BASICS OF USING SCIENTIFIC CALCULATOR

1. Calculator input methods

On a **formula calculator** one types in an expression and then presses 'ENTER' or '=' to evaluate the expression.

Example: 1+2×3=7

1	+	2	×	3	=

On an **immediate execution calculator**, each operation is executed as soon as the next operator is pressed, therefore the **order** of operations in a mathematical expression is not taken into account.

Example: 1+2×3=7 (*note that it is necessary to rearrange operands in order to get the correct result*)

2	×	3	+	1	=

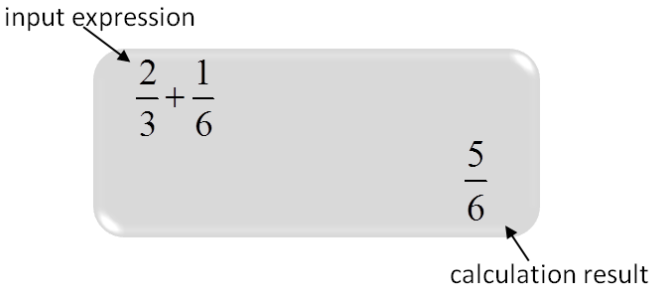
In **reverse Polish notation** (RPN), also known as **postfix notation,** all operations are entered after the operands on which the operation is performed. Reverse Polish notation is parenthesis-free which usually leads to fewer button presses needed to perform an operation.

Example: 1+2×3=7

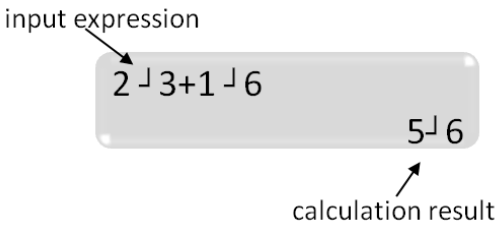
1	↵ ENTER	2	↵ ENTER	3	↵ ENTER	+	×

2. Display format

Natural Display (also known as Mathematical Display, WriteView, Math Print, and Equation Writer) causes fractions, irrational numbers and other expressions to be displayed as they are written on paper.



Natural display



Linear display

Linear display shows fractions and other expressions in a single line.

3. Correcting and clearing an expression: AC (to clear all); C or DEL (to clear last entry).

4. Execution keys: =, EXE, ↵ENTER

5. Basic arithmetic computations (+, -, ×, ÷)

Example: 2+5-4=3

2	+	5	-	4	=

6. Scrolling in 2 or 4 directions: 

7. Toggling between fractional and decimal formats: S↔D;

EXE	$a\,b/c$

8. Engineering notation: ENG

9. 1st (default), 2nd key (2nd, 2ndF, SHIFT, INV) and 3rd key (ALPHA) functions/operations

10. Functions and corresponding keys

a) **Reciprocal**: $1/x$, x^{-1}

Example: 1/5=0.2

5	$1/x$	=	S↔D

b) **Square**: x^2

Example: $5^2=25$

5	x^2	=

c) **Powers**: $x^{\blacksquare}$, x^y , e^x *or* $e^{\blacksquare}$, 10^x *or* $10^{\blacksquare}$

Example: $5^3=125$

5	$x^{\blacksquare}$	3	=

Example: $10^4=10000$

SHIFT	log	4	=

d) **Roots, square root**: $\sqrt{\blacksquare}$, $\sqrt{x}$, $\sqrt[\blacksquare]{\ }$, $\sqrt[y]{x}$, sqrt

Example: $\sqrt{225}=15$

$\sqrt{\blacksquare}$	25	=

e) **Logarithms**: ln (for base of e), log (for base of 10)

Example: ln3.2=1.163...

ln	3	)	=

f) **Fractions**: $\frac{\blacksquare}{\blacksquare}$; $\frac{\blacksquare}{\ }$; $\blacksquare\!-$, a/b , $a\,b/c$, $a\lrcorner b$

Example: 2/3+1/6=5/6

$\frac{\blacksquare}{\blacksquare}$	2	↓	3	→	+	$\frac{\blacksquare}{\blacksquare}$	1	↓	6	=

g) **Percentages**: %

Example: 150×20%=30

150	×	20	%	=

h) **Trigonometric functions**: sin, cos, tan

Example: sin30°=1/2=0.5

sin	30	)	=

i) **Inverse trigonometric functions**: $\sin^{-1}$, $\cos^{-1}$, $\tan^{-1}$ (preceded by pressing 2^{nd} , 2^{nd}F, SHIFT or INV keys)

Example: $\tan^{-1}12=85.236$

SHIFT	tan	12	)	=

j) Switching between degrees and radians for trigonometric functions

SHIFT	MODE	Deg/Rad

11. Constants: $\boldsymbol{\pi} = 3.14;\ \boldsymbol{e} = 2.71$

12. Evaluating a formula (brackets, using arrows to move along the formula, taking care of order of operations with immediate execution calculators)

Example: $\sqrt{\frac{7+2(3-5))}{5^3}} = \frac{\sqrt{15}}{25} = 0.1549$

$\sqrt{\blacksquare}$	$\frac{\blacksquare}{\blacksquare}$	7	+	2	(	3	-	5	)	↓	5	$x^{\blacksquare}$	3	=

Try computing the following:

$V = I \times R \quad (I = 5.36;\ R = 14.76)$

$v = u + at \quad (u = 9.54;\ a = 3.67;\ t = 7.82)$

$A = \pi r^2 \quad (r = 5.23)$

13. References

http://support.casio.com/pdf/004/fx-83_85GT_PLUS_E.pdf
http://www.usersmanualguide.com/manuals/casio/FX-7700G.pdf
http://www.sharpdirect.co.uk/content/ebiz/sharp/resources/pdf/calcs/Operation_Guide_Writeview.pdf
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