

A

Simplify. Express using exponents.

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|------------------------------|-------------------------------|-------------------------------------|---------------------------------------|
| 1. $2^4 \cdot 2^3$ | 2. $3^5 \cdot 3^2$ | 3. $8^5 \cdot 8^9$ | 4. $n^3 \cdot n^{20}$ |
| 5. $x^4 \cdot x^3$ | 6. $y^7 \cdot y^9$ | 7. $n^3 \cdot n$ | 8. $z^7 \cdot z^7$ |
| 9. $x^3 \cdot x^1$ | 10. $a^6 \cdot a^8$ | 11. $m^7 \cdot m^0$ | 12. $p \cdot p \cdot p$ |
| 13. $x^4 \cdot x^2 \cdot x$ | 14. $y^2 \cdot y^4 \cdot y^3$ | 15. $a^3 \cdot a^4 \cdot a \cdot a$ | 16. $b \cdot b^5 \cdot b^2 \cdot b^2$ |
| 17. $(a^3b^6)(a^5b)$ | 18. $(x^2y)(x^5y^2)$ | 19. $(p^2q^3r^2)(pqr^3)$ | |
| 20. $(x^7y^4z^4)(x^2y^5z^8)$ | 21. $(5s^2t^3)(5s^2t)$ | 22. $(2xy^2)(2x^2y^2)$ | |
| 23. $\frac{7^5}{7^2}$ | 24. $\frac{4^7}{4^3}$ | 25. $\frac{8^{12}}{8^6}$ | 26. $\frac{9^{15}}{9^2}$ |
| 27. $\frac{6^4}{6^4}$ | 28. $\frac{2^7}{2^7}$ | 29. $\frac{y^9}{y^5}$ | 30. $\frac{x^{12}}{x^{11}}$ |
| 31. $\frac{a^6}{a^4}$ | 32. $\frac{n^8}{n^4}$ | 33. $\frac{x^4}{x^2}$ | 34. $\frac{y^9}{y^6}$ |
| 35. $\frac{g^5}{g^5}$ | 36. $\frac{h^4}{h}$ | 37. $\frac{m^8}{m^8}$ | 38. $\frac{x^7}{x^5}$ |
| 39. $\frac{x^2y^5}{y^3}$ | 40. $\frac{m^6n^4}{m^3}$ | 41. $\frac{a^6b^9}{a^5b^5}$ | 42. $\frac{p^5q^7}{pq^4}$ |
| 43. $\frac{a^3b^4}{ab}$ | 44. $\frac{x^8y}{x^7y}$ | 45. $\frac{4^3x^3}{4^2x}$ | 46. $\frac{6^4a^5b}{6^2a^2b}$ |

Express using positive exponents.

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|---------------|-----------------|-----------------|---------------|
| 47. 3^{-2} | 48. 6^{-3} | 49. 2^{-4} | 50. 4^{-1} |
| 51. a^{-3} | 52. m^{-1} | 53. x^{-4} | 54. n^{-6} |
| 55. $3a^{-1}$ | 56. $(3x)^{-1}$ | 57. $(2y)^{-1}$ | 58. $4x^{-3}$ |
| 59. $5c^{-4}$ | 60. $8m^{-1}$ | 61. $(3a)^{-1}$ | 62. cd^{-2} |

Simplify. Express without using exponents.

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|--------------|--------------|--------------|--------------|
| 63. 4^{-2} | 64. 8^{-1} | 65. 7^{-1} | 66. 5^{-3} |
| 67. 1^{-4} | 68. 5^0 | 69. 2^{-4} | 70. 1^{-3} |
| 71. n^0 | 72. 6^{-2} | 73. 10^0 | 74. x^0 |

B

Simplify.

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|--------------------|------------------|-----------------------------|-------------------------------|
| 75. $(-2)^4(-2)^2$ | 76. $(-5)^2(-5)$ | 77. $\frac{(-3)^6}{(-3)^6}$ | 78. $\frac{(-10)^7}{(-10)^7}$ |
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