

## §2.4.2 Rounding off rules

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### I. Addition and subtraction

The rule means you should retain only as many decimals in the final result as the number with the largest absolute uncertainty, that is, with the fewest digits to the right of the decimal. It will be necessary to round up the last retained digit.

e.g.:	0.0121	Absolute error: 0.0001
	25.64	0.01
	1.057	0.001
	26.7091(26.71)	

II. Multiplication and division The rule is that the final result numbers should be of the same order of magnitude as the number with the largest relative uncertainty, that is, with the fewest significant figures.

data	0.0325	5.103	60.06	139.8
relative uncertainty	$\pm 0.3\%$	$\pm 0.02\%$	$\pm 0.02\%$	$\pm 0.07\%$
	$\frac{0.0325 \times 5.103 \times 60.06}{139.8} = 0.0713$			

### III. Rounding off

**If the digit following the last significant figure is:**

a. greater than 5, the number is rounded up to the next higher digit  
b. less than 5, the number is rounded to the present value of the last significant figure

e.g.  $9.47 = 9.5$      $9.43 = 9.4$

**If the digit is 5, there are some cases**

1) If the digit to the right of 5 is zero or no digit, the number is rounded off to the nearest even digit:

e.g.  $8.650 = 8.6$      $8.75 = 8.8$      $8.55 = 8.6$

2) If the digit is not 0 to the right of 5, the number is rounded up to the next higher digit no matter the digit to the left of 5 is odd or even.

e.g.  $1.024501 = 1.025$      $1.023501 = 1.024$