


SIGNIFICANT FIGURES

- indicates the level of certainty in an answer

Rules:

1. Nonzero numbers (1-9), are ALWAYS significant
 2. Zero is sometimes significant
 - a. Leading zeros are NEVER significant
Example: 0.0025 has only 2 sig. figs.
 - b. Captive zeros are ALWAYS significant
Example: 1.008 has 4 sig. figs.
 - c. Trailing zeros are significant if written with a decimal point
Example: 100 has 1 sig. fig., but 100. has three sig. figs.
 3. Exact numbers NEVER limit significant figures in a calculation.
Example: counting- 3 apples
Definitions- 1 inch = 2.54 cm
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ROUNDING

When removing uncertain numbers, the need to round off occurs

Rules:

1. If the number to be removed is
 - a. Less than 5, the preceding digit stays the same
Example: 1.333 = 1.33
 - b. Equal to or greater than 5, the preceding digit increases by 1
Example: 1.366 = 1.37
2. Ideally all figures should be carried through all operations with rounding occurring only at the final answer to correct for significant figures.

HOW TO APPLY SIGNIFICANT FIGURES IN CALCULATIONS

Addition or Subtraction Calculations:

Round your answer to the same number of decimal places as your least accurate number in the problem.

Example:

$$\begin{array}{r} 100.5 \\ 35.45 \\ + 3.687 \\ \hline 139.637 \end{array}$$

is the answer your calculator would give you.

The answer shown with the correct number of significant digits is 139.6

$$\begin{array}{r} 100.5 \\ 35.45 \\ + 3.687 \\ \hline 139.6 \end{array}$$

This is your least accurate number (10th's)

Therefore you must round your answer to the same decimal place. (10th's)

Multiplication or Division Calculations:

Round your answer to the same number of significant digits as number in the problem with the least number of significant digits.

Example:

$$475/1000 = 0.475$$

is the answer your calculator would give you.

The answer shown with the correct number of significant digits is 0.5

$$475/1000 = 0.475$$

This number has 3 significant figure. This number has 1 significant figure

Therefore, the answer must be rounded to 1 significant figure. The 7 makes the 4 round to a 5.