▶ ACTIVITY 10.1

Developing Concepts

Modeling Addition of Polynomials

SET UP
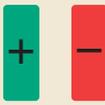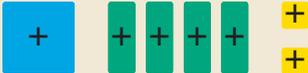Work with a partner.

MATERIALS
algebra tiles

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

▶ **EXPLORING THE CONCEPT**

Algebra tiles can be used to model polynomials.

These 1-by-1 square tiles have an area of 1 square unit.

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

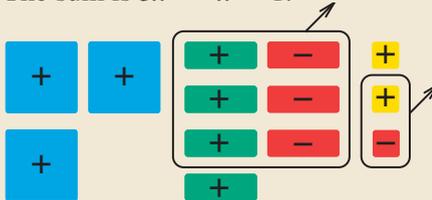**These x-by-x square tiles have an area of x^2 square units.**

1 You can use algebra tiles to add the polynomials $x^2 + 4x + 2$ and $2x^2 - 3x - 1$.

2 To add the polynomials, combine like terms. Group the x^2-tiles, the x-tiles, and the 1-tiles.
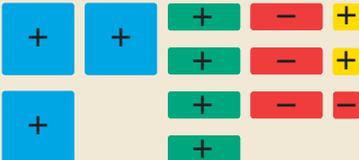
3 Rearrange the tiles to form zero pairs. Remove the zero pairs. The sum is $3x^2 + x + 1$.

▶ **DRAWING CONCLUSIONS**

In Exercises 1–6, use algebra tiles to find the sum. Sketch your solution.

1. $(-x^2 + x - 1) + (4x^2 + 2x - 3)$ **2.** $(3x^2 + 5x - 6) + (-2x^2 - 3x - 6)$

3. $(5x^2 - 3x + 4) + (-x^2 + 3x - 2)$ **4.** $(2x^2 - x - 1) + (-2x^2 + x + 1)$

5. $(-x^2 + 3x + 7) + (x^2 - 7)$ **6.** $(4x^2 + 5) + (4x^2 + 5x)$

7. Describe how to use algebra tiles to model *subtraction* of polynomials.

Use algebra tiles to find the difference.

8. $(x^2 + 3x + 4) - (x^2 + 3)$ **9.** $(x^2 - 2x + 5) - (3 - 2x)$

10. $(2x^2 + 5) - (-x^2 + 3)$ **11.** $(x^2 + 4) - (2x^2 + x)$