

Unit 2 Test Study Guide

(Algebraic Expressions)

Name: _____

Date: _____ Per: _____

Topic 1: Translating Expressions

Directions: Translate each expression.	
1. "the product of -6 and a number"	2. "the difference between a number and 25"
3. "17 more than the quotient of a number and 4"	4. "13 less than two-thirds of a number"
5. "the sum of renting bowling shoes and \$3 per game"	6. "nine subtracted from twice a number"

Topic 2: Simplifying Expressions

Directions: Simplify each expression.		
7. $18 - 6x + 5x - 11$	8. $-2a - 6 + 15a - 21 + 5$	9. $7m + 19m - 11n - 4m + 3n$
10. $6(w + 2)$	11. $-4(2p - 7)$	12. $5(a - 2b)$
13. $7(5x - 2) - 29x + 10$	14. $-3(2 - k) + 11 - 10k$	
15. $18 + 7(4c - 2) - 15c$	16. $-19 - 2(a + 9) + 5a - 3$	
17. $8p - (5p - 13) - 27 + 4p$	18. $-5x - 4(x + 2y) + 9y - 7x$	

Topic 3: Factoring Expressions

Directions: Factor each expression. If it cannot be factored, write "prime."		
19. $3x - 15$	20. $10c - 10$	21. $8k + 36$
22. $9r + 24$	23. $27r - 15$	24. $40a + 24b$
Directions: Simplify, then factor each expression.		
25. $-7m - 16 + 9m + 2$	26. $18y - (2y + 17) - 11$	
27. $-5 + 3(10 - x) + 9x - 1$	28. $3a - 5(a + 2b) + 8(4a - b)$	

Topic 4: Operations with Monomials

Directions: Complete the following rules.				
Zero Exponent $x^0 =$	Negative Exponent $x^{-a} =$	Product Rule $x^a \cdot x^b =$	Quotient Rule $\frac{x^a}{x^b} =$	Power Rule $(x^a)^b =$
Directions: Simplify each expression. Final answers must have positive exponents only.				
29. $2ab + 9ab$	30. $-14m^3n^2 - 2m^3n^2$	31. $2k^2 - 2k - 8k + k^2$		
32. $5^{10} \cdot 5^2$	33. $r^{-4}s^2 \cdot r^{-3}s^{12}$	34. $(-8p^3q^7)(2p^{-1}q^{-7})$		
35. $\frac{2^2}{2^9}$	36. $\frac{48k^{20}}{-8k^4}$	37. $\frac{3a^{-1}b^2}{6a^8b^{-3}}$		

38. $(4^{-2})^3$	39. $(9c^4d^7)^2$	40. $(-3m^{-5}n^4)^4$
41. $-2x^7y^4 + \frac{18x^{10}y^3}{3x^3y^{-1}}$	42. $(2k^3)^4 \cdot -3k^2$	43. $\frac{8r^7s^{-2}}{10r^4s \cdot 3r^2s^3}$
44. $(-6a^5b^7)^2 - 17a^{10}b^{14}$	45. $\left(\frac{4}{3}v^7 \cdot 6v^{-4}\right)^2$	46. $18m^9n^2 + 7m^{10}n \cdot -3m^{-1}n$
47. Subtract $9x^3y$ from $-4x^3y$.	48. Find the product of $18p^3q^{-15}$ and $3p^5q^4$.	
49. Find the quotient of $-28a^{14}b^5$ and $4a^{11}b^6$.	50. Find $9a^8$ more than the product of $-12a^5$ and $2a^3$.	

Topic 5: Polynomials

Directions: Write each expression in standard form.		
51. $25 - 3x$	52. $-11 - 2p^2 + 8p$	53. $4y^2 + 25 - 13y + y^3$
Directions: Simplify each expression. Write all final answers in standard form.		
54. $(4w - 7) + (2w + 23)$	55. $(9h + 10) - (7 + 12h)$	
56. $(4x^2 + 13x - 2) + (x^2 - 5x + 16)$	57. $(2a^2 - a - 11) - (4a^2 + 10a - 11)$	

58. $(10 + k^2 - 8k) - (3k + 17 - 2k^2)$	59. $(-2c - 17 + 9c^2) + (24 - 2c^2 - 2c)$
60. What is $7m - 19$ less than $6 - 2m$?	61. What is $-6p + 1$ increased by $4 - 11p$?

Topic 6: Operations with Scientific Notation

Directions: Evaluate each expression. Give all final answers in scientific notation.		
62. $(9 \times 10^{-4})(4 \times 10^{10})$	63. $(8.6 \times 10^{-7})(2.5 \times 10^{-2})$	64. $(2 \times 10^{13}) \div (5 \times 10^3)$
65. $\frac{1.1 \times 10^{-2}}{1.6 \times 10^4}$	66. $(8.2 \times 10^9) + (2.5 \times 10^8)$	67. $(4 \times 10^{-3}) - (9.8 \times 10^{-5})$
68. Asia is approximately 1.7×10^7 square miles while Europe is 3.8×10^6 square miles. How many more square miles is Asia than Europe?		
69. An average of 3.53×10^5 babies are born each day around the world. How many babies are born around the world in January?		
70. The volume of the moon is approximately 2.2×10^{10} cubic kilometers while the volume of the sun is 1.4×10^{18} cubic kilometers. How many times larger is the volume of the sun than the moon?		