HP 10BII Tutorial

By default the HP 10B displays only two decimal places. At most you will usually need four decimal places. To change the display, press the second function key (usually orange or gold in color), then "DISP," and then the number 4.

The HP 10B also has periods per year set equal to 12. You can change the periods per year for each problem, but the solutions in the lecture supplement are based on the periods per year being set to one. To change the setting, press the number 1, then the second function key, and then "P/YR."

The "C" key is the clear key that clears the display. To clear the time value function keys press the second function key and then "C ALL." You should get into the habit of clearing the time value function keys before starting a new problem.

Note that the calculator treats PV as negative numbers (cash outflows). Therefore, it is good to enter all PV's as negative numbers. To make a number negative, be sure to enter the number first and then press the "+/-" key. Do not use the subtraction key ("-").

You will use the time value keys at the top of the calculator to solve "lump sum" and annuity future and present value problems. To enter values simply type the number first and then press the associated time value key. For example, if you want n=8, press the number 8 and then press the "N" key.

EXAMPLES:

(A) calculate PV
What is the present value of $2000 received 10 years from now if the interest rate you could have received is 7%?

First enter the information that is given.
N = 10
I% = 7
PV =
PMT = 0
FV = 2000

To solve the problem, press the "PV" key.
Answer: $1016.70 (The answer will appear with a negative sign.)

(B) calculate FV
What is the future value 10 years from now of $2000 deposited today in an account which has a quoted annual interest rate of 10% with quarterly compounding of interest?

First enter the information that is given.
Note: For the calculated values, be sure to hit the "=" key before pressing the time value key.

N = 10X4 (This indicates 10 years times 4 interest payments per year.)
I% = 10/4 (This indicates 2.5% per quarter.)
PV = -2000 (The negative sign is a result of the calculator's default programming.)
PMT = 0
FV =

To solve the problem, press the "FV" key.
Answer: $5370.13

(C) calculate i
What annual interest rate must you earn if you plan to deposit $10,000 in the bank today and you want it to grow to be $17,623.42 in 5 years?

First enter the information that is given.
N = 5
I% =
PV = -10000 (The negative sign is due to the calculator's default programming.)
PMT = 0
FV = 17623.42

To solve the problem, press the "I/YR" key.
Answer: 12%

(D) calculate n
If you deposit $5000 in an account which earns 9% per year, how many years will it take for the investment to grow to be worth $10,000?

First enter the information that is given.
N =
I% = 9
PV = -5000 (The negative sign is a result of the calculator's default programming.)
PMT = 0
FV = 10000

To solve the problem, press the "N" key.
Answer: 8.0432 years

Your calculator allows you to solve for the various items for an **ordinary annuity or an annuity due**. You must make sure the calculator is in the correct "mode" for the type of annuity you are considering. The calculator has two annuities modes: END and BEGIN. The "BEGIN" mode is used for an annuity due (begin means the payments are at the beginning of the period). The "END" mode is used for ordinary annuities (end means the payments are at the end of the period). The "BEG/END" key changes the payment mode of the calculator. To change modes press the second function key and then the "BEG/END" key. If you are in the begin mode, the word "BEGIN" will show in the display. To change to the end mode, do the same again.

EXAMPLE:
You are offered an investment that will pay you $5000 per year for the next 10 years. Each payment will be made at the end of each year. If the appropriate discount rate is 9% per year, what is the present value of the annuity?
Note: Payments are at the end of each year, so be sure you are in the end mode.
Enter the information that is given.
N = 10
I% = 9
PV =
PMT = 5000
FV = 0

To solve the problem, press the "PV" key.
Answer: $32,088.29

EXAMPLE:
You are offered an investment that will pay you $8000 per year for the next 20 years. Each payment will be made at the beginning of each year. If you expect to earn an annual return of 7% per year, what is the future value of the annuity at the end of the 20 years?
Note: Payments are at the beginning of each year, so make sure you are in the begin mode.
Enter the information that is given.
N = 20
I% = 7
PV = 0
PMT = 8000
FV =
To solve the problem, press the "FV" key.
Answer: $350,921.41

Uneven Cash Flows
The calculator will calculate the present value of an uneven stream of cash flows using the NPV function. You enter the cash flows in the order they occur starting with any cash flow that occurs now (cash flow zero). To enter the cash flows, press the number first and then press the "CF_j" key. After you enter all cash flows, enter the interest rate by pressing the number and then the "I/YR" key. To solve the problem, press the second function key and then the "NPV" key.

Example:
Suppose that you are offered an investment which will pay $100 at the end of the first year, $200 at the end of the second year, $300 at the end of the third year, $400 at the end of the fourth year, and $500 at the end of the fifth year. How much are the cash flows worth in today's dollars if your annual required rate of return is 12%?

To solve the problem, first enter the cash flows. Remember you must start with cash flow zero. Since nothing happens now in the problem, cash flow zero equals 0.
Press 0 then "CF_j"
Press 100 then "CF_j"

Press 200 then "CF_j"
Press 300 then "CF_j"
Press 400 then "CF_j"
Press 500 then "CF_j"
Now enter the interest rate. Press 12 then "I/YR"
To solve the problem, press the second function key and then "NPV."
Answer: $1000.18

If cash flows occur multiple times, we use the cash flow frequency button. The cash flow frequency button is the "N_j"key. Always enter the cash flow first, and then the frequency.
Example:
Suppose that you are offered an investment that at the end of each year will pay $500 for the first 5 years, $1500 for the next 10 years, and $2500 for the next 15 years. What is the present value of the cash flows if your annual required rate of return is 13%?

To solve the problem, first enter the cash flows. Remember you must start with cash flow zero. Since nothing happens now in the problem, cash flow zero equals 0.
Press 0 then "CF_j"
Press 500 then "CF_j"
Press 5 then the second function key and then "N_j"
Press 1500 then "CF_j"
Press 10 then the second function key and then "N_j"
Press 2500 then "CF_j"
Press 15 then the second function key and then "N_j"
Now enter the interest rate. Press 13 then "I/YR"
To solve the problem, press the second function key and then "NPV."
Answer: $8759.52