The LandWare Financial Consultant for CASSIOPEIA™

User Manual

Introduction

Welcome to the LandWare Financial Consultant calculator for CASSIOPEIA. This calculator has been designed specifically for real estate, retailing and business professionals who need to use their CASSIOPEIA to make fundamental financial decisions quickly and accurately.

This document is designed to provide an operational overview of the calculator and is divided into the following sections:

- The Display
- Setting user Preferences
- Storage Memories
- General Scientific functions
- Percentage Calculations
- Cost, Selling Price and Margin Calculations
- Calendar Calculations
- Financial Calculations

Each section provides complete examples and should give adequate instruction on using the individual functions.

The Display

The display shows input data, interim results and answers to calculations. It contains 23 characters for displaying the current number, error messages and a row of status annunciators.

Annunciators

The display contains 8 annunciators that relay the status of the calculator during various operations.

FIX	Results are displayed in Finance mode (2 decimal places)
BEG	Payment mode has been set to Begin for compound interest calculations
STO	Memory STOre mode has been activated
RCL	Memory Recall mode had been activated
DMY	The Date input and display mode is set to DayMonthYear
360	The calculator is set to 30 day month (360-day year mode)
M+	Memory add mode has been activated
[▲]	Shifted functions are enabled

Error messages

The following errors are trapped by the calculator and displayed on screen. To clear an error message tap the AC key.

- *Illegal Argument* — A function has been passed an illegal parameter. [e.g. ln(0)]
- *Out of Memory* — The calculator has sensed an out of memory condition. Quit the application then try the calculation again.
- *Out of range* — The calculation result has fallen outside the calculators operating range.
- *Division by zero* — Division by 0 has been attempted.
- *Undefined result* — No answer exists for the given calculation.
- *Nonexistent cash flow* — The NPV, IRR or Nj function has been executed without any cash flow entries being entered or a nonexistent cash flow has been edited.
- *Interest rate not set* — A finance function that requires an interest rate has been executed with out any interest rate being set (i%).
- *Period not set* — A finance function that requires period has been executed without any period being set (n).

Setting User Preferences

Tapping the Preferences button (middle button upper right corner) opens the Preferences window allowing you to customize the calculator operation to your needs.

The following Preferences can be specified by tapping once:

Display

- 2DP - All results are truncated to 2 decimal places.
- Floating - Full floating point precision is used in the display.

Date Format

- M.DY - Dates are input and displayed as MM.DDYYYY .
- D.MY - Dates are input and displayed as DD.MMYYYY.

Payment Mode

- BEG - Payments are considered to be made at the beginning of a period.
- END - Payments are considered to be made at the end of a period.

Year Length

- 360 - A 360 day year is assumed for simple interest (INT) and ΔDYS calculations.
- 365 - A 365 day year is assumed for simple interest (INT) and ΔDYS calculations.

Depreciation

- SLine - The depreciation function (DEPR) uses the straight-line method.
- DBal - The depreciation function (DEPR) uses the depreciating balance method.

Keyboard Operation

Entering numbers

The number pad is used for keying in numbers in sequence as you would on paper. Erroneous digits can be corrected by tapping the delete key on the CASSIOPEIA keyboard.

Primary and Secondary functions

The on-screen calculator keys can provide up to two different operations.

- To select the primary function either tap the on screen key using the stylus or its keyboard equivalent on the CASSIOPEIA keyboard.

- Secondary functions can be selected two ways:
  1. While holding the Shift key on the CASSIOPEIA keyboard, tap the onscreen function key(s).

  or

  2. Tap the on-screen Shift key [▲] and then tap the function key(s).

Please note: When you tap or hold the Shift key the Shift annunciator [▲] will appear in the display until a function key is pressed to complete the sequence.

Terminating digit entry

Digit entry is completed under the following conditions:
1. An arithmetic operator is pressed.
2. A function is executed.
3. C or AC is executed.

Negative numbers

To change the sign of a number, key in the number and then press +/-. Positive numbers will be changed to negative and vice versa. Notice that only negative numbers are given a sign in the display.

Clearing

There are three types of clearing operations:
1. C (Clear) button deletes the number displayed in the display (the x-register).
2. If the number entry has not been completed, the backspace key on the CASSIOPEIA keyboard deletes the last digit. If the number entry has been completed the C (Clear) button will have no effect.
3. Use AC (All Clear) to delete all numbers from the execution stack.

Exporting the display contents

The calculator supports the CASSIOPEIA clipboard so using the standard copy (Ctrl-C) and paste (Ctrl-V) you can quickly move results to and from other areas within CASSIOPEIA.

Storage Memories

Ten general purpose storage memories (M0 - M9) are provided. These memories can be used to set aside numbers as constants or for use in later calculations. Five finance memories (n, i% , PV, PMT, FV) are also provided and discussed in a later section. The calculator provides continuous memory so the contents of the memories are preserved after the unit has been “turned off”.

Storing numbers

The STO function followed by a digit 0 to 9 will copy the contents of the display (X-register) into the memory specified by the digit.

Example: Store 23.5 in memory 6

Keystrokes	*Display*
23.5	*23.5*
STO	*23.5*
6	*23.5*

Recalling numbers

The RCL function followed by a digit 0 to 9 will copy the contents of the memory specified by the digit into the display (X-register).

Example: Recall memory 6 into the main Display

Keystrokes	*Display*
RCL	
6	*23.5*

Memory arithmetic

Numbers in the display can be conveniently added or subtracted from any memory using the M+ (Memory add) button.

Example: Adding 34 to memory 4

Keystrokes	*Display*
34	*34*
M+	*34*
4	*34*

Example: Subtracting 12 from memory 5

Keystrokes	*Display*
12	*12*
+/-	*-12*
M+	*-12*
5	-12

Example: Storing (STO) and Recalling (RCL) numbers in memory

Keystrokes	*Display*
10 STO 1	*10*
2 + 3 =	*5*
M+ 1	*5*
RCL 1	*15*

General Functions

In addition to the financial functions the calculator supports the following core scientific functions:

INTG - Integer portion of x

Example: Find the integer portion of 34.578

Keystrokes	*Display*
34.578	*34.578*
[▲]INTG	*34*

FRAC - Fractional portion of x

Example: Find the fractional portion of 34.578

Keystrokes	*Display*
34.578	*34.578*
[▲]FRAC	*0.578*

x^2 - square of x

Example: Find 37 squared

Keystrokes	*Display*
37	*37*
[▲]x^2	*1369*

√x - square root of x

Example: Find the square root of 41

Keystrokes	*Display*
41	*41*
[▲]√x	*6.403124237433*

x! - factorial of x

Example: Find 52!

Keystrokes	*Display*
52	*52*
[▲]x!	*8.065817517094e+67*

ln - Natural logarithm

Example: Find the Natural log of 12.3

Keystrokes	*Display*
12.3	*12.3*
[▲]ln	*2.509599262378*

e^x - Exponential function

Example: Find e raised to the power of 2.5095993

Keystrokes	*Display*
2.5095993	*2.5095993*
[▲]e^x	*12.30000046275*

y^x - y raised to the power of x

Example: Find 4 raised to the power of 7

Keystrokes	*Display*
4	*4*
[▲]y^x	*4*
7	*7*
=	*16384*

Percentage Calculations

The % and Δ% functions can be used to perform a range of percentage calculations which are outlined below: (Please note: The 2DP mode option is ON for the following sample percentage calculations)

Operation	*Keystrokes*	*Display*
Percentage		
26% of 1200	*1200 x 26 %*	*312.00*
Add-on		
To calculate 2562 increased by 15%	*2562 + 15 %*	*2946.30*
Discount		
To calculate 1520 decreased by 13%	*1520 - 13 %*	*1322.40*
Ratio		
To calculate what 75 percent is of 250	*250 ÷ 75 %*	*333.33*
Increase/Decrease		
a. Calculate what % of increase changes 23 to 67	*67 - 23 Δ%*	*191.30*
b. Calculate what % of decrease changes 102 to 67	*102 - 67 Δ%*	*52.24*
Mark-up		
Calculate selling price and profit when the purchase price is $120 and the profit margin is 33%	*120 x 33 Δ%* *120 ÷33 Δ%*	*179.10 (sell price)* *59.10 (profit)*
Mark-down		
Calculate sale price and discount when the purchase price is $430 and the discount is 33%	*430 x 33 +/- Δ%* *430 ÷ 33 +/- Δ%*	*323.31 (sale price)* *-106.69 (discount)*

Cost, Selling Price and Margin Calculations

The CST, MAR and Δ% functions facilitate the quick and easy determination of Cost Price, Selling Price and Margins.

Cost Price Calculation

The CST function provides a single tap calculation of a cost price given a selling price and margin.

Example: Calculate the cost price at a 12% margin and selling price of $20.00.

Keystrokes	*Display*
20	*20*
CST	*20*
12	*12*
=	*17.60*

Selling Price Calculation

The Δ% function can be used to determine the Selling price given the Margin and cost price.

Example: Calculate the selling price with a cost price of $12.00 and a margin of 40%.

Keystrokes	*Display*
12	*12*
x	*12*
40	*40*
Δ%	*20.00*

Margin Calculation

The MAR function provides a single tap calculation of a margin given a cost and selling prices.

Example: Calculate the margin with a cost price of $12.50 and selling price of $25.00.

Keystrokes	*Display*
12.5	*12.5*
[▲]MAR	*12.5*
25	*25*
=	*50.00*

Calendar Calculations

Date entry modes

The calculator uses one of two date formats for the entry and display of dates.
The date format is specified using the Date Format radio buttons in the Preferences window. Tap on the Preferences icon to access Calculator Preferences.

• Month-Day-Year (M.DY)— Dates are entered and displayed in the format: MM.DDYYYY

Example: Enter April 7, 1984

Keystrokes	*Display*

4.071984 *4.071984*

• Day-Month-Year (D.MY)— Dates are entered and displayed in the format: DD.MMYYYY

Example: Enter 7, April, 1984

Keystrokes	*Display*
7.041984	*7.041984*

If the calculator is set to DMY mode the DMY annunciator will be displayed. No annunciator is displayed when in MDY mode.

Year length modes

The calculator uses one of two year length settings. The year length is specified using the year length radio buttons in the Preferences window. A 30-day month can be assumed by setting the preference to 360.

If the calculator is set to 360 Day mode the 360 annunciator will be displayed. No annunciator is displayed when in 365 Day mode.

Number of days between dates

The ΔDYS function can be used to calculate the number of days between two dates. The result is also dependent on the *Year length* setting.

Example: Number of days between June 3, 1983 and October 15,1984 assuming (360 day) 30 day month and MDY mode

Keystrokes	*Display*
6.031983	*6.031983*
[▲]ΔDYS	*6.031983*
10.151984	*10.151984*
=	*492*

Calculation of a future date

The DATE function is used to calculate the future date that is a given number of days from a starting date.

Example: If you purchased an apartment with an 120 day option on 14th May 1981 what would be the expiration date (assuming DMY mode and 30 day month).

Keystrokes	*Display*	
14.051981	*14.051981*	
[▲] DATE	*14.051981*	
120	*120*	
=	*11.091981*	*(11th September 1981)*

Financial Calculations

Notes on Financial Calculations

- ***Ensure you use the [▲] FC function to clear the finance memories before you begin any finance calculations.***
- The periodic interest rate key (i%) uses values expressed as whole numbers. (i.e. 30% is entered as 30 not 0.30 like some calculators)
- It is important that the term and interest rate match. If the term is a year, input the annual interest rate, if it is a month input the monthly interest rate. The [▲]12÷ function is a convenient mechanism for converting and entering an annual interest rate as a monthly interest rate all in a single step.

Financial memories

The Financial Calculations n, i%, FV, PV, PMT are all performed using their own independent memories. The contents are retained after the calculator is "turned off"
Separate cash flow memories are provided for CFj and Nj. Please note: The contents of these specific memories are NOT retained after you exit the program.

Clearing the finance memories

All finance memories (i.e. n, i%, FV,PV, PMT) and cash flow memories are cleared using the [▲] FC function.

Storing numbers in the finance memories

To store a number into a finance memory press STO and then the corresponding finance memory key (i.e. n, i%, FV, PV, PMT)

Displaying numbers in the finance memories

To recover a number from a finance memory press RCL and then the corresponding finance memory key (i.e. n, i%, FV, PV, PMT)

Simple Interest Calculations

The INT function can be used to calculate simple interest on both a 360-day and 365 day basis. The year length is set in the Preferences window.

Example: Calculate the amount of interest accrued on a 60 day loan of $450 with a simple interest rate of 7%. (accrued interest, 360 day basis)

Keystrokes	*Display*	
[▲]FC		*(Clear all finance registers)*
60	*60*	
STO n	*60*	
7	*7*	
STO I%	*7*	
450	*450*	
+/-	*-450*	
STO PV	*-450*	
[▲]INT	*5.25*	

Compound Interest Calculations

Compound interest calculations typically involve at least three of the following five variables:

- n — the number of compounding periods.
- i% — the interest rate per compounding period.
- PV — the present value or initial cash flow.
- PMT — the periodic payment.
- FV — the future value or final cash flow.

Compound interest calculations involve keying in the known quantities and then calculating the required quantities by pressing the corresponding keys.

Cash flow sign convention

It is important to adhere to the industry standard cash flow sign convention when entering PV, PMT and FV values i.e.:

- Money paid out is expressed as a negative number.
- Money received is expressed as a positive value.

Payment mode

The calculator performs compound interest calculations based on payments made at either the beginning or end of a payment period. The payment mode is set using the Payment mode radio button in the Preferences window. If the Payment mode is set to beginning, the BEG annunciator will be displayed. No annunciator is displayed when in END mode.

Note: The calculations in the following sections are all based on payments made at the end of the period.

Loan Calculations

The calculator can be used to determine the payment amount, present value or number of periods of a loan which are being repaid with equal periodic payments.

Example: Payment calculation— You need $3000 in 36 months. How much do you need to save if the annual interest rate is 9.5%?

Keystrokes	*Display*	
[▲]FC		*(Clear all finance registers)*
9.5	*9.5*	
[▲]12÷	*0.791666666667*	*(monthly interest set)*
3000	*3000*	
STO FV	*3000*	*(Future value set)*
36	*36*	
STO n	*36*	*(period set)*
PMT	*-72.3488492223*	*(calculate payment)*

Example: Affordability calculation— You want to pay $175 per month for 24 months on a 9.5% loan. How much can you borrow?

Keystrokes	*Display*

[▲]FC		*(Clear all finance registers)*
175	*175*	
+/-	*-175*	
STO PMT	*-175*	*(payment set)*
24	*24*	
STO n	*24*	*(period set)*
9.5	*9.5*	
[▲]12÷	*0.791666666667*	*(interest set)*
PV	*3811.432700394*	

Example: Loan Period calculation— How many months will it take to repay a $4000 loan if your monthly payments are $200 and the annual interest rates are 9.5%?

Keystrokes	*Display*	
[▲]FC		*(Clear all finance registers)*
9.5	*9.5*	
[▲]12÷	*0.791666666667*	*(interest set)*
200	*200*	
+/-	*-200*	
STO PMT	*-200*	*(payment set)*
4000	*4000*	
STO PV	*4000*	*(Present value set)*
n	*21.85927983099*	*(Months)*

Compound Amount Calculations

Calculations can be applied to an amount of principal that has been placed into a account and compounded periodically with no further deposits.

Example: Period calculation— Assuming an annual inflation rate of 10%, how long will it take for prices to double? (Hint: Let PV=1 and FV=2) (365 days)

Keystrokes	*Display*	
[▲]FC		*(Clear all finance registers)*
1	*1*	
+/-	*-1*	
STO PV	*-1*	*(Present value set)*
2	*2*	
STO FV	*2*	*(Future value set)*
10	*10*	
STO i%	*10*	*(Annual interest set)*
n	*7.272540897342*	*(Period in years)*

Example: Periodic interest rate — Find the rate of return on $1000 compounded quarterly if it amounts to 1500 in 5 years

Keystrokes	*Display*	
[▲]FC		*(Clear all finance registers)*
1000	*1000*	
+/-	*-1000*	
STO PV	*-1000*	*(Present value set)*
1500	*1500*	
STO FV	*1500*	*(Future value set)*
20	*20*	
STO n	*20*	*(Period set 20 quarters)*
i%	*2.048015364945*	*(2.05% Quarterly)*

Example: Principal calculation — How much will you need to invest today at 5.75% compounded quarterly to have $3000 in 5 years?

Keystrokes	*Display*	
[▲]FC		*(Clear all finance registers)*
3000	*3000*	
STO FV	*3000*	*(Future value set)*
5.75	*5.75*	
÷	*5.75*	
4	*4*	
=	*1.4375*	
STO i%	*1.4375*	*(Quarterly interest set)*
20	*20*	
STO n	*20*	*(Period set quarters)*
PV	*-2255.0205882*	

Example: Future value calculation — What is the Future value of $2000 invested at 5.75% compounded quarterly for 4 years?

Keystrokes	*Display*	
[▲]FC		*(Clear all finance registers)*
2000	*2000*	
+/-	*-2000*	
STO PV	*-2000*	*(Present value set)*
5.75	*5.75*	
÷	*5.75*	
4	*4*	
=	*1.4375*	
STO i%	*1.4375*	*(Quarterly interest set)*
16	*16*	
STO n	*16*	*(Period set quarters)*
FV	*2513.081599907*	

Example: Accrued interest calculation — How much interest do you receive on $1500 deposited for 10 years if interest is compounded annually at 5.5%?

Keystrokes	*Display*	
[▲]FC		*(Clear all finance registers)*
10	*10*	
STO n	*10*	*(Period set years)*
5.5	*5.5*	
STO i%	*5.5*	*(Annual interest set)*
1500	*1500*	
+/-	*-1500*	
STO PV	*-1500*	*(Present value set)*
FV	*2562.21668753*	
-	*2562.21668753*	
1500	*1500*	
=	*1062.21668753*	*(Interest accrued)*

Periodic Savings Calculations

Payment, Future value or a number of time periods can be calculated for a schedule of periodic payments into a savings account.

Example: Number of payments calculation— How long will it take to save $15,000 if you are making quarterly deposits of $400 at 6% per annum?

Keystrokes	*Display*	
[▲]FC		*(Clear all finance registers)*
400	*400*	
+/-	*-400*	
STO PMT	*-400*	*(Payment set)*
1.5	*1.5*	
STO i%	*1.5*	*(Quarterly interest set)*
15000	*15000*	
STO FV	*15000*	*(Future value)*
n	*29.97506334561*	*(29 quarters or 7.5 years)*

Example: Periodic payment calculation— You need $10,000 in 7 years. How much will you need to save each month if the annual interest rate is 6.5%?

Keystrokes	*Display*	
[▲]FC		*(Clear all finance registers)*
6.5	*6.5*	
[▲]12÷	*0.541666666667*	*(interest rate set)*
10000	*10000*	
STO FV	*10000*	*(Future value set)*
7	*7*	
[▲]12x	*84*	*(Period set)*
PMT	*-94.3276980516*	*(Monthly payment)*

Example: Future value calculation— How much money will you have if you deposit $150 at the end of each month for a period of 3 years at 6% interest?

Keystrokes	*Display*	
[▲]FC		*(Clear all finance registers)*
150	*150*	
+/-	*-150*	
STO PMT	*-150*	*(Monthly payment set)*
36	*36*	
STO n	*36*	*(Period set in months)*
6	*6*	
[▲]12÷	*0.5*	*(Monthly interest set)*
FV	*5900.415744702*	

Investment Analysis

Depreciation

The calculator enables the calculation of depreciation and the remaining depreciable value (i.e. the book value - salvage value) using two different methods:

- Straight line method (SLine)
- Declining balance method (DBal)

The method used by the Depreciation Function (DEPR) is set using the Depreciation ratio buttons in the Preferences window. NOTE: After the DEPR function is executed the remaining depreciable value is stored in memory 9

If the declining balance method is being used, the declining balance factor is entered (as a percentage) in the i% memory. i.e. 1.5 times the straight-line rate would be entered as:
150 STO i%

Example: A computer is purchased for $10,000 and depreciated over 5 years. Its salvage value is estimated at $500. Determine the depreciable value for the first 3 years of the computer's life using the declining balance method at twice the straight-line rate.

Keystrokes	*Display*	
[▲]FC		*(Clear all finance registers)*
10000	*10000*	
STO PV	*10000*	
500	*500*	
STO FV	*500*	
5	*5*	
STO n	*5*	
200	*200*	
STO i%	*200*	
3	*3*	
[▲]DEPR	*1440*	*(Depreciation in 3rd year)*
RCL 9	*1660*	*(remaining depreciable value after 3rd year)*

Discounted Cash Flow Analysis

The calculator utilizes the Discount Cash Flow (DCF) method to perform two types of investment appraisal. Appraisals involve up to 3 phases:

- Entering of the cash flows (CFj) for fixed time periods.
- Editing and checking the cash flow data.
- Evaluation of the effectiveness of an investment using the NPV and IRR functions.

Entering Cash flows

Before entering Cash flow data it is important to firstly clear the Cfo, CFj, Nj and i% registers by using the FC (Finance Clear) function.

- Use the Cfo function to enter the initial investment amount. Note that this amount must be expressed as a negative number.
- Use the CFj function to enter the currently displayed number as a new cash flow amount.
- Multiple entries of the same cash flow amount can be entered with the Nj button.

Example: To enter 2 consecutive $2300 inflows

Keystrokes	*Display*	
[▲]FC		*(Clear all finance registers)*
2300	*2300*	
CFj	*2300*	
CFj	*2300*	

Example: To enter 5 consecutive $5200 inflows

Keystrokes	*Display*	
[▲]FC		*(Clear all finance registers)*

5200	*5200*
CFj	*5200*
5	*5*
Nj	*5*

NOTE : it is important that the Nj value is entered immediately after the CFj operation

Checking entered data

Individual cash flow entries maybe recalled at anytime using the RCL function.

Recalling a CFj entry — Press RCL CFj and then enter the cash flow number and press =
Example: To review the 4th cash flow entry
Keystrokes: RCL CFj 4 =

Recalling an Nj value — Press RCL Nj and then enter the cash flow number and press =
Example: To review the Nj value on the 4th cash flow entry
Keystrokes: RCL Nj 4 =

Editing Cash flows

To alter a CFj entry — enter the new CFj data, press STO, press CFj, enter the cash flow number and press =
Example: To alter the 4th cash flow entry to 5600
Keystrokes: 5600 STO CFj 4 =

To alter a Nj entry — enter the new Nj value, press STO, press Nj, enter the cash flow number and press =
Example: To alter the Nj value of the 5th cash flow entry to 7
Keystrokes: 7 STO Nj 5 =

Calculating Net Present value (NPV)

Tap the NPV button to calculate the NPV of a series of cash flows. One of 4 possible results will be displayed:

Result	Meaning
No Cash Flows Exist	No CF entries have been entered
A positive value	Revenue target exceeded (Effective investment)
0	Revenue target met (Effective investment)
A negative value	Revenue target not attained (Ineffective investment)

Example: You have the opportunity to buy an apartment for $79,000 and would like a return of at least 13.5%. You expect to be able to sell it in 10 years for 100,000 with the following cash flows:

Year	*Cash flow*	*Year*	*Cash flow*
1	*14000*	*6*	*9100*
2	*11000*	*7*	*9000*
3	*10000*	*8*	*9000*
4	*10000*	*9*	*4500*
5	*10000*	*10*	*100000*

Keystrokes	*Display*	
[▲]FC		*(Clear all finance registers)*
79000	*79000*	
+/-	*-79000*	
[▲]Cfo	*-79000*	
14000	*14000*	
CFj	*14000*	
11000	*11000*	
CFj	*11000*	
10000	*10000*	
CFj	*10000*	
3	*3*	
Nj	*3*	
9100	*9100*	
CFj	*9100*	
9000	*9000*	
CFj	*9000*	
2	*2*	
Nj	*2*	
4500	*4500*	
CFj	*4500*	
100000	*100000*	
CFj	*100000*	
13.5	*13.5*	
STO	*13.5*	
i%	*13.5*	
NPV	*907.7689337698*	

Since the NPV is positive, the investment would increase the financial value of your assets by $907.77

Calculating Internal Rate of Return (IRR)

To calculate the Internal Rate of Return for an investment first input the cash flows as described in the previous section and then execute the IRR function.

Example: To calculate the yearly IRR for an investment in a new factory with the following data:

Initial Investment:	*17 million*
Useful Life	*8 years*
Yearly factory revenues	*2.8 million*

Keystrokes	*Display*	
[▲]FC		*(Clear all finance registers)*
17	*17*	
+/-	*-17*	
[▲]Cfo	*-17*	
2.8	*2.8*	
CFj	*2.8*	
8	*8*	
Nj	*8*	
[▲]IRR	*6.571 (%)*	

NOTE: IRR is a complex function which cannot be calculated analytically for a given series of positive and negative cash flow entries. There are instances where several solutions exist and sometimes no solution is possible. The calculator looks for solutions that are financially acceptable (i.e. between 0 and 200%) and returns the lowest if more than one solution exists. If no solution is found then the *Undefined result* error message is displayed.

Keyboard Equivalents

To facilitate operation most calculator functions can also be executed directly from the physical CASSIOPEIA keyboard. The table below details the key mapping. You will notice the function keys have been arranged in the same physical order as the QWERTY, ASDFG and ZXCVB keys. NOTE: The backspace key has no "on-screen" equivalent and will delete the last entered digit. This is useful for correcting partially entered numbers.

Calculator Function	Keyboard Equivalent	Calculator Function	Keyboard Equivalent
.0123456789	.0123456789	n	a
+,-, *x* ,÷, =	+,-, * ,/, =	12x	<Shift> a
+/-	not applicable	i%	s
C	k	12÷	<Shift> s
MC	<Shift> k	.PV	d
AC	ESC	ΔDYS	<Shift> d
FC	<Shift> ESC	PMT	f
INTG	<Shift> 7	DATE	<Shift> f
FRAC	not applicable	FV	g
DEPR	<Shift> 9	x!	<Shift> g
M+	p	CST	z
CFj	w	MAR	<Shift> z
Cfo	<Shift> w	Δ%	x
Nj	e	INT	<Shift> x
IRR	<Shift> e	%	% or c
NPV	r	ln	<Shift> c
X2	<Shift> r	STO	v
1/x	t, I	ex	<Shift> v
√x	<Shift> t, or @	RCL	b
		y_x	<Shift> b

Credits

The Financial Consultant for CASSIOPEIA and its accompanying documentation was designed and developed by Clinton Logan.

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