

Practice 8-8

Example Exercises

Example 1

Simplify each expression. Use only positive exponents.

- | | | | |
|---------------------------------------|-------------------------------|-----------------------------------|------------------------------------|
| 1. $\frac{2^5}{2^3}$ | 2. $\frac{5^4}{5^7}$ | 3. $\frac{a^{10}}{a^7}$ | 4. $\frac{x^{12}}{x^8}$ |
| 5. $\frac{m^5n^2}{m^8n^7}$ | 6. $\frac{xy^6}{x^4y^3}$ | 7. $\frac{a^3b^4}{ab^2}$ | 8. $\frac{3^{-2}}{3^2}$ |
| 9. $\frac{6^{-3}}{6^{-5}}$ | 10. $\frac{d^{-3}}{d^{-9}}$ | 11. $\frac{a^{-6}}{a^4}$ | 12. $\frac{x^{10}}{x^{-7}}$ |
| 13. $\frac{a^4b^{-7}c}{a^8b^3c^{-6}}$ | 14. $\frac{s^{-14}}{s^{-10}}$ | 15. $\frac{a^2b^{-3}}{a^{-4}b^3}$ | 16. $\frac{p^{-4}q^{-6}}{pq^{-1}}$ |

Example 2

Simplify each expression. Give your answer in scientific notation.

- | | | | |
|---|---|--|---|
| 17. $\frac{5 \times 10^6}{2.5 \times 10^4}$ | 18. $\frac{8.4 \times 10^8}{4 \times 10^3}$ | 19. $\frac{7.2 \times 10^3}{8 \times 10^{-5}}$ | 20. $\frac{2.8 \times 10^{-3}}{7 \times 10^{-9}}$ |
| 21. $\frac{4.7 \times 10^{10}}{3.2 \times 10^6}$ | 22. $\frac{3.9 \times 10^6}{5.7 \times 10^{10}}$ | 23. $\frac{4.71 \times 10^3}{6.13 \times 10^{-3}}$ | 24. $\frac{7.91 \times 10^{-6}}{4.43 \times 10^{-4}}$ |
| 25. $\frac{525 \text{ billion}}{355 \text{ million}}$ | 26. $\frac{25 \text{ million}}{65 \text{ million}}$ | 27. $\frac{21.6 \text{ million}}{537.1 \text{ million}}$ | 28. $\frac{905 \text{ million}}{6.1 \text{ million}}$ |

Example 3

Simplify each expression. Use only positive exponents.

- | | | | |
|--|--|--|--|
| 29. $\left(\frac{3}{4}\right)^2$ | 30. $\left(\frac{4}{a^2}\right)^4$ | 31. $\left(\frac{3}{x^3}\right)^4$ | 32. $\left(\frac{3}{5}\right)^{-3}$ |
| 33. $\left(-\frac{4}{3^2}\right)^{-2}$ | 34. $\left(\frac{a^4}{b}\right)^3$ | 35. $\left(\frac{x-3}{y^{-2}}\right)^{-1}$ | 36. $\left(\frac{a^2b}{c^3}\right)^4$ |
| 37. $\left(\frac{2x^3y^2}{z}\right)^2$ | 38. $\left(\frac{3a^{-2}b^3}{c^{-4}}\right)^3$ | 39. $\left(\frac{x^4y^0}{z^{-3}}\right)^{-2}$ | 40. $\left(\frac{8a^2b^{-1}}{c^4}\right)^0$ |
| 41. $\left(\frac{2^3m^2n^{-2}}{p^{-4}}\right)^2$ | 42. $\left(\frac{a^3b^4}{a^5}\right)^3$ | 43. $\left(\frac{2x^4y^{-3}}{x^2y^4}\right)^0$ | 44. $\left(\frac{p^3q^{-2}}{q^2r^{-4}}\right)^1$ |