

## **Section 4: Using a Financial Calculator**

### **Tab 1: Introduction and Objectives**

#### **Introduction**

In this section, the functions of a financial calculator will be reviewed and some sample problems will be demonstrated.

#### **Objectives**

Upon completing this section of the TVOM Tutorial, you will be able to:

- Identify important keys on the financial calculator.
- Demonstrate basic and advanced operations on a financial calculator.
- Solve finance problems using the financial calculator.
- List common mistakes made by students when using a financial calculator.

## Important Functions

We will begin this section by reviewing some of the primary and secondary functions of a financial calculator.

Primary Functions | Secondary Functions

**2ND** then:

- **QUIT** -Use to leave sub-routine mode
- **SET** -Use this key to switch from a default setting.
- **CLR TVM** -Clear TVOM worksheet
- **BGN** -Cash flow at the beginning of the time period
- **P/Y** -Payments per year
- **xP/Y** -Calculates the value for N using number of years and the stored P/Y value

Primary Functions | Secondary Functions

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## Section 4: Using a Financial Calculator

### Tab 2: Basic Operation of Your Calculator

#### 1. Secondary function keys

The secondary functions are those printed above the primary function keys.

To use a secondary function, follow this sequence:

1. 2<sup>nd</sup>
2. Desired secondary function.

For example, to clear the TVOM Worksheet, you would follow this sequence:

1. 2<sup>nd</sup>
2. CLR TVM

#### DEMO:

*To clear the TVOM worksheet, press the **SECOND** key and then press the **FUTURE VALUE** key to access its secondary function, **Clear TVOM Worksheet**.*

#### 2. Setting P/Y and C/Y

P/Y stands for payments per year, and C/Y for compounding periods per year.

For BA II Plus, the defaults for P/Y and C/Y are 12. That is, 12 payments per year and 12 compounding periods per year.

To set both P/Y and C/Y to be the SAME number such as 1 (one payment per year and annual compounding) follow this sequence:

1. 2<sup>nd</sup>
2. P/Y
3. "1"
4. ENTER
5. 2<sup>nd</sup>
6. Quit

Note that if both P/Y and C/Y equal the same number, you only need to enter a value for P/Y.

#### DEMO:

*To set payments per year to one payment per year, and compounding periods per year to annual compounding, press the **SECOND** key and then press the **INTEREST PER YEAR** key to access its secondary function, **PAYMENTS PER YEAR**. Next indicate the number of payments per year, which is **1**, and then press the **ENTER** key. Finally, press the **SECOND** key and then the **COMPUTE** key to access its secondary function, **QUIT**.*

Note: To avoid setting P/Y and C/Y for every problem, you can keep the setting of P/Y and C/Y to be 1 and convert all variables according to “P/Y=1” and “C/Y=1”. In this case, Y stands for period, “P/Y=1” is one payment per period, and “C/Y=1” is one compounding per period. The period can be any time interval such as month, quarter and semiannual.

For example, over the past two years, you saved \$200 per month in a saving account that earns 6% monthly compounding. If you set “P/Y=1” and “C/Y=1”, you can think of Y as month. Therefore, “P/Y=1” implies one payment (your deposit) per month, and “C/Y=1” is one compounding per month. The interest rate must be the rate per month or 6/12 or 0.5.

## 2. Setting P/Y and C/Y

To set P/Y and C/Y for DIFFERENT numbers such as 4 P/Y and 12 C/Y (four payments per year and monthly compounding). Follow this sequence:

1. 2<sup>nd</sup>
2. P/Y
3. “4”
4. ENTER
5. Downward arrow
6. “12”
7. ENTER
8. 2<sup>nd</sup>
9. QUIT

### DEMO:

*To set the number of payments per year to 4, first press the **SECOND** key, and then the **INTEREST PER YEAR** key to access its secondary function, **PAYMENTS PER YEAR**. Next, indicate the number of payments, which is **4**, and then press the **ENTER** key. Look at the screen – it will display P/Y=4.*

*Now to specify the compounding period as monthly compounding, press the **DOWNWARD ARROW** key to move from payments per year to compounding per year. Indicate the number of compounding periods, which is **12**, and then press the **ENTER** key. Look at the screen – it will display C/Y=4.*

*To end this mode, press the **SECOND** key and then press the **COMPUTE** key to access its secondary function, **QUIT**.*

### 3. Using the BGN and END function

BGN and END indicate timing of cash flows.

- BGN is for cash flow at beginning of time period.
- END is for cash flow at end of time period.
- The default of the calculator is END.

To switch from the default of END to BGN, follow the steps below:

1. 2<sup>nd</sup>
2. BGN
3. 2<sup>nd</sup>
4. SET
5. CE/C
6. Look at screen to confirm “BGN” has appeared in the upper left corner.

To switch back (i.e., from BGN to END), repeat the steps above. If you do it successfully, BGN should disappear on the screen.

**DEMO:** *The calculator’s default is for cash flows that occur at the end of the time period. To set it for cash flows that occur at the beginning of the time period, press the **SECOND** key and then press the **PAYMENT** key to access its secondary function, **BEGIN**. Next press the **SECOND** key and then press the **ENTER** key, to access its secondary function, **SET**. Finally press the **CLEAR ENTRY** button. Look at the display - you will see Begin in the upper left corner of the screen.*

### 4. How to input variables and get solution

There are five calculator functions for TVOM:

- N
- I/Y
- PV
- PMT
- FV

Recall that that these functions are equivalent to the following values in the TVOM equation (shown in the table below). You need to input any four variables in order to calculate the fifth one.

Functions on Calculator	Meaning	Variables on Equation
N	Number of payments	T
I/Y	Interest per year or interest per period in case P/Y and C/Y = 1	r
PV	Present value	PV

PMT	Payment (amount) per period	C
FV	Future value	FV

To input a variable, start with a number and then press the variable function.

For example, to input five payments follow these steps:

1. 5
2. N
3. Look for N = 5 on the display screen.

**DEMO:** To input the 5 as the variable for number of payments, enter the number **5**, press the **NUMBER OF PAYMENTS** key, and then look for N=5 to display on the screen.

To calculate for an unknown variable, such as FV, when N = 24, I/Y=6/12, PV=100 and PMT=0:

1. First enter all the known variables, pressing the function followed by the number:
  - N; 24
  - I/Y; 6 divided by 12
  - PV; 100
  - PMT; 0
2. Next, determine the unknown value:
  - CPT
  - FV

Note: Although sequence of inputs is not required, input from one side will reduce mistakes from omitting some variables.

**DEMO:** When working with equations, it is best to enter the variables from left to right on keys of the calculator, to lessen the chance of omitting a variable. Using the information from the example on this screen,

- Enter the “Number of payments equals 2” by pressing the **NUMBER OF PAYMENTS** key followed by **24**;
- Enter “Interest per year equals 6 divided by 12,” by pressing the **INTEREST PER YEAR** key then **6**, the **divided by** sign, and then **12**, with the resulting answer of .5 displayed on the screen;
- Enter “Present Value equals 100” by pressing the **PRESENT VALUE** key, and then **100**
- Finally enter “Payment amount equals 0,” by pressing the **PAYMENT** key followed by **0**.
- Next, to find the unknown Future Value, press the **COMPUTE** key and then the **FUTURE VALUE** key.

## 5. How to clear TVOM worksheet

To set your variables N, I/Y, PV, PMT and FV to zero, or in other words, to clear the TVOM worksheet:

1. CE/C
2. 2<sup>nd</sup>
3. CLR TVM

Note that following the sequence above does not clear the setting of the C/Y and the P/Y or BEG/ENG.

**DEMO:** To clear the TVOM worksheet, press the **CLEAR ENTRY** key. Next press the **SECOND** key and then press the **FUTURE VALUE** key to access its secondary function, **CLEAR TVOM WORKSHEET**.

## 6. Setting negative and positive cash flows

A positive cash flow indicates inflow, and a negative cash flow indicates outflow.

To specify an outflow for a variable:

- Variable (number).
- +/-

For example, for the outflow future value of \$500:

1. 500.
2. +/-
3. FV

Note that the “+/-” key is not the same function as the “-” key

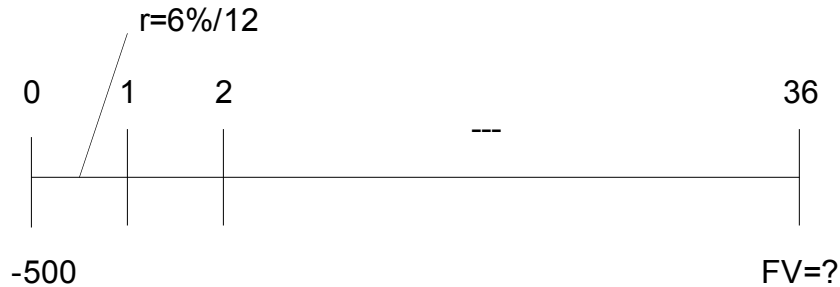
**DEMO:** To enter the Future value as -500, enter **500**, and then press the **POSITIVE or NEGATIVE** key and finally, the **FUTURE VALUE** key. You should see **FV=-500** on the screen.

## Section 4: Using a Financial Calculator

### Tab 3: Examples

#### Example 1

What is the future value of \$500 deposited three years ago? The interest rate is 6% monthly compounding.



There are two methods to solve this problem.

- Method 1: Set P/Y and C/Y = 1, to indicate one compounding period per month.
- Method 2: Set P/Y and C/Y = 12, to indicate twelve compounding periods per month.

#### Example 1, Method 1: P/Y and C/Y = 1

Setting P/Y and C/Y = 1, indicates one compounding period per month. (Note: the frequency of payments is irrelevant in this case.)

The variables are as follows:

- N = 36 (months)
- I/Y = 6/12 (per month)
- PV = -500
- PMT = 0
- FV = ?

To solve, do the following:

1. Set P/Y and C/Y = 1

- 2<sup>nd</sup> [P/Y]
- 1 ENTER
- 2<sup>nd</sup> [Quit]



2. Enter the Variables with known values, working across, left to right:

- 36; N
- 6; divided by sign; 12; = ; I/Y
- 500; +/-; PV
- 0; PMT
- CPT; FV

3. Your answer will be  $FV = 598.34$

Note that the negative of 500 indicates present value of the outflow, and the positive of your answer, 598.34, indicates future value of the inflow (i.e., your money to spend).

### **Example 1, Method 2: P/Y and C/Y = 12**

Setting P/Y and C/Y = 12, indicates twelve compounding periods per month. Y is a year in this case. (Note: frequency of payments is irrelevant in this case.)

The variables are as follows:

- N = 36 (months or 3 years)
- I/Y = 6 (per year)
- PV = -500
- PMT = 0
- FV = ?

To solve, do the following:

1. Set P/Y and C/Y = 12

- 2<sup>nd</sup> [P/Y]
- 12 ENTER
- 2<sup>nd</sup> [Quit]

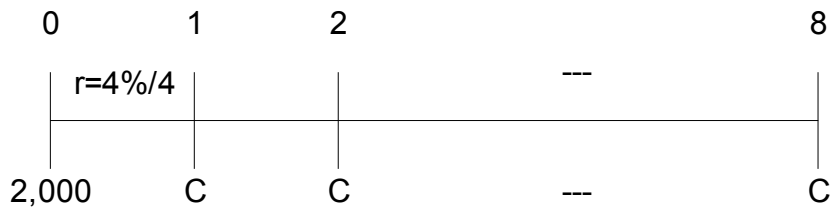
2. Enter the Variables with known values, working across, left to right:

- 36; N
- 6; I/Y
- 500; +/-; PV
- 0; PMT
- CPT; FV

3. Your answer, like in Method 1, will be  $FV = 598.34$

## Example 2

If you borrow \$2,000 from your uncle to pay for a credit card, how much do you have to pay back every three months in the next two years? You want to give your uncle 4% return compounded quarterly.



There are two methods to solve this problem.

- Method 1: Set  $P/Y$  and  $C/Y = 1$ , to indicate one compounding period per month.
- Method 2: Set  $P/Y$  and  $C/Y = 4$ , to indicate four payments per year and four compounding periods per month.

### Example 2, Method 1: $P/Y$ and $C/Y = 1$

Setting  $P/Y$  and  $C/Y = 1$ , indicates one payment per quarter, and one compounding period per quarter. As such,  $Y$  indicates a quarter in this case.

The variables are as follows:

- $N = 8$  (payments);
- $I/Y = 4\%/4$  (per quarter);
- $PV = 2,000$ ;
- $PMT = ?$ ;
- $FV = 0$

To solve, do the following:

1. Set  $P/Y$  and  $C/Y = 1$

- 2<sup>nd</sup> [P/Y]
- 1 ENTER
- 2<sup>nd</sup> [Quit]

2. Enter the Variables with known values, working across, left to right:

- 8; N
- 4; divided by sign; 4; =; I/Y
- 2000; PV
- 0; FV
- CPT; PMT

Your answer should be -261.38.

Note that the negative number in your answer indicates outflow or payment that you have to make.

### **Example 2, Method 2: P/Y and C/Y = 4**

Setting P/Y and C/Y = 4 indicates four payments per year and four compounding periods per month.

The variables are as follows:

- N = 8 (payments)
- I/Y = 4% (per year)
- PV = 2,000
- PMT = ?
- FV = 0

To solve, do the following:

1. Set P/Y and C/Y = 1

- 2<sup>nd</sup> [P/Y]
- 1 ENTER
- 2<sup>nd</sup> [Quit]

2. Enter the Variables with known values, working across, left to right:

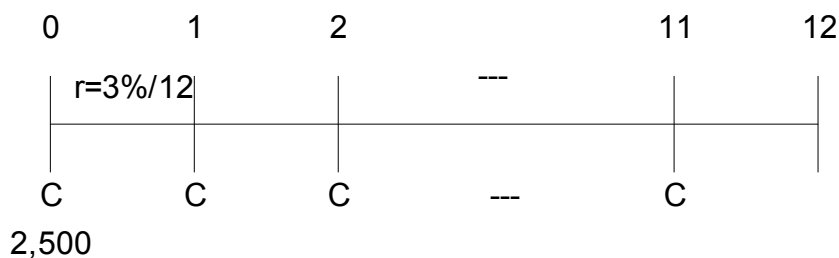
- 8; N
- 4; divided by sign; 4; =; I/Y
- 2000; PV
- 0; FV
- CPT; PMT

Your answers should be -261.38.

Note that the negative number in your answer indicates outflow or payment that you have to make.

### **Example 3**

Judy plans to buy a new laptop which costs \$2,500. The store has a financing option - 3%APR, 12 payments with the first payment due on the purchase date. What is the required monthly payment?



There are two methods to solve this problem.

- Method 1: Set P/Y and C/Y = 1 and BGN.
- Method 2: Set P/Y and C/Y = 12 and BGN.

### **Example 3, Method 1: P/Y and C/Y = 1 and BGN**

Setting “P/Y and C/Y = 1” indicates one payment per month, and one compounding period per month. Y is a month in this case.

The variables are as follows:

- N = 12 (payments)
- I/Y = 3%/12 (per month)
- PV = 2,500
- PMT = ?
- FV = 0

To solve, do the following:

1. Make sure BGN appears on screen; if not, do the following:
  - 2<sup>nd</sup>, [BGN]; 2<sup>nd</sup>, [SET]
  - CE/C
2. Set P/Y and C/Y = 1
  - 2<sup>nd</sup> [P/Y]
  - ENTER
  - 2<sup>nd</sup> [Quit]
3. Enter the Variables with known values, working across, left to right:
  - 12;N
  - 3; divided by sign; 12; =; I/Y
  - 2500; PV
  - 0; FV
  - CPT;PMT

Your answer should be PMT = -211.21

Note that the negative number indicates outflow or payment that you have to make.

**Example 3, Method 2: P/Y and C/Y = 12 and BGN**

Setting “P/Y and C/Y = 12” indicates twelve payments per year, and twelve compounding periods per year. Y is year in this case.

The variables are as follow:

- $N = 12$  (payments)
- $I/Y = 3\%$  (per year)
- $PV = 2,500$
- $PMT = ?$
- $FV = 0$

To solve, do the following:

1. Make sure BGN appears on screen; if not, do the following:

- 2<sup>nd</sup>; [BGN]; 2<sup>nd</sup>; [SET]
- CE/C

2. Set P/Y and C/Y = 1

- 2<sup>nd</sup> [P/Y]
- ENTER
- 2<sup>nd</sup> [Quit]

3. Enter the Variables with known values, working across, left to right:

- 12; N
- 3; I/Y
- 2,500; PV
- 0; FV
- CPT; PMT

Your answer should be  $PMT = -211.21$



Note that the negative number indicates outflow or payment that you have to make.

## Section 4: Using a Financial Calculator

### Tab 4: Advanced Operations

#### 1. Locating the PV of Uneven Cash Flows

To calculate present value of uneven cash flows, use the following calculator functions:

- 
- 

Use the input values of cash flows (CF) and interest rate (I), and follow three steps including:

1. Clear Cash Flow Worksheet.
2. Input cash flow (CF or C) and its frequency (F).
3. Compute present value of uneven cash flows.

These steps will be discussed in detail below.

#### **Step 1:** *Clear Cash Flow Worksheet.*

To clear the Cash Flow Worksheet:

- CF
- 2<sup>nd</sup>
- CLR WORK

The calculator will display

CFo = 0.00

**DEMO:** To clear the Cash Flow worksheet, press Cash Flow, then the “2<sup>nd</sup>” key to access it’s secondary function, and finally Clear Worksheet.

Note: This step is very important because some cash flows might be unintentionally added to a problem. For example, let assume that the calculator was previously used to calculate present value of 10 different cash flows from Year 1-10 using Cash Flow worksheet. Now the same calculator is used to calculate present value of only 5 cash flows from Year 1-5. If the worksheet is not clear prior to the calculation of the current problem, cash flows of Year 6-10 from the previous problem will be added to the current problem and create wrong answer.

#### **Step 2:** *Input cash flow (CF or C) and its frequency (F)*

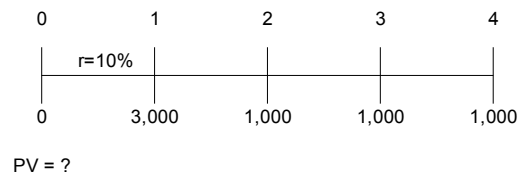
With regard to notation, the number following the CF, C and F indicates timing of cash flow.

- CF0 is the cash flow at time period 0 or initial cash flow.
- C01 is cash flow at time period 1.
- F01 = frequency of C01, and so on.










To input CF and F you will use these keys:



For example, the initial cash flow is 0, cash flow at Year 1 is 3,000, and cash flows at Year 2-4 are 1,000.



To input these cash flows, follow the steps below. (Note: The default for CF0 is 0, and the default for all F's is 1, so these steps may be skipped, if preferred)

- 0 
- 
- 3,000 
- 
- 1 
- 
- 1,000 
- 
- 3 

**DEMO:** To input cash flow and its frequency, press **ZERO** and then the **ENTER** key. Note that if your calculator has a default of “**Cash flow at Time Period Zero equal to Zero**” then you may skip this step.

Next, press the **DOWNWARD ARROW** key. Input the **Cash Flow at Time Period One**, which is 3,000, by entering the number **3,000** and then pressing the **ENTER** key.

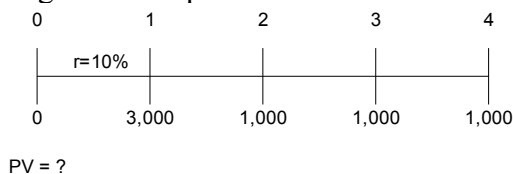
Press the **DOWNWARD ARROW** key again, and input the **Frequency of the Cash Flow at Time Period One**, which is 1, by entering the number **1** and then pressing the **ENTER** key. Note again that if your calculator has a default of **Frequency of the Cash Flow at Time Period One** that is equal to 1, you may skip this step.

Press the **DOWNWARD ARROW** key again, and input the **Cash Flow at Time Period Two**, which is 1,000, by entering then number **1,000** and the pressing the **ENTER** key.

Press the **DOWNWARD ARROW** key again, and input the **Frequency of the Cash Flow at Time Period Two**, which is 3, by entering the number **3** and then pressing the **ENTER** key.

### **Step 3:** *Compute present value of uneven cash flows*

Using this example:



Follow this sequence:

- **NPV**
- **ENTER**
- 10 .
- **↑** or **↓** to go back to NPV screen.
- **CPT**

Your answer will be: 4,988.05.

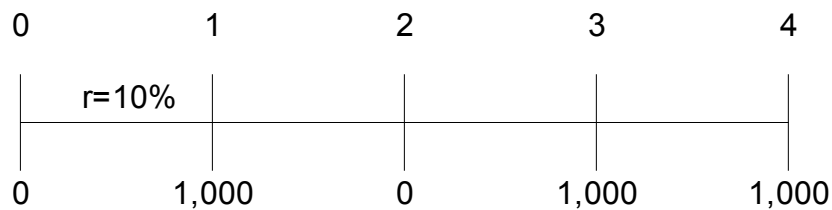


**DEMO** - To compute present value of uneven cash flows, first, press the **NET PRESENT VALUE** key. Next, indicate the Interest Rate by entering the number **10** and then pressing the **ENTER** key.

Now, use either the **UPWARD ARROW** key or the **DOWNWARD ARROW** key to return to the **NET PRESENT VALUE** Screen.

Finally, press the **COMPUTE** key to find the present value of the uneven cash flows, which is 4,988.05

**Example 1:** Calculate present value of the following cash flows.

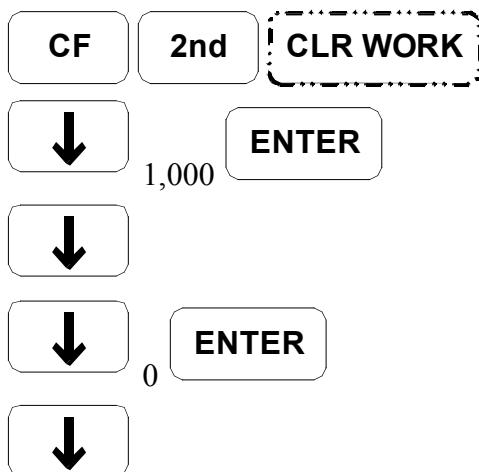


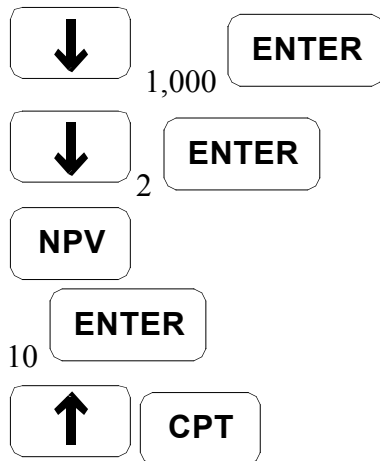
PV = ?

Note that in order for any F to be greater than 1, cash flows must be equal and consecutive. For example, F01 of the above example cash flows is NOT equal to 3, but 1.

In this case, C01 = 1,000; F01 = 1; C02 = 0; F02 = 1; C03 = 1,000; F03 = 2.

C01 = 1,000; F01 = 1; C02 = 0; F02 = 1; C03 = 1,000; F03 = 2.





Your answer will be 2343.42

**DEMO** – To calculate the present value of the cash flows in this example, first clear the cash flow worksheet by doing the following: Press the **CASH FLOW** key, then press the **2<sup>nd</sup>** key and finally the press the **CLEAR ENTRY** Key to access its secondary function, **CLEAR WORKSHEET**.

You can skip the step of inputting a value for **Initial Cash Flow**, also known as the **Cash Flow at Time Period Zero**, because the default for the Initial Cash Flow is equal to **zero**.

Next input the **Cash Flow at Time Period One**, which is **1,000**, by pressing the **DOWNWARD ARROW** key, then entering the number **1,000** and then pressing the **ENTER** key.

Next go the **Frequency of the Cash Flow at Time Period One** by pressing the **DOWNWARD ARROW** key. Since the default setting equals one as in the example, there is no need to input a value.

Next, input the value for the **Cash Flow at Time Period Two**, which is 0, by pressing the **DOWNWARD ARROW** key, entering the number 0 and then pressing the **ENTER** key.

Next, go to the **Frequency of the Cash Flow at Time Period 2** by pressing the **DOWNWARD ARROW** key. Since the default setting equals one as in the example, there is no need to input a value.

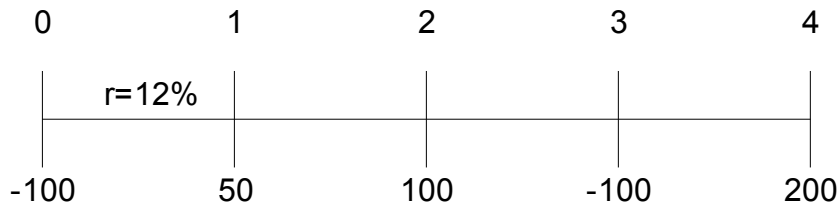
Next, input the **Cash Flow at Time Period Three**, which is equal to **1,000**, by pressing the **DOWNWARD ARROW** key, entering the number **1,000** and then pressing the **ENTER** key.

Next input the **Frequency of the Cash Flow at Time Period Three**, which is 2, by pressing the **DOWNWARD ARROW** key, entering the number 2, and then pressing the **ENTER** key.

Now, compute the present value by pressing the **NET PRESENT VALUE** key, and then indicate the 10% interest rate by entering the number **10** and pressing the **ENTER** key.

Finally press the **DOWNWARD ARROW** key to return to the **Net Present Value** screen, and press the **COMPUTE** key to find the present value, which is 2,343.42.

**Example 2:** Calculate present value of the following cash flows.

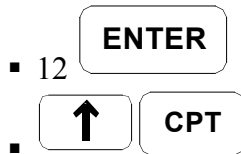


PV = ?

In this case,  $CF_0 = -100$ ;  $C_01 = 50$ ;  $F_01=1$ ,  $C_02 = 100$ ;  $F_02=1$ ;  $C_03=-100$ ;  $F_03=1$ ;  $C_04=200$ ;  $F_04=1$ .

$CF_0 = -100$ ;  $C_01 = 50$ ;  $F_01=1$ ,  $C_02 = 100$ ;  $F_02=1$ ;  $C_03=-100$ ;  $F_03=1$ ;  $C_04=200$ ;  $F_04=1$ .

- **CF** **2nd** **CLR WORK**
- **100** **+/-** **ENTER**
- **↓** **50** **ENTER**
- **↓**
- **↓** **100** **ENTER**
- **↓**
- **↓** **100** **+/-** **ENTER**
- **↓**
- **↓** **200** **ENTER**
- **NPV**



Your answer will be: 80.29

**DEMO** – To calculate present value of the cash flows in the example, first clear the **Cash Flow Worksheet** by pressing the **CASH FLOW** key, the **2<sup>nd</sup>** Key and then the **CLEAR ENTRY** key, to access its secondary function, **CLEAR WORKSHEET**.

Input the **Initial Cash Flow**, also known as the **Cash Flow at Time Period Zero**, which is -100, by entering the number **100**, pressing the **+/-** key and then pressing the **ENTER** key.

Next input the **Cash Flow at Time Period One**, which is **50**, by pressing the **DOWNWARD ARROW** key, then entering the number **50** and then pressing the **ENTER** key.

Next go to the **Frequency of the Cash Flow at Time Period One** by pressing the **DOWNWARD ARROW** key. Since the default setting equals one as in the example, there is no need to input a value.

Next, input the value for the **Cash Flow at Time Period Two**, which is 100, by pressing the **DOWNWARD ARROW** key, entering the number 100 and then pressing the **ENTER** key.

Next go to the **Frequency of the Cash Flow at Time Period Two** by pressing the **DOWNWARD ARROW** key. Since the default setting equals one as in the example, there is no need to input a value.

Next, input the **Cash Flow at Time Period Three**, which is equal to **-100**, by pressing the **DOWNWARD ARROW** key, entering the number **100**, pressing the **+/-** key and then pressing the **ENTER** key.

Next go to the **Frequency of the Cash Flow at Time Period Three** by pressing the **DOWNWARD ARROW** key. Since the default setting equals one as in the example, there is no need to input a value.

Next input the **Cash Flow at Time Period Four**, which is **200**, by pressing the **DOWNWARD ARROW** key, entering the number **200**, and then pressing the **ENTER** key.

Next, go to the **Frequency of the Cash Flow at Time Period Four** by pressing the **DOWNWARD ARROW** key. Since the default setting equals one as in the example, there is no need to input a value.

Now, compute the present value by pressing the **NET PRESENT VALUE** key, and then indicate the 12% interest rate by entering the number **12** and pressing the **ENTER** key.

Finally press the **UPWARD ARROW** key to return to the **Net Present Value** screen, and press the **COMPUTE** key to find the present value, which is 80.29

## 2. Convert between Quoted Rate and Effective Annual Rate

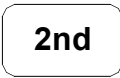


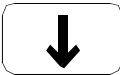
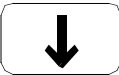



To convert between quoted rate and effective annual rate, use this secondary

function: .

The required inputs are

1. Compounding period per year (C/Y).
2. Either quoted rate (also called nominal rate, NOM) or effective annual rate (EFF).

***Example 1: Compute the effective annual rate of 10% monthly compounding.***

-  
- 
- 10
-  
- 
- 12
- 
- 

Effective rate equals 10.47.

Press the **UPWARD ARROW** key to move to the **Effective Annual Rate** screen.

Finally press the **COMPUTE** key to compute the **Effective Annual Rate** which equals 10.47%.

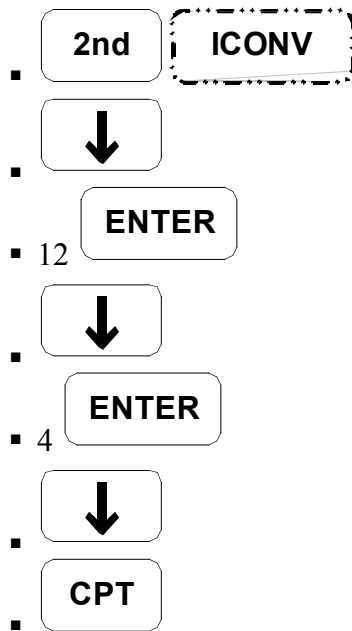
**DEMO:** To compute the effective annual rate of 10% monthly compounding, first access the **Interest Conversion Worksheet** by pressing the **2<sup>nd</sup>** key and then the number “2” to access its secondary function, **INTEREST CONVERSION**.

Next, input the 10% nominal rate by entering the number **10** and then pressing **ENTER**.

Press the **DOWNWARD ARROW** key twice to move to the **Compounding Periods Per Year** screen.

Input the **12 compounding periods per year**, or in other words, monthly compounding, by entering the number **12** and then pressing the **ENTER** key.

***Example 2: Compute nominal rate quarterly compounding of 12% effective annual rate.***



Nominal rate equals to 11.49%

**DEMO:** To compute nominal rate quarterly compounding of 12% effective annual rate, first access the **Interest Conversion Worksheet** by pressing the **2<sup>nd</sup>** key and then the number “2” to access its secondary function, **INTEREST CONVERSION**.

Next, press the **DOWNWARD ARROW** to move to the **Effective Annual Rate** screen.

Input the 12% effective rate by entering the number 12 and the pressing the **ENTER** key.

Press the **DOWNWARD ARROW** key to move to the **Compounding Periods Per Year** screen.

Input the **4 compounding periods per year**, or in other words, quarterly compounding, by entering the number **4** and then pressing the **ENTER** key.

Press the **DOWNWARD ARROW** key to move to the **Nominal or Quoted Rate** screen.

Finally press the **COMPUTE** key to compute the **Nominal or Quoted Rate** which equals 11.49%.

## Section 4: Using a Financial Calculator

### Tab 5: Three Common Mistakes

Below are three common mistakes that students make.

1. Forgetting to change C/Y and P/Y values for Frequency of compounding
  - Check to see if the default of your calculator is C/Y and P/Y is 1.
  - If interest rate is not compounded monthly, P/Y and C/Y must be set to a new number, and/or I/Y must be modified.
  - See the “Basic Operations” section to recall how to set P/Y and C/Y.
2. Forgetting to switch from BGN to END or vice versa.
  - Remember that the CE/C and/or the CLR TVM function do NOT turn off the BGN setting.
  - See the “Basic Operations” section to recall how to switch between BGN and END.
3. Rounding the I/Y variable
  - For example, if the interest rate is 1.99% monthly compounding and C/Y and P/Y =1, then I/Y must be interest rate per month or  $1.99/12$ .
  - You should NOT round  $1.99/12$  equal to 0.17, and key in 0.17 as I/Y.
  - In order to keep all decimal places in calculation, you should key in the following:
    - 1.99
    - divided by sign
    - 12
    - =
    - I/Y