

Significant Figures - Rules

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
9000	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

This gives you some idea of how to determine the number of significant figures in a single number. To find out how to use this information when performing mathematical operations (addition, subtraction, multiplication, division)