

Welcome to



FinCalc5

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Shortcut Keys

The following shortcut keys are available:

- Operators
 - Multiplication "*" , "x", "Y"
 - Division "÷", "/", "U"
 - Addition "+", "I"
 - Subtraction "-", "O"
 - Equals "=", "P", "Enter"
- Numbers "1,2,3,4,5,6,7,8,9,0"
- Other
 - Clear All "Q, Ctrl+Q"
 - Clear Last Operation "C, 'Esc' "
 - Clear Last Character "Del"
 - Change Sign "S"
 - Enter Cashflows "F"
 - Enter Multiple Cashflows "Ctrl+F"
- Exit Application "Ctrl+E"
- Clipboard
 - Cut "Ctrl+X"
 - Copy "Ctrl+C"
 - Paste "Ctrl+V"
- Memory
 - Add to Memory "Ctrl+A"
 - Set to Memory "Ctrl+S"
 - Deduct from Memory "Ctrl+D"
 - Recall Memory "Ctrl+M"
 - Clear Memory "Ctrl+N"
- View
 - Loan Variables "Ctrl+L"
 - Quick-Loan Calc. "Ctrl+O"
 - Loan Table "Ctrl+T"
 - Cashflow Variables "Ctrl+K"
 - Cashflow Graph "Ctrl+G"
- Tools
 - Help "Ctrl+Shift+H"
 - Convert interest rate "Ctrl+I"
 - Payment (Arr./Adv.) "Ctrl+P"
 - Register "Ctrl+R"
 - How to Register "Ctrl+Y"
 - About FinCalc5 "Ctrl+W"

Definitions / Terminology

Payments in Advance or Arrears (AA):

By default all payments are in arrears, i.e. they occur at the end of a period. To change this to payments in Advance (Begin) press "Ctrl+P" or use the menu bar.

The formulas below use the following convention: Payments in Arrears (AA=0) and Payments in Advance (AA=1).

Present Value (PV):

Calculates the present value of an investment given the the Interest rate, the Term, the Payment per period (if any) and the Future Value (if any). PV uses the formula:

$$PV = -(\text{Pmt} \times ((1+i)^n - 1) / i) + (\text{FV} / (1+i)^n) / (1+i \times (1-AA))$$

Payment (Pmt):

Calculates the amount to be repaid per period on a loan, given the Interest rate, the Term (number of repayment periods), the Present Value (if any) and any residual or Future Value owing at the end of the term.

The function assumes the payments are made at the end of each period. Pmt uses the formula:

$$\text{Pmt} = -\left(\frac{\text{PV} \times (1+i)^n + \text{FV}}{(1+i)^n}\right) \times i$$

Future Value (FV):

Calculates the matured value of an investment given the Interest rate, the Term, the Payment per period (if any), and the Present value (if any). FV uses the formula:

$$\text{FV} = \left(\text{Pmt} \times \frac{(1+i)^n - 1}{i}\right) + \text{PV} \times (1+i)^n$$

Number of Periods/Term (n):

Calculates the number of payments needed to accumulate the Future value from the Present Value (if any) and a series of Payments (if any) earning a periodic Interest rate. Term uses the formula:

$$n = \frac{\ln\left(\frac{\text{Pmt} \times (1+i)^n + \text{FV}}{\text{PV} \times (1+i)^n}\right)}{\ln(1+i)}$$

Interest Rate / IRR (i):

The interest rate (or discount rate) determines the rate at which future payments/receipts (cashflows) are "discounted" back to today's date. The formula to calculate i, calculates the rate necessary to make the future cashflows equal to the PV (cashflow zero).

i : Uses the formula for Present Value, and solves by iteration.

Loans

- The "**Quick-Loan Calculator**" provides an easy and interactive way of learning about *FinCalc5's* loan features. Press 'Ctrl-O' or use the menu bar to use this.
- There are six variables available for calculation and holding values (Periods p.a., n, i, PV, Pmt & FV), you need to enter the variables you have values for (typically 3), by keying in the amount, followed by the respective symbol (e.g. Pmt), and finally press the button of the calculation required (e.g. PV).
- The values entered can all be reviewed and/or amended by pressing the "**Review Loans**" button or selecting this option from the menu-bar.
- Further, a "**Loan Table**" can be produced either from the "Review Loans" dialog, or directly from the menu-bar.

Note the following:

- 1) Where payments are in Advance, the first payment is subtracted from the PV to arrive at the "Opening Balance". Correspondingly, one less payment is shown.
 - 2) All amounts are shown on the table to only 2 decimal places (excl. the term (n) which is rounded to the nearest integer) are displayed on the table.
- Initially, the **payments have been assumed to occur at the end of a period** and not at the beginning. Press "Ctrl+P" or use the menu bar to select payments in Advance or Arrears.
 - By convention, all outflows/payments should be entered as negative numbers and all inflows as positive numbers.
 - The screen will show which values have been entered. There is no need to enter zero for any variables, as these are set to zero by default, see below.
 - All values required in the calculation, but not entered, will be assumed as zero.
 - The interest rate must be entered in whole numbers i.e. 10 and not 0.10
 - You need to enter the Effective (APR) annual rate of interest. If you only know the nominal rate press 'Ctrl-I' to calculate this.
 - If interest is to be calculated on the loan more than once per year, for example on a monthly basis, you should enter 12 as the number of '**Compounding periods p.a.**' (Periods p.a.).

Cashflows

- The Cashflow graphing options provide a clear and interactive way of reviewing the cashflows, as well as providing additional useful information on the cashflows themselves (e.g. max. cumulative cash outflow, amongst other information). In addition various scenarios can be run using the NPV/IRR graph. Press 'Ctrl-G' or use the menu bar to use this feature.
- A maximum of 120 cashflows can be entered, with the first cashflow (cashflow 0) occurring at timeperiod 0.
- Cashflows should be entered by entering the amount of the cashflow followed by the **Cashflow input "Cfi"** button (or the "F" key). A counter on the screen will show the number of the cashflows entered.
- In addition, multiple, or "sets" of the same cashflows can be entered by pressing "Ctrl+F" (or by using the menu bar) and filling in the on-screen requirements.
- The values entered can all be reviewed and/or amended by pressing the "**Review Cashflows**" button or selecting this option from the menu-bar.

NPV :

This represents the Net Present Value of the cashflows entered i.e. the sum of the Present values of each cashflow.

It requires a discount rate (the **Interest** rate) which should be entered by pressing the rate followed by the "i" button

In addition at least one cashflow should be entered.

If payments/receipts only start after one year, you will need to enter the first cashflow as cashflow zero (corresponding to timeperiod zero).

NPV uses the following formula:

$NPV = \text{sum of: } Cf_0 + Cf_1/(1+i)^1 + Cf_2/(1+i)^2 + \dots$

- **Tip:** Cash flows are assumed to occur at equal intervals. Therefore if the cashflows are not evenly spaced (i.e. occur at odd intervals), the lowest common denominator interval should be used and the periods between cashflows should be entered as zero cashflows.

- **IRR :**

This calculates by iteration, the rate of return required to reduce the cashflows to a zero NPV.

As with all IRR calculations, there exists one solution for **each** change of sign. Although FinCalc only solves for the first solution (the one closest to zero), more solutions can be found by using the cashflow graphing function.

Note that in certain circumstances the calculation of IRR may return the answer "Too Complex" or an "Overflow / Underflow" error may result, this is normally a result of too many changes of sign in the cashflows.

Registration

To Register:

1. You can use **RegNet**, whereby you should have your registration code within 24 hours. The address you should use for this service is:

<http://www.reg.net/product.asp?ID=2193>

OR

Email me and I will send postal payment instructions to you (include your postal details if you do not have ready access to email).

2. If you could mention how you heard about the programme, I would appreciate it.
3. Registration costs £10 (UK), \$15 (US) or FF100 (France), payable in one of these currencies or the equivalent in your home currency.
Note that if you use RegNet or Compuserve's SWReg you will be required to pay an additional \$5 or \$3 (reflecting part of their charges).
4. Once your payment has been received **you will be sent a user ID** via e-mail (or by post if preferred, BUT if by post, don't forget to include a stamped, self addressed envelope).
5. When you receive your user ID:
 - a. Open FinCalc,
 - b. Press Ctrl+R, or from the menu bar select Tools, Register, Enter Registration ID,
 - c. Type in your registered "User Name", and
 - d. Enter your registration ID in the User ID box.
6. Company/multi-user use of FinCalc requires individual registration for each copy. However, I do offer significant bulk-discounts on FinCalc's list price. Please contact me (see above) to take advantage of this.
7. Registered versions have no "nag" screens and users will be entitled to all future minor upgrades of this programme for FREE! And will be notified of any major upgrades (available off the website) prior to general release.

Examples - Loans

Note:

The payment (Pmt) must correspond to the same time period as the period/term (n) (i.e. days/months/years etc). The interest rate entered should be the Effective / Annual Percentage Rate (APR), (this can be calculated by pressing 'Ctrl-I'). In addition, the number of compounding periods per year should be entered where interest is calculated more than once per year (e.g. monthly = 12 Periods p.a.).

House Bond/Loan:

Example 1

- Objective:

To calculate the monthly payment on a House Bond.

- Assumptions:

Cost of House	100,000
Years of Repayment	20
Nominal Interest Rate	10% p.a.

- What to do:

Type in the cost of the house, i.e. 100,000

Press the "PV" button

Type in the number of periods,

i.e. 240 = 12 monthly payments x 20 years

Press the "n" button

Enter the number of compounding periods p.a.,

i.e. 12 and press the 'Periods p.a.' button

Type in the nominal interest rate, i.e. 10 and

press 'Ctrl-I' to calculate the APR rate (this

will be entered into "i" automatically)

Press the "Pmt" Button

> presto! Your monthly payment = -965.02.

Example 2:

- **Objective:**

To calculate how much you will receive from a regular investment plan..

- **Assumptions:**

Payments of 1,000

Years of Investment 10

Frequency of payments 2 p.a.

Nominal Interest Rate 10% **p.a.**

Interest calculated 6 monthly

- **What to do:**

Type in the payment, i.e. 1,000

Press the "Pmt" button

Type in the number of payments,

i.e. 20 = 10 years x 2p.a.

Press the "n" button

Enter the number of compounding periods p.a.,

i.e. 2 and press the 'Periods p.a.' button

Type in the nominal interest rate, i.e. 10 and

press 'Ctrl-I' to calculate the APR rate (this

will be entered into "i" automatically)

Press the "FV" Button

> This will now give you the value of your

savings in 10 years time, i.e. -33065.95

Note this is negative as it is the opposite to the payments.

Car Loan

Example 3:

- **Objective:**

To calculate what value car you can afford.

- **Assumptions:**

Monthly affordable payments 300

Months of Repayment 36

Effective (APR) Interest Rate 14% **p.a.**

Payments are at the **beginning** of each month

- **What to do:**

Type in the **monthly** payment, i.e. 300

Press the "Pmt" button

Press 'Ctrl-P' and select the option

"Payments in Advance". Do not recalculate yet (press 'esc' when the dialog box appears).

Type in the number of **months** the loan would be for, i.e. 36, and press the "n" button

Enter the number of compounding periods p.a.,

i.e.12 (monthly) and press the

'Periods p.a.' button

Type in the **annual** interest rate 14, and

Press the "i" button

Press the "PV" Button

> The result will be the value of the car you can afford now i.e. -8978.99

Examples - Cashflows

Note:

Cashflows need to be entered at equal time periods.

Example 1

- Objective:

To calculate the rate of return on a series of unequal cash flows after an initial investment.

- Assumptions:

Initial Investment (outflow)	100,000
Cash in-flows:	
Year 1	20,000
Year 2	15,000
Year 3	0
Year 4	60,000
Year 5	70,000

- What to do:

Type in the initial investment, i.e. **100000**

Press the "+/-" button (or "S") to change it to negative (i.e. an outflow)

Press the "Cfi" button (or "F") to enter it, (you will now notice a small 'CF0' displayed on the screen)

Enter the next cashflow, i.e. **20000** and press the "Cfi" button.

Enter the next cashflow, i.e. **15000** and press the "Cfi" button.

As year 3 has no cashflows, **0** needs to be pressed followed by the "Cfi" button.

Enter the next cashflow, i.e. **60000** and press the "Cfi" button.

Enter the next cashflow, i.e. **70000** and press the "Cfi" button.

> Now press the "IRR" button, which will calculate the project's Internal Rate of Return i.e. 14.30

Example 2

- Objective:

To calculate the Net Present Value of a series of unequal cashflows after an initial investment, assuming a known discount rate (i).

- Assumptions:

Discount Rate (i)	10%
Initial Investment (outflow)	100,000
Cash in-flows:	
Year 1	20,000
Year 2	15,000
Year 3	0
Year 4	60,000
Year 5	70,000

- What to do:

Type in the initial investment, i.e. **100000**

Press the "+/-" button to change it to negative (i.e. an outflow)

Press the "Cfi" button to enter it, (you will now notice a small 'CF0' displayed on the screen)

Enter the next cashflow, i.e. **20000** and press the "Cfi" button.

Enter the next cashflow, i.e. **15000** and press the "Cfi" button.

As year 3 has no cashflows, **0** needs to be pressed followed by the "Cfi" button.

Enter the next cashflow, i.e. **60000** and press the "Cfi" button.

Enter the next cashflow, i.e. **70000** and press the "Cfi" button.

Enter the discount rate, i.e. **10** and press the "i" button.

> Now press the "NPV" button, which will calculate the project's Net Present Value i.e 15023.81

Credits

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Decimal Places

Note:

Although the number of decimal places can be set, this does **not** change the underlying number, i.e. there are no rounding or integer functions carried out.

To change the **displayed** number of decimal places, use the menu bar and navigate to Functions / Set Decimal Places. There are five different settings, "Floating, None, One, Two or Three", **Floating** indicates no limitation on the number of places displayed and the others are self explanatory. When the decimal places are set to anything other than Floating, an indicator "d" followed by a number "0,1,2 or 3" indicating the decimal places, will be displayed on the screen.