1.2

#24

a) $2\sqrt[3]{81}$

$= 2\sqrt[3]{27 \cdot 3}$

$= 6\sqrt[3]{3}$

b) $\dfrac{\sqrt{18}}{\sqrt{25}}$

$= \dfrac{3\sqrt{2}}{5}$

c) $\sqrt{\dfrac{12}{49}}$

$= \dfrac{2\sqrt{3}}{7}$

#44

a) $\left(\dfrac{s^2 t^{-4}}{5 s^{-1} t}\right)^{-2}$

$= \left(\dfrac{s^3}{5t^5}\right)^{-2}$

$= \dfrac{5^2 t^{10}}{s^6}$

b) $\left(\dfrac{x y^{-2} z^{-3}}{x^2 y^3 z^{-4}}\right)^{-3}$

$= \left(\dfrac{z}{x y^5}\right)^{-3}$

$= \dfrac{x^3 y^{15}}{z^3}$

#70. a) $\left(\frac{a^{\frac{1}{6}} b^{-3}}{x^{-1} y}\right)^3 \left(\frac{x^{-2} b^{-1}}{a^{\frac{3}{2}} y^{\frac{1}{3}}}\right)$

$= \left(\frac{a^{\frac{1}{2}} x^3}{b^9 y^3}\right)\left(\frac{1}{a^{\frac{3}{2}} x^2 b y^{\frac{1}{3}}}\right)$

$= \frac{x}{a b^{10} y^{\frac{10}{3}}}$

b) $\frac{(9st)^{\frac{3}{2}}}{(27 s^3 t^{-4})^{2/3}} \left(\frac{3s^{-2}}{4t^{1/3}}\right)^{-1}$

$= \frac{27 s^{\frac{3}{2}} t^{\frac{3}{2}} t^{\frac{8}{3}}}{9 s^2} \frac{4 t^{\frac{1}{3}} s^2}{3}$

$= s^{\frac{3}{2}} t^{\frac{9}{2}}$

84 a) $129,540,000$
$= 1.2954 \times 10^8$

b) $7,259,000,000$
$= 7.259 \times 10^9$

c) $.000000.00.14$
$= 1.4 \times 10^{-9}$

d) $.0007029$
$= 7.029 \times 10^{-4}$

#90. $(1.062 \times 10^{24})(8.61 \times 10^{19})$

$= 8.61 \times 1.062 \times 10^{43}$

$= 10.00382 \times 10^{43}$

$= 1.000382 \times 10^{44}$

$$\begin{array}{r} 1.062 \\ 8.61 \\ \hline 1062 \\ 6372 \\ 9296 \\ \hline 1000382 \end{array}$$

92. $\dfrac{(73.1)(1.6341 \times 10^{28})}{.00000000.19}$

$= \dfrac{(7.31 \times 10)(1.6341 \times 10^{28})}{1.9 \times 10^{-9}}$

$= \dfrac{11.945271 \times 10^{29}}{1.9 \times 10^{-9}}$

$= \dfrac{1.1945271}{1.9} \times 10^{24}$

$= .623435 \times 10^{21}$

$= 6.23435 \times 10^{20}$

$$\begin{array}{r} 1.6341 \\ 7.31 \\ \hline 16341 \\ 49023 \\ 114387 \\ \hline 11945271 \end{array}$$

$$1.9 \overline{)\,11.945271}\quad .623435$$

114

54

38

65

57

82

76

67

57

101