Rounding to Significant Figures and Scientific Notation

Round a number to a chosen number of significant figures or decimal places (half away from zero), and write it in scientific notation.

Method: Decimal rounding; half away from zero

Input parameters

Unit system: SI

Parameter	Value	Unit
Number	0.004568	
Significant figures	3.0000	
Decimal places	2.0000	

Calculated results

Parameter	Value	Unit
Rounded to significant figures	0.004570	
Rounded to decimal places	0	
Mantissa (1 ≤ |m| < 10)	4.5678	
Exponent of ten	-3.0000	

Notes for this case

- Rounding is half away from zero on the decimal value shown; very small or large numbers lose exactness in decimal form.

Formula and method

$$x = m \times 10^{e}, \quad 1 \leq |m| < 10$$

Variables

x	Number	-
n_s	Significant figures	-
n_d	Decimal places	-
x_s	Rounded to significant figures	-
x_d	Rounded to decimal places	-
m	Mantissa (1 ≤	m
e	Exponent of ten	-

Method and standards

Definitions.

Assumptions and limits

- Decimal arithmetic between about 10^{-20} and 10^{27}; outside that range the rounding is done in binary floating point and the page says so.

References

- Decimal rounding
- half away from zero

Report details

Report reference	FCC-1TW0-54MD (the same inputs always give the same reference)
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Release checks	5 reference cases of this calculator, computed independently, are checked on every release

Results are for engineering estimation. Verify critical designs against the referenced standards and your own data.

This calculator online

https://calc.firecad.com/general/geometry/rounding-significant-figures

Open this case on calc.firecad.com →

Reopens the calculator with the inputs of this report.