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 3 b) 92100 3 c) 92100. 5 d) 0.000210 3

e) 0.00219 3 f) 93,000,000 2 g) 93,000,003 8 h) 93,000,000. 8

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 = 193 b) 497.7 / 3.0 = 170

c) 920.7 / 4.32 = 213 d) 400.20 x 3.010 = 133.0

e) 98 x 0.006 = 20000 f) .009430 x 4310.9 = 40.65

g) 45.20 x 0.0071 = .32 h) 9.0 / 3.0 = 3.0

i) 10. x 300. = 3.0×10^3 j) 10. / 3 = 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
+17
17

b) 4.9670
- 3.1
1.9

c) 0.000343
+0.17
.17

d) 78
- .99
77

e) 336,000 – 33,000.03 = 303,000

f) 0.99 - .1 = .9

Additional practice problems:

How many sig. figs in the following number?

a) 87 2 b) 190. 3 c) 0.000190 3 d) 606.0 4 e) 1.008 4

Round off the following to 2 S.F.

a) 86730 8.8×10^4 b) 120.99 1.2×10^2 c) .0003450 .00035 d) 0.0555 .056 e) 9898989 9.9×10^6

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

a) 0.2 x 43.98 = 1

b) 43,000,000 x 0.00546 = 2

c) 43.0 – 17.2 = 3

d) 0.00235 – 3.0 = 2

e) 143.000 – 3.45 = 5

f) 3.40 x 0.04 = 1

g) $\frac{0.300 \times .802}{30.44}$ = 3

h) $\frac{39.04 \times 1.009}{3}$ = 1

i) $\frac{0.00390 \times 2.0098}{2.02}$ = 3

Solve the following problems:

a) 0.004598
+4
4

b) $\frac{43.2 \times 30.3 \times 17.0}{43.30 \times 0.0045 \times 99}$ = 1.2×10^3

c) 338855.0
+10000000.003
10 338 855

d) 73
-14.98
58

e) 8.0
-1.99
6.0

f) 17.0 + 1.4 – 8.9 =
9.5

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

a) 3.0×10^9 2

b) 0.0090 2

c) 4.20×10^{-4} 3

d) 900,000 1

e) 900,000. 6

f) 9.4450×10^7 5