

ANSWER SHEET

Instructions: Place your answers to all problems on this sheet. Attach your work for the problems on the back. If answer doesn't fit on the answer sheet and is on your solution paper, indicate that in the answer slot below by writing "on solution paper".

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Worksheet: _____

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Solve the problems on a separate sheet of paper. Also, write your answers on the answer sheet.

Section 5-1 – Product and Power Rules for Exponents

Write each expression in exponential form.

1. $3 \cdot 3 \cdot 3 \cdot 3 \cdot 3 \cdot 3$

2. $(4z)(4z)(4z)(4z)$

3. $\left(-\frac{4}{7}\right)\left(-\frac{4}{7}\right)\left(-\frac{4}{7}\right)\left(-\frac{4}{7}\right)\left(-\frac{4}{7}\right)$

Write the base and the exponent of each expression.

4. $(-4)^7$

5. -5^9

6. 0.5^6

Use the product rule to simplify each expression. Write each answer in exponential form.

7. $4^7 \cdot 4^8$

9. $(-4x^3)(8x^{12})$

11. $-3m^6 \cdot (-4m^6)$

8. $(-6)^3 \cdot (-6)^5$

10. $10n^4 \cdot 10n \cdot n^7$

Use the rule $(a^m)^n = a^{mn}$. Simplify each expression. Write each answer in exponential form.

12. $(3^4)^5$

13. $[(-12)^7]^5$

14. $-(21^5)^3$

Use the rule $(ab)^n = a^n b^n$. Simplify each expression. Write each answer in exponential form.

15. $(yz^4)^3$

16. $(-2r^3s)^6$

17. $(4c^3d^4)^3$

Use the rule $\left(\frac{a}{b}\right)^m = \frac{a^m}{b^m}$. Simplify each expression. Write each answer in exponential form.

18. $\left(-\frac{2a}{b^2}\right)^7$

19. $\left(\frac{x}{2y}\right)^4$

20. $\left(-\frac{2x}{5}\right)^3$

Use a combination of rules to simplify each expression. Write each answer in exponential form.

21. $\left(\frac{3b^2}{11}\right)^4$

22. $(5x^2y^3)^7(5xy^4)^4$

23. $\left(\frac{km^4p^2}{3n^4}\right)^7$

5.2 – Integer Exponents and Quotient Rule

Evaluate each expression.

24. 6^0

26. -12^0

25. $-(-8)^0$

27. $0^8 \cdot 8^0$

Evaluate each expression.

28. 4^{-2}

29. $(-2)^{-4}$

30. $10^{-2} + 5^{-2}$

Simplify using definition of negative exponents. Write each expression with positive exponents.

31. a^{-4}

32. $\frac{2}{r^{-7}}$

33. $\frac{2x^{-4}}{3y^{-7}}$

Use quotient Rule for exponents.

34. $\frac{2^9}{2^5}$

36. $\frac{12x^9y^5}{12^4x^3y^7}$

35. $\frac{(-2)^8}{(-2)^3}$

37. $\frac{8b^{-3}c^4}{8^{-4}b^{-7}c^{-3}}$

Use a combination of rules. Write answers with only positive exponents.

38. $x^{-3}x^3x^9$

39. $(5w^2y^2)^{-2}(4wy^{-3})^2$

40. $\frac{c^{10}(c^2)^3}{(c^3)^3(c^2)^{-9}}$

41. $\left(\frac{k^3t^4}{k^2t^{-1}}\right)^{-4}$

42. $\frac{(3^{-2}x^{-5}y)^{-4}(2x^2y^{-4})^2}{(2x^{-2}y^2)^{-2}}$

Section 5.3 – Scientific Notation

Write each number in scientific notation.

43. 4579

45. -0.257

44. 209,907

46. 0.00000413

Write each number without exponents.

47. 2.5×10^4

49. 6.4×10^{-3}

48. -2.45×10^6

50. 4.007×10^{-2}

Perform the indicated operations with numbers in scientific notation and write each answer without exponents.

51. $(7 \times 10^3) \times (3 \times 10^0)$

52. $(3 \times 10^6) \times (4 \times 10^{-2}) \times (2 \times 10^{-1})$

53. $8 \times 10^{-3} / 4 \times 10^{-7}$