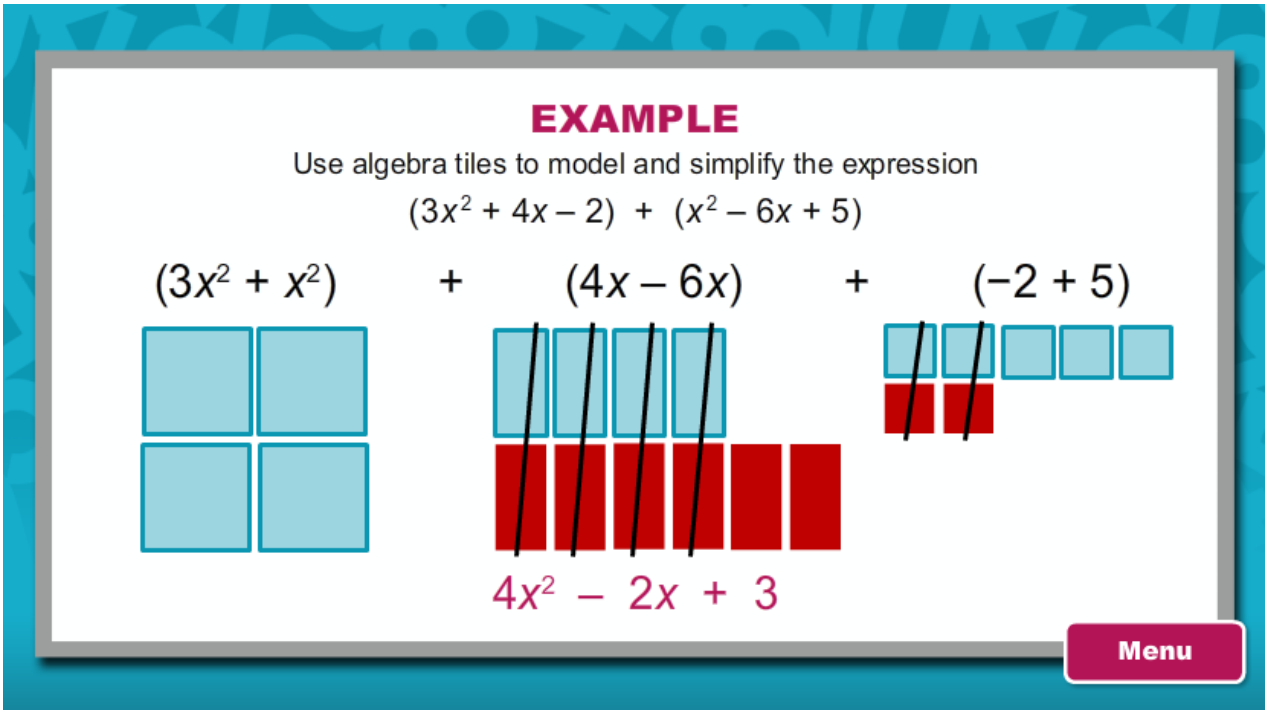
Example (continued)



To represent the second polynomial $x^2 - 6x + 5$, you will need:

- 1 blue x^2 tile to represent x^2,
- 6 red rectangles to represent $-6x$, and
- 5 blue 1-unit tiles to represent 5.

Example (continued)



Now that you have modeled each polynomial, it is time to group the like tiles together so that you can determine the sum. Group all of the x^2 tiles together, all of the rectangles together, and all of the 1-unit tiles together.

Now simplify.

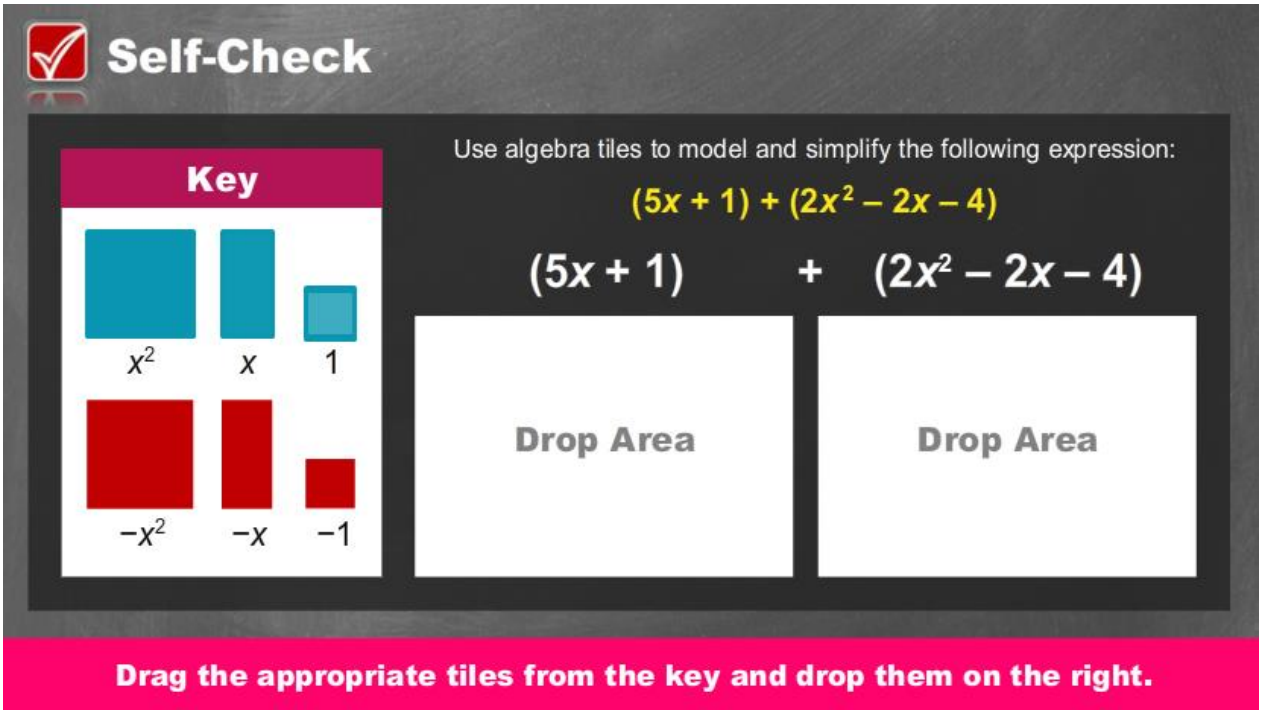
A. $\mathbf{3x^2 + x^2 = 4x^2}$
$3x^2 + x^2$ is $4x^2$.

B. $\mathbf{4x - 6x = -2x}$
After eliminating the zero pairs, you find that $4x$ combined with $-6x$ is $-2x$.

C. $\mathbf{-2 + 5 = 3}$
After eliminating more zero pairs, you also find that $-2 + 5$ is 3.

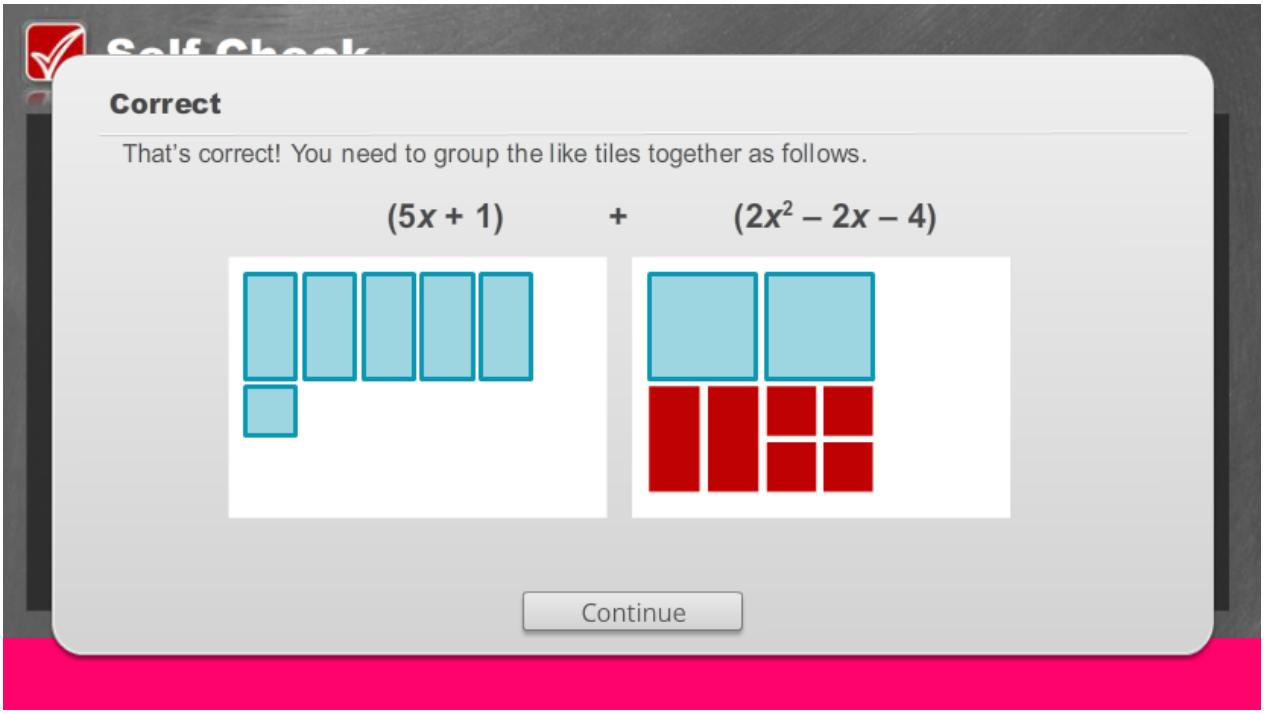
So the sum of the polynomials is $4x^2 - 2x + 3$.

Self-Check 1



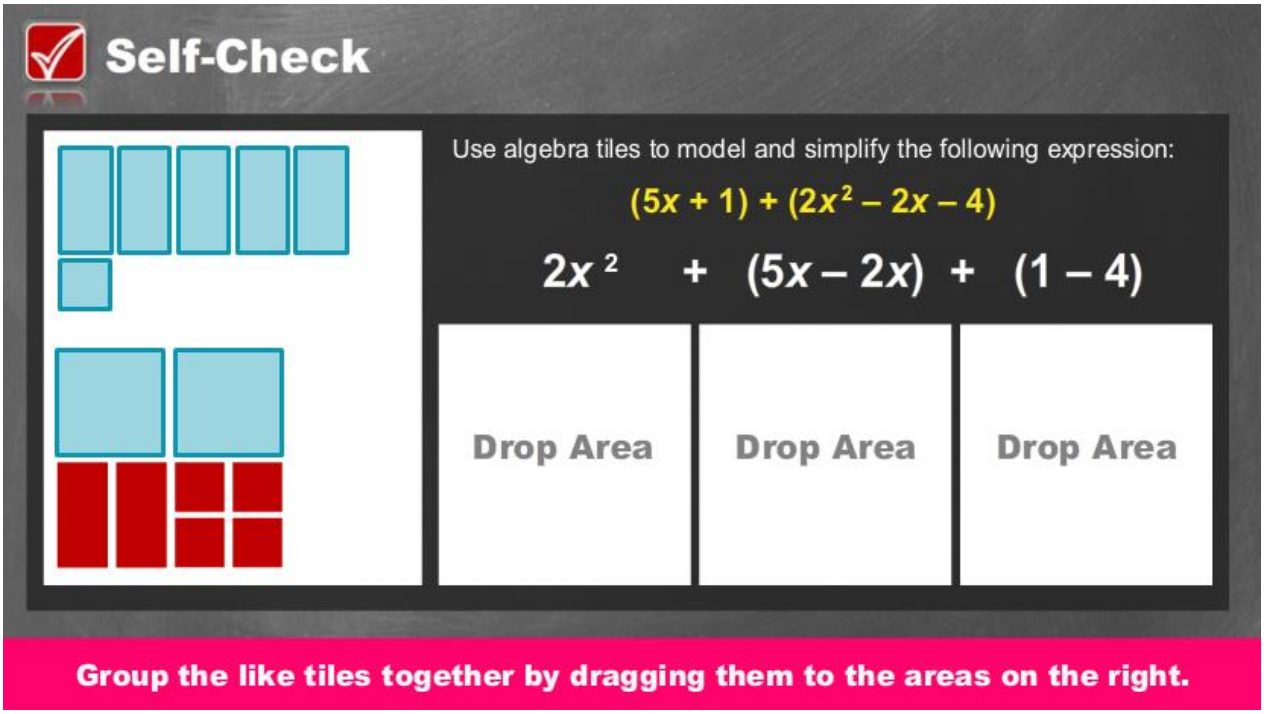
Solve the problem in the image above to check your understanding of the content.

Self-Check 1: Answer



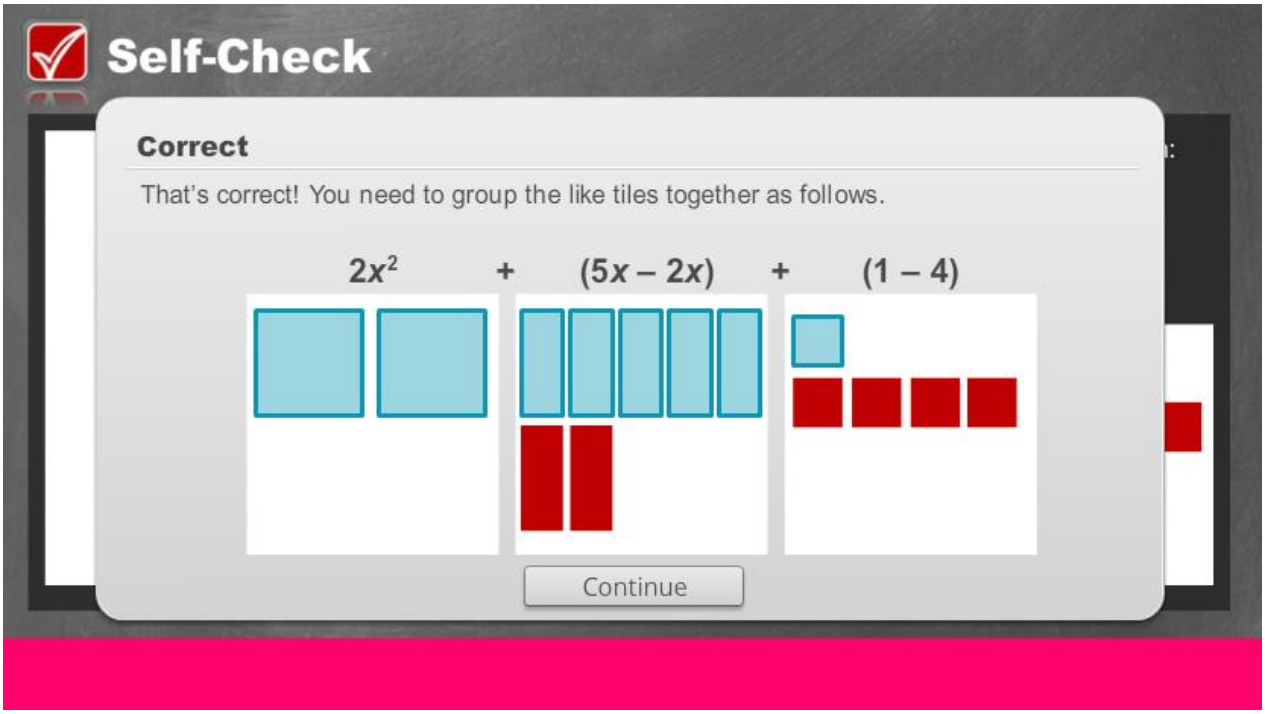
For your reference, the image above shows the correct solution to the self-check problem.

Self-Check 2



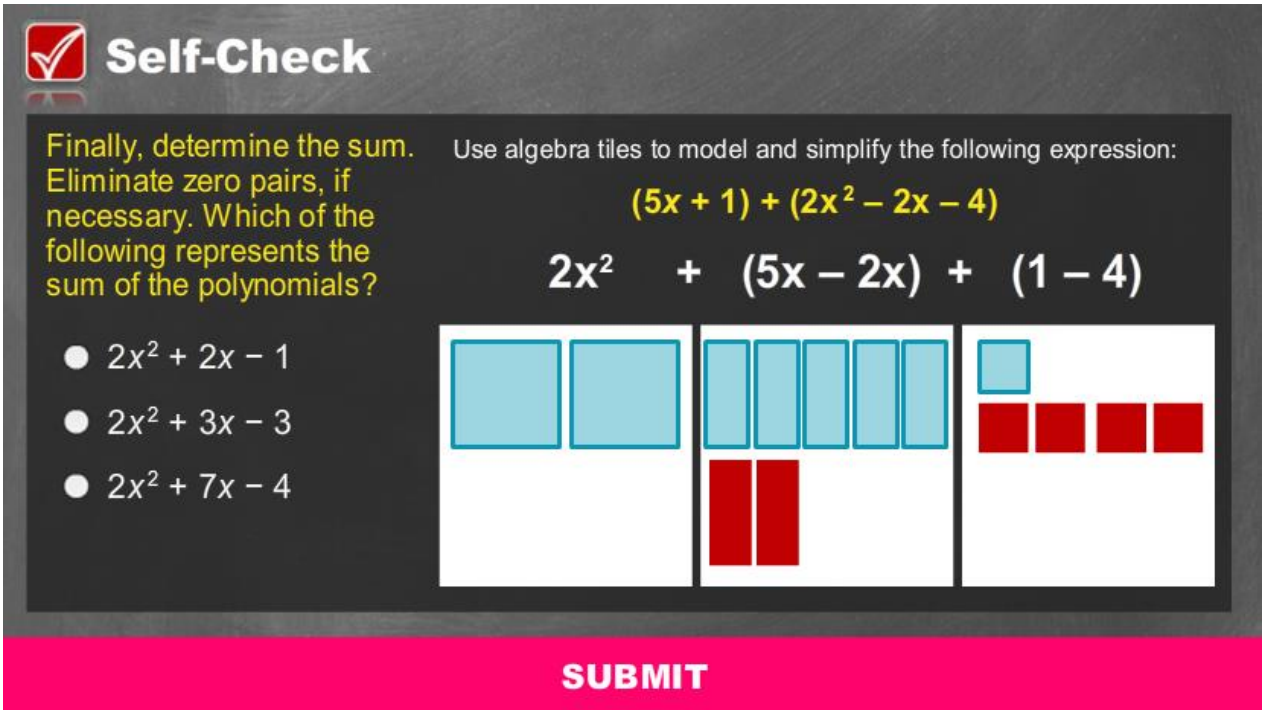
Solve the problem in the image above to check your understanding of the content.

Self-Check 2: Answer



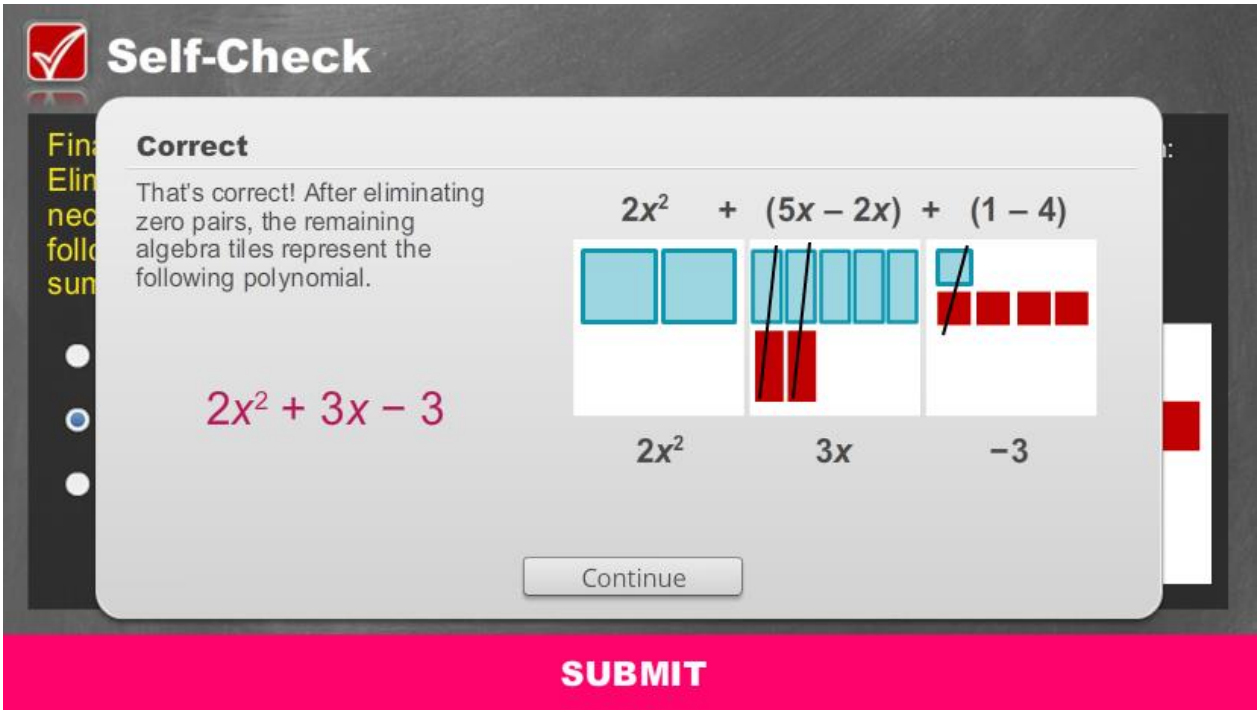
For your reference, the image above shows the correct solution to the self-check problem.

Self-Check 3



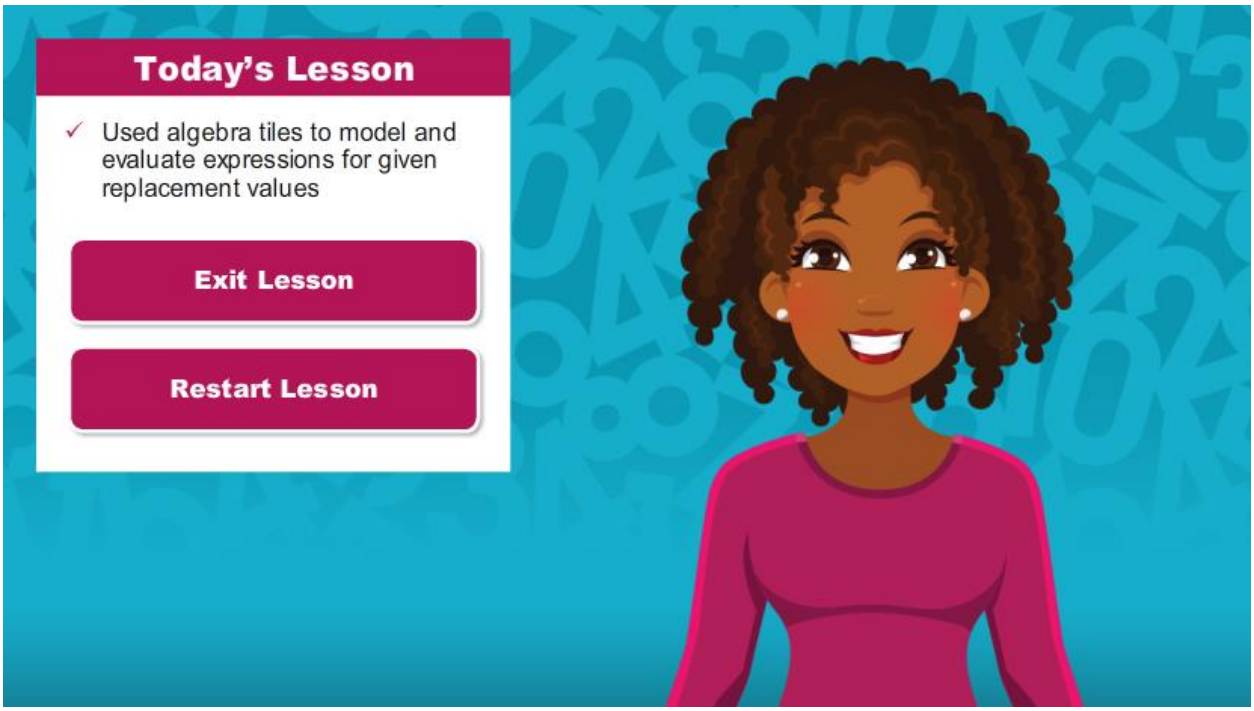
Solve the problem in the image above to check your understanding of the content.

Self-Check 3: Answer



For your reference, the image above shows the correct solution to the self-check problem.

Conclusion



Congratulations! You have reached the conclusion of this lesson in Algebra I. In this lesson, you were able to apply your knowledge of algebra tiles and integer operations to model and simplify sums of polynomial expressions.