

## EXTRA PRACTICE — Exercises

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### Unit V – Second Degree Relations and Higher - Polynomials Part B – Polynomials

#### Lesson 4 – Operations - Multiplication

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For each of the following, multiply the monomials to find the product.

- $(-8a^5b) \cdot (4a^2b^3)$
- $(-12x^5y^4z)(18x^2y^4z^3)$
- $(2a^2)(5a^3b)(ab^5)$
- $(5x^2)(y)(x^4y^3)$
- $(7xy^3)(4x^2y^4)$
- $(-11mn^6)(2m^3n)(4m^5n^2)$
- $(-6c^2d)(4c^4d^6)(10c^3d^2)$
- $(-4a^2b)(5ab^3)(2a^3b)$
- $(8x^6y^4z^3)(6x^2y^4z^7)$
- $(-12a^5bc^2d^5)(-8ac^{10}d^5)$

For each of the following, multiply the monomial and the polynomial to find the product.

- $ab(b - a)$
- $3r^2(r^2 - 4rs + s^2)$
- $-xy(x^2 - y^2)$
- $-4s^2(s - 4rs + r)$
- $m^2(n^2 - 2m + 1)$
- $-3cd(2c^2 + cd - d^2)$
- $x^2(x^m + 3x^{m-2} - 7)$
- $xy(x^m y^n - x^{m-1} y^{m+1})$
- $-2x^{a+1}(3x^{a-1} - 2x^{1-a})$

For each of the following, multiply the polynomials to find the product.

- $(2a + 1)(a + 3)$
- $(ab - 3)(ab + 3)$
- $(x^2 - 2y)(x^2 - 5y)$
- $(x - y)(x^2 + xy + y^2)$
- $(a^2 + a - 1)(a^2 - a + 1)$
- $(y^2 + 2y + 1)(y + 1)$
- $(x^2 - 5x + 4)(x^2 - x + 2)$
- $(1 - 4x + x^2)(1 - x)$
- $(c - d)^3$
- $(a^x - b^y)(a^x + b^y)$
- $(x^a + y^b + z^c)^2$

# EXTRA PRACTICE — Answer Key

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For each of the following, multiply the monomials to find the product.

1.  $-32a^7b^4$

2.  $-216x^7y^8z^4$

3.  $10a^6b^6$

4.  $5x^6y^4$

5.  $28x^3y^7$

6.  $-88m^9n^9$

7.  $-240c^9d^9$

8.  $-40a^6b^5$

9.  $48x^8y^8z^{10}$

10.  $96a^6bc^{12}d^{10}$

For each of the following, multiply the monomial and the polynomial to find the product.

11.  $ab^2 - a^2b$

12.  $3r^4 - 12r^3s + 3r^2s^2$

13.  $-x^3y + xy^3$

14.  $-4s^3 + 16s^3r - 4s^2r$

15.  $m^2n^2 - 2m^3 + m^2$

16.  $-6c^3d - 3c^2d^2 + 3cd^3$

17.  $x^{m+2} + 3x^m - 7x^2$

18.  $x^{m+1}y^{n+1} - x^m y^{m+2}$

19.  $-6x^{2a} + 4x^2$

For each of the following, multiply the polynomial to find the product.

20.  $2a^2 + 7a + 3$

21.  $a^2b^2 - 9$

22.  $x^4 - 7x^2y + 10y^2$

23.  $x^3 - y^3$

24.  $a^4 - a^2 + 2a + 1$

25.  $y^3 + 3y^2 + 3y + 1$

26.  $x^4 - 6x^3 + 11x^2 - 14x + 8$

27.  $-x^3 + 5x^2 - 5x + 1$

28.  $c^3 - 3c^2d + 3cd^2 - d^3$

29.  $a^{2x} - b^{2y}$

30.  $x^{2a} + 2x^a y^b + 2x^a z^c + y^{2b} + 2y^b z^c + z^{2c}$