

6.1 Worksheet

Practice

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. $\frac{7^{-2}}{4^{-1}}$ |

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. $-4a^{-2}b^{-3}$ | 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. $\frac{a^{-2}b^{-1}}{cd^{-3}}$ |

Simplify each expression.

1. $\frac{c^{15}}{c^9}$

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

3. $\frac{x^7y^9z^3}{x^4y^7z^8}$

4. $\left(\frac{a^2}{b^3}\right)^5$

5. $\frac{3^7}{3^4}$

6. $\left(\frac{a^3}{b^2}\right)^4$

7. $\left(\frac{2}{3}\right)^{-2}$

8. $\left(\frac{p^{-3}q^{-2}}{q^{-3}r^5}\right)^4$

9. $\frac{a^6b^{-5}}{a^{-2}b^7}$

10. $\frac{7^{-4}}{7^{-7}}$

11. $\frac{a^7b^6}{a^5b}$

12. $\left(\frac{a^2b^{-4}}{b^2}\right)^5$

13. $\left(-\frac{3}{2}\right)^{-2}$

14. $\frac{z^7}{z^{-3}}$

15. $\left(\frac{5a^0b^4}{c^{-3}}\right)^2$

16. $\frac{x^4y^{-8}z^{-2}}{x^{-1}y^6z^{-10}}$

17. $\frac{m^6}{m^{10}}$

18. $\left(\frac{2^3m^4n^{-1}}{p^2}\right)^0$

19. $\left(\frac{s^{-4}}{t^{-1}}\right)^{-2}$

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

21. $\left(\frac{x^{-3}y}{xz^{-4}}\right)^{-2}$

22. $\frac{h^{-13}}{h^{-8}}$

23. $\frac{4^6}{4^8}$

24. $\left(\frac{1}{3}\right)^3$

25. $\frac{x^5y^3}{x^2y^9}$

26. $\left(\frac{m^{-3}n^4}{n^{-2}}\right)^4$

27. $\frac{4^{-1}}{4^2}$

28. $\left(\frac{a^8b^6}{a^{11}}\right)^5$

29. $\frac{n^9}{n^{15}}$

30. $\left(\frac{r^3s^{-1}}{r^2s^6}\right)^{-1}$

31. $\frac{n^{-8}}{n^4}$

32. $\frac{m^8n^3}{m^{10}n^5}$