



Modeling Activity

(Use with Lesson 12-4)

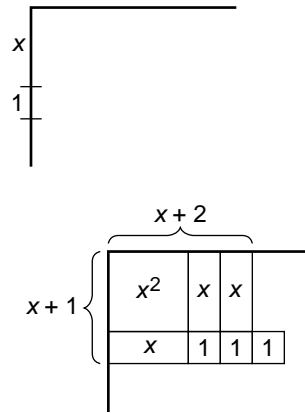
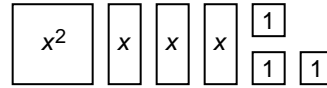
Dividing Polynomials**Materials:** algebra tiles , product mat 

You can use algebra tiles as a model for dividing polynomials.

Activity: Use algebra tiles to divide $x^2 + 3x + 3$ by $x + 1$.

- ▶ Model the polynomial $x^2 + 3x + 3$.
- ▶ Use your algebra tiles to mark off the divisor $x + 1$ along the side of the product mat.
- ▶ Try to arrange the tiles to form a rectangle with a width of $x + 1$ units. Notice that there is an extra 1-tile. This tile represents the remainder.
- ▶ The tiles form a rectangle with a width of $x + 1$ units and a length of $x + 2$ units, and there is one 1-tile left over. Therefore, $x^2 + 3x + 3$ divided by $x + 1$ equals $x + 2$ with a remainder of 1. Since the remainder of 1 can be expressed as the fraction $\frac{1}{x+1}$,

$$(x^2 + 3x + 3) \div (x + 1) = x + 2 + \frac{1}{x+1}.$$

**MODEL***Use algebra tiles to find each quotient.*

1. $(x^2 + 4x + 3) \div (x + 3)$
2. $(x^2 - 5x + 6) \div (x - 2)$
3. $(x^2 - 2x - 3) \div (x - 3)$
4. $(x^2 + 2x - 8) \div (x + 4)$
5. $(x^2 + 5x + 8) \div (x + 2)$
6. $(x^2 - 3x - 5) \div (x - 4)$

WRITE

7. How does the relationship between multiplication and division help you to model division of polynomials?
8. When dividing polynomials, how is the remainder expressed in the answer?