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LESSON
8.1

## Investigating Algebra Activity:

Addition of Polynomials
For use before the lesson "Add and Subtract Polynomials"
Materials: algebra tiles

QUESTION How can you model the addition of polynomials with algebra tiles?

## EXPLORE Add $2 x^{2}+5 x-3$ and $x^{2}-3 x+1$

Algebra tiles can be used to model polynomials.



These 1-by- $x$ rectangular tiles have an area of $x$ square units.


These $x$-by- $x$ rectangular tiles have an area of $x^{2}$ square units.

STEP 1 Model polynomials
Use algebra tiles to model $\left(2 x^{2}+5 x-3\right)+\left(x^{2}-3 x+1\right)$.


STEP 2 Combine like terms To add the polynomials, combine like terms. Group the $x^{2}$-tiles, the $x$-tiles, and the 1-tiles.


STEP 3 Form zero pairs
Rearrange the tiles to form zero pairs.
Remove the zero pairs. The sum is $3 x^{2}+2 x-2$.


In Exercises 1-4, use algebra tiles to find the sum. Sketch your solution.

1. $\left(-x^{2}+2 x-1\right)+\left(4 x^{2}+3 x-2\right)$
2. $\left(3 x^{2}+3 x+2\right)+\left(-3 x^{2}-5 x-3\right)$
3. $\left(5 x^{2}-x+4\right)+\left(-3 x^{2}+4 x-6\right)$
4. $\left(2 x^{2}+7\right)+\left(-4 x^{2}+3 x\right)$
5. Describe how to use algebra tiles to model subtraction of polynomials.

## Use algebra tiles to find the difference.

6. $\left(x^{2}+2 x+1\right)-\left(x^{2}+4\right)$
7. $\left(2 x^{2}-3 x-3\right)-(5-3 x)$
8. $\left(3 x^{2}+7\right)-\left(-2 x^{2}+1\right)$
9. $\left(-x^{2}-2 x+4\right)-\left(2 x^{2}-5 x+1\right)$
