SIGNIFICANT FIGURES

1. Rewrite the following numbers using scientific notation:

    a) 476
    b) 0.00367
    c) 549×10^3
    d) 0.0000069
    e) 9546.3

    f) 0.00485×10^7
    g) 264×10^{-5}
    h) 4795
    i) 67.09
    j) 100.

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

    a) 16.0
    b) 54,056
    c) 1000.
    d) 0.00594
    e) 207.3

    f) 10
    g) 5.2×10^7
    h) 1.68×10^{-9}
    i) 2007
    j) 5×10^2

3. Round the following numbers to three significant figures and use scientific notation where appropriate:

    a) 7894
    b) 0.00003982
    c) 100378
    d) 19047×10^{-2}
    e) 2345
    f) 3.075

4. Perform the following mathematical operations and express your answers to the proper number of significant figures:

    a) $645 \times 2.0 \times 167.8$
    b) $0.045 \times 128.2 \times 34.6$
    c) $190.4 + 12 + 0.69$
    d) $26.6 \times (3.7 \times 10^2)$
    e) $(3.65 \times 10^4) \times (2.1 \times 10^2)$

    f) $(4.3 \times 10^3)^5$
    g) $2597/42$
    h) $12.0/1.8 \times 10^{23}$
    i) $3.006/4.68 \times 10^{-4}$
    j) $1.2 + 45.81 + 0.186$

DIMENSIONAL ANALYSIS

Set up and solve the following problems using dimensional analysis. Be sure to express your results to the proper number of significant figures.

1. How many seconds are there in 1.2 weeks?
2. How many centimeters are there in 4.38 feet?
3. How many meters did you run if the distance run was 6.59×10^5 inches?
4. What is the mass of a suitcase, in pounds, if it weighs 19.5 kilograms?
5. If a recipe calls for 37 grams of sugar, how many pounds does that correspond to?
6. Express a volume of 589 cm^3 in ft^3 and in^3.
7. How many liters are equal to 39 in^3?
8. If a car travels at 4.45×10^4 ft/hr, what would its speed be in meters/min?
9. What is the density of a substance if it has a mass of 59.2 grams and a volume of 17.0 mL?
10. Calculate the density of a liquid, in grams/cm^3, if it has a mass of 23.2 grams and occupies a cube with dimensions of 1.3 cm $\times$ 5.6 cm $\times$ 2.3 in.
11. If a liquid has a density of 1.04 g/mL, what would its density be in lb/in^3?
12. What volume, in liters, would 88.9 grams of a substance occupy if its density is 2.38 g/mL?
13. What is the mass, in pounds, of 389 mL of a gas that has a density of 1 29 g/L?
14. Convert 37°C to °F and K.
15. Which temperature is the coldest?
    a) −12°C   b) 18°F   c) 248K