Name: **Key** Date: _____ Period: _____

Test Review Ch. 5 DAY FOUR CYU

CONCEPTS	BASIC	INTERMEDIATE	ADVANCED
5.1 Exponent Concepts	1 - 5	6 - 9	10 - 16
5.2 Adding & Subtracting Polynomial Functions	17 – 20, 22, 23	21, 24 - 25	26 - 28
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5.5 Negative Exponents & Scientific Notation	45 - 48	49 - 53	54 - 59

(5.1) Exponents

State the base and the exponent for each expression.

1. $(-5)^4$ base: -5 exponent: 4

2. x^6 base: x exponent: 6

Evaluate each expression.

3. $(-6)^2$ 36

4. $-4^3 - 4^0$ -65

5. $\frac{8b}{8b}$ 1

Simplify each expression.

6. $x^9 \cdot x^5$ x^{14}

7. $(-5y^3)(4y^4)$ $-20y^7$

8. $(y^3)^5$ y^{15}

9. $(2x^3)^3$ $8x^9$

10. $\frac{z^{12}}{z^5}$ z^7

11. $\frac{x^4 y^6}{xy}$ $x^3 y^5$

12. $\frac{2x^7 y^8}{8xy^2}$ $\frac{x^6 y^6}{4}$

13. $(2x)^2 (9x)^1$ $36x^3$

14. $8(x)^0 + 9^0$ 9

15. $\left(\frac{3x^4}{4y}\right)^3$ $\frac{27x^{12}}{64y^3}$

16. $\left(\frac{5a^6}{b^3}\right)^2$ $\frac{25a^{12}}{b^6}$

(5.2) Adding & Subtracting Polynomial Functions

Find the degree of each term.

17. $10x^3 y^2 z$ 6

18. $95xyz$ 3

Find the degree of each polynomial.

19. $9y^2 + 30y + 25$

2

20. $6x^2y^2z^2 + 5x^2y^3 - 12xyz$

6

21. The surface area of a box with a square base and a height of 5 units is given by the polynomial function $P(x) = 2x^2 + 20x$. Fill in the table below by evaluating the given values of x.

x	1	3	5.1	10
$P(x) = 2x^2 + 20x$	22	78	154.02	400

Combine like terms in each expression.

22. $21x^2 + 3x + x^2 + 6$

$22x^2 + 3x + 6$

23. $4a^2b - 3b^2 - 8q^2 - 10a^2b + 7q^2$

$-6a^2b - 3b^2 - 8q^2$

Add or subtract as indicated.

24. $(2x^5 + 3x^4 + 4x^3 + 5x^2) + (4x^2 + 7x + 6)$

$2x^5 + 3x^4 + 4x^3 + 9x^2 + 7x + 6$

25. $(3x^2 - 7xy + 7y^2) - (4x^2 - xy + 9y^2)$

$-x^2 - 6xy - 2y^2$

Translate: Perform the indicated operations.

26. Subtract $(4x^2 + 8x - 7)$ from the sum of $(x^2 + 7x + 9)$ and $(x^2 + 4)$.

$-2x^2 - x + 20$

27. If $P(x) = 9x^2 - 7x + 8$, find the following. $P(-2) = ?$ 58

$(-2, 58)$

28. With the ownership of computers growing rapidly, the market for new software is also increasing. The recenue for software publishers (in millions of dollars) in the United States from 2001 to 2006 can be represented by the polynomial function $f(x) = 754x^2 - 228x + 80,134$ where x is the number of years since 2001. Use this model to find the revenues from software sales in 2009.

$126,566 million

(5.3) Multiplying Polynomials

Multiply each expression. Write the final answer in standard form.

29. $9(6a - 3)$

$54a - 27$

30. $-8y(4y^2 - 6)$

$-32y^3 + 48y$

31. $(6b^3 - 4b + 2)(7b)$

$42b^4 - 28b^2 + 14b$

32. $(2x - 5)(3x + 2)$

$6x^2 - 11x - 10$

33. $(x - 12)^2$

$x^2 - 24x + 144$

34. $(6a - 1)(7a + 3)$

$42a^2 + 11a - 3$

35. $(3x + 5)^2$

$9x^2 + 30x + 25$

36. $(x + 2)(x^5 + x + 1)$

$x^6 + 2x^5 + x^2 + 3x + 2$

37. $(x^3 + 4x + 4)(x^3 + 4x - 4)$

$x^6 + 8x^4 + 16x^2 - 16$

(5.4) Special Products

Use special products to multiply each of the following. Formulas or FOIL & Punnett Squares.

38. $(x-5)^2$

$x^2 - 10x + 25$

39. $(2x-5)^3$

$8x^3 - 60x^2 + 150x - 125$

40. $(4x+2)^2$

$16x^2 + 16x + 4$

41. $(5x+1)(5x-1)$

$25x^2 - 1$

42. $(2x-6)(2x+6)$

$4x^2 - 36$

43. $(4a^2 + 2b)(4a^2 - 2b)$

$16a^4 - 4b^2$

Express each as a product of polynomials in x. Then multiply and simplify.

44. Find the area of the rectangle if the length is $((x-1)$ miles and the width is $(5x+2)$ miles.

$(5x^2 - 3x - 2)\,mi^2$

(5.5) Negative Exponents & Scientific Notation

Simplify each expression to have no negative exponents.

45. -7^{-2}

$-\dfrac{1}{49}$

46. $(2x)^{-4}$

$\dfrac{1}{16x^4}$

47. $\left(\dfrac{-2}{3}\right)^{-2}$

$\dfrac{9}{4}$

48. $6^{-1} - 7^{-1}$

$\dfrac{1}{42}$

Simplify each expression. Write each answer using positive exponents only.

49. $\dfrac{z^4}{z^{-4}}$

z^8

50. $\dfrac{y^{-2}}{y^{-5}}$

y^3

51. $\left(\dfrac{x^{-3}y^{-4}}{x^{-2}y^{-5}}\right)^{-3}$

$\dfrac{x^3}{y^3}$

52. $\dfrac{a^5 b^{-5}}{a^{-5} b^5}$

$\dfrac{a^{10}}{b^{10}}$

53. $a^{m+2} a^{m+3}$

a^{2m+5}

Write each number in scientific notation.

54. 0.8868

8.868×10^{-1}

55. 868,000

8.68×10^5

56. The approximate diameter of the Milky Way galaxy is 150,000 light years. Write this number in scientific notation.

1.5×10^5

Write each number in standard notation.

57. 3.86×10^{-3}

0.00386

58. 8.936×10^5

$893,600$

59. An angstrom is a unit of measure, equal to 1×10^{-10} meter, used for measuring wavelengths or the diameters of atoms. Write this number in standard notation.

0.0000000001

60. Simplify. Express the final answer in standard notation and scientific notation. $\dfrac{8 \times 10^4}{2 \times 10^{-7}}$

$400,000,000,000$

CYU Reflection: *How far can you go: basic, intermediate, or advanced?*

Rate your mastery level!

How confident are you with the skills this CYU covered? Circle the score you would give yourself.

1 2	3 4 5	6 7	8
Basic	Intermediate	Advanced	Solved ALL!