Name _____ Date _____ Class _____

LESSON 6-2

Multiplying Polynomials

Practice and Problem Solving: A/B

Find each product.

1. $4x^2(3x^2 + 1)$

_____

2. $-9x(x^2 + 2x + 4)$

_____

3. $-6x^2(x^3 + 7x^2 - 4x + 3)$

_____

4. $x^3(-4x^3 + 10x^2 - 7x + 2)$

_____

5. $-5m^3(7n^4 - 2mn^3 + 6)$

_____

6. $(x + 2)(y^2 + 2y - 12)$

_____

7. $(p + q)(4p^2 - p - 8q^2 - q)$

_____

8. $(2x^2 + xy - y)(y^2 + 3x)$

_____

Expand each expression.

9. $(3x - 1)^3$

_____

10. $(x - 4)^4$

_____

11. $3(a - 4b)^2$

_____

12. $5(x^2 - 2y)^3$

_____

Solve.

13. A biologist has found that the number of branches on a certain rare tree in its first few years of life can be modeled by the polynomial $b(y) = 4y^2 + y$. The number of leaves on each branch can be modeled by the polynomial $l(y) = 2y^3 + 3y^2 + y$, where y is the number of years after the tree reaches a height of 6 feet. Write a polynomial describing the total number of leaves on the tree.

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LESSON 6-2

Multiplying Polynomials

Practice and Problem Solving

Consider the expansion of $(x + y)^n$.

14. How many terms does the expression contain? _____

15. What is the exponent of x in the first term? _____

16. What is the exponent of y in the first term? _____

17. What is the sum of the exponents in any term of the expansion? _____

Find each product.

18. $-y^3(10x^2 + 4xy - y^2)$

_____

19. $(2a - b)^3$

_____

20. $5(h - 2)^4$

_____

21. $(2m^2 + n)(3n^2 + 6mn - m^2)$

_____

22. $\left(\frac{1}{3}x + 4\right)^3$

_____

23. $(4x - 5)(2x^5 + x^3 - 1)$

_____

24. $(a^3 + a^2b^2)(b^4 + a^2)$

_____

25. $(k^4 + k^3 + 12)(k^2 - k - 9)$

_____

Solve.

26. The momentum of an object is defined as its mass m multiplied by its velocity. As a certain experimental aircraft burns fuel, its mass decreases according to the polynomial $m(t) = 3000 - 0.1t^2 - 4t$, where m is in kilograms and t is measured in minutes since takeoff. Under the force of the engines, the velocity of the aircraft increases according to the function $v(t) = 0.001t^3 + 0.01t$, where v is in kilometers per second. What is the momentum of the rocket?

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