LESSON 8.3 **Challenge Practice**
For use with the lesson "Find Special Products of Polynomials"

In Exercises 1–5, simplify by multiplying and then adding and subtracting. Write the result as a polynomial in standard form.

1. $(2x + 3)^2 + (2x - 3)^2$

2. $(-x^2 + 1)^2 + (x^2 + 2)^2$

3. $(ax + by)^2 + (ax - by)^2$

4. $(ax^2 + by^2)^2 + (ax^2 - by^2)^2$

5. $(x + 5)^2 - (x - 25)(x + 1)$

6. Show that $(a - b + c)^2 = a^2 + b^2 + c^2 - 2ab + 2ac - 2bc$.

In Exercises 7 and 8, use the result from Exercise 6 to find the product.

7. $(3x - 2y + 5z)^2$

8. $(ax - by + cz)^2$

In Exercises 9–12, assume x is a positive integer.

9. Find an expression for the product of three consecutive even integers, with $2x$ as the smallest of the three integers. Write the result as a polynomial in standard form.

10. Explain why the result from Exercise 9 is an even number.

11. Find an expression for the product of three consecutive odd integers, with $2x + 1$ as the smallest of the three integers. Write the result as a polynomial in standard form.

12. Explain why the result from Exercise 11 is an odd number.