

# Cash Flows Calculations

The HP-12C calculator provides functions for the two most widely-used methods of discounted cash flow analysis: **[ f ] [NPV]** (net present value) and **[ f ] [IRR]** (internal rate of return). These functions enable you to analyze financial problems involving cash flows (Cash-In or Cash-Out) occurring at regular intervals, but of different values.

The RLM's 12C implementation has the capacity to store up to 99 different cash flow amounts (CFj) plus the initial investment (CFo). Also, equal consecutive cash flows can be grouped entering the cash flow amount and the number of times (up to 99) that it repeats (Nj).

The keys involved in the Discounted Cash Flow Analysis are:

<b>[ n ]</b>	Stores the index “ j ” of the current cash flow entry for editing; or the index of the last cash flow to be considered in the NPV and IRR calculation.
<b>[ i ]</b>	Stores the Interest rate to use by the NPV calculation or keeps the result of the IRR calculation.
<b>[g] [CFo]</b>	Amount of the initial investment stored in storage register 0. This function stores the number in the display in the storage register 0 and resets to 0.
<b>[g] [CFj]</b>	Cash flow “ j “ amount. This function increments by 1 and stores the number in the display in the Storage Register “n”.
<b>[g] [Nj]</b>	Number of times the cash flow “ j “ occurs consecutively. By default “Nj” is 1. If a value is entered, it must be a positive integer from 1 up to 99.
<b>[ f ] [NPV]</b>	Calculates the Net Present Value using the value of as interest rate per period of the cash flow entries from 0 to the value of .
<b>[ f ] [IRR]</b>	Calculates the Internal Rate of Return of the cash flow entries from 0 to the value of and stores the result in register .

## **Example : Cash Flow NPV & IRR Calculations**

A rental property is for sale at \$79,000. It has rental and purchase contracts that give the following cash flows to the investor:

Year	Cash Flow Amount	Year	Cash Flow Amount
1	\$14,000.00	6	\$9,100.00
2	\$11,000.00	7	\$9,000.00
3	\$10,000.00	8	\$9,000.00
4	\$10,000.00	9	\$4,500.00
5	\$10,000.00	10	\$100,000.00

What is the Present Value of the investment at 13.5% rate of return?  
What is the Internal Rate of Return of the investment?

Keystrokes	Description
<b>[f] clear [REG]</b>	Clears the Storage Registers.
"79000" <b>[CHS] [g] [CFo]</b>	Stores the initial investment (Cash-Out).
"14000" <b>[g] [CFj]</b>	Stores the 1 <sup>st</sup> cash flow value "CF <sub>1</sub> " (Cash-In).
Type "11000" <b>[g] [CFj]</b>	Stores the 2 <sup>nd</sup> cash flow value "CF <sub>2</sub> " (Cash-In).
Type "10000" <b>[g] [CFj]</b>	Stores the 3 <sup>rd</sup> cash flow value "CF <sub>3</sub> " (Cash-In).
Type "3" <b>[g] [Nj]</b>	Stores the number of repetitions of cash flow "CF <sub>3</sub> " in "N <sub>3</sub> ".
Type "9100" <b>[g] [CFj]</b>	Stores the 4 <sup>th</sup> cash flow value "CF <sub>4</sub> " (Cash-In).
Type "9000" <b>[g] [CFj]</b>	Stores the 5 <sup>th</sup> cash flow value "CF <sub>5</sub> " (Cash-In).
Type "2" <b>[g] [Nj]</b>	Stores the number of repetitions of cash flow "CF <sub>5</sub> " in "N <sub>5</sub> ".
Type "4500" <b>[g] [CFj]</b>	Stores the 6 <sup>th</sup> cash flow value "CF <sub>6</sub> " (Cash-In).
Type "100000" <b>[g] [CFj]</b>	Stores the last cash flow value "CF <sub>7</sub> " (Cash-In).
Type "13.5" <b>[i]</b>	Key in the rate of return a press "i" to enter it.
<b>[f] [NPV]</b>	Calculates the Net Present Value. <b>Result = 907.77</b>
<b>[f] [IRR]</b>	Calculates the Internal Rate of Return. <b>Result = 13.72%</b>

## Cash Flow Review & Edit

The cash flow amounts are stored in the Storage Registers, from CF<sub>0</sub> in register 0 to CF<sub>j</sub> in register “ j ”, thus they can be viewed or changed using **[STO]** or **[RCL]**. Nevertheless, this method only works with the first 20 entries (STO & RCL can access up to 20 registers, from 0 to 19).

The general method to access all cash flow entries is to use the number stored in register [ n ] as index “ j ”. You can use the following procedures to view or change an entry with this technique:

### To Review cash flow entries (CF<sub>j</sub>):

Type the index of the cash flow you want to view (“ j ”) and press [ n ] then press **[RCL] [g] [CFj]** and the amount of “CF<sub>j</sub>” will be shown in the display. Be aware that this function decreases the contents of [ n ] by 1 after the recall.

### To Review cash flow repetition (N<sub>j</sub>):

Type the index of the cash flow you want to view (“ j ”) and press [ n ] then press **[RCL] [g] [Nj]** and the number of ‘CF<sub>j</sub>’ repeats consecutively will be shown in the display.

### To Change a cash flow entry (CF<sub>j</sub>):

Type the index of the cash flow you want to change (“ j ”) minus 1 and press [ n ] then type the the new cash flow amount and press **[g] [CFj]**. Be aware that this function increases [ n ] by 1 before storing CF<sub>j</sub>.

### To Change a cash flow repetition (N<sub>j</sub>):

Type the index of the cash flow you want to view (“ j ”) and press [ n ] then press **[g] [Nj]**.

To view or change the initial investment use **[RCL] [g] [CF<sub>0</sub>]** to view the amount or **[g] [CF<sub>0</sub>]** to store a new one.

After any of these operations, be sure to restore the value of [ n ] to its original value, that is the total number of cash flow entries, not counting the initial investment.

## Summary:

Type “ j “ [n]	Stores the index “ j ” of the cash flow in the financial register “n”.
[RCL] [g] [CFj]	Recalls and displays the amount of the cash flow “n” (CFj) and decrement the index in “n” by 1.
[RCL] [g] [Nj]	Recalls and displays the number of times that the cash flow “n” (Nj) repeats consecutively.
[g] [CFj]	Increments the index in “n” by 1 and stores the number in the display in the cash flow “n” (CFj).
[g] [Nj]	Stores the displayed value as the number of times that the cash flow “n” (Nj) repeats consecutively (integer from 1 to 99).
[RCL] [g] [CFo]	Recalls and displays the amount of the initial cash flow.
[g] [CFo]	Stores the displayed value as the initial cash flow (CFo) and resets the index in “n” to 0.