

Practice 7-1**Zero and Negative Exponents**

Simplify each expression.

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|--------------------------|-----------------------------|------------------------------|-----------------------------|
| 1. 16^0 | 2. 4^{-2} | 3. 3^{-3} | 4. 8^{-4} |
| 5. $\frac{1}{2^{-5}}$ | 6. $\frac{4}{4^{-3}}$ | 7. $\frac{3}{6^{-1}}$ | 8. $\frac{2^{-1}}{2^{-5}}$ |
| 9. $3 \cdot 8^0$ | 10. $16 \cdot 2^{-2}$ | 11. 12^{-1} | 12. -7^{-2} |
| 13. $16 \cdot 4^0$ | 14. 9^0 | 15. $\frac{32^{-1}}{8^{-1}}$ | 16. $\frac{9}{2^{-1}}$ |
| 17. $\frac{8^{-2}}{4^0}$ | 18. $\frac{9^{-1}}{3^{-2}}$ | 19. $5(-6)^0$ | 20. $(3.7)^0$ |
| 21. $(-9)^{-2}$ | 22. $(-4.9)^0$ | 23. $-6 \cdot 3^{-4}$ | 24. $\frac{7^{-2}}{7^{-2}}$ |

Evaluate each expression for $a = -2$ and $b = 6$.

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|---------------------|-------------------|--------------------------|------------------|
| 25. b^{-2} | 26. a^{-3} | 27. $(-a)^{-4}$ | 28. $-b^{-3}$ |
| 29. $4a^{-3}$ | 30. $2b^{-2}$ | 31. $(3a)^{-2}$ | 32. $(-b)^{-2}$ |
| 33. $2a^{-1}b^{-2}$ | 34. $-4a-2b^{-3}$ | 35. $3^{-2}a^{-2}b^{-1}$ | 36. $(3ab)^{-2}$ |

Simplify each expression.

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|-----------------------------|------------------------------|-------------------------------|------------------------------------|
| 37. x^{-8} | 38. xy^{-3} | 39. $a^{-5}b$ | 40. m^2n^{-9} |
| 41. $\frac{1}{x^{-7}}$ | 42. $\frac{3}{a^{-4}}$ | 43. $\frac{5}{d^{-3}}$ | 44. $\frac{6}{r^{-5}s^{-1}}$ |
| 45. $3x^{-6}y^{-5}$ | 46. $8a^{-3}b^2c^{-2}$ | 47. $15s^{-9}t^{-1}$ | 48. $-7p^{-5}q^{-3}r^2$ |
| 49. $\frac{d^{-4}}{e^{-7}}$ | 50. $\frac{3m^{-4}}{n^{-8}}$ | 51. $\frac{6m^{-8}n}{p^{-1}}$ | 52. $\frac{a^{-2}b^{-1}}{cd^{-3}}$ |

Write each number as a power of 10 using negative exponents.

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|------------------------|---------------------------|----------------------------|-------------------------------|
| 53. $\frac{1}{10,000}$ | 54. $\frac{1}{1,000,000}$ | 55. $\frac{1}{10,000,000}$ | 56. $\frac{1}{1,000,000,000}$ |
|------------------------|---------------------------|----------------------------|-------------------------------|

Write each expression as a decimal.

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| 57. 10^{-5} | 58. 10^{-8} | 59. $4 \cdot 10^{-1}$ | 60. $6 \cdot 10^{-4}$ |
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Evaluate each expression for $m = 4$, $n = 5$, and $p = -2$.

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|--------------|---------------------|------------------------|---------------|
| 61. m^p | 62. n^m | 63. p^p | 64. n^p |
| 65. $m^p n$ | 66. m^{-n} | 67. p^{-n} | 68. mn^p |
| 69. p^{-m} | 70. $\frac{m}{n^p}$ | 71. $\frac{1}{n^{-m}}$ | 72. $-n^{-m}$ |