Significant Figures Worksheet #1   Name_____Block_____

There are two rules for determining the number of significant figures:

   1) If there is **no** decimal point--start at the RIGHT and count, beginning with the first non-zero digit.

        Examples   340   2 s.f.
                        30400   3 s.f.
                        34955   5 s.f.

   2) If there **is** a decimal point--start at the LEFT and count, beginning with the first non-zero digit.

        Examples   340**.**   3 s.f.
                        30400**.**   5 s.f.
                        0**.**34955   5 s.f.
                        0**.**00040   2 s.f.

Determine the number of significant figures (s.f.) in each of the following:

a) 921   b) 92100   c) 92100**.**   d) 0**.**000210

e) 0**.**00219   f) 93,000,000   g) 93,000,003   h) 93,000,000**.**

There are also rules for reporting numbers when you multiply and/or divide:

   1) Count the sig. figs. in the numbers you are multiplying and/or dividing. Your answer should be rounded off to the smallest number of sig. figs. in your problem.

        Example: a) 28.33   x   3.12   =   "88.3896" ←-----calculator answer
                        ↑   ↑   ↑
                      4 s.f.   3 s.f.   6 s.f.   so round to 3 s.f.
                                                                       Your answer will be reported as 88.4

                    b) 28.44   ÷   3.12   =   "9.080128205" ←-----calculator answer
                        ↑   ↑   ↑
                      4 s.f.   3 s.f.   6 s.f.   so round to 3 s.f.
                                                                       Your answer will be reported as 9.08

        Reminder: Rounding-off rules: Go to next number. If it is 0-4, round down.
                                                            If it is 5-9, round up.

Report the answer to the following problems, paying particular attention to the correct number of sig. figs.

a) 986.72 / 5.12 =   b) 497.7 / 3.0 =

c) 920.7 / 4.32 =   d) 400.20 x 3.010 =

e) 98 x 0.006 =   f) .009430 x 4310.9 =

g) 45.20 x 0.0071 =   h) 9.0 / 3.0 =

i) 10. x 300. =   j) 10. / 3 =

There are also different rules for reporting the answer when you add or subtract:

1) The answer should have the same number of decimal places as that of the number with the least decimal.

Example: 4.838 g   486.58 g
                   +1.0023 g   - 421.   g
                      5.3853 g = 5.385 g   65.58 g = 66 g
                               ↑   ↑
                      is 0-4, so round down.   is 5-9, so round up.

NOTE: IN ADDITION AND SUBTRACTION, DECIMAL POINTS MUST BE LINED UP!!

Solve the following:

a) 0.00000313   b) 4.9670   c) 0.000343   d) 78
     +17   - 3.1 ___   +0.17   - .99

e) 336,000 – 33,000.03 =   f) 0.99 - .1 =

Additional practice problems:

How many sig. figs in the following number?

a) 87_____   b) 190._____   c) 0.000190_____   d) 606.0_____   e) 1.008_____

Round off the following to 2 S.F.

a) 86730_____ b) 120.99_____ c) .0003450_____ d) 0.0555_____ e) 9898989_____

How many S.F. should be in the following answers: (Don't work out the problems!)

a) 0.2 x 43.98 = _____   b) 43,000,000 x 0.00546 = _____   c) 43.0 – 17.2 = _____

d) 0.00235 – 3.0 = _____   e) 143.000 – 3.45 = _____   f) 3.40 x 0.04 = _____

g) $\dfrac{0.300 \text{ x } .802}{30.44}$ = _____   h) $\dfrac{39.04 \text{ x } 1.009}{3}$ = _____   i) $\dfrac{0.00390 \text{ x } 2.0098}{2.02}$ = _____

Solve the following problems:

a) 0.004598   b) $\dfrac{43.2 \text{ x } 30.3 \text{ x } 17.0 =}{43.30 \text{ x } 0.0045 \text{ x } 99}$ c)   338855.0
     +4   +10000000.003

d) 73   e) 8.0   f) 17.0 + 1.4 – 8.9 =
     -14.98   -1.99

How many S.F. are in the following numbers?

a) 3.0 x 10^9_____   b) 0.0090_____   c) 4.20 x 10^{-4}_____

d) 900,000_____   e) 900,000._____   f) 9.4450 x 10^7_____