

MxCalc SE

for Windows Mobile
(Smartphone)

Version 3.1.2
User Guide

Product of:-

3GR Technologies

For Installation information & Sales/Support contacts refer the Read Me file

Contents

1	Introduction.....	3
2	Installation/Unistallation.....	4
3	Components of the Main Screen.....	5
4	Key Mapping.....	8
5	Tips and Tricks.....	9
6	Mathematical Functions.....	10
7	Trigonometric Functions.....	11
8	Hyperbolic Functions.....	12
9	Statistical Functions.....	13
10	Financial Functions.....	14
10.1	Amortization.....	15
10.2	Loan.....	16
11	Unit Converter.....	17
12	MxCurrency.....	18
13	Matrix Calculator.....	19
14	Date and Time Converter.....	22
15	MxSolver.....	23
16	Base Converter.....	24
17	Tip Calculator.....	25
18	Preferences.....	26
19	Registration.....	27

1. Introduction.

MxCalcSE version 3.1.2 is a multi utility tool. It comes with a most comprehensive Unit Converter, Scientific Evaluator, Loan Calculator & Analyzer, Amortization table generator & newly introduced Finance Calculator.

v3.1.2

- Financial Calculator
- New MxLoan calculator with features like Compare loans, Save, Export etc.
- Smart LED – Allows to view & edit the expression easily, change settings etc.
- Finger operated menu & other operations.
- Multiple Memory registers.
- Numeric Display in Fix/Normal/Scientific.
- Removed error of Internet connection from MxCurrency while updating the currency.
- Easy navigation, data input and better Interface for Matrix, Statistics, Tip and UnitConverter.
- Faster loading of calculators.

2. Installation/Uninstallation

Requirements

- You need to have MS ActiveSync Software on your device and make sure your device is connecting with Desktop PC.
- **.Net Framework**

Download & install the .Net framework from the following link in case the system prompts for missing runtime files.

- **Smartphone (.Net Compact Framework)**

<http://www.microsoft.com/downloads/details.aspx?familyid=9655156b-356b-4a2c-857c-e62f50ae9a55&displaylang=en>

- **Desktop**

www.microsoft.com/downloads/details.aspx?FamilyId=10CC340B-F857-4A14-83F5-25634C3BF043 - 33k

Steps to Install MxCalc program.

- You need to have MS ActiveSync Software on your device and make sure your device is connecting with Desktop PC.
- ONLY IF prompted to install the .Net Compact Framework on your SmartPhone, check the NetCF option during installation. You can download the .Net Compact Framework runtime files from the following page <http://www.microsoft.com/downloads/details.aspx?familyid=9655156b-356b-4a2c-857c-e62f50ae9a55>
- When finished, go to Start Menu>>Program, here you will see the Icon of

'MxCalc'. 

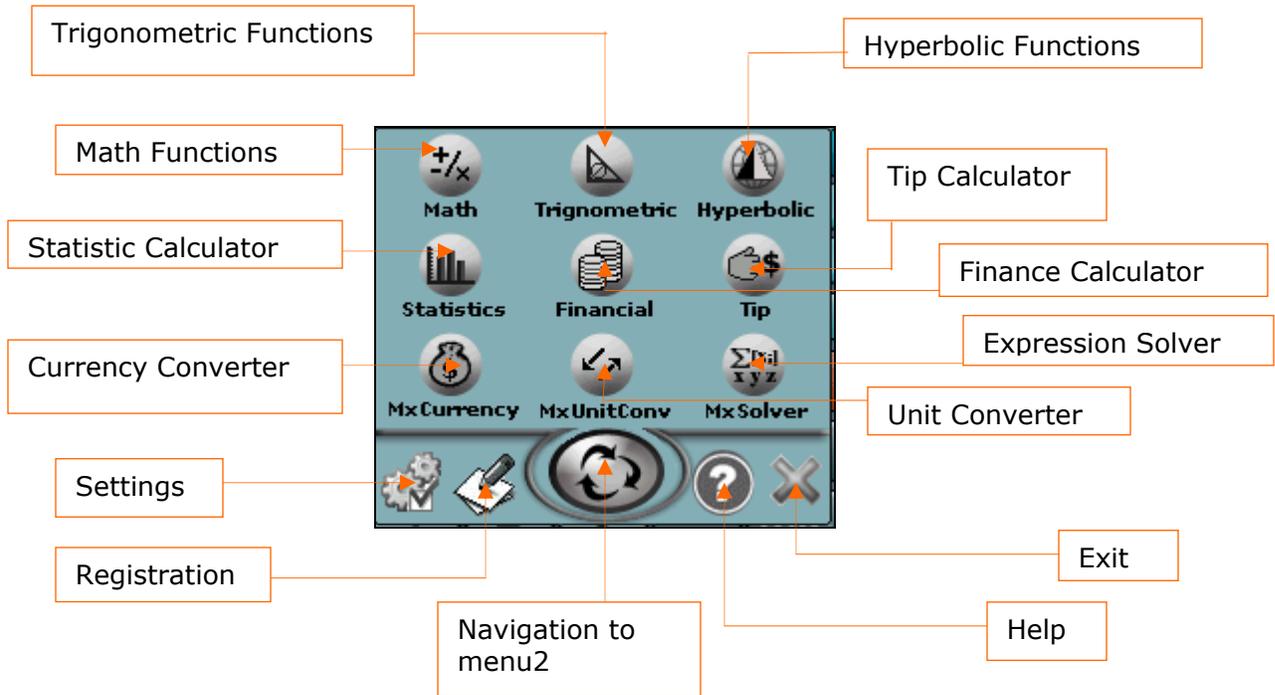
Steps to Uninstall MxCalc program.

To remove the product from your device:

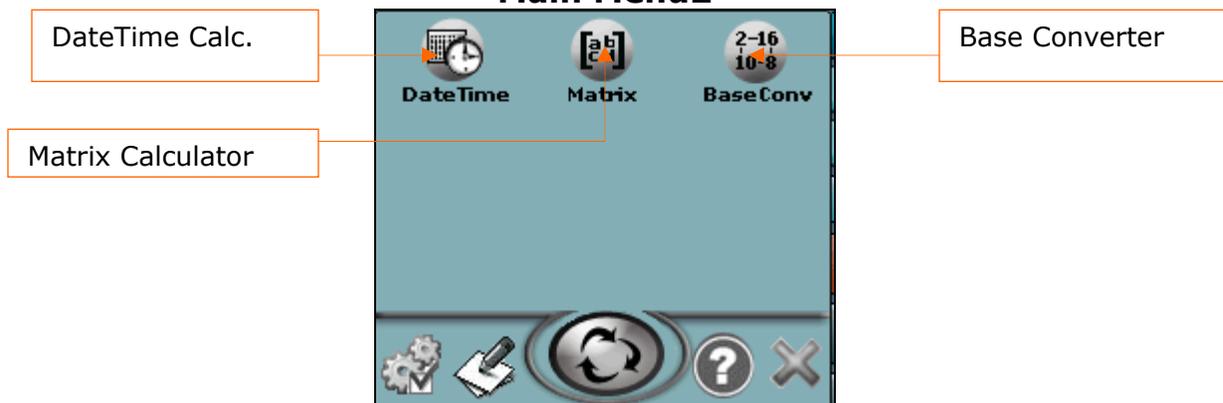
- Go to **Start menu >> Settings.**
- Select **Remove Programs.**
- Select MxCalcSE from the list.
- Click on **"Done"** to confirm removing.

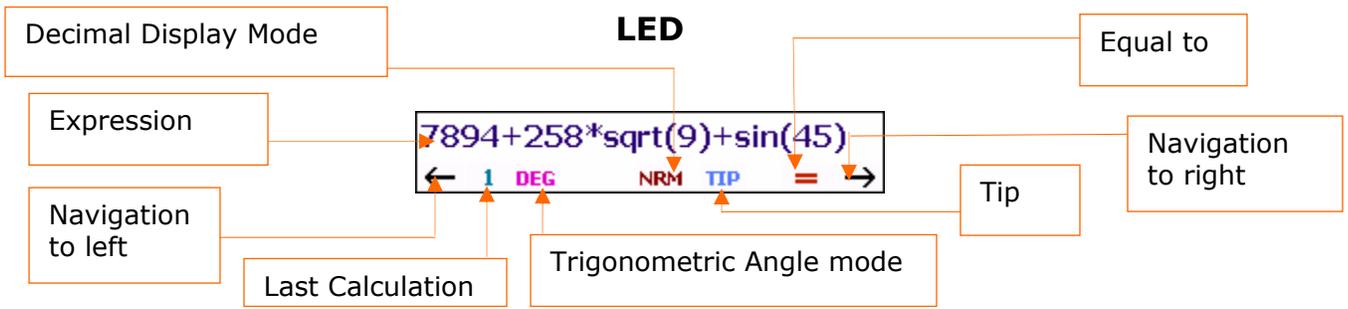
3. Components in the MxCalc main screen:

Main Menu1.

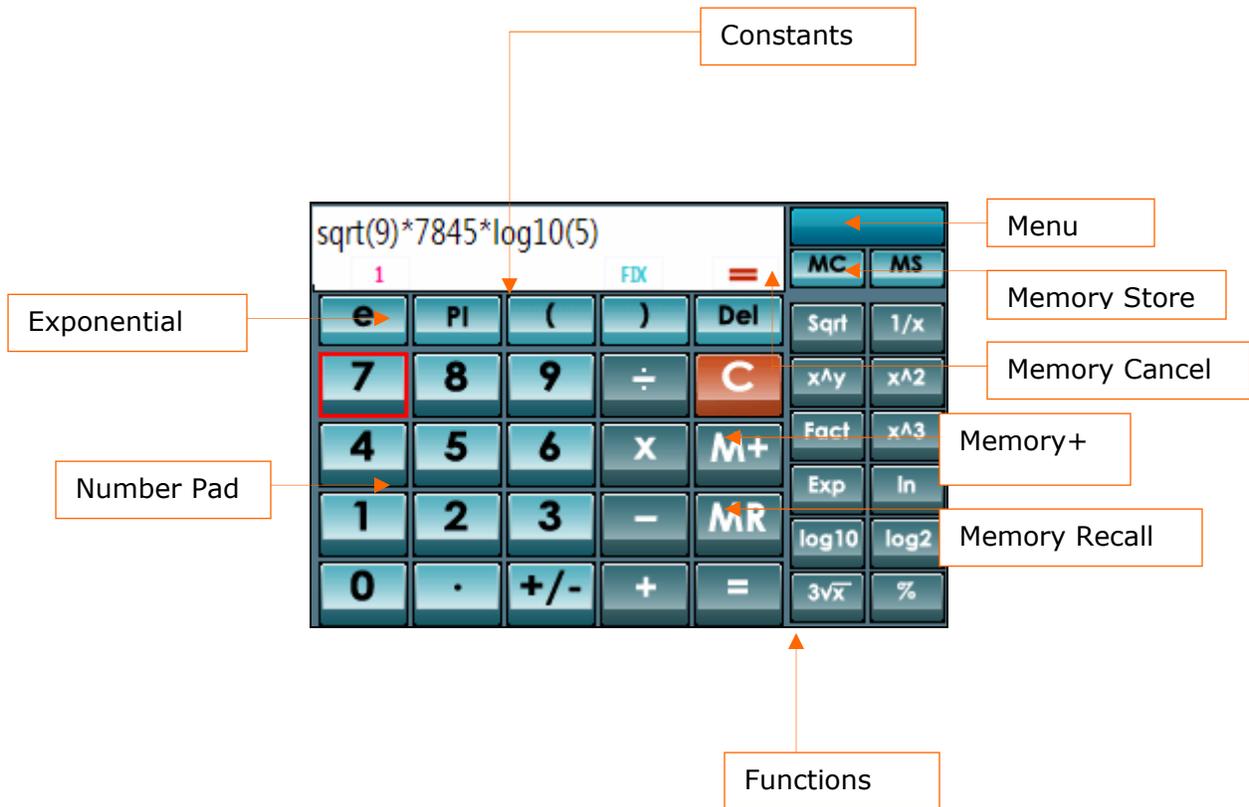


Main Menu2

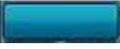




General Usage

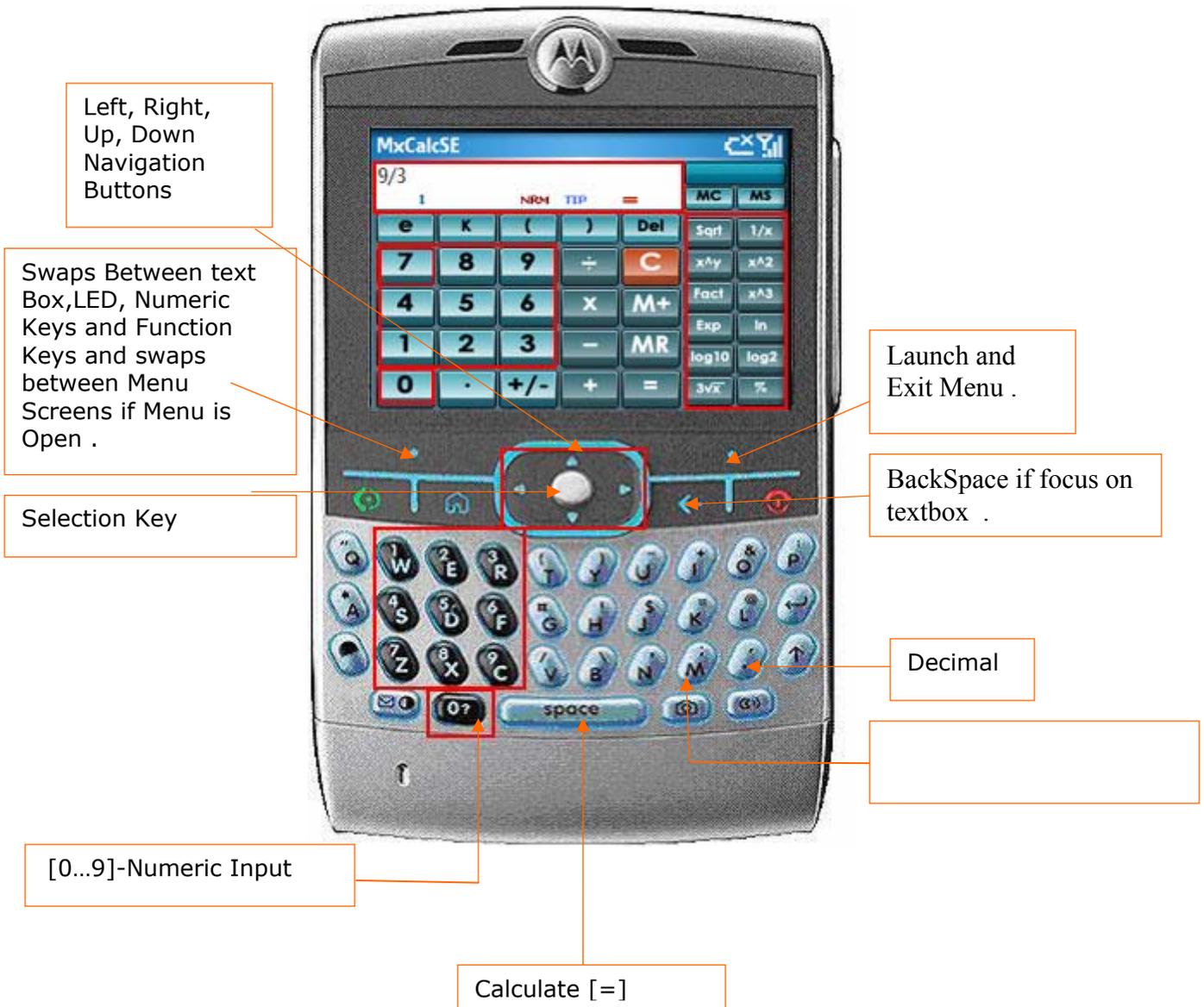


List of Buttons and their functions

<u>Buttons</u>	<u>Description</u>
 Menu	Tap on this button returns back to the main menu
 Memory Store	Tap on this button stores the result into the memory store variable
 Memory Cancel	Tap on this button clears the memory variable
 Memory Recall	Tap on this button displays the value in the memory variable on the LED
 C	Clears and resets the LED
 Del	Deletes the previous character

4. Key mapping for QWERTY keyboard

(MotoQ, Samsung Blackjack, T-Mobile Dash etc.)



List of Keys and their functions

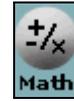
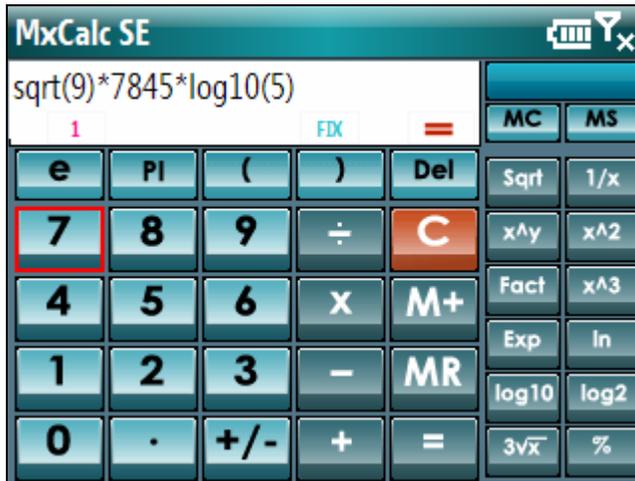
Keys	Functions
Space Key	Equal to [=]
Left Soft Key	Swap focus between Text Box,LED , Numeric Keys and Function Keys. (Except in case of MxCurrency, Unit converter, DateTime Calculator, MxSolver,Tip.) or Swap between the Menu Screens if Menu is open .
Right Soft Key	Launch and Exit Menu.
Back Key	Returns to the previous screen.

5. Tips and Tricks

General

- Use the left soft key to change the focus between the Text Area, LED, Numeric Pad & the functions or Navigate between Menu Screens if Menu is Open.
- To hide the T9 Dictionary input mode press 'Alt' key & then Space Bar. Select ABC from the list.

6. Mathematical Functions



- Select **Math** from the menu.

Basic Arithmetic calculations are carried out in a similar manner as in the simple calculators.

Functions:

- **Sqrt**- Returns the square root of number
- **1/x** - Returns the inverse of a number
- **X^y** - Returns the yth power of the number.
- **x²** - Returns the square of a number
- **Fact** - Returns the factorial of a nonnegative number
- **x³** - Returns the cube of a number
- **Exp** - Returns e to the power of the number.
- **In** - Returns the logarithm of a number to the natural base 'e'.
- **log10** - Returns the logarithm of a number to the base 10.
- **log2** - Returns the logarithm of a number to the base 2.
- **3√x** - Returns cube root of the number.
- **%**- Returns Percentage.

Example:-

Following are the steps to calculate the square root of a no.

- Tap on the Sqrt button.
- Enter the no.
- Close the bracket
- Tap on the = button

The result will be displayed on the right side corner.

7. Trigonometric Functions:



- Select [Trigonometric](#)



from the menu.

Functions:

- **Sin** - Returns the sine of the given angle.
- **Cos** - Returns the cosine of the given angle
- **Tan** - Returns the tangent of the given angle.
- **Cot** - Returns the cotangent of the given angle.
- **Sec** - Returns the secant of the given angle.
- **Cosec** - Returns the cosecant of the given angle.
- **Sin⁻¹** Returns the arcsine of the given number.
- **Cos⁻¹** - Returns the inverse hyperbolic cosine of any real number. Number must be Greater than or equal to 1
- **Tan⁻¹** - Returns the arctangent of a number. The arctangent is the angle whose tangent is number.
- **Cot⁻¹** - Returns the arc cotangent of a number. The arc cotangent is the angle whose tangent is number.
- **Sec⁻¹** - Returns the arc secant of the given angle.
- **Csc⁻¹**- Returns the arc cosecant of the given angle.

The steps in calculating are similar to the Arithmetic functions.

8. Hyperbolic Functions:



- Select **Hyperbolic** from the menu.

Functions:

- **Sinh** - Returns the hyperbolic sine of a real number.
- **Cosh** - Returns the hyperbolic cosine of a real number
- **Tanh** - Returns the hyperbolic tangent of a real number
- **Sech** - Returns the hyperbolic secant of the given angle.
- **Csch** - Returns the hyperbolic cosecant of the given angle.
- **Coth** - Returns the cotangent of the given
- **Sinh⁻¹** - Returns the inverse hyperbolic sine of a real number.
- **Cosh⁻¹** - Returns the inverse hyperbolic cosine of a number. Number must be greater than or equal to 1.
- **Tanh⁻¹** - Returns the inverse hyperbolic tangent of a number. Number must be between - 1 and 1 (excluding - 1 and 1).
- **Coth⁻¹** - Returns the arc cotangent of a number.
- **Sech⁻¹** - Returns the arc secant of the given angle
- **Csch⁻¹** - Returns the arc cosecant of the given angle.

Steps involved in calculation are same as the arithmetic functions.

9. Statistics Functions:

MxCalc SE	
MxCalcSE Statistics	
N :5	
0	1.2
1	30
2	1.67
3	44
4	56.23
Data Size	Back

MxCalc SE	
sd(X)*dsq(X)+min(X)	
1	FIX =
e	PI
7	8
4	5
1	2
0	.
Del	MC
C	MS
M+	SD
MR	ΣX
=	DSQ
	!
	nPr
	DATA
	MIN
	AVD
	nCr
	SHIFT
	,



➤ Select **Statistics** from the menu.

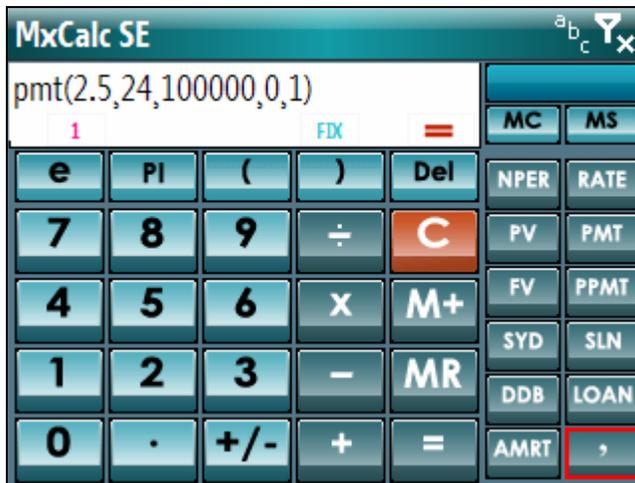
➤ To see more functions Tap on Shift **SHIFT** button

➤ Enter the data from the Data input area ('Data' button).

Functions:

- **SD**: Standard deviation.
- **X**: The mean (arithmetic average) of all the values of data.
- **ΣX**: sum of all the values of data.
- **AVD**: average of the absolute deviations of all the values of data.
- **DSQ**: sum of squares of deviations of all the values of data
- **MIN**: minimum of all the values.
- **!**: Computes the Factorial
- **nCr**: Compute the number of combination.
- **nPr**: Compute the number of permutations
- **SSD**: Sample standard deviation.
- **Median**: The median of (the number in the middle) all the values of data.
- **ΣX²**: sum of the squares of all the values of data.
- **MD**: repetitive value in all the values of data.
- **GM**: Geometric mean
- **MAX**: Maximum of all the values.
- **N**: Total number of values of data.
- **N (z)**: Standard normal cumulative distribution.
- **z**: Inverse of Standard normal cumulative distribution.

10. Financial Functions:



- Select **Financial** from the menu.

Functions:

- **NPER** - Calculates number of periods of an investment based on periodic constant payments and a constant interest rate.
- **RATE** The annual interest rate.
- **PV** The present value
- **FV** The future value
- **PMT** The payment made each period
- **PPMT** - Calculates the principal payment for a given period of an annuity based on periodic fixed payments and a fixed interest rate.
- **SYD** - Calculates the sum-of-years digits depreciation of an asset for a specified period.
- **SLN** - Straight-line depreciation.
- **DDB** -Double-declining-balance depreciation method.
- **Comma separator (,)** – It is used to separate parameters. As the values are entered the parameters in the Tip gets highlighted.

10.1. Amortization:

Field	Value	Field	Value
Loan	1000	Term	40
Periods	100	APR	30
Escrow	60	Princi	5500

Buttons: Edit | Calculate

- Launch Amort Calc by tapping **AMRT** button  in **Finance module**.
- Enter all the mandatory Inputs.
- Then tap on **Calculate**.

Functions:

- **Loan amt:** Loan Amount
- **Term:** # of years
- **Periods:** It can be weekly, bi-weekly, 2/month, monthly, Quarterly, 2/year or yearly. E.g. Enter 12 in case of months and 4 in case of quarterly payments.
- **APR:** Annual Percentage Rate
- **Escrow:** Money placed with a third party for safekeeping either for final closing on a property or for payment of taxes and insurance throughout the year, an item of value, money, or documents deposited with a third party to be delivered upon the fulfillment of a condition. For example, the earnest money deposit is put into escrow until delivered to the seller when the transaction is closed.
- **Princi:** You can choose to add extra principal payments.
- After tapping on Calculate it will show the details of the amortization.

10.2. Loan:

MxCalc SE abc

Principal 5000

Interest Rate 2

No Of Years 1

Edit | Calculator

- Launch Loan module by tapping **Loan** button  in **Finance module**.
- After entering all inputs, tap on Calculate button as shown in Fig (a).

Functions:

- **Principal** – Principal amount
- **Interest Rate** - Interest rate in percent
- **No. Of years** – Number of years.
- **Mth**- Month
- **Bal** - Balance
- **TowardsPrinci** – Towards Principal
- **PrinciPd**- Principal paid
- **IntPd**- Interest Paid

MxCalc SE abc

	Mth	Bal	TowardsPri	PrinciPd	In
▶	1	4587.14	412.86	412.86	8.
	2	4173.6	826.4	413.54	7.
	3	3759.37	1240.63	414.23	6.

Monthly Payment 421.19

Total Interest 54.34

Edit | Calculator

11. Unit Converter:



- Select [MxUnitConv](#)



from the menu.

This module of unit converter offers a very comprehensive collection of properties with respective units. A very useful utility to Convert Values from one unit to another. Following are the steps for Converting Values.

- Choose a property from the list.
- Enter the value and choose a unit from the 'From Value'.
- Choose a unit from the 'To Value' and see the conversion.

12. MxCurrency:



	USD	EUR	JPY
1		0.642	104.23
1.558		1	162.352
0.012		0.008	1.23
2.57		1.65	267.812
1		0.642	104.23
Update Currency			
Clear		Menu	

- Select **MxCurrency**  from the menu.
- Select the Currency and enter the value in the Text boxes available below that. The last box will show the summation of all the values. The 3 textboxes at the bottom is to show the factors for the currencies converted.

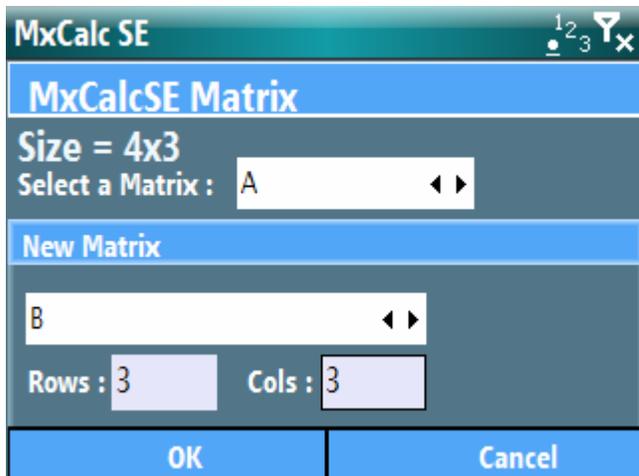
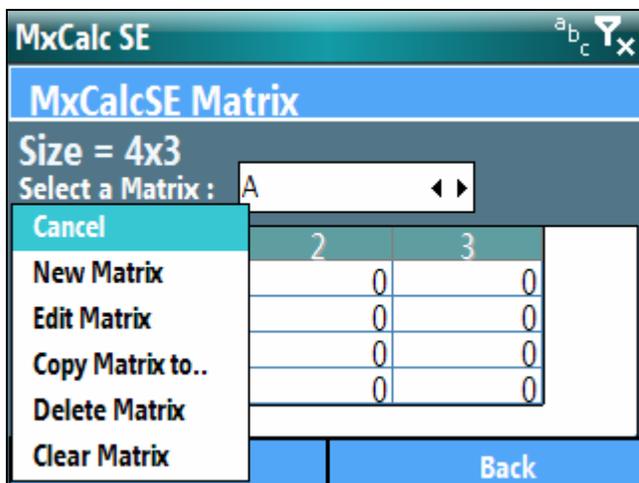
Update Currency Values



	USD	EUR	JPY
Updating Currency Values..			
			
0	0		0
1		0.632	101.05
Update Currency			
Clear		Menu	

- Click on the update to get the current currencies conversion factors.
- The last updated date and time can be found by clicking on Update Currency.

13. Matrix Calculator:



➤ Select **Matrix**  from the menu. You can perform matrix calculations such as Determinant, Adjoint, Transpose, Eigenvalue, Eigenvector etc.

➤ **How to create a new matrix and enter data :**

1. From the Matrix Calculator main screen



tap on

2. Select Edit Menu...

4. Select New Matrix from Pop Up

5. Enter number of Row(s) and

Column(s)

6. Tap on 'OK' button

7. Enter value for each Elements

8. After that tap on  button to

return

main screen

➤ **How to use matrix functions:** If you want to use simple operators for matrix as (+, -, ÷, ×)

1. Select first matrix from matrix list by tapping on '[']

2. Select operator (+, -, ÷, ×)

3. Select second Matrix

4. the tap on '=' button

5. you can see the resultant matrix or see the result by

clicking on 

6. To view [ANS] just tap on select matrix button and choose Edit Matrix.

➤ The matrix calculator has the following functions

• We use two matrices for example
Matrix: [A] Matrix :[B]

1	2	5	1
5	3	1	2

2	4	2	3
---	---	---	---

MxCalc SE

MxCalcSE Matrix

Size = 3x3

Select a Matrix : **B**

	1	2	3
1	4	11	0
2	0	0	0
3	0	0	77

Edit Matrix Back

MxCalc SE

[B]+[C]

1 FIX = MC MS

Size = 3x3

	1	2	3
1	5.2	13.5	4.5
2	8.9	8	7.8
3	1.28	23	84.5

OK

Descriptions

DET: Compute determinant of matrix

Ex: $DET([A]) = 56$
(square matrix only)

ADJ: Returns the adjoin of the specified matrix
Ex: $ADJ([A]) = [ANS]$

2	16	-13
-8	-8	24
14	0	-7

TRANS: Returns the transpose of the specified matrix
Ex: $TRA([A]) = [ANS]$

1	5	2
2	3	4
5	1	2

INV: Invert a matrix
(square matrix only)
Ex: $INV([A]) = [ANS]$

0.04	0.29	-0.23
-0.14	-0.14	0.43
0.25	0	-0.12

EIGV: Compute the eigenvectors of Specified matrix.
Ex: $EIGV([A]) = [ANS]$

0.55	-0.95	-0.33
-0.62	0.58	0.86
-0.56	0.33	-0.64

EIGL: Compute the eigenvalues of specified matrix.

8.36
-1.18

RANK: Returns the rank of the specified matrix

Ex: RANK([VA]) = 3

FNRM: Returns the Forbenius Norm of the specified matrix

Ex: FNRM([A]) = [ANS]
9.43398113205661

SOLVE:
Solves a linear system
 $AX = B$,
return the X matrix

-0.09	2	5
0.86	3	1
-0.13	4	2

Ex:
SOLV([A],[B])
= [ANS]

14. Date and Time Calculator:

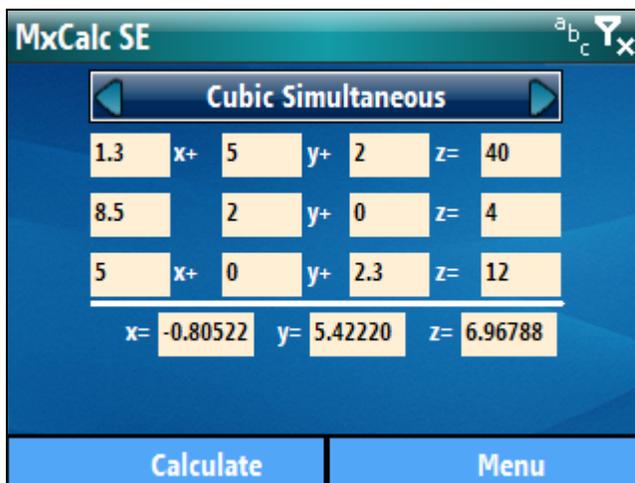


- Select **Date-Time**  from the menu.
- Here you can perform both date and time calculations
- Date will be shown in US or European style depending on your settings in MxCalcSE Preferences.
- **To calculate date:** There are 3 rows in this module: From bar, Interval bar and To bar.
- Enter date time values in 2 out of 3 rows, the expected result will be shown in the third row by tapping on the calculate button at the end of each row .
- **Examples:** To calculate the Interval between 05/17/2008 at 16h: 21m: 16s and 05/12/2008 at 0h: 12m: 7s. Please follow the below steps.
 - 1. Enter 05/17/2008 and 16:21:16 in edit box of From row
 - 2. Enter 05/12/2008 and 0:12:7 in edit box of To row
 - 3. Tap on Calc button  on Interval Bar then you will see the result of 5d-16h-9m-9s in the box.
- **To calculate by number of days**
- This calculator allows calculating in number of days, hours, minutes or even seconds.
- There are 3 rows in this calculator: From row, Interval row and To row.
- Enter time values in 2 out of 3 rows, the expected result will be shown in the third row by tapping on button at the end of each row.
- To shift from date Calculator to

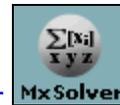
Time Calculator, please tap on  button.

- **Examples:** To calculate the interval between (45d 4h 8m 45s) and (50d 0h 48m 57s), please follow steps as below:
 1. Enter 45d 4h 8m 45s in the From rows edit box
 2. Enter 50 d 0h 48m 57s in the To rows edit box
 3. Tap on Calc button on Interval row i.e. the middle row , You will have the result of 4d 20h 40m 12s.

15. MxSolver:



- This module allows users to calculate quadratic equation, quadratic simultaneous equations and cubic simultaneous equations with the exact results.



- Select **MxSolver** from the menu.
- **How to calculate:** Enter equations along with the variable you wish to solve it for and tap on the calculate button.
- **Examples:** You want to solve a cubic simultaneous equation like this: $x^2 + 5x + 6 = 0$
- 1. Choose mode "Quadratic Equation" by tapping on 
- 2. Enter the number
- 3. Solve it! Tap on Calculate
- To clear all values, please tap on Clear.

16. Base Converter:



- The Base conversion module supports binary, octal, decimal, and hexadecimal number systems. This module supports integer arithmetic only.
- 
- Select **Base Conv** from the menu
 - **To calculate:**
 1. Select base mode
 2. Select word length (i.e. 8/16 or 32 bit)
 3. Enter first number
 4. Select operator (+, -, ÷, ×, AND, OR, Etc...)
 5. Enter second number
 6. Tap on '=' button then you will see the result at the second line of the LED.
 - When setting limitation to operand, values will be truncated to the selected number of bits for display, with leading zeroes added.
 - It is possible to convert or directly set word length on the LED simply by tapping on Base indicator or Word length indicator
 - To see more function please Tap on  button
 - Base Conversion supports functions as below:

Label Descriptions :

- and:** AND operation
- nand:** operation
- or:** operation
- nor:** operation
- xor:** operation
- mod:** Modulus operation
- lsh:** Shift Left operation
- rsh:** Shift Right operation
- lrt:** Rotate Left operation
- rrt:** Rotate Right operation
- not:** NOT operation
- cpl:** Two's complement operation.

17. Tip Calculator:

Bill Amount	5000
No. of Persons	3
Tip	2.4 %
Tax	5 %
Tip Amount	370.00
Total Per Person	1790.00
Total Amount	5370.00

Clear Menu

This module allows calculating Tip amount quickly. Its interface is very easy and convenient to use. It includes some features:

- Quickly itemize bills to split them fairly between friends.
- Easy to use interface.
- Use Tip Calculator to calculate the tip for: Servers, Bar tenders, Taxi driver etc



Select **Tip** from the menu.

- Enter values for parameters such as no. of person, Percentage to tip, tax amount and Bill amount.

For examples:

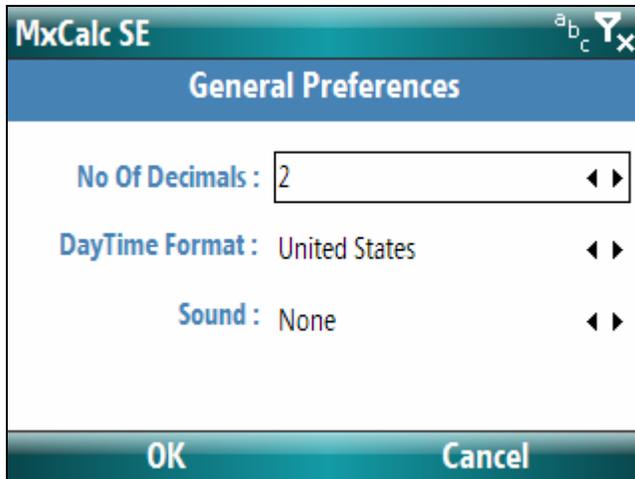
We should have something like screen shot at the below. Let's test the Tip Calculator now. You will take 3 steps to get tip amount:

- You change Total people to 3.
- Change Percentage to Tip to 2.4%
- Change Percentage to Tip to 5%
- Change amount to 5000\$

The results will be displayed immediately. Now we know how much each person needs to pay and the Tip amount and the total bill payment amount.

18. Preferences:

18.1. Settings:



- Select Settings  from the menu.
- Set the No. of Decimals
- Select Day Time format for Date Calculations.
- Set the sound levels to Loud, Soft and None.

19. Registration



- Tap on **Register** in menu
- Enter Serial number.
- Tap 'Enter Key' button

MxCalc SE v3.1.2

Evaluation version will expire after 15 uses. Please register.

Serial 3310015271515278954

Key

Developed by 3GR Technologies.

Enter Key Cancel

- To register you will need the **ActiveSync ID** or **Owner Name** or **Serial #**.
- You can locate the ActiveSync ID as shown below. In the example given below **'WM_XYZ'** is the ActiveSync ID.
- The Serial # is a 19 digit # located in the registration form as seen in the example.
- Owner Name is the name in the Owner Information found in the Today Screen.

