

# Chapter 8 Answers

## Practice 8-1

1. 1 2.  $\frac{1}{16}$  3.  $\frac{1}{27}$  4.  $\frac{1}{4096}$  5. 32 6. 256 7. 18 8. 16  
9. 3 10. 4 11.  $\frac{1}{12}$  12.  $-\frac{1}{49}$  13. 16 14. 1 15.  $\frac{1}{4}$   
16. 18 17.  $\frac{1}{64}$  18. 1 19. 5 20. 1 21.  $\frac{1}{81}$  22. 1  
23.  $-\frac{2}{27}$  24.  $\frac{4}{49}$  25.  $\frac{1}{36}$  26.  $-\frac{1}{8}$  27.  $\frac{1}{16}$  28.  $-\frac{1}{216}$   
29.  $-\frac{1}{2}$  30.  $\frac{1}{18}$  31.  $\frac{1}{36}$  32.  $\frac{1}{36}$  33.  $-\frac{1}{36}$  34.  $-\frac{1}{216}$   
35.  $\frac{1}{216}$  36.  $\frac{1}{1296}$  37.  $\frac{1}{x^8}$  38.  $\frac{x}{y^3}$  39.  $\frac{b}{a^5}$  40.  $\frac{m^2}{n^9}$   
41.  $x^7$  42.  $3a^4$  43.  $5d^3$  44.  $6r^5s$  45.  $\frac{3}{x^6y^5}$  46.  $\frac{8b^2}{a^3c^2}$   
47.  $\frac{15}{s^9t}$  48.  $-\frac{7r^2}{p^5q^3}$  49.  $\frac{e^7}{d^4}$  50.  $\frac{3n^8}{m^4}$  51.  $\frac{6np}{m^8}$  52.  $\frac{d^3}{a^2bc}$   
53.  $10^{-4}$  54.  $10^{-6}$  55.  $10^{-7}$  56.  $10^{-9}$  57. 0.00001  
58. 0.00000001 59. 0.4 60. 0.0006 61.  $\frac{1}{16}$  62. 625  
63.  $\frac{1}{4}$  64.  $\frac{1}{25}$  65.  $\frac{5}{16}$  66.  $\frac{1}{1024}$  67.  $-\frac{1}{32}$  68.  $\frac{4}{25}$   
69.  $\frac{1}{16}$  70. 100 71. 625 72.  $-\frac{1}{625}$

## Practice 8-2

1. 70,000 2. 0.03 3. 260,000 4. 0.00071 5. 0.0000571  
6. 41,550,000 7. 301.07 8. 0.00009407 9. 31,300,000  
10. 0.00837 11. 0.0018 12. 1600 13. 0.0080023  
14. 690,200,000 15. 100,500 16. 0.0095 17.  $5.1 \times 10^7$   
18.  $9.75 \times 10^4$  19.  $1.2 \times 10^{-7}$  20.  $5.008 \times 10^{-6}$   
21.  $1.56 \times 10^{12}$  22.  $5 \times 10^5$  23.  $2 \times 10^{-3}$   
24.  $1.095 \times 10^{-3}$  25.  $1.94 \times 10^5$  26.  $1.54 \times 10^{-1}$   
27.  $5 \times 10^4$  28.  $3.1 \times 10^{-6}$  29.  $7.9 \times 10^5$   
30.  $2.5 \times 10^{-1}$  31.  $1.5 \times 10^{-10}$  32.  $5.0009 \times 10^{12}$   
33.  $4 \times 10^{-10}$  34.  $6 \times 10^{-8}$  35.  $7 \times 10^{-7}$  36.  $5 \times 10^{-6}$   
37.  $5.01 \times 10^{-4}$  38.  $4.8 \times 10^{-3}$  39.  $3.2 \times 10^{-2}$  40.  $5.6 \times 10^{-2}$   
41.  $6.34 \times 10^{-1}$  42.  $6.2 \times 10^2$  43.  $6.20 \times 10^3$  44. 62,040  
45.  $10^{-3}$  46.  $5 \times 10^{-3}$  47.  $8 \times 10^{-2}$  48.  $4 \times 10^{-1}$   
49.  $1.2 \times 10^6$  50.  $3.5 \times 10^{-1}$  51.  $7.7 \times 10^{10}$   
52.  $6.3 \times 10^7$  53.  $3.6 \times 10^{-4}$  54.  $1.22 \times 10^{-7}$   
55.  $3.3 \times 10^{-4}$  56.  $1.29 \times 10^{-3}$  57.  $9.6 \times 10^{-2}$   
58. 0.0069444 59.  $4.356 \times 10^{-1}$  60.  $2.7225 \times 10^2$   
61. 27,878,400 62.  $1.076 \times 10^{-3}$  63. 10,800,000

## Practice 8-3

1.  $15a^4$  2.  $-32m^{12}$  3.  $\frac{1}{n^{15}}$  4.  $a^4$  5.  $3^{13}$  6.  $\frac{18}{p^4}$  7.  $p^{13}q^5$   
8.  $-9a^6b^2$  9.  $-12d^7e^9$  10.  $b^2$  11.  $p^9q^2$  12.  $\frac{1}{n^2}$  13.  $32d^{11}$   
14.  $\frac{1}{x^4}$  15.  $2^5$  16.  $r^{10}s^5$  17.  $b^{20}$  18.  $35p^{13}$  19.  $2^2$   
20.  $54r^5s^5$  21.  $4^5$  22.  $\frac{1}{m^2}$  23.  $s^7t^{12}$  24.  $-9.6x^6y^7$

25.  $5^2$  26.  $\frac{1}{h^{10}}$  27.  $t^8$  28.  $f^5$  29.  $\frac{1}{r^7}$  30.  $\frac{1}{5^2}$   
31.  $3.5 \times 10^3$  32.  $9 \times 10^{12}$  33.  $1.9 \times 10^{-8}$   
34.  $1.64 \times 10^{18}$  35.  $1.44 \times 10^{-11}$  36.  $2 \times 10^{11}$   
37.  $3.12 \times 10^{-1}$  38.  $3.6 \times 10^{15}$  39.  $4.88 \times 10^{24}$   
40.  $8.4 \times 10^{-11}$  41.  $4.8 \times 10^{16}$  42.  $2.7 \times 10^{-6}$   
43.  $4.4 \times 10^{13}$  44.  $4.5 \times 10^5$  45.  $2.8 \times 10^{16}$   
46.  $7.2 \times 10^{-14}$  47.  $1.92 \times 10^{18}$  48.  $1.3 \times 10^{-7}$   
49.  $1.64 \times 10^{-1}$  g 50.  $1.174 \times 10^{17}$  mi 51.  $3.9 \times 10^9$  g  
52.  $1.18 \times 10^1$  in.

## Practice 8-4

1.  $64a^{15}$  2.  $\frac{1}{2^{12}}$  3.  $\frac{m^{12}}{n^{16}}$  4.  $x^{10}$  5.  $2^{13}$  6.  $256x^{14}y^6$   
7.  $x^{16}$  8.  $x^{17}y^{19}$  9.  $5^4$  10.  $\frac{1}{a^7}$  11.  $\frac{27f^{10}}{g^7}$  12.  $x^{18}$   
13.  $\frac{1}{d^8}$  14.  $a^6b^{12}$  15.  $x^8y^4$  16.  $\frac{144}{b^4}$  17.  $m^{15}$  18.  $\frac{y^{10}}{x^5}$   
19.  $y^3$  20.  $\frac{1}{n^4}$  21.  $mn^{20}$  22.  $a^{18}$  23.  $\frac{1}{b}$  24.  $\frac{16}{s^6}$   
25.  $625a^{12}b^{20}$  26.  $\frac{1}{b^{18}}$  27.  $y^{18}$  28.  $a^4b^6$  29.  $x^{12}y^3$   
30.  $d^{13}$  31.  $4 \times 10^{-5}$  32.  $2.7 \times 10^{-17}$  33.  $6.4 \times 10^{23}$   
34.  $8.1 \times 10^{15}$  35.  $3.2 \times 10^{13}$  36.  $3.43 \times 10^{17}$   
37.  $6.25 \times 10^{22}$  38.  $8 \times 10^{-9}$  39.  $8 \times 10^{-9}$   
40.  $8.1 \times 10^{21}$  41.  $1.5625 \times 10^{-26}$  42.  $1 \times 10^{25}$   
43.  $5.12 \times 10^{28}$  44.  $2.16 \times 10^{-1}$  45.  $1.6 \times 10^{16}$   
46.  $5.79555 \times 10^5$  J 47.  $1.46 \times 10^7$  mi<sup>2</sup>  
48.  $3.8 \times 10^5$  ft<sup>3</sup> 49.  $1.44 \times 10^8$  ft

## Practice 8-5

1.  $c^6$  2.  $\frac{y^8}{x^{12}z^{20}}$  3.  $\frac{x^3y^2}{z^5}$  4.  $\frac{a^{10}}{b^{15}}$  5. 27 6.  $\frac{a^{12}}{b^8}$  7.  $\frac{9}{4}$   
8.  $\frac{q^4}{p^{12}r^{20}}$  9.  $\frac{a^8}{b^{12}}$  10. 343 11.  $a^2b^5$  12.  $\frac{a^{10}}{b^{30}}$  13.  $\frac{64}{9}$   
14.  $z^{10}$  15.  $25b^8c^6$  16.  $\frac{x^5z^8}{y^{14}}$  17.  $\frac{1}{m^4}$  18. 1 19.  $\frac{s^8}{t^2}$   
20.  $\frac{32a^{15}}{b^{10}c^{15}}$  21.  $\frac{x^8}{y^2z^8}$  22.  $\frac{1}{h^5}$  23.  $\frac{1}{16}$  24.  $\frac{1}{27}$  25.  $\frac{x^3}{y^6}$   
26.  $\frac{n^{24}}{m^{12}}$  27.  $\frac{1}{64}$  28.  $\frac{b^{30}}{a^{15}}$  29.  $\frac{1}{n^6}$  30.  $\frac{s^7}{r}$  31.  $\frac{1}{n^{12}}$   
32.  $\frac{1}{m^2n^2}$  33.  $5.76 \times 10^{-5}$  34.  $2.52 \times 10^2$   
35.  $2.07 \times 10^4$  36.  $2 \times 10^4$  37.  $1.9 \times 10^{-3}$   
38.  $8 \times 10^1$  39.  $6.08 \times 10^3$  40.  $2 \times 10^{-11}$   
41.  $4 \times 10^8$  42.  $1.72 \times 10^9$  43.  $3.33 \times 10^{-3}$   
44.  $7 \times 10^8$  45.  $3.68 \times 10^2$  46.  $3 \times 10^{-5}$   
47.  $7 \times 10^1$  48.  $4.06 \times 10^{-2}$  49.  $1.8 \times 10^4$  times longer