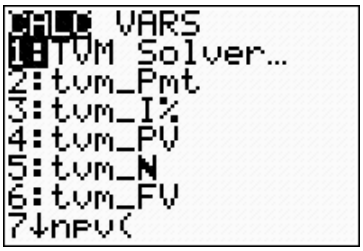
Finance

CATEGORY
Tool and quick reference guide

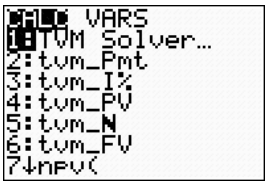


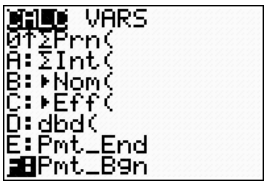
DESCRIPTION
The Finance application calculates the most common financial functions and values.

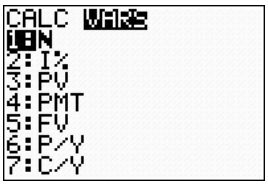
DIDACTICAL SUGGESTIONS
This APP can contribute to the conceptual development of financial calculations and financial models, and can be used to better understand the concept underlying financial math.

We recommend to set the calculator's display mode to two decimal places.

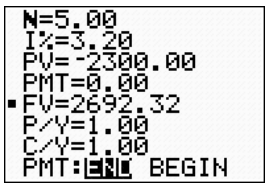
The FINANCE application consists of the following menus:





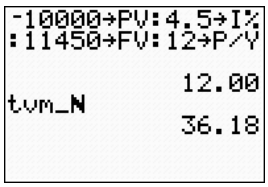


With the TVM Solver you can quickly solve 5 types of financial calculations in an easy and user-friendly way. For example, an amount of € 2300 is put in the bank at a compound interest rate of 3.2 % per year. What is the value after 5 years?



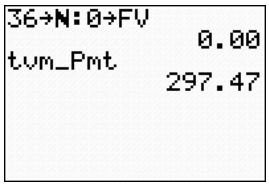
With the TVM Solver, the numbers can be entered as shown in the screen shot on the right with FV empty. Then put the cursor on the line with FV and press ALPHA[ENTER].

For the functions tvm_N, tvm_I%, tvm_PV, tvm_Pmt and tvm_FV it is easier and more practical to use the TVM Solver.



The screen shots illustrate this for a loan of € 10,000 at a yearly interest rate of 4.5 %. How many monthly payments are needed to eventually pay back a total of about € 11,450?

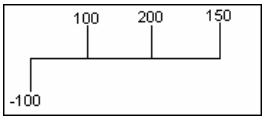
About 36 payments of € 297.47 are needed.

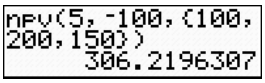


Please note that each function requires the values of other functions as parameters.

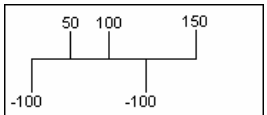
Two cash flow transaction:

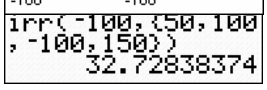
- npv(
  Over a period of time with a constant rate of inflation of 5%, payments (or withdrawals) are made at different periods of the same length. The illustration on the right shows the cash flow. "What will be final present value?"





- irr(
  An investment will be approved under the condition that the return will be bigger than 25%. The cash flow is -100, 50, 100, -100, 150. The answer 32.728… is bigger than 25%, and thus the investment can be approved.

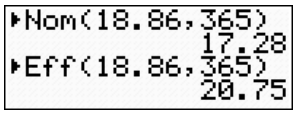




In case of interest calculations using the proportional method, ▸Nom(and ▸Eff(can be used to convert an annual effective interest rate to a nominal rate and vice-versa.

▸Nom(calculates the nominal interest rate.

For a revolving credit, the real rate is 18.86 % per year. Interest is accrued each day. What should be the declared nominal interest rate for this loan?



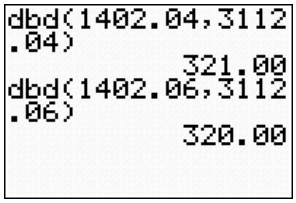
▸Eff(calculates the effective interest rate

For a revolving credit, a "general effective rate" of 18.86 % per year is given Interest is charged each day. What is the real (effective) rate of interest for this loan?

The dbd(function calculates the number of days between two dates (years between 1950 and 2049). Two formats are possible: MM.ddyy (US-format) or ddMM.yy (Europe). Two examples:

Number of days between 14/02/2004 and 31/12/2004 (leap year),

Number of days between 14/02/2006 and 31/12/2006 (normal year).



And how to calculate the payments of a loan?

Bal(= outstanding (remaining) amount, after a certain number of payments.

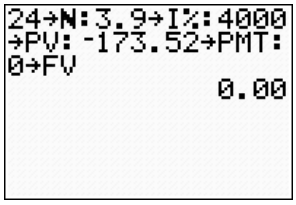
ΣPrn(= sum of the payments that have been paid between two periods p_i and p_j, $0 \le i < j \le n$.

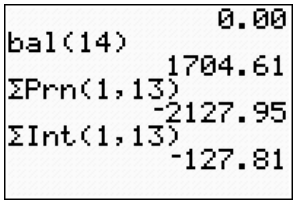
ΣInt(= sum of the interest paid between two periods p_i and p_j, $0 \le i < j \le n$.

Please note that also here you must first enter the parameters N, I%, PV, PMT and FV.

For a loan of € 4,000, with an annual interest rate of 3.9% and 24 monthly installments, what is the outstanding (remaining) amount to pay it back after 14 payments?

What have you paid so far and what is the interest that has been paid after 14 payments?





The functions that are direct available in Tvm Solver:		The variable TVM:	
Tvm_Pmt	Computes the amount of each payment.	N	Total number of payment periods
Tvm_I%	Computes the interest rate per year.	I%	Annual interest rate
Tvm_PV	Computes the present value.	PV	Present value
Tvm_N	Computes the number of payment periods.	PMT	Payment amount
Tvm_FV	Computes the future value.	FV	Future value
		P/Y	Number of payment periods per year
		C/Y	Number of compounding periods/year
Other financial functions:			
Npv(	Computes the net present value.	▸Nom	Computes the nominal interest rate.
Irr(	Computes the internal rate of return.	▸ Eff(	Computes the effective interest rate.
Bal(	Computes the amortization sched. balance.	dbd(	Calculates the days between two dates.
ΣPrn(	Computes the amort. sched. princ. sum.	Pmt_End	Selects ordinary annuity (end of period).
ΣInt(	Computes the amort. sched. interest sum.	Pmt_Bgn	Selects annuity due (beginning of period).

POINT OF VIEW

The Finance application provides the opportunity to quickly perform common financial calculations. In actual education, it is a helpful application that takes away the cumbersome calculations from the students. It is an application of how to use the geometrical progression and it naturally introduces spreadsheets.