

Using the TI-83 Plus¹

The keystrokes you should input are in the color teal.

Amortization

The loan amortization example is the same one described in class on slides 37 through 39 (Chapter 5).

Step 1: Perform the calculation to determine the amount of the loan payment (this must remain in memory throughout the amortization example).

APPS ENTER ENTER
30 X 12 ENTER
7.25 ÷ 12 ENTER
150000 ENTER

▼
0 ENTER
1 ENTER (also, make certain calculator is in END mode)
Scroll up to PMT and press ALPHA SOLVE to calculate the monthly payment of 1023.26.

Step 2: Exit the TVM Solver menu and go to the amortization functions.

2ND QUIT
APPS ENTER 9 (to select *bal* function)

The *bal* function works like this:

$$\text{Bal}(\text{npmt}, \text{roundvalue})$$

where *npmt* is the number of the payment for which you wish to have the balance computed—the balance remaining outstanding after the *npmt*. The *roundvalue* is optional, and, if omitted, the calculator rounds the answer to the number of decimal places for which your calculator is set. I will always omit the *roundvalue*.

We will be solving for the outstanding balance at the end of first year of the mortgage, or payment #12—the second to last line on the table on Slide 39.

Calculator should now display:

bal(
and you should input:
12) ENTER at which point the calculator displays 148548.22.

To calculate the total interest paid through payment #12 (the \$10,827.39 shown on the last line of table on Slide 39):

APPS ENTER ALPHA A (selects the Σ Int function—it's easier to do it this way, but you could scroll until you find the Σ Int function [after you press APPS ENTER])

The Σ Int function works like this:

$$\hat{a} \text{Int}(\text{pmt1}, \text{pmt2}, \text{roundvalue})$$

¹ This may not be the most effective method to use with the TI-83 Plus, but it works!

and calculates the total interest paid from payments 1 to 2, inclusive. Roundvalue works the same way as described above, and will be omitted.

We will be calculating the total interest paid over the first year of the mortgage, or payments 1 through 12.

The calculator should now display:

$\Sigma\text{Int}(\text{$

and you should input:

1,12) ENTER at which point the calculator displays $-10,827.39$.

The ΣPrn (principal) function works the same way as the ΣInt function, so I won't describe it.

To find the values for a single payment (say, the 6th one) you would input:

Bal(6) and calculator displays 149287.22

$\Sigma\text{Int}(6,6)$ and calculator displays -902.67

$\Sigma\text{Prn}(6,6)$ and calculator displays -120.59

To find the total interest paid over the life of the loan (after all 360 payments have been made);

$\Sigma\text{Int}(1,360)$ and calculator displays -218375.21

NOTE: It is possible to generate a table showing the outstanding balance at the end of each payment, but I think the processes demonstrated here are sufficient, so I didn't demonstrate the table feature.

Unequal Cash Flows

I will demonstrate the example from Slide 43 (Chapter 5) where I solved for the present value of the following series of cash flows:

Time	Cash Flow
0	5,000
1	4,000
2	3,000

The TI-83 PLUS has an interesting way of viewing cash flows. The Net Present Value (NPV) function works like this:

Npv(interest rate, Cash Flow 0, List of cash flows 1 through n, List of frequencies of cash flows 1 through n)

The interest rate is expressed as a percentage (in other words, input 10, not .10)

The List of cash flows 1 through n is a list containing cash flows occurring in years 1 through the end of the series of cash flows.

The List of frequencies of cash flows 1 through n is a list containing the frequencies of cash flows 1 to the end of the cash flow series. This value is optional, and, if omitted, each cash flow is assumed to have a frequency of 1.

Step 1: Create a list of cash flows from year 1 to 2.

2ND {4000,3000} STO → 2ND L1 ENTER

NOTE: L1 through L6 are pre-programmed list names. You could name your list something else, but we will just use the pre-programmed list names.

Step 2: Go to the finance menu and select the NPV function.

APPS ENTER 7 (to select NPV function)

Display should read:

Npv(

And you should input:

10,5000,2ND L1) ENTER

at which point the calculator displays 11115.70.