

# MxCalc 12c

for PocketPC

Version 1.2.3  
User Guide

**Product of:-**

3GR Technologies

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

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## 1. Installation/Uninstallation

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### 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 links in case the system prompts for missing runtime files.

- **PocketPC ( .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](http://www.microsoft.com/downloads/details.aspx?FamilyId=10CC340B-F857-4A14-83F5-25634C3BF043) - 33k

### Steps to Install MxCalc 12c program.

- You need to have MS ActiveSync Software on your device and make sure your device is connecting with Desktop PC.
- Execute MxCalc12c\_Setup.exe and follow instructions. ONLY IF prompted to install the .Net Compact Framework on your POCKETPC device execute the Dot\_Net\_Compact\_Framework\_2.exe to start the installation of .Net Compact Framework runtime files.
- When finished, go to Start Menu>>Program, here you will see the Icon of 'MxCalc 12c'

### Steps to Uninstall MxCalc 12c program.

To remove the product from your Pocket PC:

- Go to **Start menu >> Settings.**
- Select **System** Tab and tap on **Remove Programs.**
- Select MxCalc 12c from the list and tap on the Remove button.
- Choose **"Yes"** to confirm removing.

## 2. Frequently asked questions

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1. What is the [STK] button for?
  2. How do I change the number of decimal places?
  3. How do I change MxCalc 12c skin ?
  4. How do I change the Screen Orientation ?
  5. What do the different ERROR messages imply?
- 

### Questions:

1. What is the [STK] button for?

#### Answer:

The [STK] button is used to show a window displaying the contents of all the financial and storage registers. Press [g][STK] to show the form.

2. How do I change the number of decimal places?

#### Answer:

Press [f] followed by a digit as the number of decimal places used in the display. For instance, to set the display to use 2 decimal places, press [f][2].

You can set the display to use from 0 to 9 decimal places. Pressing [f][.] will set the display to use the scientific notation.

3. How do I change MxCalc 12c skin ?

#### Answer:

MxCalc12c comes with two skins Default and Platinum. To change between the skins press [f][Σ+].

New 12c Platinum skin :-



#### 4. How do I change the screen Orientation ?

**Answer:**

##### **90 degrees rotation**

The following key strokes will rotate the calculator by 90 degrees. Press sequence [f][x].

##### **180 degrees rotation**

The following key strokes will rotate the calculator by 180 degrees. Press sequence [f][-].

##### **270 degrees rotation**

The following key strokes will rotate the calculator by 270 degrees. Press sequence [f][+].

##### **0 degrees rotation**

The following key strokes will rotate the calculator by 0 degrees. Press sequence [f][÷] .

#### 4. How do I register?

**Answer:**

To register MxCal12c, press the [f] [-] buttons. This will open the MXCal12c registration form. Enter the registration key in the key input area and tap on **Enter Key** button to complete registering MxCal12c.

#### 5. What do the different ERROR messages imply?

**Answer:**

##### **Error messages**

**Error 0 :** Occurs due to performing invalid Math operations such as :-

- 1> division by zero
- 2> square root of a negative number
- 3> log of zero or negative number
- 4> factorial of a non-integer or negative number.

**Error 1 :** Overflow in storage register i.e. magnitude of result is greater than the max allowed value.

**Error 2 :** Occurs while performing Statistical operations when no Data exists

**Error 3 :** IRR error.

**Error 4 :** Entered more than 399 lines of program steps or attempting to [GTO] a line number that does not exist..

**Error 5 :** Error occurs when invalid data has been entered for compound interest calculation.

**Error 6 :** Storage registers error.

**Error 7 :** IRR error.

**Error 8 :** Improper date format or dates are outside the valid range (1901 to 2100).

### 3. Examples

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- ◆ Simple arithmetic
- ◆ Interests
- ◆ Depreciations
- ◆ Bonds prices and yields
- ◆ MxCalc 12C Programming
- ◆ More math calculations
- ◆ Amortizations
- ◆ Annuities
- ◆ Statistics
- ◆ Mortgage Calculation
- ◆ Percentages
- ◆ NPV and IRR
- ◆ Normal Distribution
- ◆ Dates calculations

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#### Simple Arithmetic

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$3 + 5 = ?$

1. Key in 3
2. Press [ENTER]
3. Key in 5
4. Press [+].
5. The output is 8.00

$100 \div 25 = ?$

1. Key in 100
2. Press [ENTER]
3. Key in 25
4. Press [ $\div$ ].
5. The output is 4.00

$(10 - 2) \times (2 + 6 - 4) \div 8 = ?$

1. Key in 10
2. Press [ENTER]
3. Key in 2
4. Press [-]
5. Key in 2
6. Press [ENTER]
7. Key in 6
8. Press [+]
9. Key in 4
10. Key in [-]
11. Press [ $\times$ ]

12. Key in 8
13. Press [ $\div$ ].
14. The output is 4.00

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### more Math Calculation

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$\ln 12 = ?$

1. Key in 12
2. Press [g][LN].
3. The output is 2.48.

$e^{2.1} = ?$

1. Key in 2.1
2. Press [g][ $e^x$ ].
3. The output is 8.17.

$\sqrt{25} = ?$

1. Key in 25
2. Press [g][ $\sqrt{x}$ ].
3. The output is 5.00

$(1 + 3)^7 = ?$

1. Key in 1
2. Press [ENTER]
3. Key in 3
4. Press [+]
5. Key in 7
6. Press [ $y^x$ ].
7. The output is 16384.00

Calculate the Integer part of 12.23 = ?

1. Key in 12.23
2. Press [g][INTG].
3. The output is 12 .

Calculate the Fractional part of 19.25 = ?

1. Key in 19.25
2. Press [g][FRAC]. The output is 0.25 .

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## Percentages

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14% of 300 = ?

1. Key in 300
2. Press [ENTER]
3. Key in 14
4. Press [%].
5. The output is 42.00.

Yesterday your stock fell from 150 to 60 per share. What is the percent change ?

1. Key in 150
2. Press [ENTER]
3. Key in 60
4. Press [ $\Delta$ %].
5. The output is -60.00.

What percentage is 7.95 of 2.36?

1. Key in 7.95
2. Press [ENTER]
3. Key in 2.36
4. Press [%T].
5. The output is 29.69.



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## Interests

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### Simple Interest

**Question:** Calculate the amount of accrued interest earned if \$450 is invested for 25 days at 7% p.a. Calculate on a 365 day basis.

**Answer:**

1. Press [f][FIN] to clear the financial registers.
2. Key in 450 then press [CHS][PV]
3. Key in 25 then press [n]
4. Key in 7 then press [i]
5. Press [f][INT]. The interest accrued on a 360-day basis is \$2.19
6. Press [RDown][X<>Y] to display the interest accrued on a 365-day basis, \$2.16.
7. Press [+] to display the total of the principal and accrued interest on the display, \$452.16.

### Compound Interest

**Question:** \$25,000 is placed in an account earning 9% compounded monthly. What is the future value after 10 years?

**Answer:**

1. Press [f][FIN] to clear the financial registers.
2. Key in 25000 then press [CHS][PV]
3. Key in 9 then press [g][12÷]
4. Key in 10 then press [g][12×]
5. Press [FV]. The result is \$61,283.93.

**Question:** How many years will it take for a \$2,500 deposit to double at an interest rate of 8%, compounded quarterly?

**Answer:**

1. Press [f][FIN] to clear the financial registers.
2. Key in 8
3. Key in 4
4. Key in ÷
5. Press [i].
6. Key in 2500 then press [PV]
7. Key in 5000 then press [CHS][FV]

8. Key in 0 then press [PMT] .
9. Press [n] .This will calculate the no of quarters .
10. Now key in 4 and press  $\div$  .
11. The output is 8.75 .

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## NPV AND IRR

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**Question:** Beginning with a cash outflow (investment) of \$400, a project will result in 4 inflows of unequal amounts, spaced evenly, of 100, 200, 200, and 300 dollars. The Discount date is 10% . Calculate the IRR and the NPV ..

**Answer:**

1. Press [f][FIN] to clear the financial registers.
2. Key in -400 then press [g][g][CF<sub>o</sub>] initial cash flow.
3. Key in 100 then press [g][CF<sub>j</sub>]
4. Key in 200 then press [g][CF<sub>j</sub>]
5. Key in 2 then press [g][N<sub>j</sub>]
6. Key in 300 then press [g][CF<sub>j</sub>]
7. Key in 10 then press [i]
8. Press [f][NPV]. The Output is \$211.37.
9. Press [f][IRR]. The Output is \$28.90.

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## Depreciations

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**Question:** A table is purchased for \$567.65. The expected life is 5 years. There is a \$50.00 salvage value. Using the straight line method find the depreciation after the third year and the remaining depreciable value.

**Answer:**

1. Press [f][FIN] to clear the financial registers.
2. Key in 567.65 then press [PV]
3. Key in 50 then press [FV]
4. Key in 5 then press [n]
5. Key in 3 then press [f][SL]. The result is \$103.53 . Press [X<>Y] to display the remaining depreciable value, \$207.06

**Question:** A conference table is purchase for 1,467.89. The expected life is 5 years and no salvage value, find the depreciation after the fourth year using the sum of years digits methods.

**Answer:**

1. Press [f][FIN] to clear the financial registers.
2. Key in 1467.89 then press [PV]

3. Key in 0 then press [FV]
4. Key in 5 then press [n]
5. Key in 4 then press [f][SOYD] to display the depreciation for the first year, \$195.72.

**Question :** A copy machine is purchased for \$3,217.89. The expected life is 4 years and the salvage value is \$100, calculate the depreciation for the second year using the *double declining balance method*.

**Answer:**

1. Press [f][FIN] to clear the financial registers.
2. Key in 3217.89 then press [PV]
3. Key in 100 then press [FV]
4. Key in 4 then press [n]
5. Key in 200 then press [i] to enter the declining balance factor.
6. Key in 2 then press [f][DB]. The result is \$804.47.

## **Annuities**

**Question:** Now, suppose that you will be borrowing \$1000 each year for 10 years at a rate of 9%, and then paying back the loan immediate after receiving the last payment. How much would you have to repay? .

**Answer:**

1. Press [f][FIN] to clear the financial registers.
2. Press [g][END] to set payments to begin mode.
3. Key in 1000 then press [PMT]
4. Key in 10 then press [n]
5. Key in 9 then press [i]
6. Press [FV].
7. The output is -\$15,192.93 .

**Question** Suppose that you are offered an investment that will pay you \$1,000 per year for 10 years. If you can earn a rate of 9% per year on similar investments, how much should you be willing to pay for this annuity?

**Answer:**

1. Press [f][FIN] to clear the financial registers.
2. Press [g][END] to set payments to begin mode.
3. Key in 1000 then press [PMT]
4. Key in 10 then press [n]
5. Key in 9 then press [i]
6. Press [PV].
7. The output is -\$6,417.66.

**Question** Suppose you make monthly payments, beginning at the end of next month, into an account that pays 6% annually, compounded monthly. What payment amount would be required in order to accumulate \$10,925.75 in the 14 years remaining?

**Answer:**

1. Press [f][FIN] to clear the financial registers.
2. Press [g][END] to set payments to begin mode.
3. Key in 10925.75 then press [FV]
4. Key in 6 then press [g][12÷]
5. Key in 14 then press [g][12×]
6. Press [PMT].
7. The output is -\$41.65.

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### Normal Distribution

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**Question** Find the area under the standard normal curve for  $z < 2.5$

**Answer:**

1. Press 2.5
2. Press [g][N(z)].
3. The result is 0.933192.

**Question:** Find  $z_0$  such that the area under the standard normal curve for  $z < z_0$  is 0.52.

**Answer:**

1. Press 0.52
2. Press [g][z]. The result is 0.0515

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### Bonds Prices and Yields

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**Question** Consider a zero-coupon, semi-annual bond purchased on May 19, 2003 that matures on June 30, 2017. What is the price given a yield to maturity of 14%? .

**Answer:**

1. Press [f][FIN] to clear the financial registers.
2. Press [g][M.DY] to use month-day-year format.
3. Key in 14 then press [i]
4. Key in 5.192003 then press [ENTER]
5. Key in 6.302017 then press [f][PRICE].
6. The output is \$15.04.

**Question** Calculate the yield of a semi-annual bond if the price on June 12, 2005 is \$90 and it matures on December 6, 2008 bearing 11.5% p.a.

**Answer:**

1. Press [f][FIN] to clear the financial registers.
2. Press [g][M.DY] to use month-day-year format.
3. Key in 11.5 then press [PMT]
4. Key in 90 then press [PV]
5. Key in 6.122005 then press [ENTER]
6. Key in 12.062008 then press [f][YTM].
7. The output is \$15.95.

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## Statistics

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**Question:** Find the mean and sample standard deviation for the following data: 26, 12, 23, 19, 20, 45.

**Answer:**

1. Press [f][ $\Sigma$ ] to clear the statistical registers.
2. Key in 26 then press [ $\Sigma$ +]
3. Key in 12 then press [ $\Sigma$ +]
4. Key in 23 then press [ $\Sigma$ +]
5. Key in 19 then press [ $\Sigma$ +]
6. Key in 20 then press [ $\Sigma$ +]
7. Key in 45 then press [ $\Sigma$ +]
8. Press [g][x] to calculate the mean, 24.7.
9. Press [g][S] to calculate the sample standard deviation, 11.23.

**Question:** For the following data, calculate  $r$ . Estimate Y when X is 8.

X:	9	12	15	25	23
Y:	15	23	25	12	26

**Answer:**

1. Press [f][ $\Sigma$ ] to clear the statistical registers.
2. Key in 9 then press [ENTER]
3. Key in 15 then press [ $\Sigma$ +]
4. Key in 12 then press [ENTER]
5. Key in 23 then press [ $\Sigma$ +]
6. Key in 15 then press [ENTER]

7. Key in 25 then press  $[\Sigma+]$
8. Key in 25 then press [ENTER]
9. Key in 12 then press  $[\Sigma+]$
10. Key in 23 then press [ENTER]
11. Key in 26 then press  $[\Sigma+]$
12. Key in 8 then press  $[g][\hat{y}, r]$  to calculate Y estimate, 17.78.

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### Dates Calculations

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**Question:** Calculate the days difference between December 25, 1999 and Jan 20, 1980.

**Answer:**

1. Press  $[g][M.DY]$  to use month-day-year format.
2. Key in 1.201980 then press [ENTER]
3. Key in 12.251999 then press  $[g][\Delta DYS]$ . The result is 7,279

**Question** Add 150 days to December 2, 1980.

**Answer:**

1. Press  $[g][M.DY]$  to use month-day-year format.
2. Key in 12.021980 then press [ENTER]
3. Key in 150 then press  $[g][DATE]$ . The result is 5,1,1981 . Digit 5 at the end means it was Friday.

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### MxCalc 12C Programming

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**Question:** Write a program to calculate  $2 + 8 - 6$ .

**Answer:**

1. Press  $[f][P/R]$  to enter into program mode.
2. Key in 8 then press [ENTER]
3. Key in 2 then press [+]
4. Key in 6 then press [-] .
5. Press  $[f][P/R]$  to exit from program mode.
6. To run the program press [R/S].
7. The output is 4.

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## Mortgage Calculation

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**Question:** If you have a loan of \$10000 for 2 years at 10% per annum compounded monthly and if the payments were made at the end of each month, find the monthly repayment amount and the remaining balance after 1 year.

**Answer:**

1. Press [f][FIN] to clear the financial registers.
2. Press [g][END] to set payments to begin mode.
3. Key in 10000 then press [PV]
4. Key in 2 then press [g][12×]
5. Key in 10 then press [g][12÷]
6. Press [PMT] to calculate the monthly payments, -\$461.45.
7. Key in 12 then press [f][AMORT]. The amount from the payments applied toward interest is -\$786.15.
8. Press [RCL][PV] to display the remaining balance, \$5,249.76.

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## 4. List of Features

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**DISPLAY:** main display, Stack registers display, Data registers display

**DISPLAY FORMAT:** fixed, Scientific

**ORIENTATION:** portrait, Landscape

**LOGIC:** Reverse Polish Notation (RPN), Algebraic (ALG)

**STACK LEVELS:** 4 and Last-X

**DATA REGISTERS:** 20

**STORAGE, RECALL:** Yes

**MATH OPERATORS:** ÷, x, +, -, 1/x, v, LN, ex, yx, %, %T, ? %, INTG, FRAC

**STAT FUNCTIONS:** Mean, standard deviation, Sn, Sx, Sx2, Sxy, Sy2,  
Linear regression, coeff. of determination, factorial,  
Normal distribution

**DATE CALCULATIONS:** yes (from 1901 to 2100)

**DATE FORMAT:** D.MY (day-month-year), M.DY (month-day-year)

**TIME VALUE OF MONEY:** n, i, PV, PMT, FV

**CASH FLOWS ANALYSIS:** NPV, IRR

**AMORTIZATION:** accumulated interest, balance

**DEPRECIATION:** straight line method, sum of year's digits, declining balance

**BONDS CALCULATION:** price, yields, accrued interest

**PROGRAMMING:** 399 program steps, 2 conditional tests, line number addressing  
Pause single step

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## 5. Functions Reference

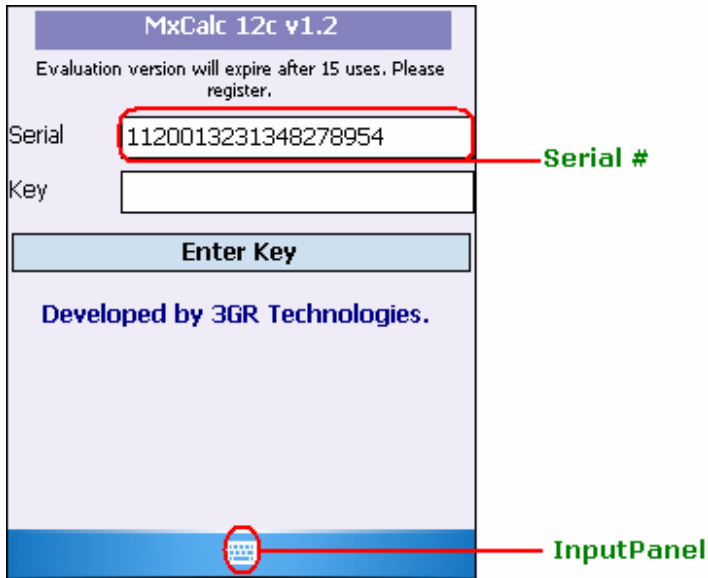
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<-	Backspace
-	Subtraction
$\Delta\%$	percent of change
%	percent of
%T	percent of total
+	addition
x	multiplication
$\div$	division
$\Sigma$	clear statistical registers
$\Sigma-$	subtraction from statistics
$\Sigma+$	addition to statistics
$\Sigma+$	number digits
0, ..., 9	reciprocal
1/x	multiply by 12 and store into n
12x	divide by 12 and store into i
12 $\div$	algebraic mode
ALG	amortization
AMRT	set payment mode to begin
BEG	back step
BST	initial cash flow
CFo	next cash flow
CFj	change sign
CHS	clear the number displayed (X-register)
CLx	calculate new date
DATE	declining balance method of depreciation
DB	set date mode to day-month-year
D.MY	number of days
?DYS	enter exponent
EEX	set payment mode to end
END	terminate digit entry and push the number
ENTER	close the calculator
EXIT	raise e to the power of x
ex	access gold colored function
f	clear financial registers
FIN	fractional part
FRAC	future value
FV	access blue colored function
g	goto
GTO	interest
I	calculate simple interest
INT	integer part
INTG	calculate internal rate of return
IRR	natural log
LN	last x
LSTx	set date mode to month-day-year
M.DY	number of periods
n	factorial
n!	number of cash flows
Nj	net present value
NPV	standard normal cumulative distribution
N(z)	payment
PMT	program/run toggle
P/R	bond price

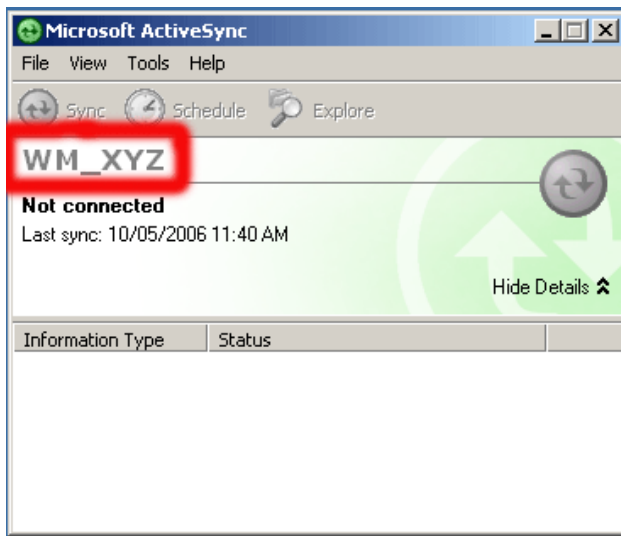
<b>PRICE</b>	clear all programs
<b>PRGM</b>	pause for about one second
<b>PSE</b>	present value
<b>PV</b>	recall from data storage register
<b>RCL</b>	roll down stack registers
<b>RDown</b>	clear all registers
<b>REG</b>	round to match display
<b>RND</b>	rpn mode
<b>RPN</b>	Run/Stop toggle
<b>R/S</b>	show the financial and storage registers
<b>SHOW</b>	straight line method of depreciation
<b>SL</b>	sum of years digits method of depreciation
<b>SOYD</b>	single step
<b>SST</b>	store into data storage register
<b>STO</b>	square root of
<b>vx</b>	conditional branching
<b>X=0</b>	estimate using linear regression
<b>x,r</b>	weighted average
<b>xw</b>	conditional branching
<b>X=Y</b>	exchange contents of X-register and Y-register
<b>X&lt;&gt;Y</b>	estimate using linear regression
<b>y,r</b>	yield to maturity
<b>YTM</b>	power
<b>yx</b>	inverse of standard normal cumulative distribution
<b>z</b>	

## 6. How to Register



- 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.

In the example given below **'WM\_XYZ'** is the ActiveSync ID.



To find the Owner Name Today's Screen or by clicking on **Settings-->Personal-->OwnerInformation -->Name**

If you have not set the owner name, please set it & supply when requested.

If you do not have the Microsoft ActiveSync software (Usually a CD is packaged in the PocketPC box) installed, please install it. To download visit the following page <http://www.microsoft.com/windowsmobile/activesync/default.msp>

To Register MxCalc12c please follows the following Steps:-

- Enter the key combinations [g] followed by [-] (i.e. [g][-]) to open the registration form.
- Enter the registration code in the key input area.
- Select 'Enter key' to complete your registration.