Title

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trunc( ) — Round to integer

Syntax

real matrix `trunc(`*real matrix R*`)`

real matrix `floor(`*real matrix R*`)`

real matrix `ceil(`*real matrix R*`)`

real matrix `round(`*real matrix R*`)`

real matrix `round(`*real matrix R*`,` *real matrix U*`)`

Description

These functions convert noninteger values to integers by moving toward 0, moving down, moving up, or rounding. These functions are typically used with scalar arguments, and they return a scalar in that case. When used with vectors or matrices, the operation is performed element by element.

`trunc(`*R*`)` returns the integer part of *R*.

`floor(`*R*`)` returns the largest integer *i* such that $i \leq R$.

`ceil(`*R*`)` returns the smallest integer *i* such that $i \geq R$.

`round(`*R*`)` returns the integer closest to *R*.

`round(`*R*`,` *U*`)` returns the values of *R* rounded in units of *U* and is equivalent to `round((`*R*`:/`*U*`)):*`*U*. For instance, `round(`*R*`, 2)` returns *R* rounded to the closest even number. `round(`*R*`, .5)` returns *R* rounded to the closest multiple of one half. `round(`*R*`, 1)` returns *R* rounded to the closest integer and so is equivalent to `round(`*R*`)`.

Remarks and examples

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Remarks are presented under the following headings:

Relationship to Stata's functions
Examples of rounding

Relationship to Stata's functions

`trunc()` is equivalent to Stata's `int()` function.

`floor()`, `ceil()`, and `round()` are equivalent to Stata's functions of the same name.

Examples of rounding

x	`trunc(`x`)`	`floor(`x`)`	`ceil(`x`)`	`round(`x`)`
1	1	1	1	1
1.3	1	1	2	1
1.6	1	1	2	2
−1	−1	−1	−1	−1
−1.3	−1	−2	−1	−1
−1.6	−1	−2	−1	−2

Conformability

`trunc(`R`)`, `floor(`R`)`, `ceil(`R`)`:

R:	$r \times c$
result:	$r \times c$

`round(`R`)`:

R:	$r \times c$
result:	$r \times c$

`round(`R`, `U`)`:

R:	$r_1 \times c_1$
U:	$r_2 \times c_2$, R and U r-conformable
result:	$\max(r_1, r_2) \times \max(c_1, c_2)$

Diagnostics

Most Stata and Mata functions return missing when arguments contain missing, and in particular, return `.` whether the argument is `.`, `.a`, `.b`, ..., `.z`. The logic is that performing the operation on a missing value always results in the same missing-value result. For example, `sqrt(.a)==.`

These functions, however, when passed a missing value, return the particular missing value. Thus `trunc(.a)==.a`, `floor(.b)==.b`, `ceil(.c)==.c`, and `round(.d)==.d`.

For `round()` with two arguments, this applies to the first argument and only when the second argument is not missing. If the second argument is missing (whether `.`, `.a`, ..., or `.z`), then `.` is returned.

Also see

[M-4] **scalar** — Scalar mathematical functions