

“Success comes to those who are success conscious.”
 – Napoleon Hill, author of “Think and Grow Rich”

NOT JUST FOR RETIREMENT (NJFR) CALCULATOR MANUAL

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i. INTRODUCTION

Imagine you have to get from POINT A to POINT B in a certain period of time. You have a car, but you don't know how many gallons of gas the car holds, how many miles to the gallon it gets, the distance between Point A and B, and if there is a place to refill your tank between Point A and B. How would you feel about taking off in your car with no cell phone and no way to contact anyone if the car breaks down or you run out of gas?

Sadly, this is how many people approach retirement: - they know how much they'll get in social security, but they haven't calculated how much income they need to maintain their desired lifestyle, how inflation will affect their needed income, how long they are likely to live, or how different investment returns will affect their ability to finance retirement, and so on.

The sad fact is that many people are finding themselves living longer than expected, having a pension cut or terminated, suddenly having to pay much more of their health care costs, and having spent far too much money in their early years of retirement to afford the years ahead.

ii. VERY IMPORTANT INFORMATION

A CALCULATOR IS A TOOL – AND ONLY A TOOL. It does not think. It does not prevent you from entering data that is risky or foolish or totally inaccurate. The NJFR calculator was designed to make it easy for even a financial novice to make the calculations that are the foundation of retirement planning. THE CALCULATOR WILL NOT PREVENT you from entering data that is unrealistic or unreasonable, but doing so VERY LIKELY WILL have a financially harmful effect on your long term financial well-being, and of those dependent on you.

NOTE: THE ORGANIZATION YOU RECEIVED OR PURCHASED THIS CALCULATOR FROM HAS NO CONTROL OVER THE ASSUMPTIONS YOU USE, THUS NO CONTROL OVER THE RELIABILITY OF THE RESULTS.

REMEMBER: IT'S **YOUR** FUTURE USING UNREALISTIC ASSUMPTIONS CAN BE HARMFUL TO **YOUR** FINANCIAL HEALTH.... ASSUME WISELY!!!!

iii. SMALL DIFFERENCES IN ASSUMPTIONS CAN MEAN BIG DIFFERENCES IN RESULTS PRODUCED.

To illustrate how even small differences in DATA (assumptions) ENTERED can affect the results, consider the following (NOTE: all figures are rounded to the nearest dollar)

Joe wants to generate \$30,000 / year from his savings.

- A. Assuming a 2% increase in withdrawal / year, 9% rate of return on investments and, 25 years of retirement, Joe would need savings of \$378,265
- B. Assuming a 3% increase in withdrawal / year, 8% rate of return, and 30 years of retirement, Joe would need \$491,693.

A difference of just 1% in annual withdrawal, 1% difference in the return on his investments, and another 5 years to be financed results in a difference of \$113,428, OR ALMOST 30% MORE.

Jean is retiring. She can choose a pension of \$20,000 a year for as long as she lives, or a lump sum of \$250,000.

- A. If she lives 15 years and gets a 7% rate of return on the lump sum, she would need \$194,909. She would be FAR BETTER taking the \$250,000 and leave a nice nestegg for her family
- B. If she lives 15 years and gets a 5% rate of return on the lump sum, she would need \$217,973. Not as much of a legacy, but would still be able to leave a small legacy for her family.
- C. If she lives 25 years and gets a 7% rate of return on the lump sum, she would need \$249,387. About the same either way.
- D. If she lives 25 years and gets a 5% rate of return on the lump sum, she would need \$295,973. She would be FAR BETTER off with the pension.

While the calculator can't tell Jean how long she will live, or what she will actually earn on the lump sum if she makes that choice, it can provide her with the information that can help her make this very important decision about whether to take a pension, or lump sum

It's your future, your life, your assumptions. Past investment performance is not necessarily indicative of future performance. Using data that is too optimistic can be an expensive price to pay for "making the numbers look good".

PART 1. Key points to maximizing the power of the Not Just for Retirement calculator

1. Most typical situations require more than one color-set of keys. The key to solving most problems is to break each down into its separate parts. (see appendix for worksheets)
2. Enter the value (amount) to be used (the value entered will be shown in the display box), then press the appropriate color coded key that identifies what the amount represents.
3. Pressing a key INSIDE THE WHITE "CALCULATE" LINE (future amount, year 1 spending, future value, present value), "tells" the calculator to compute an answer using the data entered with keys of the same color (and **ROR** for red, green and blue computations)
4. THE CALCULATOR CAN BE USED TO CALCULATE VALUES OF KEYS "OUTSIDE" THE WHITE CALCULATE KEY BOX, BUT IT WILL NEED TO BE DONE INDIRECTLY.
5. Calculations using the **YELLOW** keys DO NOT USE the **ROR** key.
6. The BLUE keys assume that at the end of the specified years, the balance remaining will be zero.
7. Some keys can represent more than one thing. The examples provided in this manual will reference what multi-use keys stand for. For example, the **ROR** key could be used to enter either an investment rate, or inflation rate, depending on the calculation to be made.
8. If there is a value in the display from a previous calculation and you press any of the DATA ENTRY keys, the value in the display will be entered into memory as the value of the key that is pressed.
9. The C/E key only deletes what is in the display, not the information entered using the color-coded keys
10. The CLR key WILL DELETE ALL CURRENT DATA AND SET VALUES TO ZERO.
11. UNDERSTAND "RY1". THROUGHOUT THIS MANUAL, "RY1" REFERS TO THE YEAR YOU HOPE/ PLAN TO STOP WORKING FULL TIME IN ORDER TO PAY GENERAL LIVING EXPENSES. WHICH MEANS: you may continue to work, but RY1 is the year you want the OPTION to work by choice, or only to finance your "extras". See RY1 appendix for further explanation.
12. Lump sum / single amount. This is an amount that is available or needed in a single year. RED or YELLOW keys would be used when the amount involved is a lump sum or single year amount.
13. Multi-year amount. This applies when the amount being entered will be received, or paid out in more than one year. BLUE or GREEN keys would be used for multi-year amounts. NOTE: IF THE AMOUNT PER YEAR CHANGES BY A FIXED PERCENT, YOU USE THE "INCREASE / YEAR KEY", IF IT CHANGES BY A SPECIFIC DOLLAR AMOUNT OR BY DIFFERING PERCENTAGES, EACH INDIVIDUAL FUTURE /PRESENT AMOUNT SHOULD BE CALCULATED USING YELLOW OR RED KEYS, THEN ADD THE RESULTS TOGETHER.
14. **YELLOW** keys are used to compute future value of a single amount
15. **BLUE** keys are used to compute how much you can withdraw without running out of money
16. **GREEN** keys are used for present or future value of 2 or more years of income / withdrawal
17. **RED** keys are used to compute an earlier year value of a future amount (often the year in question is the year is the first year of retirement.

PART 2: IMPORTANT TERMS TO UNDERSTAND

1. CURRENT VALUE

The amount of money available to invest, or that would be enough for a comfortable lifestyle in retirement, IN TODAY'S DOLLARS.

2. FUTURE VALUE

How much would be needed in the future after adjustment for inflation, or how much an investment would grow to at a specified rate of return.

3. "REPLACEMENT" VALUE -

The amount of money that:

- a) **is the amount that is EQUIVALENT to a future stream of money to be received, or**
- b) **The amount of money you would need to invest to generate a specified future stream of income.**

IN OTHER WORDS: Suppose Joe's social security starting at age 65 is \$1000 a month (\$12,000 annually) . He assumes it will increase 2% a year, and expects to live to collect it for 20 years. If he had to provide this amount of income from his OWN MONEY, assuming a rate of return of 6%, he would need \$170,662.51. The \$170,662.51 is the "replacement, or equivalent, amount" of his projected social security (See Appendix RV for a chart showing this on a year by year basis.)

4. "RETIREMENT VALUE"

The "retirement value" is the value of either a lump sum or series of annual amounts AS OF the year you have defined as RY1.

5. "RETIREMENT COST"

RETIREMENT COST is assumed to be the amount of ASSETS (money, investments, property) THAT WOULD BE NEEDED IN RY1 to generate the retirement income you specify

TO MAKE IT EASIER TO UNDERSTAND, CONSIDER THIS EXAMPLE: Suppose you are 60, and want to retire NOW. You have savings and your pension starts at 60. You plan to start collecting your social security at age 62. You would calculate the RETIREMENT value of your pension using the green keys. But to calculate the RETIREMENT value of your social security, first (using the green keys) you would have to calculate the REPLACEMENT value, which is the value AT AGE 62, BUT you would ALSO have to calculate the RETIREMENT value of that FUTURE benefit AS OF AGE 60 when you are starting retirement. The RETIREMENT

value of your social security benefit IS THE AMOUNT YOU WOULD NEED TO INVEST, AT AGE 60, FOR IT TO BE WORTH THE REPLACEMENT VALUE YOU CALCULATED AS OF AGE 62

6. RATE OF RETURN:

The rate of return you assume in your calculations is CRITICAL. The more unrealistic (either high or low) a rate of return you use, the more inaccurate your computations will be. Remember, it's YOUR life, and YOUR future. You can use whatever numbers you choose, but if you use wildly inaccurate information, you are only making it more difficult for yourself and your loved ones to properly plan for future needs (you can obtain historical rates of return on different types of investments at the library or from a financial advisor)

7. INFLATION: THE TERMITES OF RETIREMENT

Between 2000 and 2005, when this was written, the increase in the cost of living (inflation rate) was very modest. But that was not always so. During the 1970's the average cost of living grew at a rate more than double that of recent years. And depending on your particular needs, your PERSONAL cost of living could increase at a slower or faster rate than the average. For example, if a large part of your spending in for a fixed mortgage, and you have few medical expenses, your average cost of living will likely be much less than a neighbor who rents his home and has high health care costs. See APPENDIX INFL to see how different rates of inflation can affect retirement planning.

8. INDIRECT CALCULATION:

This applies when the value to be computed is not one of the values referenced by keys INSIDE the white "calculate line". For example, if the value that you wanted to compute was "annual amount", you would need to use this method. This process involves trying different possible answers for the answer you are seeking, and the answer you are seeking being that which produces the "calculate" amount you already know. For example, Suppose you want to know how much you would need to invest a year to accumulate 500,000 over 30 years and assuming a rate of 7%. The 500,000 represents the "future value" that you would normally compute. To find the annual amount you need to invest, you would enter the 30 years (green years key), 7 as ROR, 0 as increase per year. Then you would try entering different amounts as the annual income until the future value was equal (or very near) 500,000. The annual amount you entered that produced the answer "500,000" is the annual amount you would need to invest.

9. INFORMATION RELEVANT TO RETIREMENT PLANNING

- years TO retirement
- years OF retirement
- value of current assets
- value of future inheritances, etc
- desired withdrawal (income) per year – in current year dollars
- the annual percentage of increase (if any) in withdrawals (cost of living, inflation)
- the amount of money to be invested, either as a lump sum, or per year
- sources of income other than investments you expect to receive in retirement (social security, pension, part time income, inheritance)
- the annual percent increase in any retirement benefits
- the rate of return you expect to earn on your investments (or money you would have needed to invest to generate the equivalent of benefits to be received)

VERY IMPORTANT REMINDER: *even a very small difference between assumed and actual inflation, between assumed and actual rate of return, between assumed and actual spending levels, can make a HUGE difference in the results and your long term financial well-being.*

PART 3. WHAT YOU KNOW > WHAT YOU WANT TO KNOW ... COLOR KEY SUMMARY

1. You know the current value and want to know the future value or cost. >> **YELLOW**
2. You know the future value and want to know what it would be worth at some number of years before you will receive it. >> **RED AND ROR**
3. You want to know how much you would need to invest to replace 2 or more years of future income >> **GREEN AND ROR**
4. You want to know how much investing money each year for 2 or more years would be worth in the future >> **GREEN AND ROR**
5. You know how much you have to generate income and want to know how much you can withdraw, or how long your money would last if you withdrew a specific amount. >> **BLUE AND ROR**

PART 4: THE CALCULATOR – an overview

When the software is loaded, an icon that looks like a calculator will appear on the desktop. To access the calculator, double click on this icon. To remove it, click the “off” key on the calculator (NOTE: a disclaimer will appear first)

Once you’ve displayed the Not Just for Retirement (NJFR) calculator on your computer screen, you will quickly notice it is a lot more colorful than most calculators. The gray and white keys normally found on a calculator. **What makes THIS calculator unique are the specialized “groups” of keys designed for specific financial calculations.**

The **YELLOW**, **BLUE**, **GREEN** AND **RED** KEYS are special keys. For most people, the formulas / calculations needed to compute retirement funding needs is not something they are well versed in. For most of the clients I have worked with over the past 20 plus years, they approach it from one of two perspectives:

1. they want to know how much they would need in investments to finance a specified level of income for a specified number of years, or
2. they know how much they have available for retirement and want to know how much they can afford to spend without running out of money during their expected lifetime.

The NJFR calculator is designed to make these, as well as other calculations such as for college funding or insurance needs analysis, quick and easy to do.

With the NJFR calculator, **Each color group is designed to perform specific tasks.**

- **YELLOW** keys are used to compute future value of a single amount
- **BLUE** keys are used to compute how much you can withdraw without running out of money
- **GREEN** keys are used for present or future value of 2 or more years of income / withdrawal
- **RED** keys are used to compute an earlier year value of a future amount (often the year in question is the year is the first year of retirement.

making it easy for even a financial novice to do the kind of calculations needed for retirement planning. All you have to do is pick the scenario (see table of contents) that best fits what you want to know and then use the color coded buttons (keys) specific to YOUR particular need.

IMPORTANT NOTE: *the color coded “calculate” keys will ONLY use information entered with the same color data keys and the **ROR** Key. FOR EXAMPLE, when you press the **future amount** key it doesn’t matter what you entered as years using the Blue or green keys. When this key is pressed, it will only look at the most recent information entered using the other yellow keys.*

Group 1. GENERAL

CLR key: resets values of all variables to zero (0)
C/E : this clears the value displayed in the display box
OFF: turns the calculator off

Group 2. RATE OF RETURN (**ROR) Key**

The **ROR** KEY is used to enter either the rate of return (for green, blue or red keys) or the inflation / cost of living rate (for red keys when income, not assets, are being calculated. IT IS NOT USED FOR YELLOW KEY CALCULATIONS.

NOTE: IF AN UNREALISTICALLY HIGH, OR LOW, ROR VALUE IS USED, THE RESULTS WILL ALSO BE UNREALISTIC. To fully understand why the rate is so important, refer to the ROR appendix to see what a difference even a percent or two makes, particularly for a 20-30 year time period.

Group 3: COMPUTE / CALCULATION KEYS

The **yellow**, **blue**, **green** and **red** buttons **INSIDE THE WHITE OUTLINED “CALCULATE” BOX** are used to “**tell the calculator**” you want it to do a calculation using the information you have entered **USING THE SAME COLOR KEYS** (and the **ROR** Key where applicable)

- **YELLOW** keys are used to compute future value of a single amount
- **BLUE** keys are used to compute how much you can withdraw without running out of money
- **GREEN** keys are used for present or future value of 2 or more years of income / withdrawal
- **RED** keys are used to compute an earlier year value of a future amount (often the year in question is the year is the first year of retirement).

Group 4. DATA ENTRY KEYS (As mentioned previously, each color coded group is designed for a specific purpose.)

The data entry keys are the **yellow**, **blue**, **green** and **red** buttons that are **OUTSIDE THE WHITE OUTLINED “calculate” BOX**. Pressing any of these keys “tells the calculator” to use the number displayed in the window as the “value” of the data item (rate of return, inflation, years, etc) that was pressed. **For example**, if you enter 30 and then press the **yellow** “yrs to ret’mt” key, when the **future income** key is pressed, it will use “30” as the number of years to be used for the calculation.

- **YELLOW** keys are used to compute future value of a single amount
- **BLUE** keys are used to compute how much you can withdraw without running out of money
- **GREEN** keys are used for present or future value of 2 or more years of income / withdrawal
- **RED** keys are used to compute an earlier year value of a future amount (often the year in question is the year is the first year of retirement)

4a. YELLOW DATA KEYS:

The yellow data keys are used when you know the current amount (either of income needed or investments available) and you want to calculate what it would be worth / cost at some time in the future.

EXAMPLE A: *Joe needs \$30,000 of income in today’s dollars. He wants to retire in 20 years. He assumes the cost of living will increase 3% / year. He wants to know how much income he would need in 20 years to have the same purchasing power as \$30,000 has today.*

EXAMPLE B: *Michelle has \$100,000 to invest. She wants to know what it would be worth in 20 years if it were invested earning 6% / year for the next 20 years.*

- **CURRENT AMOUNT** : this is used to enter EITHER retirement income desired (in today’s dollars) or the current value of money you want to estimated the value of at some time in the future.
- **% INCREASE / YEAR:**
 1. estimated annual increase in cost of living
 2. assumed rate of return on investments
- **YEARS:** the number of years between now and when you want to “retire”, or at least work by choice, not by need.
- (COMPUTE KEY) **FUTURE AMOUNT** KEY: using the data entered with the yellow data keys, pressing this key causes the calculator to compute and display either the future value of a lump sum investment, or the income needed at a future date to maintain purchasing power.

TYPICAL CALCULATIONS USING YELLOW KEYS

**Results are based on data entered,
enter wisely.**

Y1. I want to know how much my current investments would be worth 20 years from now.

Barbara has \$300,000 in a 401K plan. She wants to know how much it will be worth in 20 years if it earns 7% / year (answer: 1160905.3)

number entered	key to press	answer displayed
300000	Yellow current amount	
7	Yellow % increase / year	
20	Yellow years	
None	Yellow future amount	
		1160905.3

Y2. How much income would I need in 25 years to maintain my current purchasing power?

Rich wants to retire in 25 years and have enough income to have the same purchasing power as \$40,000 has today. How much will he need if the cost of living increases an average of 5% / year. (answer: 135454.19)

number entered	key to press	answer displayed
40000	Yellow current amount	
5	Yellow % increase / year	
25	Yellow years	
None	Yellow future amount	
		135454.19

4b. BLUE DATA KEYS:

The blue data keys are used to enter information needed to calculate how much you can withdraw without “running out of money” (requires ROR Key)

EXAMPLE: Mary is 62 and wants to retire. She has saved \$550,000 for retirement. She wants to know how much she could afford to pull out a year and not run out of money for 25 years.

- **RET'MT FUNDS**: this key is used to enter the total amount of financial resources available to finance retirement. **IMPORTANT**: If pension, social security or other “outside” income / lump sum will be available to finance retirement, the “replacement / retirement” value of such other income / resources should be included in the amount.
- **% INCREASE / YEAR**: this is the amount (in percent) that you want to increase your withdrawal each year. (for example, if you want to withdraw 3% more each year of retirement to offset inflation, you would enter a value of 3)
- **YEARS**: the number of years you expect to live and need income from your investments to last.
- (COMPUTE KEY) **YEAR 1 SPENDING KEY**: using the data entered with the blue data keys and the ROR Key, pressing this key causes the calculator to compute and display the amount of money you can spend IN YEAR 1 OF THE PERIOD SPECIFIED, with the annual amount to be increased each year by the inflation rate specified. **At the end of the specified years, the money invested is assumed to be gone.**

TYPICAL CALCULATIONS USING BLUE KEYS

**Results are based on data entered,
enter wisely.**

B1 . I know how much money I have to invest, I know how long I want it to last. How do I figure out how much I can afford to withdraw a year without running out of money?

Stan has \$750,000 available to finance retirement. If he wants to withdraw 4% more each year, and the money is to last 30 years, assuming his investments earn 6% / year, he wants to know how much he can withdraw the first year (Answer: 32509.11)

number entered	key to press	answer displayed
750000	Blue retirement amount	
4	Blue % increase / year	
30	Blue years	
6	Tri-color ROR	
None	Blue Yr 1 spending	
		32509.11

number entered	key to press	answer displayed
1000000	Blue retirement funds	
4	Blue % increase / year	
40	Blue years	
6	Tri-color ROR	
None	Blue Yr 1 spending	
		35383.93

The value displayed (35383.93) is below the 40000 a year he wants, so he needs to enter a higher rate of return and re-calculate the yr1 spending allowed. He tries 7% rate of return:

number entered	key to press	answer displayed
7	Tri-color ROR	
None	Blue Yr 1 spending	
		41268.708

Since the new value displayed (41268.708) is higher than the 40000, he knows the interest rate he needs to earn is between 6 and 7%. To get it more exact, he would continue to enter ROR between 6 and 7% , then pressing the Blue Yr 1 spending until the value displayed equals (or nearly equals), 40000.

B2. I know how much I have and how much I want to take out each year. How do I figure out the rate of return my investments need to earn to do this? (answer: just under 6.8%)

Barry just sold some property for \$1,000,000. He wants his money to last 40 years. He wants to be able to withdraw \$40,000 the first year, increasing the amount withdraws increasing 4% each year. Because the answer we are looking for is normally a value that is entered, we need to work “backwards” , trying different interest rates until the Yr 1 spending amount equals the \$40,000 he wanted.

He starts by assuming a 6% rate of return

B3. How do I figure out if taking a pension or a lump sum payout is a better choice? (also see G1)

(same as G1 using Blue Keys) Hope is ready to retire. She is eligible for a defined benefit pension, but also has a choice of taking her pension as a lump sum. Having read about pension plan troubles and retirees who had their pension cut many years after retirement, she is concerned about trusting her retirement security to a company that may be unable to pay what she had been promised throughout her retirement years. If she chooses the pension (monthly income for as long as she lives), she will receive \$2000 / month (\$24,000 / year). She expects to live (and need income from investments) for 30 years. Because this is “safe” money, she wants to use an investment rate of 5% for her calculations. If she was offered a lump sum of \$400,000, which

should she choose? (Answer: lump sum is better by \$781.50 / year)

number entered	key to press	answer displayed
400000	Blue retirement funds	
0	Blue % increase / year	
30	Blue years	
5	Tri-color ROR	
None	Blue Yr 1 spending	
		24781.499

The value displayed (24781.499) is the annual amount she could withdraw over 30 years based on the assumptions given. Since this is more (by \$781 / year) than the \$24,000 she would get in pension benefits, the lump sum is the better choice.

BUT WHAT IF THE LUMP SUM SHE IS OFFERED IS \$350,000? Since all the information remains the same except the lump sum amount, she would do the following (answer: the pension):

number entered	key to press	answer displayed
350000	Blue retirement funds	
None	Blue Yr 1 spending	
		21683.811

Since this time the value displayed (21683.811) is less than the \$24,000 a year she would get in pension, she would be better taking the pension. (NOTE: this could also be done using green keys – see G1 below)

4c. GREEN DATA KEYS.

The green data keys are used to enter information when income or expenses for multiple years is involved and you are seeking to calculate either: (requires ROR Key):

1. the amount of money you would need to invest to generate a specified level of annual payments / income / spending, or
2. the amount of money that would be accumulated by making the specified annual investments.

(VERY IMPORTANT: WHEN USING GREEN KEYS, A COMMON SITUATION WILL BE TO CALCULATE THE AMOUNT OF FUNDS NEEDED TO GENERATE A DESIRED LEVEL OF INCOME FOR A SPECIFIC NUMBER OF YEARS. WHEN CALCULATING BENEFITS SUCH AS PENSION OR SOCIAL SECURITY THAT ARE DESIGNED TO LAST “FOR LIFE”, THE YEARS USED IN CALCULATING THEIR EQUAL THE SAME AS THE YEARS OF DESIRE INCOME)

FOR EXAMPLE: Bob is planning to invest \$5000 this year, and increase his investment by 5% each year for the next 20 years. He wants to know what his investments would be worth 20 years from now. . Jane wants to know how much she would need to generate \$30,000 a year, increasing the amount generated by 4% a year, for 20 years.

- **ANNUAL AMOUNT:** the amount to either be invested, or withdrawn as income, each year.
- **% INCREASE / YEAR:**
 1. the percent you plan to increase your investment amount each year (for example, suppose you plan to invest \$1000 the first year, and increase it by 10% each year after. Then you would enter 10)
 2. the percent you want to increase your withdrawal amount each year (for example, suppose you want to increase your retirement withdrawal by 3% / year to offset inflation. Then you would enter 3)
- **YEARS:** the number of years you will be investing or withdrawing money.
- **(COMPUTE KEY) REPLACEMENT \$ KEY:** using the data entered with the green data keys and the ROR Key, pressing

this key causes the calculator to compute and display the amount of money that would need to be invested at the start of year 1 to be able to “replace” the annual amount of income for the years specified. (this is also know as the Net Present Value (NPV) of specified annual amounts)

- **(COMPUTE KEY) FUTURE AMOUNT KEY:** using the data entered with the green data keys and the **ROR** Key, pressing this key causes the calculator to compute and display the amount of money would be accumulated based on the annual investments, rate of return and years specified.

number entered	key to press	answer displayed
24000	Green annual amount	
0	Green % increase / year	
30	Green years	
5	Tri-color ROR	
None	Green replacement \$	
		387385.76

G2. I know how much I want to invest a year. How do I calculate what it would be worth in 25 years?

This year Dawn can afford to invest \$5000 a year, and plans to increase the amount she invests each year by 10%. She assumes her investments earn 7% a year. (Answer: 901212.21)

number entered	key to press	answer displayed
5000	Green annual amount	
10	Green % increase / year	
25	Green years	
7	Tri-color ROR	
None	Green future amount	
		901212.21

TYPICAL CALCULATIONS USING GREEN KEYS

Results are based on data entered, enter wisely.

G1. How do I figure out if taking a pension or a lump sum payout is a better choice? (Also see B3)

(same as B3 using Green Keys) Hope is ready to retire. She can take a pension, or lump sum. Having read about pension plan troubles and retirees who had their pension cut many years after retirement, she is concerned about trusting her retirement security to a company that may be unable to pay what she had been promised throughout her retirement years. If she chooses the pension (monthly income for as long as she lives), she will receive \$2000 / month (\$24,000 / year). She expects to live (and need income from investments) for 30 years. Because this is “safe” money, she wants to use an investment rate of 5% for her calculations. If she was offered a lump sum of \$400,000, which should she choose? In this example, she wants to compute how much the lump sum would need to be to generate \$24,000 for 30 years assuming a 5% return on the money invested. (Answer: 387385.76)

G3. How much would I need to invest to generate the same income as I get from my pension?

Jacqui is eligible to receive a pension of \$1200 / month (14400/year) starting at age 65. She expects her pension to increase 2% / year, and that she will live to collect those benefits for 30 years. Assuming she could earn 6% / year on her investments, how much would she have needed to invest at 6% to generate the equivalent of her pension benefits for 30 years. (this is called the “replacement value” of her pension) (Answer: 261252.36)

number entered	key to press	answer displayed
14400	Green annual amount	
2	Green % increase / year	
30	Green years	
6	Tri-color ROR	
None	Green replacement \$	
		261252.36

The new value calculated (459652.63) is less than the 500000 answer she are looking for. She now knows the annual amount needed is between 40000 and 50000. She would repeat the above - trying different annual amounts between 40000 and 50000 until the annual amount enters produces a future amount of (or very close to) 500000

G4. How do I calculate the amount I need to invest each year to save a specific amount?

Shelly wants \$500,000 in 9 years. Since the answer we are seeking is for a data key instead of a calculation key, she needs to try multiple annual amounts until the value calculated equals 500000. A simple way to get the initial annual amount is divide the amount she wants (500000) by the years (9) involved. The value = 55555.55. She rounds it to 50000. Assuming a 6% rate of return and no increase in the annual amount, she would make the following calculations: (Answer: between 43000 and 44000)

number entered	key to press	answer displayed
50000	Green Annual amount	
0	Green % Increase / year	
9	Green Years	
6	Tri-color ROR	
None	Green future amount	574565.79

Since the value calculated (574565.79) is more than the 500,000 she needs she would enter a new, lower annual amount, the again press the green retirement value key

number entered	key to press	answer displayed
40000	Green Annual amount	
None	Green future amount	459652.63

4d. **RED DATA KEYS:**

The red data keys are used when you want to know a current or earlier year equivalent of either income or assets / money to be received at a future date. **IMPORTANT: when using the red keys, you must use the ROR Key to enter either the inflation rate, or the investment Rate of Return (see following).**

1. If the future amount represent **income**, to determine earlier year value enter the estimated **inflation / cost of living rate** using the **ROR Key**
2. If the future amount represents an **asset**, to determine earlier amount (THAT IS, how much you would need to invest for it to be worth the future amount), enter the assumed **rate of return** using the **ROR Key**

EXAMPLE A: Dawn has a loan with a balloon payment in 5 years. She wants to know how much she needs to invest now to have enough to make that payment. (value entered using ROR Key would be assumed rate of return she would earn on investments).

EXAMPLE B: Ted and Lisa are divorcing Lisa has a choice of receiving \$100,000 today or \$200,000 in 20 years. She wants to know which is the best option. (value entered using ROR Key would be assumed rate of return she could earn on the \$100,000)

EXAMPLE C: Michelle is 25. She just got her social security statement that shows she will get social security of \$1800 / month when she is 65. She wants to know what that would be worth in today's dollars. (Value entered using ROR Key would be the inflation / cost of living rate she expects between age 25 and age 65)

- **FUTURE AMOUNT:** the amount of money to be received (or paid) at some time in the future.
- **YRS TO REC'VD:** the number of years until the money is to be received (or paid)
- **(COMPUTE KEY) CURRENT VALUE KEY:** using the data entered with the red keys and the **ROR Key**, pressing this key causes the calculator to compute and display the current (or specified year) equivalent of the future amount based on the discount rate specified by the **ROR Key**.

TYPICAL CALCULATIONS USING RED KEYS

Results are based on data entered, enter wisely.

R1. How much is the social security I'm eligible for at age 67 worth in today's dollars

Norm is 37. His social security at age 67 will be \$1800 / month. If inflation averages 4%, how much would that \$1800 be worth in age 37 dollars. (answer: 554.97)

IMPORTANT NOTE: FOR RED KEYS, INFLATION IS ENTERED USING ROR KEY)

number entered	key to press	answer displayed
1800	Red future amount	
30	Red yrs to received	
4	Tri-color ROR	
None	Red current value	
		554.97

R2. I'll get a balloon payment of \$300,000 in 15 years. If I want to retire in 5 years, how much would my balloon payment be worth in "retirement dollars"

Gayle sold a house and will get a balloon payment of \$300,000 in 15 years, but she wants to know how much it would be worth 5 years from now if she assumes an investment return of 6%. IN OTHER WORDS, how much would she need to invest 5 years from now for it to be worth 300000 10 years later if her investments earned 6% / year (Answer: 167518.43)

number entered	key to press	answer displayed
300000	Red future amount	
10	Red years to received	
6	Tri-color FOR	
None	Red current value	
		167518.43

NOTE: the “years to received” is the number between when it will be received, and when you want to know the value. In this case, while it won’t be received for 15 years from now, she doesn’t want to know what she would need to invest now, but 5 years from now)

PART 5. SEAN AND BOB

To help you better understand how these color coded sets of keys work alone and in conjunction with each other, following are two “client scenarios” –one for a young investor with many years before he will be able to afford to retire, and one for an investor who is ready to retire – similar to cases I have had presented by real life clients through the years.

As you will see, these require computations using more than one color-coded group of keys. HOWEVER, each of the calculations can be broken down. **Again, the key to remember is WHAT THE ANSWER YOU ARE SEEKING REPRESENTS.** As a reminder:

1. You know the current value and want to know the future value or cost. >> **YELLOW**
2. You know the future value and want to know what it would be worth at some number of years before you will receive it. >> **RED AND FOR**
3. You want to know how much you would need to invest to replace 2 or more years of future income >> **GREEN AND FOR**
4. You want to know how much investing money each year for 2 or more years would be worth in the future >> **GREEN AND FOR**
5. You know how much you have to generate income and want to know how much you can withdraw, or how long your money would last if you withdrew a specific amount. >> **BLUE AND FOR**

Results are based totally on data entered, enter wisely.

5a. SEAN IS 20 AND WANTS TO KNOW HOW MUCH HE WILL NEED TO SAVE A YEAR TO RETIRE AT 55 IF HE EXPECTS TO LIVE TO AGE 95.

In order to compute this amount, he also needs to make some additional assumptions: the cost of living increase he wants to withdraw in retirement, the rate of return he assumes his investment will earn, how much he will increase his savings, and so on.

To make it easier to keep track of the information being used, Sean would create a table of information of what he knows, what he assumes, and what he wants to find out. Following is the data he will use:

<i>Current Amount needed (of income)</i>	\$	<u>30000</u>	
<i>Current amount available to invest</i>	\$	<u>0</u>	
<i>Years until retirement</i>		<u>35</u>	yrs
<i>Years money would have to grow</i>		<u>35</u>	yrs
<i>annual amount of income to be generated (yr 1)</i>	\$	<u>?</u>	
<i>annual increase in amount to be withdrawn</i>		<u>4</u>	%
<i>Annual increase in cost of living</i>		<u>4</u>	%
<i>Annual Increase in social security benefits</i>		<u>n/a</u>	%
<i>Annual increase in pension</i>		<u>n/a</u>	%
<i>Expected years of retirement</i>		<u>40</u>	yrs
<i>Annual % increase in amount invested</i>		<u>10</u>	%
<i>Future amount to be received</i>	\$	<u>n/a</u>	
<i>Years until future amount is received</i>		<u>n/a</u>	yrs
<i>Assumed rate of return on investments</i>		<u>7</u>	%
<i>Annual social security income</i>	\$	<u>n/a</u>	
<i>Annual pension income</i>	\$	<u>n/a</u>	
<i>Investments needed by retirement</i>	\$	<u>??</u>	

Sean would need to do the following:

1. Calculate how much income he will need at age 55 to have the same purchasing power as the \$30,000 he specified in today's dollars

number entered	key to press	answer displayed
30000	Yellow Current amount	
4	Yellow % Increase / year	
35	Yellow Years	
none	Yellow Future amount	
		118382.66

The value displayed (118382.66) represents the annual income Sean would need at age 55 to have the inflation adjusted purchasing power of \$30,000 at age 20.

2. using the amount (118382.66) he calculated he would need at 55, he needs to next calculate how much he would need to invest to finance that amount for the 40 years he assumes he will be in retirement:

number entered	key to press	answer displayed
118382.66	Green Annual amount	
4	Green % Increase / year	
40	Green Years	
7	Tri-color ROR	
None	Green Replacement \$	
		2868581.9

The value displayed (2868581.9) represents how much Sean would need to have in investments (earning 7% / year) at age 55 to be able to withdraw the inflation adjust equivalent of \$30,000 in current dollars each year for 40 years of retirement.

3. Last, he needs to calculate how much he needs to invest each year to have \$2,868,581.90 by age 55. Because the answer he is looking for is not one of the normal "calculate" keys, he will need to "back into" the first year investment amount. One method for ESTIMATING THE FIRST YEAR ANNUAL INVESTMENT AMOUNT is to divide the total amount wanted (2868581) by the years he has to invest (35)). The amount computed is 81959. I've rounded it to 80000. Referencing assumptions above, he plans to increase the amount he invests each year by 10%. The following calculation would be made:

BOB IS 62. HE HAS \$700,000 IN INVESTMENTS. HE'LL GET \$1000 / MONTH SOCIAL SECURITY AND A PENSION OF \$500 / MONTH. HE WANTS \$60,000 A YEAR FOR THE REST OF HIS LIFE, AND WANTS TO KNOW IF HE CAN AFFORD TO RETIRE AND NOT RUN OUT OF MONEY.

The table below summarizes the information Bob knows, and the assumptions he is making:

<i>Current Amount needed (of income)</i>	\$	<u>60000</u>
<i>Current amount available to invest</i>	\$	<u>700000</u>
<i>Years until retirement</i>		<u>0</u> yrs
<i>Years money would have to grow</i>		<u>0</u> yrs
<i>Annual social security income</i>	\$	<u>12000</u>
<i>Annual pension income</i>	\$	<u>6000</u>
<i>annual amount of income that can be withdrawn (yr 1)</i>	\$	<u>?</u>
<i>annual increase in amount to be withdrawn</i>		<u>3</u> %
<i>Annual Increase in social security benefits</i>		<u>1</u> %
<i>Annual increase in pension</i>		<u>0</u> %
<i>Expected years of retirement</i>		<u>30</u> yrs
<i>Annual % increase in amount invested</i>		<u>n/a</u> %
<i>Future amount to be received</i>	\$	<u>n/a</u>
<i>Years until future amount is received</i>		<u>n/a</u> yrs
<i>Assumed rate of return on investments</i>		<u>6</u> %

Results of calculations

retirement value of social security	\$	<u> </u>
retirement value of pension	\$	<u> </u>

To figure out how much is available as the basis for withdrawal, Bob needs to calculate the retirement value of his social security and pension to add to his \$700,000 in savings.

number entered	key to press	answer displayed
80000	Green Annual amount	
10	Green % Increase / year	
35	Green Years	
7	Tri-color FOR	
None	Green Future amount	
		46468947.

Since the value displayed (46468947) is almost 20 times more than he needs, we know the annual investment needed should be closer to 1/20th of the 80000. Dividing 80000 by 20 = 4000. He would enter 4000 as the annual amount, then do the computation again (The other information is unchanged so does not need to be re-entered)

number entered	key to press	answer displayed
4000	Green Annual amount	
None	Green Future amount	
		2323447.3

The amount displayed (2323447.3) is less than the 2868581.90 needed, so he knows the annual amount needed must be more than 4000. for his next calculation, he tries 5000 as annual amount.

number entered	key to press	answer displayed
5000	Green Annual amount	
None	Green Future amount	
		2904309.2

The value displayed (2904309.2), about \$36,000 more than he what he needed. If he wants to be more exact, he can keep entering new annual amounts until the future savings equals exactly what he needs, but basically, he now knows he needs to invest \$5,000 a year to start and increase that amount by 10% each year to achieve his goal.

number entered	key to press	answer displayed
12000	Green Annual amount	
1	Green % Increase / year	
30	Green Years	
6	Tri-color ROR	
None	Green replacement \$	
		194698.89

The value displayed (194698.89) is how much he would need to invest to replace the income he will receive from social security for the projected 30 years.

number entered	key to press	answer displayed
6000	Green Annual amount	
0	Green %Increase / year	
30	Green Years	
6	Tri-color ROR	
None	Green replacement \$	
none		87544.326

The value displayed (87544.326) is how much Bob would need to invest to replace the income he will receive from pension for the projected 30 years of retirement

Bob's retirement funds for calculation = 700000
+ 194698.89 (social security)
+ 87544.326 (pension)

TOTAL = 982243.21

Bob would like to initially withdraw \$60,000, with the amount increasing 4% / year for 30 years. He is assuming his investments will earn 6% / year. He can do computations using either blue or green keys

number entered	key to press	answer displayed
60000	Green Annual amount	
3	Green %Increase / year	
30	Green Years	
6	Tri-color ROR	
None	Green replacement \$	
		1224064.7

The value displayed (1224064.7) is the amount Bob would need to generate his desired income for 30 years of retirement. Since, including the retirement value of his social security and pension, he only has 982243.21, he does not have enough

Using the blue keys, Bob can calculate the amount he could withdraw the first year:

number entered	key to press	answer displayed
982243.21	Blue retirement funds	
3	Blue % Increase / year	
30	Blue Years	
6	Tri-color ROR	
None	Blue Yr 1 spending	
		48146.63

The value displayed (48146.63) is the amount Bob can afford to spend his first year of retirement if he wants his money to last the 30 years.

APPENDIX RY1

To help you visualize this ESSENTIAL TERM, consider the following “timeline”:

1. **Working years: your non-wage sources of income are not enough to cover your basic spending needs**
2. **RY1**
3. **“technically retired” You have enough to pay for the “basics”, but you need to work to afford the lifestyle you want to enjoy.**
4. **fully funded retirement – you have enough non-working income to afford the lifestyle you desire, but you may work full or part time by choice, not financial need.**
5. **savings gone – you are not able to work, but are unable to afford the lifestyle you desire. You may depend on low-income programs for basic needs.**

Timeline ...			
WORKING RY1	WORKING	... NOT WORKING	
(need the income)	(because you choose to Or to pay for “extras”	either by choice or inability	
<i>Usually age 18-60/65</i>	<i>age depends on health, Finances, interests</i>	<i>age depends on health, finances, etc</i>	

APPENDIX NET PRESENT VALUE

NET PRESENT VALUE AND WHY IT’S SO IMPORTANT:

suppose you want to buy a sofa. The cost is \$500. You can pay cash for it now, or invest the \$500 at 6% and use the \$500 PLUS WHAT IT EARNS to make the payments. You are offered three payment plans.

1. Pay \$540 in one year. (\$540 total payments)
 2. Pay \$110 / year for the next 5 years (\$550 total payments)
 3. Pay \$60 / year for the next 10 years. (\$600 total payments)
- WHICH WOULD NEED THE LEAST AMOUNT OF MONEY, TODAY?

If the \$500 earned 6% / year

1. you would need to invest \$509.43 to have \$540.00 one year from now
2. you would need to invest \$491.16 to make payments of \$110 / year for 5 years.
3. you would need to invest \$468.10 to make payments of \$60 / year for 10 years)

IN OTHER WORDS, while the \$500 payment up front had the lowest in total payments, the \$60 for 10 years was actually the best use of that money because you would need to invest only \$468.10 of the \$500 to make all the required payments. With the savings you could buy some pillows or a lamp to go with the sofa.

WHEN IT COMES TO RETIREMENT, the NET PRESENT VALUE (NPV) represents the amount of money that would need to be invested to generate a specified lump sum or multi-year stream of revenue.

APPENDIX ROR

Suppose you want \$30,000 a year income for 30 years. Depending on the rate of return you assume, following is the amount you would need to invest:

<u>ROR</u>	<u>Investment needed</u>
4%	539511
6%	437722
8%	364752
10%	311088

Or suppose you plan to invest \$5000 / year for 20 years and want to know what it would be worth in 20 years. Following are the amounts based on the referenced rate of return:

<u>ROR</u>	<u>Amount that would be accumulated</u>
4%	148890
6%	183928
8%	228810
10%	286375

As you can see, small differences in the assumed rate of return can produce very different results.

APPENDIX DATA FORM (feel free to make copies of this form)

GENERAL USE DATA FORM

<u>KEY NAME</u>	Calculation 1	Calculation 2
Yellow current amount	_____	_____
Yellow % increase / yr	_____	_____
Yellow years	_____	_____
Yellow future amount	_____	_____
Red future amount	_____	_____
Red yrs to received	_____	_____
Tri-color ROR	_____	_____
Red current value	_____	_____
Blue retirement funds	_____	_____
Blue % Increase / yr	_____	_____
Blue Years	_____	_____
Tri-color ROR	_____	_____
Blue Yr 1 spending	_____	_____
Green Annual amount	_____	_____
Green % Increase / yr	_____	_____
Green Years	_____	_____
Tri-color ROR	_____	_____
Green Replacement \$	_____	_____
Green Future amount	_____	_____