BA II Plus Tutorial

Payments per year: The calculator is initially set at twelve payments per year (it assumes monthly compounding). You need to set the payments per year to one.

To change this, press the 2nd key, then press I/Y. Now enter the number 1, and press the ENTER key. Once you have completed this process, press 2nd and CPT to get back to the normal screen.

If your calculator is ever reset, the payments per year will automatically default to twelve and you will need to change it back to one.

What if there are multiple compounding periods in a year? You will adjust your interest rate and time period to accommodate the multiple compounding periods.

Setting decimal places: The calculator can be set so that answers are displayed with zero to eight decimal places. The default is two decimal places. It is preferred that you set your calculator to five decimal places.

To change this, press the 2nd key and · Enter the number 5 then press the ENTER key. Now press 2nd and CPT to return to the normal screen.

Why do you need to do this? Numbers should display five decimal places so that there are four significant digits and a fifth digit that is sufficient for rounding.

Time Value of Money Variables: The five main variables that you will use in problems are: number of periods N , interest per year (periods) I/Y , present value PV , payment PMT , and Future Value FV .

!!! To enter a value for your variable, you **first** enter the number and then press the desired variable key. If you do not have a number for a variable, you should enter zero for that value (press zero and then press the desired variable key).

Entering interest rates: Although your interest rate is a percentage, it must be entered as a number. E.g. For an interest rate of 6%, you must enter the number 6 and then press I/Y (you DO NOT enter .06).

Signs: When entering a value for a variable, it must have the proper sign or you will receive an error message. All cash inflows (money that you receive) must be entered with a positive sign value. All cash outflows (money that you spend) must be entered with a negative sign value (use the +/- key, not the minus key).

E.g: For bond-valuation, your initial purchase price (present value) of the bond is a cash outflow (you are buying the bond) and therefore must be entered as a negative number. Your coupon payments and the maturity value (future value) are cash inflows (income that you will receive over the life of the bond) and must be entered as positive numbers.

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Some Examples

Note: To being a TVM calculation, you should make sure that the financial registers are clear. To do this, press $\boxed{2^{nd}}$ and $\boxed{FV}$.

Present Value of a Lump Sum:
If $100 is deposited today at 6%, how much will be in the account in four years?

Enter the number -100 and press PV (this amount is a cash outflow and therefore negative; use the +/- key, NOT the minus key to enter a negative number)
Enter 6 and press I/Y
Enter 4 and press N
Enter 0 and press PMT.

To solve, press CPT and FV. Your answer should be $126.25.

Present Value of an Annuity:
The present value of an annuity of $2,350 each year for eight years at an interest rate of 11% is:

Be sure to clear you register by pressing 2nd and FV
Enter the number 2,350 for PMT
Enter 11 for I/Y
Enter 8 for N
Enter 0 for FV

To solve, press CPT and PV. Your answer should be -$12,093.39 (The answer is displayed as a negative because it is a cash outflow).

Future Value of an Annuity:
Alex plans to fund his individual retirement account with the maximum contribution of $2,000 at the end of each year for the next 10 years. If Alex can earn 10% on his contributions, how much will he have at the end of the 10th year?

Be sure to clear you register by pressing 2nd and FV
Enter -2,000 for PMT (this is a cash outflow)
Enter10 for N
Enter 10 for I/Y
Enter 0 for PV

To solve, press CPT and FV. Your answer should be $31,874.85

Solving for the Interest Rate of a Lump Sum:
If a U.S. savings bond can be purchased for $14.60 and has a maturity value of $100 at the end of 25 years, what is the annual rate of return on the bond?

Be sure to clear you register by pressing 2nd and FV
Enter -14.60 for PV
Enter 100 for FV
Enter 25 for N
Enter 0 for PMT

To solve, press CPT and I/Y. You answer should be 8%

Solving for the Interest Rate of an Annuity:
Carol borrows $20,000 from the bank. For a 5 year loan, the bank requires annual payments of $4.878.05. The annual interest rate on the loan is:

Be sure to clear you register by pressing 2nd and FV
Enter 20,000 for PV
Enter 5 for N
Enter -4,878.05 for PMT
Enter 0 for FV

To solve, press CPT and I/Y. Your answer should be 7%

Solving for the Payment of an Annuity:
Carol borrows $20,000 from the bank. For a 5 year loan, the annual rate is 7%. Annual payments are:

Be sure to clear you register by pressing 2nd and FV
Enter 20,000 for PV
Enter 7 for I/Y
Enter 5 for N
Enter 0 for FV

To solve, press CPT and PMT. Your answer should be -$4,877.81

Bond Valuation:
The firm has an issue of $1,000 par value bonds with a 9% coupon rate outstanding. The issue pays interest annually and has 20 years remaining to its maturity date. If bonds of similar risk are currently earning 11%, the firm's bond will sell today.

Be sure to clear you register by pressing 2nd and FV
Enter 1,000 for FV
Enter 90 for PMT
Enter 20 for N
Enter 11 for I/Y

To solve, press CPT and PV. Your answer should be -$840.73 (the answer is negative because it is a cash outflow).

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Net Present Value:
A project has an initial investment of $10,000. The net operating cash flows are $3,500 per year for four years. The cost of capital is 12%. What is the net present value?

Press CF. Your display will read [CF_0=].
Now put in your initial investment, -10,000 and press ENTER.
Press the ↓ key. The display will now read [C01=]
Now put in your operating cash flow, 3,500. Press ENTER and then ↓.
The display now reads [F01=]. It is asking for the frequency of this cash flow. Since the cash flow is equal for all four years, enter 4 and press ENTER (If your cash flows were different for each year, you would enter 1 for F01, press ENTER and ↓ and continue the process for C02, F02, etc.)
Your cash flows are now entered in your calculator.

Now press NPV.
The display will read [I=]. This is asking for your cost of capital.
Enter 12 and press ENTER. Press ↓.
The display reads [NPV=].

To solve, press CPT. Your answer should be $630.72

Internal Rate of Return:
Use the information set from the net present value example. What is the internal rate of return?

Your cash flows are still stored in your calculator from the NPV problem (if they are not, you will need to re-enter the; see NPV problem for help on this).

To solve, press IRR and CPT. Your answer should be 14.96%.

Clearing Cash Flows from the Register:
To clear all cash flows from the registry, press CF. Now press 2nd and CE/C.