

CHEM1301/Scientific Notation and Sig Fig Practice

1. Convert each of the following into scientific notation.

- | | | |
|---------------------------|-------------------------|--------------------------|
| a) 3427 | b) 0.00456 | c) 123,453 |
| d) 172 | e) 0.000984 | f) 0.502 |
| g) 3100.0×10^2 | h) 0.0114×10^4 | i) 107.2 |
| j) 0.0000455 | k) 2205.2 | l) 30.0×10^{-2} |
| m) 0.982×10^{-3} | n) 0.0473 | o) 650.502 |
| p) 3.03×10^{-1} | q) 20.4×10^5 | r) 1.29 |
| s) 0.00565 | t) 1362205.2 | u) 450.0×10^3 |
| v) 1000×10^{-3} | | |

2. Determine the number of significant figures in each of the following:

- | | | |
|---------------------------|-------------------------|--------------------------|
| a) 3427 | b) 0.00456 | c) 123,453 |
| d) 172 | e) 0.000984 | f) 0.502 |
| g) 3100.0×10^2 | h) 0.0114×10^4 | i) 107.2 |
| j) 0.0000455 | k) 2205.2 | l) 30.0×10^{-2} |
| m) 0.982×10^{-3} | n) 0.0473 | o) 650.502 |
| p) 3.03×10^{-1} | q) 20.4×10^5 | r) 1.29 |
| s) 0.00565 | t) 1362205.2 | u) 450.0×10^3 |
| v) 1000×10^{-3} | w) $546,000 \pm 10$ | x) $546,000 \pm 1000$ |

3. Convert each into decimal form.

- | | | | |
|-----------------------|---------------------------|------------------------|---------------------|
| 1.56×10^4 | 0.56×10^{-2} | 3.69×10^{-2} | 736.9×10^5 |
| 0.00259×10^5 | 0.000459×10^{-1} | 13.69×10^{-2} | 6.9×10^4 |
| 0.00259×10^3 | 0.0209×10^{-3} | | |

4. Calculate the following. Give the answer in correct scientific notation.

- | | |
|---|---|
| a) 4.53×10^5
+ 2.2×10^6 | b) 1913.0
- 4.6×10^3 |
| c) 2.34×10^{24}
+ 1.92×10^{23} | d) 2.130×10^3
- 6.6×10^2 |

$$\begin{array}{l} \text{e) } 9.10 \times 10^3 \\ + 2.2 \times 10^6 \end{array}$$

$$\begin{array}{l} \text{f) } 1113.0 \\ - 14.6 \times 10^2 \end{array}$$

$$\begin{array}{l} \text{g) } 6.18 \times 10^{-45} \\ + 4.72 \times 10^{-44} \end{array}$$

$$\begin{array}{l} \text{h) } 4.25 \times 10^{-3} \\ - 1.6 \times 10^{-2} \end{array}$$

5. Calculate the following. Give the answer in correct scientific notation.

$$\text{a) } 3.95 \times 10^2 / 1.5 \times 10^6$$

$$\text{b) } (3.5 \times 10^2)(6.45 \times 10^{10})$$

$$\text{c) } 4.44 \times 10^7 / 2.25 \times 10^5$$

$$\text{d) } (4.50 \times 10^{-12})(3.67 \times 10^{-12})$$

$$\text{e) } 1.05 \times 10^{-26} / 4.2 \times 10^{56}$$

$$\text{f) } (2.5 \times 10^9)(6.45 \times 10^4)$$

$$\text{g) } 6.022 \times 10^{23} / 3.011 \times 10^{-56}$$

$$\text{h) } (6.88 \times 10^2)(3.45 \times 10^{-10})$$

6. Convert each of the following into scientific notation.

727 _____

172000 _____

0.000984 _____

200.0 $\times 10^2$ _____

0.014 $\times 10^2$ _____

256000
(use 4 sig. fig. for the last one)

7. Convert each into decimal form.

1.56 $\times 10^4$ _____

3.6 $\times 10^{-2}$ _____

736.9 $\times 10^5$ _____

0.0059 $\times 10^5$ _____

0.00059 $\times 10^{-1}$ _____

8. Calculate the following. Give the answer in correct scientific notation.

a) 2.34×10^{65}
+ 9.2×10^{66}

b) 313.0
- 1.2×10^3

9. Calculate the following. Give the answer in correct scientific notation.

a) $8.95 \times 10^{76} / 1.25 \times 10^{56}$ b) $(4.5 \times 10^{29})(2.45 \times 10^{100})$

10. Give the number of significant figures in each of the following.

a) 1.05 g _____

b) 0.0003040 mm _____

c) 29000 ± 10 ft _____

d) 0.90×10^{45} L _____

e) the number of eggs (12) that make up a dozen _____

11. Determine the answer for each of the following. Be sure to use the correct number of significant figures.

a) 17.34
 4.900
+ 23.1

b) 9.80
 - 4.762

c) $3.9 \times 6.05 \times 420 =$ d) $14.1 / 5 =$

12. Round each of the following to 3 significant figures.

77.0653 _____ 6,300,178.2 _____

0.00023350 _____ 10.2030 _____

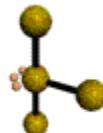
2.895×10^{21} _____

13. Give the number of significant figures in each of the following.

a) 10.0005 g _____

b) 0.003423 mm _____

c) 2900 ± 100 ft _____



d) 8.9×10^5 L _____

e) the number of minutes (60) that make up an hour _____

14. Determine the answer for each of the following. Be sure to use the correct number of significant figures.

$$\begin{array}{r} \text{a) } 27.34 \\ \quad 6.90 \\ + 13.124 \\ \hline \end{array} \qquad \begin{array}{r} \text{b) } 2.8023 \\ - 4.762 \\ \hline \end{array}$$

$$\text{c) } 0.32 \times 14.50 \times 120 = \text{d) } 24.1 / 0.005 =$$

15. Round each of the following to 3 significant figures.

707.5 _____ **2,300.2** _____

0.0003350 **10.26730**

$$18.95 \times 10^{21}$$

16. Convert each of the following into correct scientific notation.

1747

0.00000984

$$3200,0 \times 10^2$$

$$0.002014 \times 10^2$$

25600000000000000000 (use 4 sig. fig. for the last one only)

17. Calculate the following using the correct number of significant figures.

a) 2.34×10^{47}
 + 9.2×10^{46}

18. Calculate the following using the correct number of significant figures.

$$\text{a) } (1.54 \times 10^{58})(3.5 \times 10^{60})$$

$$\text{b) } (7.9 \times 10^{34}) / (8.32 \times 10^{23})$$