Significant Figures

1. The density of the element gold, Au, is to be calculated from the following data:

    Mass of the golden coin = 13.512 g
    Volume of the coin and water = 25.1 ml
    Volume of the water alone = 24.4 ml

    The density of the metal in the coin equals $\dfrac{13.512 \text{ g coin}}{25.1 \text{ ml} - 24.4 \text{ ml}}$

    The answer to the correct number of significant figures is:
    (a) 19.303 g/ml   (b) 19.3 g/ml
    (c) 19.30 g/ml   (d) 19 g/ml

2. Two samples were weighed using different balances: (1) 3.529 g   (2) 0.40 g
    How should the <u>total</u> weight of the samples be reported?
    (a) 3.929 g   (b) 3.9 g
    (c) 4 g   (d) 3.93 g

3. Which of the following has four significant figures?
    (a) 0.0005   (b) 0.0050
    (c) 0.0500   (d) 0.5000
    (e) all of these

4. Add 5.17 g, 0.251 g, and 0.0023 g. The answer to the correct number of significant digits after the decimal point is:
    (a) 5.4233 g   (b) 5.423 g   (c) 5.42 g   (d) 5.4 g   (e) 5 g

5. Express the following quantities in scientific notation and indicate how many significant figures each has.
    (a) 12,200
    (b) 12,200.0
    (c) 0.003040

6. Express the following in standard decimal form and indicate how many significant figures each has.

    (a) 1.34×10^{5}
    (b) 1.340×10^{-2}
    (c) 0.00420×10^{6}

7. When the value of a certain number is given, the significant figures provides an indication of the uncertainty in the value. For instance, a value of 2.7 indicates that the number lies between 2.65 and 2.75. Give ranges within which each of these values lie.
    (a) 4.3
    (b) 4.30
    (c) 2.778×10^{-3}
    (d) 2.500
    (e) 2.500×10^{3}