

NAME _____

SECTION _____ DATE _____

INSTRUCTOR _____

EXERCISE 1

Significant Figures and Exponential Notation

1. How many significant figures are in each of the following numbers?

(a) 7.42 _____ (b) 4.6 _____ (c) 3.40 _____ (d) 26,000 _____

(e) 0.088 _____ (f) 0.0034 _____ (g) 0.0230 _____ (h) 0.3080 _____

2. Write each of the following numbers in proper exponential notation:

(a) 423 _____ (a) _____

(b) 0.032 _____ (b) _____

(c) 8,300 _____ (c) _____

(d) 302.0 _____ (d) _____

(e) 12,400,000 _____ (e) _____

(f) 0.0007 _____ (f) _____

3. How many significant figures should be in the answer to each of the following calculations?

(a)
$$\begin{array}{r} 17.10 \\ + 0.77 \\ \hline \end{array}$$
 (b)
$$\begin{array}{r} 57.826 \\ - 9.4 \\ \hline \end{array}$$
 (a) _____

(b) _____

(c) $12.4 \times 2.82 =$ (d) $6.4 \times 3.1416 =$ (c) _____

(d) _____

(e) $\frac{0.5172}{0.2742} =$ (f) $\frac{0.0172}{4.36} =$ (e) _____

(f) _____

(g) $\frac{5.82 \times 760. \times 425}{723 \times 273} =$ (h) $\frac{0.92 \times 454 \times 5.620}{22.4} =$ (g) _____

(h) _____

4. For each of these problems, complete the answer with a 10 raised to the proper power. Note that each answer is expressed to the correct number of significant figures.

(a) $2.71 \times 10^4 \times 2.0 \times 10^2 = 5.4 \times$ _____ (a) _____

(b) $\frac{4.523 \times 10^{-4}}{2.71 \times 10^2} = 1.67 \times$ _____ (b) _____

(c) $4.8 \times 10^4 \times 3.5 \times 10^4 = 1.7 \times$ _____ (c) _____

(d) $\frac{1.64 \times 10^{-4}}{1.2 \times 10^2} = 1.4 \times$ _____ (d) _____

(e) $\frac{4.70 \times 10^2}{8.42 \times 10^5} = 5.58 \times$ _____ (e) _____

5. Solve each of the following problems, expressing each answer to the proper number of significant figures. Use exponential notation for (c), (d), and (e).

(a)
$$\begin{array}{r} 1.842 \\ 45.21 \\ + 37.55 \\ \hline \end{array}$$
 (b)
$$\begin{array}{r} 714.3 \\ - 28.52 \\ \hline \end{array}$$
 (a) _____

(b) _____

(c) $2.83 \times 10^3 \times 7.55 \times 10^7 =$ (c) _____

(d) $4.4 \times 5,280 =$ (d) _____

(e) $\frac{7.07 \times 10^{-4} \times 6.51 \times 10^{-2}}{2.92 \times 10^4} =$ (e) _____

Answers

- (a) 3, (b) 2, (c) 3, (d) 2, (e) 2, (f) 2, (g) 3, (h) 4.
- (a) 4.23×10^2 , (b) 3.2×10^{-2} , (c) 8.3×10^3 , (d) 3.020×10^2 , (e) 1.24×10^7 , (f) 7×10^{-4} .
- (a) 4, (b) 3, (c) 3, (d) 2, (e) 4, (f) 3, (g) 3, (h) 2.
- (a) 10^6 , (b) 10^2 , (c) 10^9 , (d) 10^{-6} , (e) 10^{-4} .
- (a) 84.60, (b) 685.8, (c) 2.14×10^{11} , (d) 2.3×10^4 , (e) 1.58×10^{-9} .