Main TVM functions of a BAII Plus Financial Calculator

The BAII Plus calculator can be used to perform calculations for problems involving compound interest and different types of annuities. (Note: there are many other TVM functions of this calculator but they will not be discussed here).

One of the advantages of using a BAII Plus calculator is that it can save you lots of time on tests and exams. However, always make sure that the numbers the calculator gives you make sense!

The calculator is also a quick method of double checking your formula calculations.

Main TVM Keys:

N – time in years (for compound interest calculations) OR # of payments made during the term of the annuity (for annuity calculations)

I/Y – nominal annual rate of interest per year (entered as a %; NOT a decimal)

C/Y – # of interest compounding periods per year

P/Y – # of payment periods per year

PV – present value (the amount of money at the beginning of the transaction.)

PMT – payment amount

FV – future value (money at the end of the transaction.)

Compound Interest Calculations:

1. Set up the payment and interest schedules in the second function (set P/Y and C/Y):

    a) Press 2nd [I/Y] to get into the P/Y and C/Y mode.
        1. If there are payments: input number of payments per year. Press the number, then [ENTER].
        2. If there are no payments: set P/Y **equal** to C/Y.
    b) Press the arrow down ↓

    c) Enter the number of compounding periods per year.

    Press the number, then [ENTER].

       For annually, enter C/Y = 1

       For semi-annually, enter C/Y = 2

       For quarterly, enter C/Y = 4

       For monthly, enter C/Y = 12

    d) Press 2nd [CPT] (i.e. QUIT) to exit this mode.

2. Clear out any old information that may be stored by pressing 2nd [FV] (i.e. CLR TVM).

3. Input the variables you know. Press the number *first* and then press the appropriate TVM key.

    For example, to enter a present value of $3,000. Enter 3000, press [PV]. Then, go on to the next variable.

Important Notes: Since there are no payments, **no value** is entered for **PMT**.

Values are entered for all other TVM keys, except the value that is being calculated.

PV is always entered as a ***negative*** value to indicate a cash outflow. All other variables are always positive.

4. Compute the variable you need to find by pressing [CPT] and the variable you are calculating.

Example:

Find the present value of $3000 due in 5 years and 6 months if money is worth 4.5% compounded quarterly.

Given:
N = 5.5 years
I/Y = 4.5%
C/Y = 4 (P/Y = 4 since there are no payments)
PMT = none
FV = 3000
PV = ?

Solution:
On your calculator, set P/Y, C/Y = 4.

CLR TVM

5.5 N

4.5 I/Y

3000 FV

Press [CPT] PV

PV = − 2,820.9755

Round the answer to the nearest cent.

Therefore, the present value is $2,820.98.

Annuities Calculations:

For an Ordinary Annuity (payments made at the END of the payment period):

1. Set up the calculator:

   a) Check whether the calculator says "BGN" or nothing on the calculator screen.

      If there is nothing, the calculator is in "END" mode.

      If the calculator is in "BGN" mode, you need to change it to "END" mode.

      Press 2nd [PMT] to access the [BGN] second function.

      Press 2nd [ENTER] (i.e. SET) to switch between BGN and END modes.

      Press 2nd [CPT] to QUIT.

   b) Set the P/Y and C/Y functions:

      Press 2nd [I/Y] to get into the P/Y and C/Y mode.

      Enter the # of payments per year (P/Y).

      Press Arrow down ↓

      Enter # of compounding periods per year (C/Y)

      Press 2nd [CPT] to QUIT this mode

2. Clear out any old information by pressing 2nd [FV] (i.e. CLR TVM)

3. Input the variables you know.

Important Notes:

For annuity calculations usually only <u>one</u> of either the PV or the FV is involved. The value *not* involved in the calculations should be entered as 0. If PV is given it should be entered as a negative amount.

Payments (**PMT**) are considered to be cash outflows and should be entered as a *negative* number.

4. Compute the variable you need to find.

Example:

Find the future value of $1000 deposited at the end of every month for ten years if interest is 3.5% compounded semi-annually.

Given:
N = 10 years x 12 = 120 payments
I/Y = 3.5%
C/Y = 2 (since interest is compounded semi-annually)

P/Y = 12 (since payments are made every month)
PMT = −1000
PV = 0
FV = ?

Solution:
On your calculator, set P/Y = 12 and C/Y = 2.

CLR TVM

120 N

3.5 I/Y

0 PV

−1000 PMT

Press [CPT] FV

FV = 143,243.1146

Round the answer to the nearest cent.

Therefore, the future value is $143,243.11.

For an Annuity Due (payments made at the BEGINNING of the payment period):

1. Set up the calculator:

    c) Check whether the calculator says "BGN" or nothing on the calculator screen. If there is nothing, the calculator is in "END" mode and you need to change it to "BGN" mode.

    Press 2nd [PMT] to access the [BGN] second function.
    Press 2nd [ENTER] (i.e. SET) to switch between BGN and END modes.
    Press 2nd [CPT] to QUIT.

2. Follow same steps as above (1b to 4).

Example:

Compute the nominal annual rate of interest compounded monthly at which $200 deposited at the beginning of every three months for five years will amount to $5,000.

Given:
N = 5 years x 4 = 20 payments
C/Y = 12 (since interest is compounded monthly)

P/Y = 4 (since payments are made every three months, which is quarterly)
PMT = −200
PV = 0
FV = 5,000
I/Y = ?

Solution:
On your calculator, set P/Y = 4 and C/Y = 12.

CLR TVM

20 N

0 PV

−200 PMT

5000 FV

Press [CPT] I/Y

I/Y = 9.072823406

Let's round the answer to two decimal places.

The nominal annual rate of interest is 9.07% compounded monthly.