vKalc Calculation Editor
User Manual *(v1.0)*

Dark Valley Software

Welcome to the *vKalc* Calculation Editor

vKalc is all about simplicity!

The *vKalc* calculation editor is an affordable application which allows the user to write and solve complex engineering calculations within a text editor environment.

Create clear and concise custom calculations which are much easier to check and validate than either hand-written calculations or spreadsheets. Create calculations which can be easily updated and extended, or re-used on a new project.

Some key features,

- *vKalc* only requires text to work, there are no intricacies required to create statements or results, just text.
- write the expressions and *vKalc* will provide the results.
- easily format calculation text and results to your preference using the editor's powerful automatic formatting features, giving you more time to focus on your calculation.
- highlight text such as variables, units, and more to aid inspection of the calculation.
- should a calculation fail, the editor will pin-point the equation which has failed to resolve, avoiding a lengthy search for errors.

Contents

Contents *(cont'd...)*

Menus

The calculation editor environment contains a top menubar, various toolbars and a right-click context menu. All of the functions of the various toolbars can be found in either the top menu or the context menu. The context menu has exactly the same functionality and layout as the top menubar in order to provide the user with full control when a windowless environment is preferred.

File menu

Open...	- open a file *(shortcut key Ctrl + O)* - *editor can open file types .klc, .txt, or .html (if created with the calculation editor)*
New	- create a new instance of the editor *(shortcut key Ctrl + N)*
Open Recent	- open a recent file from the provided list
Close	- close the current file *(shortcut key Ctrl + W)*
Save	- save the current file *(shortcut key Ctrl + S)*
Save As...	- save the current file as a new save *(shortcut key Ctrl + Shift + S)* - *files can be saved as .klc, .txt, or .html (with limitations)*
Reload	- reload the current file *(shortcut key F5)*
Print to pdf...	- export the current file as a pdf file *(shortcut key Ctrl + P)*
Exit	- quit the program *(shortcut key Ctrl + Q)*

Edit menu

Undo	- undo last action *(shortcut key Ctrl + Z)*
Redo	- redo last action which was undone *(shortcut key Ctrl + Shift + Z)*
Cut	- cut selection *(shortcut key Ctrl + X)*
Copy	- copy selection *(shortcut key Ctrl + C)*
Paste	- paste selection from clipboard *(shortcut key Ctrl + V)*
Select All	- select all text and images *(shortcut key Ctrl + A)*

View menu

Scrollbar	- show/hide the vertical scrollbar *(shortcut key F7)*
Menubar	- show/hide the top menubar *(shortcut key F8)*
Toolbars	- show/hide the toolbars *(shortcut key F9)*
Statusbar	- show/hide the bottom statusbar *(shortcut key F10)*
Fullscreen	- show/hide a borderless window *(shortcut key F11)*
Select Toolbars...	- select which specific toolbars to show/hide
Reset Screen to Default	- reset the screen to the default view

Format menu

Set Current Font...	- open the current font dialog to select current font type and size
Set Default Font...	- open the default font dialog to select default font type and size
Bold	- set bold font
Italic	- set italic font
Underline	- set underline font
Strikeout	- set strikeout font
Align Left	- set text alignment to left
Align Center	- set text alignment to center
Align Right	- set text alignment to right
Superscript	- set superscript font *(shortcut key F2 (cycle))* - *superscripts will be read by the solver as exponents*
Subscript	- set subscript font *(shortcut key F2 (cycle))*
Pens...	- select a pen to use from pen one to pen six - *right-click associated toolbar button to set color*

Tools menu

Page...

Page One	- set page one profile - *right-click associated toolbar button to set color*
Page Two	- set page two profile - *right-click associated toolbar button to set color*
Page Three	- set page three profile - *right-click associated toolbar button to set color*
Show Header	- show page header - *right-click associated toolbar button to set page header text*
Show Footer	- show page footer - *right-click associated toolbar button to set page footer text*
Show Border	- show a border around the text area of the current page - *right-click associated toolbar button to set color*
Show Grid	- show a grid on the text area of the current page - *right-click associated toolbar button to set color*
Show Page Edge	- show a thin line around the page edge - *right-click associated toolbar button to set color*
Paged Layout	- toggle between a traditional text editor layout and a paged layout - *right-click associated toolbar button to open page settings*

Tools menu *(cont'd...)*

Insert...	- insert the selected symbol at the current cursor position
Insert Image...	- insert image *(from file)* at the current cursor position
Insert Text...	- insert text *(from file)* at the current cursor position
Highlight...	- highlight specific text within the editor window, eg. variables, units, rebar etc. *- highlighting will be applied to the entire text, ie. statements, results and comments.* *- right-click associated toolbar button to set color*
List...	- show a select list of useful information
Find/Replace	- toggle Find/Replace toolbar
Highlighters	- toggle Highlighter toolbar
Resize Image	- toggle Image Resize toolbar

Settings menu

Page Settings...

- Page size - select a page size from the list
- Page orientation - set page orientation, portrait or landscape
- Cursor width - set cursor width for current page
- Text margin (%) - set text margin for current page *(as a % of the full page width)*
- Text spacing (%) - set vertical text spacing *(as a % of the font height)*
- Page location (%) - set horizontal location for current page
- Page zoom (%) - set page zoom factor *(see page 33)*
- Page color - set/reset color for current page
- Page edge color - set/reset color for current page edge line
- Selected text color - set/reset color for current page selected text
- Selection highlight color - set/reset color for current page selected text background
- Background color - set/reset color for current page background
- Cursor color - set/reset color for current page cursor
- Border color - set/reset color for current page border
- Grid color - set/reset color for current page grid
- Scrollbar color - set/reset color for current page scrollbar

Page Header... - set page header text *(left, center and right)*

Page Footer... - set page footer text *(left, center and right)*

Settings menu *(cont'd...)*

- Default Folder... - select default folder for opening and saving new files.
- Clear All Settings - reset all parameters to default as and when the editor is next restarted.

Solve menu

- Solve - calculate and update all results *(shortcut key F3)*
- Reset - reset all results to zero, preserving formatting, precision and units *(shortcut key F4)*
- Clear - clear all results completely from the editor window
- Reset Solver - reset text to last solve/reset/clear state
- From Start to Cursor - solve/reset/clear results from start of text to current cursor position
- From Cursor to End - solve/reset/clear results from current cursor position to end of text
- Selection - solve/reset/clear results for selected text only
- Base Units...
  - SI Units - set base units to SI (*metric*)
  - US Units - set base units to US (*imperial*)
- Result Layout...
  - Sci-Notation - enable/disable switching to sci-notation for large and small numbers
  - Auto Precision - automatically set result precision
  - Truncate Zeros - automatically truncate any trailing zeros from the result

Solve menu *(cont'd...)*

Statement Format...

Spaced	- format using a space between all items of the statement
No Spaces	- format using no spaces in the statement other than at the equals sign
Star	- format using * symbol for multiplication
Multiply	- format using × symbol for multiplication
Slash	- format using / symbol for division
Divide	- format using ÷ symbol for division *(excl. units)*
Star Star	- format using ** symbol for exponents
Power	- format using ^ symbol for exponents
Superscript	- format using superscript for exponents
Hide Semicolons	- hide/show semicolon delimiters within the editor window

Solve menu *(cont'd...)*

Result Format...

Auto	- format results as per preceding statement format
User	- leave the current result format unchanged
Bold	- format using bold font for result *(number part only)*
Italic	- format using italic font for result *(number part only)*
Underline	- format using underline font for result *(number part only)*
Strikeout	- format using strikeout font for result *(number part only)*
Pen One	- format using pen one for result *(number part only)* - *right-click associated toolbar button to set color*
Pen Two	- format using pen two for result *(number part only)* - *right-click associated toolbar button to set color*
Pen Three	- format using pen three for result *(number part only)* - *right-click associated toolbar button to set color*
Reset Pens	- reset all pen colors to default

Help menu

Keyboard Shortcuts...	- display a list of keyboard shortcuts
Constants Info...	- display a list of *vKalc* constants
Units Info...	- display a list of *vKalc* units
Operators Info...	- display a list of *vKalc* operators
Functions Info...	- display a list of *vKalc* functions
Bar Size Info...	- display a list of *vKalc* bar sizes
Documentation...	- open *vKalc* documentation online *(shortcut key F1)*
About...	- display *vKalc* version number

Toolbars

The editor provides 9 toolbars which provide almost all of the functionality of the menus

- Font Toolbar *(default: on)*
- Page Toolbar *(default: on)*
- Special Font Toolbar *(default: on)*
- Solver Toolbar *(default: on)*
- Solver Settings Toolbar *(default: on)*
- Highlighter Toolbar *(default: off)*
- Find/Replace Toolbar *(default: off)*
- Image Resize Toolbar *(default: off)*

The visibility of individual toolbars can be controlled through the 'View / Select Toolbars' menu.

All toolbar controls are accompanied with a statusbar tool tip describing it's action.

Please take a few minutes to hover over each toolbar reading the aforementioned statusbar tips, which also tie back to the menu explanations already provided.

Right-clicking on certain toolbar buttons will open a color selection dialog, a page settings dialog, or a page header/footer text dialog.

Statusbar

The editor provides an active statusbar which provides useful information

- Tips for each toolbar item
- General updates on Editor actions taken
- Updates on success of calculations, and precise error messages when required
- Current cursor location
- Current page number
- Window opacity slider

Page Header and Footer

Upon opening the header or footer dialog window, three locations are available for text input, left, center, or right.

Alternatively, the following commands can be used in any of the available locations,

#page#	- show the current page number followed by the total page number
#date#	- show the date
#time#	- show the time
#datetime#	- show the date followed by the time
#timedate#	- show the time followed by the date

Formatting

Example 1 *(single step formatting)*

Line load; *w=10kN/m*
Span; *L=10m*
Bending moment; *M=w*L**2/8=kNm*

Applying statement formats: Spaced, Multiply, and Superscript
Applying result format: Pen One
And solving gives -

Line load; *w = 10kN/m*
Span; *L = 10m*
Bending moment; *M = w × L² / 8 = 125kNm*

Example 2 (*single step formatting with mixed units and user precision)*

Line load; *w=6kN/ft*
Span; *L=24ft*
Bending moment; *M=w*L**2/8=0.000kNm*

Applying statement formats: Spaced, Multiply, and Superscript
Applying result format: Underline
And solving gives -

Line load; *w = 6kN/ft*
Span; *L = 24ft*
Bending moment; *M = w × L² / 8 = 131.674kNm*

Variables

Variable names can include -
- alphanumeric characters A-Z, a-z, 0-9
- greek characters A-Ω, α-ω *(except π and Σ)*
- subscripted characters
- underscores _
- single apostrophes ‘ *(eg. f’c)*

Variable names cannot include -
- a dot .
- parenthesis
- superscripted characters *(except as allowed in chemistry notation)*
- mathematical operators
- equals signs

Variable names cannot -
- start with a number
- have the same name as a constant
- have the same name as a unit
- have the same name as a function

Variable names are case-sensitive, but they are not subscript-sensitive -
- S_v and s_v are separate variables
- A_{v_min} and Av_min are the same variable

A number, decimal or constant placed before the variable will factor the variable by that amount.

Example one

b_v = 150mm; *$2.5b_v$ = 250mm*

Example two *(circumference of a circle)*

r = 10cm; *2πr = 62.8cm*

A string variable must be created with quotation marks, and will be returned without quotation marks.

Example three *(a string variable)*

result = "PASS"; *result := PASS*

Current variables can be viewed at any time from Tools / List… / Variables...
Variable lists are renewed with every solve/reset/clear action.

Constants

The full list of constants currently included with the editor are as follows,

e_n	- Euler's number
g_o	- gravitational acceleration constant
π	- pi
pi	- pi

Constants can also be used as units,

$2g_o + 4g_o = 6g_o$

Chemistry Notation

Typical arrows used in the creation of chemical equations have been included in the insert symbol list. Further to this, superscripts ending with a '+' or '-' sign will be ignored by the solver *(and will become part of the variable name)*, which enables the use of 'ion' notation.

Example one

$6CO_2 + 6H_2O \rightarrow C_6H_{12}O_6 + 6O_2$

$3Hg(OH)^2 + 2H_3PO_4 \rightarrow Hg_3(PO_4)_2 + 6H_2O$

$H_2O + HCl \rightleftharpoons H_3O^+ + Cl^-$

$H_2O + NH_3 \rightleftharpoons NH_4^+ + OH^-$

$Al_2O_3 + 6H_30^+ + 3H_2O \rightarrow 2(Al(OH_2)_6)^{3+}$

Example two

Hydrogen ion concentration; $H^+ = 0.03mol$

$pH = -log(H^+ \times mol^{-1}) = 1.52$

Math Operators

The full list of math operators currently included with the editor are as follows,

+	- add
-	- subtract
*	- multiply
×	- multiply
·	- multiply
/	- divide
÷	- divide
**	- power
··	- power
^	- power
=	- equals
==	- equals *(de-reference)*
:=	- equals *(de-reference)*
<	- less than
>	- greater than
!=	- not equal to
<=	- less than or equal to
>=	- greater than or equal to
(	- opening parenthesis
)	- closing parenthesis

Units

The full list of units currently included with the editor are as follows,
(please note, vKalc does not support pluralized units)

Distance (SI)

µm	- micrometer
mm	- millimeter
cm	- centimeter
dm	- decimeter
m	- meter
km	- kilometer

Distance (US)

in	- inch
ft	- foot
yd	- yard
mi	- mile

Area

hectare	- hectare
acre	- acre

Volume (SI)

µl	- microlitre
ml	- millilitre
l	- litre

Volume (US)

floz	- fluid ounce
gal	- gallon
us_floz	- fluid ounce (US)
us_gal	- gallon (US)

Units *(cont'd...)*

Mass (SI)

µg	- microgram
mg	- milligram
g	- gram
kg	- kilogram
t	- tonne

Mass (US)

oz	- ounce
lb	- pound
slug	- slug
ton	- ton (imperial)
us_ton	- ton (US)

Time

µs	- microsecond
ms	- millisecond
s	- second
min	- minute
hr	- hour
day	- day
yr	- year

Force (SI)

dyne	- dyne
mN	- millinewton
N	- newton
kN	- kilonewton
MN	- meganewton
kgf	- kilogram force

Force (US)

ozf	- ounce force
lbf	- pound force
kip	- kilopound force
tonf	- ton force

Units *(cont'd...)*

Density (US)

pcf	- pound force per cubic foot

Line Load (US)

plf	- pound force per linear foot
klf	- kilopound force per linear foot

Pressure (SI)

Pa	- pascal
kPa	- kilopascal
MPa	- megapascal
GPa	- gigapascal
mbar	- millibar
bar	- bar
atm	- atmosphere

Pressure (US)

psi	- pound force per square inch
psf	- pound force per square foot
ksi	- kilopound force per square inch
ksf	- kilopound force per square foot

Units *(cont'd...)*

Torque (SI)

Nmm	- newton millimeter
Nm	- newton meter
kNm	- kilonewton meter
MNm	- meganewton meter

Torque (US)

lb_in	- pound force inch
in_lb	- inch pound force
lbf_in	- pound force inch
in_lbf	- inch pound force
lb_ft	- pound force foot
ft_lb	- foot pound force
lbf_ft	- pound force foot
ft_lbf	- foot pound force
kip_in	- kilopound force inch
in_kip	- inch kilopound force
kip_ft	- kilopound force foot
ft_kip	- foot kilopound force
ton_ft	- ton force foot
ft_ton	- foot ton force

Power

mW	- milliwatt
W	- watt
kW	- kilowatt
MW	- megawatt
GW	- gigawatt

Action

Js	- joule second

Speed

kph	- kilometers per hour
mph	- miles per hour

Units *(cont'd...)*

Energy

erg	- erg
mJ	- millijoule
J	- joule
kJ	- kilojoule
MJ	- megajoule
GJ	- gigajoule
mWh	- milliwatt hour
Wh	- watt hour
kWh	- kilowatt hour
MWh	- megawatt hour
GWh	- gigawatt hour
cal	- calorie
kcal	- kilocalorie
BTU	- british thermal unit

Electrical

µA	- microampere
mA	- milliampere
A	- ampere
amp	- ampere
kA	- kiloampere
µAh	- microampere hour
mAh	- milliampere hour
Ah	- ampere hour
kAh	- kiloampere hour
Cmb	- coulomb
mV	- millivolt
V	- volt
kV	- kilovolt
mVA	- millivolt amp
VA	- volt amp
kVA	- kilovolt amp
mVm	- millivolt meter
Vm	- volt meter
kVm	- kilovolt meter

Units *(cont'd...)*

Electrical *(cont'd...)*

mΩ	- milli ohm
Ω	- ohm
kΩ	- kilo ohm
MΩ	- mega ohm
mΩm	- milli ohm meter
Ωm	- ohm meter
kΩm	- kilo ohm meter
MΩm	- mega ohm meter
S	- siemens
mho	- reciprocal of ohm (S)
pF	- picofarad
nF	- nanofarad
µF	- microfarad
mF	- millifarad
F	- farad
Wb	- weber
Mx	- maxwell
µH	- microhenry
mH	- millihenry
H	- henry
T	- tesla
Gs	- gauss
Oe	- oersted

Frequency

mHz	- millihertz
Hz	- hertz
kHz	- kilohertz
MHz	- megahertz
GHz	- gigahertz

Angle

rad	- radian
°	- degrees

Units *(cont'd...)*

Thermal

°C	- celsius
°F	- fahrenheit
K	- kelvin
°Cday	- celsius day
°Fday	- fahrenheit day
°Cm	- celsius meter
°Fm	- fahrenheit meter

Amount

mol	- mol

Currency

$	- dollar
€	- euro
£	- pound
¥	- yen

The value of any constant or unit can be checked to any user precision set, as follows -

PI = 0.00000 *(5 decimal places sought by the user)*
And solving gives -
PI = 3.14159

Wb = *(default precision and units sought by the user)*
And solving gives -
Wb = 1.00kgm^2/As^2

Compound Numbers

A number or decimal followed directly by a variable, constant, unit, function or parenthesis will be considered as a single entity. And a number or decimal followed by π, and then followed by a variable, constant, unit, function or opening parenthesis will also be considered as a single entity.

Examples

2.5cm³ / 5.0cm³ = 0.5; *2.5kN/m² / 5.0kN/m² = 0.5*

a = 2; *2 / 2a = 0.5;* *2 / 2 × a = 2;* *2 / 2(a + a) = 0.25;* *2 / 2 × (a + a) = 4*

2 / 2√(16) = 0.25; *2 / 2 × √(16) = 4;* *2 / 2avg(1, 2, 3) = 0.5;* *2 / 2 × avg(1, 2, 3) = 2*

r = 10cm; *2πr / 2πr = 1;* *2πr / 2π × r = 100cm²;* *2πr / 2 × π × r = 987cm²*

Exponents

Compound numbers do not apply to non-superscript exponents.

a = 2; *10**2a = 200;* *10**2 × a = 200;* *10**(2a) = 10000;* *10**2mm = 100mm;*

In order to facilitate switching exponents easily from superscript syle to non-superscript style, vKalc will *(during solve or reset)* introduce additional parenthesis where required, if not already in place.

a = 2; $10^{2a} = 10000$; *(will solve to)* *a = 2;* $10^{(2a)} = 10000$ *(or)* *a = 2;* *10**(2a) = 10000*

a = 2; $100^{2/2a} = 10$; *(will solve to)* *a = 2;* $100^{(2/2a)} = 10$ *(or)* *a = 2;* *100**(2 / 2a) = 10*

a = 4; $100^{2/2\sqrt{(a)}} = 10$; *(will solve to)* *a = 4;* $100^{(2/2\sqrt{(a)})} = 10$ *(or)* *a = 4;* *100**(2 / 2√(a)) = 10*

Reinforcement

The editor can recognize rebar quantities when input as follows,

Bar sizes (*SI*)

R6, R8, R10, R12, R16, R20, R25

T6, T8, T10, T12, T16, T20, T25, T32, T40

Bar sizes (*US*)

No3, No4, No5, No6, No7, No8, No10

Examples (*SI and US units can be mixed*)

R10 = 78.5mm^2; *T12@200mm = 565mm^2/m;* *2T16@300mm = 1340mm^2/m*

No3 = 0.110in^2; *No4@8in = 0.295in^2/ft;* *2No5@12in = 0.0511in*

T20 = 0.487in^2; *No6@200mm = 0.673in^2/ft;* *2R12@10in = 891mm^2/m*

Results

Text format of results is controlled through the menus and toolbars as previously described.

Precision and units are controlled by the user, and the editor will respond to to the user as follows -

user leaves a blank space where the result should be.
- editor will insert a result using a default number precision and base units.

user inputs a number only, where the result should be.
- editor will insert a result using the precision of the existing number along with base units, should units be required.

user inputs a unit only where the result should be.
- editor will insert a result using a default number precision and match the units found if they are compatible. If the units are incompatible, the editor will revert to base units.

user inputs a number and a unit where the result should be.
- editor will insert a result using the precision of the existing number and match the units found if they are compatible. If the units are incompatible, the editor will revert to base units.

user inputs a number and a unit where a unitless result should be.
- editor will insert a result using the precision of the existing number and remove the excess units.

user inputs incoherent text where the result should be.
- editor will delete all existing text and insert a result using a default number precision and base units, should units be required.

Precision and units can be updated by the user prior to running any solve or reset function.

The clear function will clear all text from the result space.

The value of the number placed in result space does not matter, the editor will only look at the precision of the number. This works exactly the same way for sci-notation, the precision will be read from the first number (preceding the letter e).

If truncate zeros is switched on, the precision you set may not be reached as any trailing zeros will be cut.

Results greater than 1e+308 will be shown as ∞, and results less than -1e+308 will be shown as -∞.

Error Handling

The solver will exit immediately if it comes across an equation it cannot resolve and the calculation will remain as it was prior to solving. However, the text line where the error occurred will be highlighted, and the equation that caused the error will be displayed on the status bar as Equation 1, 2, or 3 etc. reading from left to right along the highlighted line.

It is often the case that the equation which caused the solver to exit has no errors, rather the root cause of the error is from a previous equation which has provided incorrect information to this equation. Perhaps a variable supplied to this equation was provided with incompatible units, for example.

In such cases, the root cause of the error is usually quite easy to trace from the highlighted line.

Please note, when solving only a portion of the calculation text, if any variables located within the portion are initiated outside of the portion, the calculation will fail as the variable being sought by *vKalc* does not actually exist.

SI / US Base Units

Where the units for a result have not been specified, the editor will provide SI base units or US base units, depending upon which option is current. Note, the user is still free to specify any units, SI or US, no matter which option is current.

SI Base Units -

length	meter	m
mass	kilogram	kg
time	seconds	s
electric current	ampere	A
amount	mole	mol

US Base Units -

length	feet	ft
mass	slug	slug
time	seconds	s
electric current	ampere	A
amount	mole	mol

Sci-Notation

The editor can read and write sci-notation.

If sci-notation is switched off, the editor will not use sci-notation in results, but it will still read any sci-notation used in statements or equations.

If sci-notation is switched on, the editor will use sci-notation in results. Numbers larger than 10^{15} or smaller than 0.0001 will be expressed in sci_notation.

Sci notation example formats as follows -

10^{16} = 1e+16

23^{12} = 2.19e+16

-23^{12} = -2.19e+16

0.00001 = 1e-5

-0.0000123 = -1.23e-5

1e+16cm + 1e+16cm = 2e+16cm

(1e+16)cm + (1e+16)cm = 2e+16cm

Auto Precision

With this option selected the editor will automatically set the precision of results as follows - *100* *10.0* *1.00* *0.000*
(note: the editor will also remove any trailing zeros automatically)

Truncate Zeros

With this option selected the editor will automatically remove any trailing zeros from the results.

Functions

The calculation editor currently includes a list of useful functions, examples of each are provided below.
All functions (with the exception of the random number functions) can be nested without limitations.
(note the semicolon separator (delimiter) positions on each line)

if... function	*a = 10mm;*	*b = 5mm;*	*if(b < a, c = "Pass", c = "Fail");*	*c := Pass*
	a = 10mm;	*b = 5mm;*	*if(a = b, c = "Pass", c = "Fail");*	*c := Fail*
	a = 10mm;	*b = 5mm;*	*if(a != b, c = "Pass", c = "Fail");*	*c := Pass*
sqrt... function	*a = 9m²;*	*b = 7m²;*	*sqrt(a + b) = 4m* *√(a + b) = 4m* *√a = 3m*	
cbrt... function	*a = 4m³;*	*b = 4m³;*	*cbrt(a + b) = 2m* *∛(a + b) = 2m* *∛27 = 3*	
ftrt... function	*a = 8m⁴;*	*b = 8m⁴;*	*ftrt(a + b) = 2m* *∜(a + b) = 2m* *∜256 = 4*	
ln... function	*a = 10;*	*ln(a) = 2.30259;*	*log of 10 to base e*	
log... function	*a = 100;*	*log(a) = 2;*	*log of 100 to base 10*	
log... function	*a = 27*	*b = 3;*	*log(a, b) = 3;*	*log of 27 to base 3*
abs... function	*a = 10m;*	*b = 5m;*	*abs(b - a) = 5mm*	
avg... function	*a = 3ft;*	*b = 9ft;*	*c = avg(a, b, a+b) = 8ft*	
max... function	*a = 10in;*	*b = 5in;*	*c = max(a, b, a+b) = 15in*	
min... function	*a = 10in;*	*b = 5in;*	*min(a, b, a+b) = 5in*	
sum... function	*a = 10in;*	*b = 5in;*	*c = sum(a, b, a+b) = 30in*	

Functions *(cont'd...)*

Trigonometric functions (*sample*)

sin... function	*θ = 90°;*	*c = sin(θ) = 1.0* *sin(3.14 / 2) = 1.0;*	
cos... function	*θ = π;*	*c = cos(θ) = -1.0* *cos(3.14) = -1.0;*	
tan... function	*θ = 30°;*	*c = tan(θ) = 0.5774* *tan(3.14 / 6) = 0.5774;*	
asin... function	*a = 1.0;*	*θ = asin(a) = 1.570rad;*	*the use of 'rad' is optional*
acos... function	*a = -1.0;*	*acos(a) = 3.142;*	*the use of 'rad' is optional*
atan... function	*a = 0.5774;*	*θ = atan(a) = 0.524rad;*	*the use of 'rad' is optional*

Full list of trigonometric functions,

sin(), cos(), tan(), asin(), acos(), atan(), sinh(), cosh(), tanh(), asinh(), acosh(), atanh()

sec(), csc(), cot(), asec(), acsc(), acot(), sech(), csch(), coth(), asech(), acsch(), acoth()

Random number functions
(the following random number functions accept integer arguments only)

rand... function	*a = rand();*	*a = 0.123;*	*returns a random number between 0 and 1*
rand... function	*a = rand(4, 9);*	*a = 8;*	*returns a random number between 4 and 9 (inclusive)*
rand... function	*a = 1m × rand(1, 100);*	*a = 32m;*	*returns a random length between 1m and 100m (inclusive)*

Text

Text can be copy/pasted into the text area, dragged and dropped, or inserted from the menu (as described above).

Text can also be copy/pasted or dragged and dropped directly from the web.

Images

Images can be copy/pasted into the text area, dragged and dropped, or inserted from the menu *(as described above)*.

Images cannot be copy/pasted or dragged and dropped directly from the web.

Placed images can be selected by clicking on the image followed by a small drag prior to release.

Placed images can be resized to a percentage of the page width, the original proportions of the image will be preserved.

The current size of images which have previously been resized can be checked.

For optimal performance use the smallest possible file size.

Zoom

Please note that when setting the zoom factor in paged view, the whole body of text may (or may not) move up or down by a line or two because the page and the text are zoomed separately.

This requires only a simple adjustment to correct.

Printing

The editor will only print to a pdf file *(Export to pdf...)*

Printing will include

- Page color
- Page border *(if visible)*
- Page grid *(if visible)*
- Page header *(if visible)*
- Page footer *(if visible)*

Export to txt

When exporting to txt, in order to maintain the functionality of any superscript powers in the calculation, format these to 'star star' or 'hat' type powers prior to exporting.

Exporting to txt or saving as .txt will not update any configuration settings associated with the file.

Keyboard Shortcuts

File menu

Open ...	- Ctrl + O
New	- Ctrl + N
Close	- Ctrl + W
Save	- Ctrl + S
Save As...	- Ctrl + Shift + S
Reload	- F5
Export to pdf...	- Ctrl + P
Exit	- Ctrl + Q

Edit menu

Undo	- Ctrl + Z
Redo	- Ctrl + Shift + Z
Cut	- Ctrl + X
Copy	- Ctrl + C
Paste	- Ctrl + V
Select All	- Ctrl + A

View menu

Show/hide scrollbar	- F7
Show/hide menubar	- F8
Show/hide toolbars	- F9
Show/hide statusbar	- F10
Enable/disable fullscreen	- F11

Format menu

Subscript	- Alt + Down Arrow	*(pressing space, semicolon or equals will return cursor to normal)*
Superscript	- Alt + Up Arrow	*(pressing space, semicolon or equals will return cursor to normal)*

Tools menu

Insert square root (√)	- Alt + Q
Insert multiply (×)	- Alt + X
Insert dot multiply (·)	- Alt + .
Insert divide (÷)	- Alt + /
Insert degree (°)	- Alt + 0
Insert infinity (∞)	- Alt + 8

Keyboard Shortcuts *(cont'd...)*

Tools menu (cont'd...)

Open Current Variables info	- Ctrl + 0	
Open Constants info	- Ctrl + 5	
Open Units info	- Ctrl + 6	
Open Operators info	- Ctrl + 7	
Open Functions info	- Ctrl + 8	
Open Bar Sizes info	- Ctrl + 9	
Show Find/Replace toolbar	- Ctrl + F	*(can also be used to load selected text into the toolbar)*
Show/hide Highlighter toolbar	- Ctrl + H	
Show/hide Image Resize toolbar	- Ctrl + I	

Solve menu

Solve	- F2
Reset	- F3

Help menu

Open Keyboard Shortcuts	- Ctrl + K
Documentation (*online*)	- F1

Greek alphabet lowercase

Insert Alpha (α)	- Alt + A
Insert Beta (β)	- Alt + B
Insert Gamma (γ)	- Alt + G
Insert Delta (δ)	- Alt + D
Insert Epsilon (ε)	- Alt + E
Insert Eta (η)	- Alt + H
Insert Theta (θ)	- Alt + T
Insert Lambda (λ)	- Alt + L
Insert Mu (μ)	- Alt + M
Insert Pi (π)	- Alt + P
Insert Rho (ρ)	- Alt + R
Insert Sigma (σ)	- Alt + S
Insert Tau (τ)	- Alt + U
Insert Phi (φ)	- Alt + F
Insert Psi (ψ)	- Alt + I
Insert Omega (ω)	- Alt + O

Greek alphabet uppercase

Insert Delta (Δ)	- Alt + Shift + D
Insert Sigma (Σ)	- Alt + Shift + S
Insert Phi (Φ)	- Alt + Shift + F
Insert Omega (Ω)	- Alt + Shift + O

Constants

Insert Euler (e_n)	- Alt + Shift + E
Insert Gravity (g_o)	- Alt + Shift + G

Contact Us

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