

Worksheet 1: Significant Figures, Units, and Conversion Factors

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

5.40 3

235.40 5

1.4895 5

3.97×10^{-5} 3

1.400 4

30000 1

250. 3

0.0210 3

2. Complete the following calculations to the appropriate number of sig. figs.:

$$234.55 + 25.2 = \underline{259.8}$$

$$430. - 44.67 = \underline{385}$$

$$1420 \times 320. = \underline{454000 \text{ or } 4.54 \times 10^5}$$

$$(6.274 \times 10^3) \times (1.56 \times 10^{-2}) = \underline{9.79 \times 10^1}$$

$$(529 + 1.30) \times 1.2 = \underline{530.}$$

$$(1.343 \times 10^2) + (1.5654 \times 10^2) = \underline{2.908 \times 10^2}$$

$$\log(3.80 \times 10^{-8}) = \underline{\log(3.80) + \log(10^{-8}) = 0.580 + -6.00000... = -5.420}$$

$$10^{3.201} = \underline{10^{0.201} \times 10^3 = 1.59 \times 10^3 = 1.59 \times 1000.00000... = 1590}$$

$$(202 + 3.50) \times 1.2 = \underline{250}$$

***** These [$\log(10^{-8}) = -6$; $10^3 = 1000$] are exact numbers with infinite sig figs, so they do NOT affect the number of sig figs in the final answer***

3. According to the Office of the Registrar at UW, for an in-state student to enroll with a course load of 12 credit hours, the current cost of tuition and fees for fall 2013 is \$4133. Given that CHEM142 is a 5-credit course that meets 30 times per term, calculate how much you are paying to attend a single CHEM142 lecture assuming a 12-credit course load and \$4133 in total expenses for the fall term.

$$\left(\frac{\$4133}{\text{quarter}}\right) \cdot \left(\frac{\text{quarter}}{12 \text{ credits}}\right) \cdot \left(\frac{5 \text{ credits}}{\text{CHEM142}}\right) \cdot \left(\frac{\text{CHEM142}}{30 \text{ lectures}}\right) = \frac{\$57.40}{\text{lecture}}$$

4. Write out electron configurations for the following atoms:

