

Exercise 1.2 Significant Figures

All of the rules you need to know for significant figures in CHEM 1000 and 2000 are in your lab manual (in one of the Appendices). These include rules for multiplication/division, for addition/subtraction and for logarithms/exponents.

1. Circle (or highlight) all of the zeroes in the following numbers which definitely qualify as significant figures.

(a) 1020

(b) 102.0

(c) 10.20

(d) 0.201

(e) 2.01×10^2

(f) 1.020×10^2

2. One of the numbers in question 1 contains one or more ambiguous zeroes (zeroes which might be significant but might not). Which number is it? Rewrite the number in a way that would communicate that those zeroes were definitely significant.

3. You will have used the formula $pH = -\log[H^+]$ in high school.

(a) Calculate pH when $[H^+] = 1.00 \times 10^{-2}$

(b) Calculate $[H^+]$ when pH = 6.00

4. Solve for A in each of the following equations. Report your answer using the correct number of significant figures. Use scientific notation if necessary.

(a) $13.4 A = 14.2 \times 0.26 \times 124$

(b) $16.37 A = 12.47 + 6.2$

(c) $4 A = 15 A - 3.21$

(d) $63.5 A - 18.7 = \frac{86 - 12.5 A}{3}$

(e) $A = (6.37 \times 10^3) + (1.24 \times 10^4)$

These questions are representative of the level of algebra necessary to do well in both lab and lecture portions of Chemistry 1000. Always assume that significant figures “count”.