

Finance Calculator

Texas Instruments 83

NPV and IRR: Using the Cash Flow Register.

NPV: The NPV key is used to compute the net present value of a stream of cashflows. After the stream has been inputted, an interest rate must be entered to discount the cashflow. Once all the factors are present, the NPV can be computed.

IRR: The IRR is used to compute the internal rate of return. This being the rate at which the NPV equals zero.

Finding the NPV and the IRR of a stream of uneven cashflows use the cash flow functions in menu items **7** and **8**

Beginning with a cash outflow (investment) of \$400, a project will result in 4 inflows of unequal amounts, spaced evenly, of 100, 200, 200, and 300 dollars.

To find NPV: **2nd, FINANCE**, scroll down to **7: npv(** and then press **ENTER**

Rate = **10%**
CF0 = **-400**
CO1 = **100**
CO2 = **200**
CO3 = **300**
FO1 = **1**
FO2 = **2**
FO3 = **1**

The equation: $\text{npv}(\text{Rate}, \text{CF0}, \{\text{CF List}\}, \{\text{CF Frequency}\})$
It should look like: $\text{npv}(10, -400, \{100,200,300\}, \{1,2,1\})$ and then press **ENTER**
The screen should display **NPV = 211.365**.

Another way of using this function without putting the CF Frequency:
Instead of entering the CF Frequency, repeat CO2
therefore in the CF List it should look like: $\text{npv}(10, -400, \{100,200,200,300\})$ and press **ENTER** to get **NPV = 211.365**

To find IRR: **2nd, FINANCE**, scroll down to **8: irr(** and then press **ENTER**
 $\text{irr}(\text{CF0}, \{\text{CF List}\}, \{\text{CF Frequency}\})$

it should look like: $\text{irr}(-400, \{100,200,300\}, \{1,2,1\})$ and then press **ENTER**
The screen should displaying a figure of **IRR = 28.9**. At a discount rate of 28.9% the net present value of the cash flows will equal 0.

Another way of using this function without putting the CF Frequency:

Instead of entering the CF Frequency, repeat CO2

therefore in the CF List it should look like: irr(-400, {100,200,200,300}) and then press **ENTER** to get **IRR = 28.90**

We can use another approach to solve this problem. That is to create two lists for the cash flow and the cash flow frequency to input the npv equation.

Step one: create a list for the cash flow entries above.

Press **2nd**, { (can be found on fifth row third column) enter the cash flow: **100,200,300** (comma is used to separate the numbers) and **2nd**, } to close the list. Now press **STO arrow** (above the on key), and then name the list to **CF**. To do so, press **ALPHA** (the green key) before each alphabet. (that is, **ALPHA, C, ALPHA, F**) at the end press **ENTER**.

Step two: create the second list for the cash flow frequency.

Press **2nd**, { (can be found on fifth row third column) enter the cash flow frequency: **1,2,1** and **2nd**, } to close the list. Now press **STO arrow** (above the on key), and then name the list to **CFF**. To do so, press **ALPHA** (the green key) before each alphabet. (that is, **ALPHA, C, ALPHA, F, ALPHA, F**) at then press **ENTER**.

Step three:

To find NPV: **2nd, FINANCE**, scroll down to **7: npv**(and then press **ENTER**

The equation: npv (Rate, CF0, {CF list}, {CF Frequency list})

npv (10, -400 (CF0 is not in the CF list), \downarrow CF (go to 2nd, LIST, under NAMES, pick CF (this where the CF list is stored), \downarrow CFF (follow the same instruction as above) press **ENTER** after all the steps are finished.
npv = 211.37

Step Four:

To find IRR: **2nd, FINANCE**, scroll down to **8: irr**(and then press **ENTER**

The equation: irr (CF0, {CF List}, {CF Frequency})

irr (-400, \downarrow CF, \downarrow CFF and then press **ENTER**
irr = 28.9

Note: To delete the old list under NAMES: go to 2nd MEM (above the ENTER key), choose 2: Delete, click ENTER, and choose 4: List... click ENTER. From here choose the unnecessary lists delete them by pressing the ENTER key.

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Finance Calculator

HP 10BII

NPV and IRR: Using the Cash Flow Register.

4 KEYS:

CFj: used to enter even or uneven cashflows. (The location on calculator is: third row third column)

Orange key, Nj: This is where the frequency of the cashflows will be entered, for example if a cashflow occurs twice in a row, you would enter 2, orange key, Nj. (The location on calculator is: third row third column below CFj)

Orange key, NPV: The NPV key is used to compute the net present value of a stream of cashflows. After the stream has been inputted, an interest rate must be entered into the I/YR key first to discount the cashflow. Once all the factors are present, the NPV can be computed. (The location on calculator is: second row fourth column below the PRC key)

Orange key, IRR/YR: This button is used to compute the internal rate of return. This being the rate at which the NPV equals zero. (The location on calculator is: second row third column below the CST key)

Finding the NPV and the IRR of a stream of uneven cashflows.

Beginning with a cash outflow (investment) of \$400, a project will result in 4 inflows of unequal amounts, spaced evenly, of 100, 200, 200, and 300 dollars. These cashflows will occur on a yearly basis.

Begin by clearing the register: Orange key, C ALL.

Enter 1, orange key, P/Y to set the calculator to 1 period per year

400+/-, CFj (The screen should read CF 0 while the CFj button is depressed)

100, CFj

200, CFj

2, orange key, Nj (sets the frequency of the \$200 payment at 2)

300, CFj

Now to obtain the answer, press orange key, **IRR/YR** and the answer should be **28.9**. To calculate the NPV of this stream of cashflows, enter **10, I/YR** for the discount rate, then orange key, **NPV** and **211.365** should appear as the Net Present Value of the stream.