

Name \_\_\_\_\_ Date \_\_\_\_\_

## They're Multiplying—Like Polynomials! Multiplying Polynomials

1. Consider the binomials  $(x + 3)$ ,  $(2x + 1)$ , and  $(x - 4)$ .
  - a. Without multiplying, make a conjecture about the degree of the product of these binomials. Explain how you determined your answer.
  - b. Without multiplying, make a conjecture about the number of terms in the product of these binomials. Explain your reasoning.
  - c. Two students determine the product of the 3 binomials using two different methods. Student 1 uses a multiplication table, and Student 2 uses the Distributive Property. Their work is shown below. Determine which student multiplied correctly and identify the mistake the other student made. Explain how you determined your answer.

**Student 1**

•	$x$	$3$	$2x$	$1$
$x$	$x^2$	$3x$	$2x^2$	$x$
$-4$	$-4x$	$-12$	$-8x$	$-4$

The product is  $3x^2 - 8x - 16$ .

**Student 2**

$$\begin{aligned} (x + 3)(2x + 1)(x - 4) &= (2x^2 + 7x + 3)(x - 4) \\ &= 2x^3 - x^2 - 25x - 12 \end{aligned}$$

The product is  $2x^3 - x^2 - 25x - 12$ .

12

2. Consider the trinomials  $2x^2 - 5x + 7$  and  $-3x^2 + 4x - 2$ .
  - a. Without multiplying, make a conjecture about the degree of the product of these trinomials. Explain how you determined your answer.
  - b. Without multiplying, make a conjecture about the number of terms in the product of these trinomials. Explain your reasoning.

- c. Determine the product of these trinomials. Show your work.
3. Consider the binomials  $(5x - 9)$ ,  $(4x + 7)$ , and  $(3x - 6)$ .
- You now know three methods for multiplying polynomials. Which method would you prefer to use to find the product of these polynomials? Explain your reason.
  - Determine the product of the polynomials. Show your work.
4. Describe when each of the following methods is most helpful in multiplying polynomials.

Algebra Tiles—

Multiplication Tables—

Distributive Property—