

Chapter 9 — Polynomials: Operations

Worksheet C: Mixed Application

Name: _____ Grade: _____ Date: _____

1. A student subtracts $(2x^2 - 3x + 4)$ from $(5x^2 + x - 6)$ and writes $3x^2 - 2x - 10$. Identify the error and write the correct result.

2. A patio has length $x + 9$ metres and width $x - 4$ metres. Write and simplify an expression for its area.

3. A student simplifies $4x^2 + 3x + 2x^2 - 5x$ as $6x^4 - 2x$. Identify the error and write the correct simplification.

4. A rectangular sign has length $3x - 2$ cm and width $x + 5$ cm. Write and simplify an expression for its area.

5. Revenue is $R = 8x^2 + 15x$ and cost is $C = 3x^2 + 4x + 20$. Write and simplify $P = R - C$.

6. A student expands $(2x - 3)(x + 4)$ as $2x^2 + 5x - 12$. Is the student correct? Verify using four products.

7. Income is $I = 6n^2 + 9n - 5$ and expenses are $E = 2n^2 - 3n + 12$. Write and simplify $I + E$.

8. Is $(x + 4)^2$ equal to $x^2 + 16$? Expand and explain.

9. Compare $3x + 2x$ and $3x(2x)$. Simplify each and explain why the results differ.

10. Create two binomials whose product is $x^2 - x - 20$. Verify by expanding.

11. A rectangle has area $x^2 - 2x - 24$. Write one possible pair of binomial dimensions and verify.

12. Simplify $(7x^2 - 2x + 9) + (3x^2 + 5x - 4) - (x^2 - x + 6)$.

13. Non-routine diagnostic: a student expands $(2x + 1)(x - 3)$ as $2x^2 - 6x + 1$. Identify the missing product, correct the expansion, and explain why four products are required.
-

14. Expand $(3x + 2)(x - 4)$.
-

15. Non-routine diagnostic: compare $3x(x + 2)$ and $3x + 2$. Explain why one is a product and the other is a sum. Expand or simplify each expression as appropriate.
-