Date: 28/11/2014
Source: LINK
Permalink: LINK
Document Version: 1.0
Total Chars: 1546
Total Words: 275
Created by: HeelpBook
Page: 1

Significant Figures

Significant figures are critical when **reporting scientific data** because they give the reader an idea of how well you could actually **measure/report** your data.

Before looking at a few examples, let's summarize the rules for significant figures.

1. ALL non-zero numbers (1,2,3,4,5,6,7,8,9) are **ALWAYS** significant.
2. ALL zeroes between non-zero numbers are **ALWAYS** significant.
3. ALL zeroes which are **SIMULTANEOUSLY** to the right of the decimal point AND at the end of the number are **ALWAYS** significant.
4. ALL zeroes which are to the left of a written decimal point and are in a number >= 10 are **ALWAYS** significant.

A helpful way to check rules 3 and 4 is to write the number in scientific notation. If you can/must get rid of the zeroes, then they are NOT significant.

Examples: How many significant figures are present in the following numbers?

Number	# Significant Figures	Rule(s)
48,923	5	1
3.967	4	1
900.06	5	1,2,4
0.0004 (= 4 E-4)	1	1,4
8.1000	5	1,3
501.040	6	1,2,3,4
3,000,000 (= 3 E+6)	1	1
10.0 (= 1.00 E+1)	3	1,3,4

Addition and Subtraction

When adding or subtracting numbers, count the **NUMBER OF DECIMAL PLACES** to determine the number of significant figures.

The answer cannot **CONTAIN MORE PLACES AFTER THE DECIMAL POINT THAN THE SMALLEST NUMBER OF DECIMAL PLACES** in the numbers being added or subtracted.

23.112233	(6 places after the decimal point)
1.3324	(4 places after the decimal point)
+ 0.25	(2 places after the decimal point)
24.694633	(on calculator)
24.69	(rounded to 2 places in the answer)

MULTIPLICATION AND DIVISION

When multiplying or dividing numbers, count the **NUMBER OF SIGNIFICANT FIGURES**.

The answer cannot **CONTAIN MORE SIGNIFICANT FIGURES THAN THE NUMBER BEING MULTIPLIED OR DIVIDED** with the **LEAST NUMBER OF SIGNIFICANT FIGURES**.

23.123123	(8 significant figures)
x 1.3344	(5 significant figures)
30.855495	(on calculator)
30.855	(rounded to 5 significant figures)