Name: _____ Class: _____ Date: _____ ID: A

Monomials and Polynomials Review

Simplify. Leave your answer in exponential form.

____ 1. $8^1 \times 8^6$

a. 8^6 b. 64^7 c. 8^5 d. 8^7

Simplify:

____ 2. $\left(wc^7\right)\left(-8w^3c^5\right)$

a. $-8w^4c^{12}$ c. $-8w^4c^{11}$

b. $-8w^3c^{12}$ d. $-8w^3c^{11}$

____ 3. $\left(-3c^8\right)\left(2c^6d^8\right)$

a. $-6c^{14}d^8$ c. $6c^{48}d^{14}$

b. $-6c^{48}d^8$ d. $6c^{14}d^{14}$

____ 4. $\left(c^8\right)^4$

a. c^{32} b. c^{12} c. c^2 d. c^4

____ 5. $6^4 \times 6^5$.

a. 6^{20} b. 6^9 c. 36^{20} d. 36^9

6. $d \cdot d^9 \cdot d^6$

7. $\left(3c^2\right)\left(-3c^2d^2\right)$

Simplify. Write your answer using exponents.

____ 8. $\left(2^2\right)^6$.

a. $2^{1/3}$ b. 2^{64} c. 2^8 d. 2^{12}

____ 9. $(2qr^5)^3(qr)^6$

a. $2q^9r^{21}$
c. $8q^9r^{11}$
b. $2q^4r^{21}$
d. $8q^9r^{21}$

10. Simplify: $(2v)^2$

11. Simplify $\left(8x^3\right)^2\left(2x^2\right)^3$.

12. Simplify $(-x)^2\left(-x^2\right)^2\left(-x^3\right)$.

Simplify the expression using positive exponents.

____ 13. $\left(\frac{x^3}{y^8}\right)^4$

a. $\frac{x^{12}}{y^{32}}$
c. $x^{12} + y^{32}$
b. $\frac{x^7}{y^{12}}$
d. $\frac{x^{12}}{y^8}$

14. Evaluate the expression $\frac{5^4 \cdot 5^5}{5^6}$.

15. About 10^4 taxpayers live in City A. Last year, the state collected about 10^7 dollars in taxes from these taxpayers.
a. On average, how much did each taxpayer in City A pay in taxes last year?
b. City B has 10^6 taxpayers and collected 10^8 dollars in taxes. On average, did a resident of City B pay more or less than a resident of City A in taxes? Explain.

Simplify:

____ 16. $a^{-11} \cdot a^{-11}$

a. $\frac{1}{a^{22}}$
b. a^{22}
c. -22^a
d. $\frac{1}{a^{-22}}$

____ 17. Write $5^0 \cdot 5^{-12}$ using positive exponents.

a. $\frac{1}{5^{13}}$ b. $\frac{1}{5^{12}}$ c. 5^{12} d. 5^0

18. Rewrite using only positive exponents: $3a^2b^{-2}c^{-3}$

19. Rewrite the expression using positive exponents. $(-2)^0\left(3x^{-2}y^{-2}\right)^{-1}$

____ 20. Classify the expression $-9v^9 - 7$ and state its degree.

a. binomial, 9
b. binomial, 10
c. trinomial, 9
d. trinomial, 10

Simplify the expression.

____ 21. $\left(5q^5+4\right)-\left(2q^3+9\right)+\left(6q^5-q^3\right)$

a. $11q^5-3q^3-5$
b. $-3q^5+11q^3-5$
c. $11q^3+3q^5+5$
d. $11q^5+3q^3+5$

22. $\left(3e^4-4\right)-\left(8e^3+2\right)+\left(4e^4+3e^3\right)$

Find the difference.

____ 23. $\left(-4z^4-4z^3-6\right)-\left(-6z^4-7z^3-3\right)$

a. $2z^4+3z^3-3$
b. $-10z^4-11z^3-9$
c. $10z^4+11z^3+9$
d. $-2z^4-3z^3+3$

24. $\left(-7q^5-8q^4+6q^3-6q^2\right)-\left(-6q^4+2q^3-2q^2\right)$

25. Write the polynomial so that the exponents decrease from left to right. $-4x^2-3x-3x^4-2$

26. Find the sum $\left(2x^2 - 7x + 7\right) + \left(-3x^2 - 2x + 8\right)$.

27. Find the sum $(5x^4 - 5x^6 - 5) + (9x^6 - 7 - 3x^4)$.

28. Find the difference $\left(3z^3 + 2z^2 + 7\right) - \left(z^3 - 3z - 6\right)$.

29. Find the difference $\left(3x^3 - 7x - 5\right) - \left(x^3 - 2x^2 + 4\right)$.

Find the product.

____ 30. $(x+4)(x+7)$

a. $x^2 + 28$
b. $x^2 + 28x + 11$
c. $x^2 + 11x + 28$
d. $x^2 + 28x + 28$

____ 31. $(x+5)\left(x^2 - 2x + 3\right)$

a. $x^3 + 3x^2 - 7x + 15$
b. $x^3 - 2x^2 + 15$
c. $x^3 + 3x^2 - 10x + 15$
d. $x^2 - 3x + 15$

____ 32. $(x+7)\left(x^2 - 4x + 2\right)$

a. $x^3 + 3x^2 - 26x + 14$
b. $x^3 + 11x^2 - 26x + 14$
c. $x^3 + 3x^2 - 30x + 14$
d. $x^3 + 11x^2 - 30x + 14$

33. $17x(3x - 5)$

34. $3x^2\left(4 - x^2\right)$

35. $-3x^2\left(2x^2 - 5x - 3\right)$

36. $-x^2\left(-3x^2 + 2x - 4\right)$

37. Use the FOIL pattern to find the product $(2x-5)(3x+4)$.

38. A rectangle has length $x+5$ and width $x-7$. Write an equation that represents the area, A, of the rectangle in terms of x.

Find the product.

39. $(a-7)^2$

40. $(2p+7)(2p-7)$

41. $(4x+7y)^2$

Find the missing term.

____ 42. $(x+9)^2 = x^2 + 18x + \_\_$

a. 81
b. 27
c. 72
d. 90

43. $(x-2)(x-4) = 0$

44. Consider the equation $(3t-15)(4t+22) = 0$.
a. Solve the equation.
b. Susan noticed that she could factor out a 3 from the first expression on the left side of the equation and a 2 from the second expression. She rewrote the equation as $3(t-5)\cdot 2(t+11) = 0$. Is this equation equivalent to the original equation? Explain.