

FEATURES:

- * Advanced LCD scientific calculator.
- * 10 digit with sign, or 8 digit mantissa + 2 digit exponent display.
- * 1 independent memory.
- * Calculation range: $10^{-106} \sim 10^{107}$
- * Mode key for Degree/Radian/Grad/Statistical function selection.
- * Two level parenthesis.
- * Scientific functions: x^2 , \sqrt{x} , $1/x$, π , $x!$
 10^x , e^x , \ln , \log , y^x , $x\sqrt{y}$
 nPr , nCr
 \sin , \cos , \tan , \sin^{-1} , \cos^{-1} , \tan^{-1}
 \sinh , \cosh , \tanh , \sinh^{-1} , \cosh^{-1} ,
 \tanh^{-1}
- * Statistical functions: n , ∇ , \bar{x} , Σx , Σx^2 , $P(x)$, $Q(X)$, $R(x)$
- * Exchange functions: CN , $P \rightarrow R$, $R \rightarrow P$, \circ , \rightarrow , $\rightarrow \circ$, $\circ \rightarrow$,
 $D \rightarrow R$, $R \rightarrow G$, $G \rightarrow D$, $R \rightarrow D$, $G \rightarrow R$,
 $D \rightarrow G$.
- * Long battery life – over 2000 hours' operation.
- * Super thin size with de-luxe aluminum case.

SPECIFICATIONS:

1. Display: 11-digit FEM type LCD.
2. Capacity: 10 digit with sign.
3. Memory: 1 accumulating memory.
4. Calculation modes:
 - a. $+$, $-$, \times , \div .
 - b. $[(,)]$
 - c. x^2 , \sqrt{x} , $1/x$, π , $x!$
 - d. 10^x , e^x , \log , \ln , y^x , $x\sqrt{y}$
 - e. \sin , \cos , \tan , \sin^{-1} , \cos^{-1} , \tan^{-1}
 - f. \sinh , \cosh , \tanh , \sinh^{-1} , \cosh^{-1} , \tanh^{-1}
 - g. n , σ , ∇ , Σx , Σx^2 , $P(x)$, $Q(x)$, $R(x)$,
 - h. CN , $\circ'' \rightarrow$, $\rightarrow \circ''$, $P \rightarrow R$, $R \rightarrow P$, $D \rightarrow R$, $R \rightarrow G$,
 $G \rightarrow D$, $R \rightarrow D$, $G \rightarrow R$, $D \rightarrow G$.
5. Notation: Automatic selection for scientific or floating point notation.
6. Components: CMOS/LSI, LCD etc.
7. Operation temperature: $0^\circ\text{C} \sim 40^\circ\text{C}$ ($32^\circ\text{F} \sim 104^\circ\text{F}$)
8. Power source: DC 3V (G-13 silver oxide battery x 2)
9. Power consumption: 0.2mW.
10. Dimension: 130 mm(L) x 70mm(W) x 7.5mm(H).
11. Weight: 85g.

KEY IDENTIFICATION:

- | | |
|-----------------------|--|
| [0] ~ [9] | : Numeral keys. |
| [.] | : Decimal point key. |
| [+] | : Plus key. |
| [-] | : Minus key. |
| [x] | : Multiplication key. |
| [÷] | : Division key |
| [=] | : Equal key. |
| [CE/C] | : Clear entry/clear key.
(Push once to clear wrong entry, twice to clear all except memory) |
| [M+] | : Memory plus key. |
| [M-] | : Memory minus key. |
| [MS] | : Memory store key. |
| [M _R
C] | : Memory recall/memory clear key.
(Push once to recall memory, twice to clear memory) |
| [M↔X] | : Memory and display exchange key. |
| [Exp] | : Exponent key. |
| [CN] | : Change notation key. |
| [+/-] | : Change sign key. |
| [√x] | : Square root key. |
| [x ²] | : Square key. |
| [1/x] | : Reciprocal key. |
| [π] | : π key. |
| [[(] [)]] | : Parenthesis key. |
| [log] | : Common logarithm key. |
| [10 ^x] | : Common exponential key. |
| [ln] | : Natural logarithm key. |
| [e ^x] | : Natural exponential key. |

[x↔y]	: Display and Y register exchange key.
[x!]	: Factorial key.
[y ^x]	: Involution key.
[$\sqrt[y]{x}$]	: Anti-involution key.
[°'"/→]	: Degree-minute-second to degree key.
[→°'"/]	: Degree to Degree-minute-second key.
[F]	: Double function key. (Push twice to clear double function)
[Mode]	: DEG, RAD, GRAD mode select key.
[Σ Mode]	: Statistical mode select key.
[tan] (tan ⁻¹)	: Tangent (arc tangent) key.
[cos] (cos ⁻¹)	: Cosine (arc cosine) key.
[sin] (sin ⁻¹)	: Sine (arc sine) key.
[HYP]	: Hyperbolic function key.
[INV]	: Inverse function key. (Push twice to clear the inverse function)
[nPr]	: Permutation key.
[nCr]	: Combination key.
[P→R]	: Polar coordinate to rectangular coordinate key.
[R→P]	: Rectangular to polar coordinate key.
[D→R]	: Degree to radian key.
[R→G]	: Radian to grad key.
[G→D]	: Grad to degree key.
[R→D]	: Radian to degree key.
[G→R]	: Grad to radian key.
[D→G]	: Degree to grad key.
[INT]	: Keep the integer, omit the fraction key.
[FRAC]	: Keep the fraction, omit the integer key.

STATISTICAL FUNCTION:

When in statistical mode, parenthesis calculation is ignored, [(,)] are equal to [Σout], [DATA/DEL] respectively. Data input operation [numeral key] [DATA/DEL]

Result operation: [Σ out] [Statistical function key]

[DATA/DEL]: Data input or data delete key.

[Σ out]: Data output key.

[σ]: Standard deviation key.

$$\sigma = \sqrt{\frac{\sum_{i=1}^n X_i^2 - \bar{X} \sum_{i=1}^n X_i}{(n-1)}}$$

[∇] : Variance key.

$$V = \left(\sum_{i=1}^n X_i^2 - \bar{X} \sum_{i=1}^n X_i \right) / n$$

[\bar{X}] : Mean value key.

$$\bar{X} = \sum_{i=1}^n X_i / n$$

[Σx] : Sum key.

$$\sum X = \sum_{i=1}^n X_i$$

[Σx²] : Sum of square key.

$$\sum X^2 = \sum_{i=1}^n X_i^2$$

[n] : Item key.

Standard distribution key

$$[P(X)] : P(X) = \frac{1}{\sqrt{2\pi}} \int_{-\infty}^x e^{-(t^2/2)} dt$$

$$[Q(X)] : Q(X) = \frac{1}{\sqrt{2\pi}} \int_0^x e^{-(t^2/2)} dt$$

$$[R(X)] : R(X) = \frac{1}{\sqrt{2\pi}} \int_x^{\infty} e^{-(t^2/2)} dt$$

CALCULATION RANGE:

The following table provides a summary of the data which fall within the permitted range of the specific function.

Function	Range
10^x	$ x < 107$
e^x	$ x < 107 \cdot \ln 10$
$\log x$	$0 < x < 10^{107}$
$\ln x$	$0 < x < 10^{107}$
y^x	$0 \leq x < 107$ $0 \leq y < 10^{107}$
$\sqrt[x]{y}$	$0 \leq x \cdot \ln y < 107 \cdot \ln 10$ $0 < x < 10^{107}$ $0 \leq y < 10^{107}$
$x!$	$0 \leq \frac{1}{x} \cdot \ln y < 107 \cdot \ln 10$ $0 \leq x \leq 73$
$\sin x$	$ x < 2880^\circ$
$\cos x$	$ x < 2880^\circ$

Function

Range

$\tan x$	$ x < 2880^\circ, x \neq 90^\circ \times (2N-1)$
$\sin^{-1} x$	$ x \leq 1$
$\cos^{-1} x$	$ x \leq 1$
$\tan^{-1} x$	All range
$\sinh x$	$ x \leq 107 \cdot \ln 10$
$\cosh x$	$ x \leq 107 \cdot \ln 10$
$\tanh x$	All range
$\sinh^{-1} x$	All range
$\cosh^{-1} x$	$1 \leq x < 10^{107}$
$\tanh^{-1} x$	$ x < 1$
statistical function	$0 \leq x < \sqrt{10} \cdot 10^{53}$ $2 \leq n \leq 99$ $\Sigma x^2 < 10^{107}$
P→R	$ \theta < 2880^\circ$ $ r < 10^{107}$
R→P	$\sqrt{x^2 + y^2} < 10^{107}$
nPr	$0 \leq r \leq n \leq 99$
nCr	$0 \leq r \leq n \leq 99$

NOTATION AND SYMBOL:

1. Notation:

- Floating point notation:
-1234567890.
- Scientific notation ($-1.2345678 \times 10^{-12}$)
-1.2345678 -12
- Change notation ($1.234567898 \times 10^{12}$)
1234567898

Notes that there is no decimal point display on CN mode.

2. Symbol:

- : Negative sign.
- F : Flag indicator.
- INV or 2ND : Inverse function indicator.
- HYP : Hyperbolic function indicator.
- DEG : Degree mode indicator.
- RAD : Radian mode indicator.
- GRAD : Grad mode indicator.
- Σ : Statistical mode indicator.
- Σ OUT : Result of statistical operation.
- Exp or X10 : Exponent indicator.
- M : Memory in use sign.
- E : Error sign.

CALCULATION EXAMPLES:

1. Mixed calculation:

$$2 \times 8 - \frac{(3 + 5) \times 4 - 6 \times 7}{4.3 - 1.8} = 20$$

Sequence	Display	Symbol
3 [+]	32.	M
5 [x]	42.	M
4 [=]	2.5	M
[M+]	-10.	M
6 [x]	- 4.	M
7 [=]	4.	M
[INV] [M-]	16.	M
4.3 [-]	20.	M
1.8 [=]		
[÷] [M _C ^R]		
[x+y] [=]		
[+/-] [MS]		
2[x]		
8 [=]		
[M+] [M _C ^R]		

2. Constant and repeat calculation:

- $7 + 5 + 5 + 5 = 22$
- $2 + 3 = 5$
 $4 + 3 = 7$
- $4 \times 5 = 20$
 $4 \times 6 = 24$
- $12 \div 3 = 4$
 $18 \div 3 = 6$

Sequence	Display
a. 7 [+]	12.
5 [=]	17.
[=]	22.
b. 2 [+]	5.
3 [=]	7.
4 [=]	20.
c. 4 [x]	24.
5 [=]	4.
6 [=]	6.
d. 12 [÷]	
3 [=]	
18 [=]	

3. Scientific notation calculation and change notation operation:

$$(72.5 \times 10^{20} + 1.75 \times 10^{20}) \div (-4.7 \times 10^{-11})$$

$$= -1.579787234 \times 10^{32}$$

Sequence	Display
72.5 [EXP] 20 [+]	7.25 21 EXP
1.75 [EXP] 20 [÷]	7.425 21 EXP
4.7 [+/ -] [EXP] 11 [+/ -]	-4.7 -11 EXP
[=]	-1.5797872 32 EXP
[INV] [CN]	-1579787234

4. Parenthesis calculation:

$$2 + [3 \times (16 + 2)] = 56$$

Sequence	Display
2 [+]	2.
[[(] 3 [x]	3.
[[(] 16 [+] 2 [)]]	18.
[)]]	54.
[=]	56.

5. Factorial calculation:

$$27! = 1.0888869 \times 10^{28}$$

Sequence	Display
27 [INV] [x!]	27. INV
	1.0888869 28 EXP

6. Basic slide rule function:

- $\sqrt{3^2 + 4^2} = 5$
- $\frac{1}{\frac{1}{2.5} + \frac{1}{3.4}} = 1.440677966$
- $\sqrt{-3} = ?$

Sequence	Display
a. 3 [INV] [x ²] [+]	9.
4 [INV] [x ²] [=]	25.
[√x]	5.
b. 2.5 [1/x] [+]	0.4
3.4 [1/x] [=]	0.694117647
[1/x]	1.440677966
c. 3 [+/ -]	-3.
[√x]	E.

7. Logarithm and exponential calculation:

- $\log 0.02 = -1.698970004$
- $\ln (50/3) = 2.813410717$
- $e^{2.5} = 12.18249396$
- $7^{10} = 282475249.$
- $\sqrt[3]{56} = 2.23685383$

Sequence	Display
a. 0.02 [log]	-1.698970004
b. 50 [÷] 3 [=] [ln]	2.813410717
c. 2.5 [INV] [e ^x]	12.18249396
d. 7 [y ^x] 10 [=]	282475249.
e. 56 [INV] [√x] 5 [=]	2.23685383

8. Trigonometric calculation & DMS – degree operation

- a. $\cos 50^\circ = 0.6427876097$
- b. $\tan \frac{\pi}{5} \times \sqrt{5} = 1.624598481$
- c. $\sin 30^\circ 30' 30'' = 0.5076636765$
- d. $\sin^{-1} 0.357 = 20^\circ 54' 58''$
- e. $\cos^{-1} 0.5 = 66.66666667$ grads

Sequence	Display	Symbol
a. 50 [COS]	0.6427876097	DEG
b. [MODE] [INV] [π] [÷] 5 [=]	0.6283185307	RAD
[tan]	0.726542528	RAD
[x] 5 [\sqrt{x}] [=]	1.624598481	RAD
c. [MODE] [MODE] 30. 30 30 [o' " →]	30.50833333	DEG
[sin]	0.5076636765	DEG
d. 0.357 [INV] [sin] [INV] [→o' "]	20.91606965	DEG
20.5458	DEG	
e. [MODE] [MODE] 0.5 [INV] [cos]	0	GRAD
66.66666667	GRAD	

9. Hyperbolic function calculation:

- a. $\sinh 4 = 27.2899172$
- b. $\cosh^{-1} 30 + \cosh^{-1} 40 = 8.47593702$

Sequence	Display	Symbol
a. 4 [HYP]	4.	HYP
[sin]	27.2899172	DEG
b. 30[INV] [HYP] [COS] [+]	4.09406667	DEG
40[INV] [HYP] [COS] [=]	8.47593702	DEG

10. Combination and permutation:

- a. ${}^6C_2 = 15$
- b. ${}^8C_3 \times {}^6P_4 = 20160$

Sequence	Display	Symbol
a. 6 [INV] [nCr]	6.	
2 [=]	15.	
b. 8[INV] [nCr] 3[=] [MS] 56.		M
6[INV] [nPr] 4[=]	360.	M
[x] [M_C^R] [=]	20160.	M

11. Polar to rectangular and rectangular to polar coordinate exchange calculation:

$$\begin{aligned}
 x \text{ [R} \rightarrow \text{P]} \ y \text{ [=]} & \quad r = \sqrt{x^2 + y^2} \\
 [x \leftrightarrow y] & \quad \theta = \tan^{-1} \cdot y/x \\
 r \text{ [P} \rightarrow \text{R]} \ \theta \text{ [=]} & \quad x = r \cos \theta \\
 [x \leftrightarrow y] & \quad y = r \sin \theta
 \end{aligned}$$

- a. $(x, y) = (3, 1) \rightarrow (r, \theta) = (3.16227766, 18.4349488^\circ)$
- b. $(r, \theta) = (5, 30^\circ) \rightarrow (x, y) = (4.33012702, 2.5)$

Sequence	Display	Symbol
a. 3[INV] [R → P] 1 [=]	3.16227766	DEG
[X ↔ Y]	18.4349488	DEG
b. 5 [INV] [P → R] 30 [=]	4.33012702	DEG
[X ↔ Y]	2.5	DEG

12. Double function:

- a. $30^\circ = 0.5235987756$ radians
- b. 60 grads = 54°
- c. Integer of $\tan 75^\circ = 3$

Sequence	Display
a. 30 [F] [D→R]	0.5235987756
b. 60 [F] [G→D]	54
c. 75 [tan] [F] [INT]	3.

13. Statistical Function:

Press [INV] [ΣMODE], a "Σ" indicator appears in the display indicating that you are operating in the statistical mode.

Data input operation: [data key] [DATA/DEL]

Result operation: [Σ out] [N] (N = 1 to 9 or CE/C)

[Σ out] [1]: (standard deviation)

$$\sigma = \sqrt{\frac{1}{n-1} \left(\sum_{i=1}^n x_i^2 - \bar{x} \sum_{i=1}^n x_i \right)}$$

[Σ out] [2]: (variance)

$$V = \frac{1}{n} \left(\sum_{i=1}^n x_i^2 - \bar{x} \sum_{i=1}^n x_i \right)$$

[Σ out] [3]: (mean value)

$$\bar{x} = \frac{1}{n} \sum_{i=1}^n x_i$$

[Σ out] [4]: (sum)

$$\sum x = \sum_{i=1}^n x_i$$

[Σ out] [5]: (sum of squares)

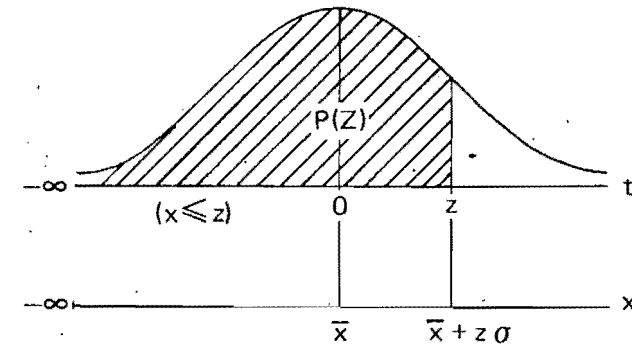
$$\sum x^2 = \sum_{i=1}^n x_i^2$$

[Σ out] [6]: (total items)

n

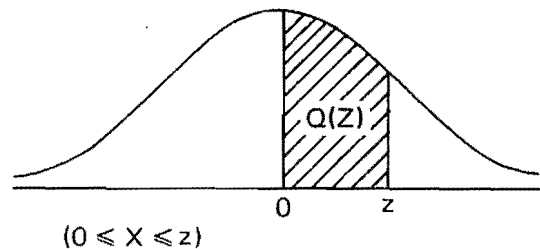
[Σ out] [7]:

$$P(Z) = \frac{1}{\sqrt{2\pi}} \int_{-\infty}^z e^{-\frac{t^2}{2}} dt$$



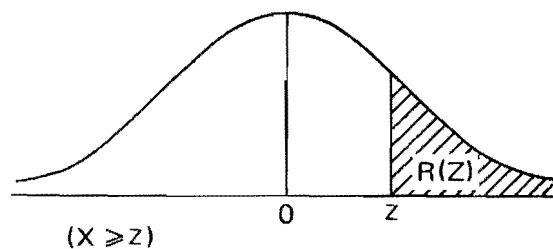
[Σ out] [8]

$$Q(Z) = \frac{1}{\sqrt{2\pi}} \int_0^z e^{-\frac{t^2}{2}} dt$$



[Σ out] [9]

$$R(Z) = \frac{1}{\sqrt{2\pi}} \int_z^{\infty} e^{-\frac{t^2}{2}} dt$$



[Σ out] [CE/C]: Clear register of statistical calculation.

(1) Find the total items, sum of squares, sum, mean value, variance and standard deviation of the following numbers: 2, 4, 7, 8.

total items	n = 4
sum of squares	Σx ² = 133
sum	Σx = 21
mean value	\bar{x} = 5.25
variance	V = 5.6875
standard deviation	σ = 2.753785273

Sequence

Display

[INV] [ΣMODE]		
2 [DATA/DEL]	2.	
3 [DATA/DEL]	3.	(mistaken data input)
3 [INV] [DATA/DEL]	3.	(delete mistaken data)
4 [DATA/DEL]	4.	
7 [DATA/DEL]	7.	
8 [DATA/DEL]	8.	
[Σ out] [n]	4.	
[Σ out] [Σx ²]	133.	
[Σ out] [Σx]	21.	
[Σ out] [\bar{x}]	5.25	
[Σ out] [V]	5.6875	
[Σ out] [σ]	2.753785273	

(2) Given the following 2 values, find P(Z) Q(Z) and R(Z) for each.

2 Values -1.5
 0.15

Sequence	Display	Symbol
[INV] [Σ MODE]		Σ
1.5 [+/-] [MS]	-1.5	Σ, M
[Σ out] [P]	0.06681	Σ, M
$[M_C^R]$	-1.5	Σ, M
[Σ out] [Q]	-0.43318	Σ, M
$[M_C^R]$	-1.5	Σ, M
[Σ out] [R]	0.93318	Σ, M
0.15 [MS]	0.15	Σ, M
[Σ out] [P]	0.55962	Σ, M
$[M_C^R]$	0.15	Σ, M
[Σ out] [Q]	0.05962	Σ, M
$[M_C^R]$	0.15	Σ, M
[Σ out] [R]	0.44037	Σ, M

APPLICATIONS:

1. **Business** — What is the future value if \$1,000 is invested compounded annually at a rate of 6% for 7 years.

$$\begin{aligned} FV &= PV (1 + i)^n \\ &= 1000 (1 + 0.06)^7 \\ &= 1503.63026 \end{aligned}$$

Sequence	Display
1000 [x]	1000.
[(] [(] 1 [+]	1.
0.06 [)]]	1.06
[Y ^x] 7 [)]]	1.50363026
[=]	1503.63026

2. **Statistics** — If the average value of occurrence of an event during time interval T is 2.5, find the probability of 5 occurrence during T.

$$\begin{aligned} P(a) &= e^{-m} (m^a/a!) \\ P(5) &= e^{-2.5} [(2.5)^5/5!] \\ &= 0.0668009429 \end{aligned}$$

Sequence	Display
2.5 [+/-]	-2.5
[INV] [e ^x] [x]	0.0820849986
[(] 2.5 [Y ^x] 5 [÷]	97.65625
5 [INV] [X!]	120
[)]]	0.8138020833
[=]	0.0668009429

3. Physics

Thrown object — If a ball is thrown upward with a velocity of 75 feet per second, what is its velocity and height at the end of 1.6 second?

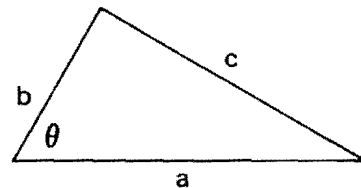
($g = 32.2 \text{ ft/sec}^2$).

$$\begin{aligned} \text{Velocity: } V &= V_0 - gt \\ &= 75 - (32.2 \times 1.6) \\ &= 23.48 \text{ ft/sec} \end{aligned}$$

$$\begin{aligned} \text{Height: } S &= V_0 t - \frac{1}{2}gt^2 \\ &= (75 \times 1.6) - [\frac{1}{2} \times 32.2 \times (1.6)^2] \\ &= 78.784 \text{ ft} \end{aligned}$$

Sequence	Display
75 [—]	75.
[[(] 32.2 [x]	32.2
1.6 [)]]	51.52
[=]	23.48
75[x] 1.6 [—]	120.
[[(] 2 [1/x] [x] 32.2 [x]	16.1
1.6 [INV] [x ²] [)]]	41.216
[=]	78.784

4. Surveying



If $a = 6.2$, $b = 5.7$, $\theta = 57^\circ 31' 25''$, then $C = ?$

$$\begin{aligned} c &= \sqrt{a^2 + b^2 - 2ab \cos\theta} \\ &= \sqrt{(6.2)^2 + (5.7)^2 - 2 \times 6.2 \times 5.7 \cos(57^\circ 31' 25'')} \\ &= 5.742667678 \end{aligned}$$

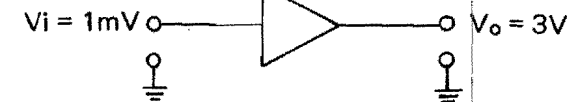
Sequence

Display

6.2 [INV] [x ²] [+]	38.44
5.7 [INV] [x ²] [-] [[(]	70.93
2 [x] 6.2 [x] 5.7 [x]	70.68
57.3125 [° ' " →]	57.52361111
[cos]	0.5369520081
[)]]	37.95176793
[=]	32.97823206
[√x]	5.742667678

5. Electrical engineering

a. Amplifier gain



What is A_v ?

$$\begin{aligned} \text{Voltage gain } AV &= 20 \log V_o / V_i \\ &= 20 \log \frac{3}{1 \times 10^{-3}} \\ &= 69.5424251 \end{aligned}$$

Sequence

Display

Symbol

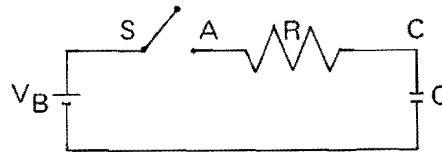
20 [x] [[(]	20.	
3 [÷] [EXP] 3 [+/-]	1. -03	EXP
[)]]	3000.	
[log]	3.477121255	
[=]	69.5424251	

- b. Parallel resistance — three resistors of 820 ohms, 470 ohms and 680 ohms are in parallel. What is the equivalent resistance?

$$\begin{aligned} R_{eq} &= \frac{1}{\frac{1}{R_1} + \frac{1}{R_2} + \frac{1}{R_3}} \\ &= \frac{1}{\frac{1}{820} + \frac{1}{470} + \frac{1}{680}} \\ &= 207.5653413 \end{aligned}$$

Sequence	Display	Symbol
820 [1/x] [+]	1.2195121-03	EXP
470 [1/x] [+]	3.3471717-03	EXP
680 [1/x] [+]	4.8177600-03	EXP
[1/x]	207.5653413	

- c. Electronic circuit example



Switch on at $t = 0$

if $V_B = 10V$, $R = 20K$, $C = 40\mu f$

then $V_C = ?$ $V_{ac} = ?$ at $t = 4$ sec.

$$\tau = RC = 20 \times 10^3 \times 40 \times 10^{-6} = 0.8$$

$$\begin{aligned} \tilde{V}_C &= V_B (1 - e^{-t/\tau}) \\ &= 10 \times (1 - e^{-4/0.8}) \\ &= 9.9 \end{aligned}$$

$$\begin{aligned} V_{ac} &= V_B e^{-t/\tau} \\ &= 10 \times e^{-4/0.8} \\ &= 0.06737947 \end{aligned}$$

Sequence	Display	Symbol
20[EXP]3[x]	20000.	
40[EXP]6[+/-]	40. -06	EXP
[=] [MS]	0.8	M
10[x] [[(] 1 [-]	1.	M
[[(] 4[+/-] [÷]	-4.	M
[M _C] [)]]	-5.	M
[INV] [e ^x] [MS]	6.737947 -03	EXP, M
[)]]	0.993262053	M
[=]	9.93262053	M
10[x] [M _C]	6.737947 -03	M
[=]	0.06737947	M

6. Statistics

A factory wants to produce a resistor of $120\Omega \pm 5\%$, ten arbitrary sample values are: 121, 124, 116, 114, 127, 119, 121, 118, 120, 124. How many products will not meet the 5% requirement?

Sequence	Display	Symbol
[INV] [MODE]	0	Σ
121[DATA]	121.	Σ
124[DATA]	124.	Σ
⋮	⋮	Σ
⋮	⋮	Σ
124[DATA]	124.	Σ
[Σ out] [x]	120.4	(mean value)
[Σ out] [σ]	3.921450978	(standard deviation)

Upper limit: $120 + 5\% = 126$

$$a_U = (126 - 120.4) \div 3.9214 = 1.4280$$

Lower limit: $120 - 5\% = 114$

$$a_L = (114 - 120.4) \div 3.9247 = -1.6320$$

Sequence	Display	Symbol
120 [x]	120.	Σ
1.05 [-]	126.	Σ
[Σ OUT] [\bar{x}] [\div]	5.6	Σ
[Σ OUT] [σ] [=]	1.428042841	Σ
[Σ OUT] [R]	0.07664	Σ
[MS]	0.0766	Σ, M
120 [x]	120.	Σ, M
0.95 [-]	114.	Σ, M
[Σ OUT] [\bar{x}] [\div]	-6.4	Σ, M
[Σ OUT] [σ] [=]	-1.632048962	Σ, M
[Σ OUT] [P]	0.05134	Σ, M
[M+] [MR]	0.12798	Σ, M

There will be 12.79% resistors beyond 5% tolerance.

TO THE CONSUMER

FULL 6 MONTHS WARRANTY

For 6 months from date of purchase APF will repair defects in material or workmanship, free of charge, which appear in the operation of this electronic calculator, unless caused by damage resulting from corrosive leakage of batteries or from the unreasonable use of this product.

To obtain service under this warranty, return this calculator to your Dealer with evidence of date of purchase, or return it directly to APF Service, prepaid with proof of purchase date.

The above warranty gives you specific legal rights, and you may also have other rights which vary from state to state.

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