Section 7.6 Financial Maths on the Calculator

TVM Solver (Time Value of Money Solver) is a built-in program under the APPS function of your calculator under Finance. Go to APPS, FINANCE, TVM Solver.

It can be used to find any of the variables below given the other variables:

N represents the number of time periods
(multiply the years times the number of times compounded a year)

I% represents the interest rate per year

PV represents the present value of the investment
(always enter the initial value invested as a negative value!)

PMT represents the payment each time period (for us this will primarily be 0)

FV represents the future value of the investment

P/Y represents the number of payments per year

C/Y represents the number of compounding periods per year

PMT: END BEGIN lets you choose between the payments at the end of a time period or at the beginning of a time period. Interest paid on investments are always calculated at the END of time periods.

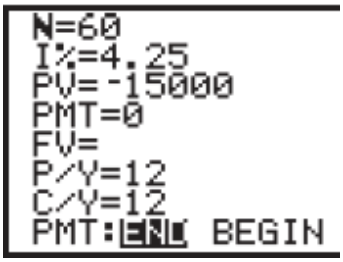
Once you enter the variables that you know, go to the variable that you want to find. Either leave it blank or enter a 0. Then hit ALPHA ENTER (which will solve).

On the exam, you should plan on showing the variables you are entering. You should also be prepared to use an equation.

Example: Holly invests 15,000 UK pounds in an account that pays 4.25% annually compounded monthly. How much is her investment worth after 5 years?

Enter the present value (PV) as a negative.

Find N by multiplying 5 years times 12 (monthly).



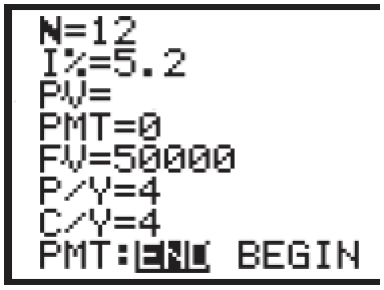
FV ends up being 18544.52848

Answer: 18,544.53 UK Pounds

Example: How much does Halena need to deposit into an account to collect $50,000 at the end of 3 years if the account is paying 5.2% annually compounded quarterly.

Enter the future value (FV) as a positive.

Find N by multiplying 3 years times 4 (quarterly).



PV ends up being -42820.98569

Answer: $42,821
(round up because otherwise you won't have $50,000 after 3 years)

Example: For how long must Magnus invest €4000 at 6.45% annually compounded half-yearly for it to amount to €10,000?

Enter the present value (FV) as a negative.

When N is computed it will be years times 2
(half-yearly means twice a year)

N ends up being 28.8678...

So this is 29 half-years.
So divide by 2...

Answer: 14.5 years

Example: Calculate the compound interest earned on an investment of €13,000 for 4 years if the interest rate is 7% annually compounded quarterly.

Enter the present value (FV) as a negative.

Find N by multiplying 4 years times 4 (quarterly).

Once you find the FV, subtract the starting and ending amounts to compute the interest earned.

N: 16
I%: 7
PV: -13000
PMT: 0
FV:
P/Y: 4
C/Y: 4
PMT: end

FV ends up being 17159.08

So the interest earned is

17159.08 – 13000 = €4159.08