

Practice 8-1

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. $(3.7)^0$ |

Simplify each expression.

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|------------------------|------------------------|------------------------|------------------------------|
| 21. x^{-8} | 22. xy^{-3} | 23. $a^{-5}b$ | 24. m^2n^{-9} |
| 25. $\frac{1}{x^{-7}}$ | 26. $\frac{3}{a^{-4}}$ | 27. $\frac{5}{d^{-3}}$ | 28. $\frac{6}{r^{-5}s^{-1}}$ |
| 29. $3x^{-6}y^{-5}$ | 30. $8a^{-3}b^2c^{-2}$ | 31. $15s^{-9}t^{-1}$ | 32. $-7p^{-5}q^{-3}r^2$ |

Practice 8-3

Multiplication Properties of Exponents

Simplify each expression.

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|---------------------------------------|----------------------------------|----------------------------------|
| 1. $(3d^4)(5d^8)$ | 2. $(-8m^4)(4m^8)$ | 3. $n^{-6} \cdot n^{-6}$ |
| 4. $a^3 \cdot a$ | 5. $3^8 \cdot 3^5$ | 6. $(3p^{-15})(6p^{11})$ |
| 7. $p^7 \cdot q^5 \cdot p^6$ | 8. $(-1.5a^5b^2)(6a)$ | 9. $(-2d^3e^3)(6d^4e^6)$ |
| 10. $\frac{1}{b^{-7} \cdot b^5}$ | 11. $p^5 \cdot q^2 \cdot p^4$ | 12. $\frac{1}{n^7 \cdot n^{-5}}$ |
| 13. $(8d^4)(4d^7)$ | 14. $x^{-9} \cdot x^3 \cdot x^2$ | 15. $2^3 \cdot 2^2$ |
| 16. $r^7 \cdot s^4 \cdot s \cdot r^3$ | 17. $b^7 \cdot b^{13}$ | 18. $(7p^4)(5p^9)$ |
| 19. $2^8 \cdot 2^{-9} \cdot 2^3$ | 20. $(6r^4s^3)(9rs^2)$ | 21. $4^3 \cdot 4^2$ |