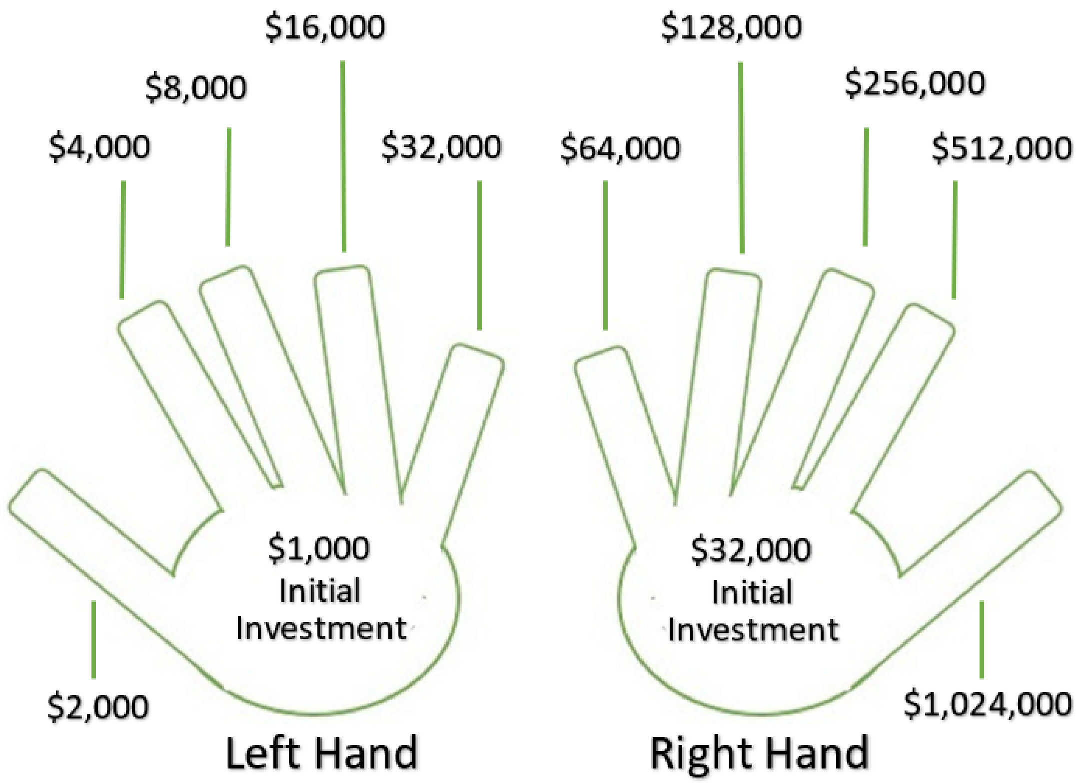
Math of Money

Lesson 1

**Figure 5. Graphic of $1,000 Doubled 10 times creates $1,024,000 Nest Egg**




Notice there are 5 fingers on each hand are mathematically identical at $2^5$ equals 32. On the surface the two hands look the same, but the main difference is how much money you start with. The first hand starts with $1,000 and the second hand starts with $32,000. This seemingly insignificant starting point difference is what makes the second hand so powerful.

The first hand grew by $31,000 ($32,000 minus $1,000). The second hand grew by $992,000 ($1,024,000 minus $32,000). The process of doubling on the second hand is exactly the same process as the first hand. Now a recap, when you start with $1,000 and you consecutively double it 10 times the result is $1,024,000.

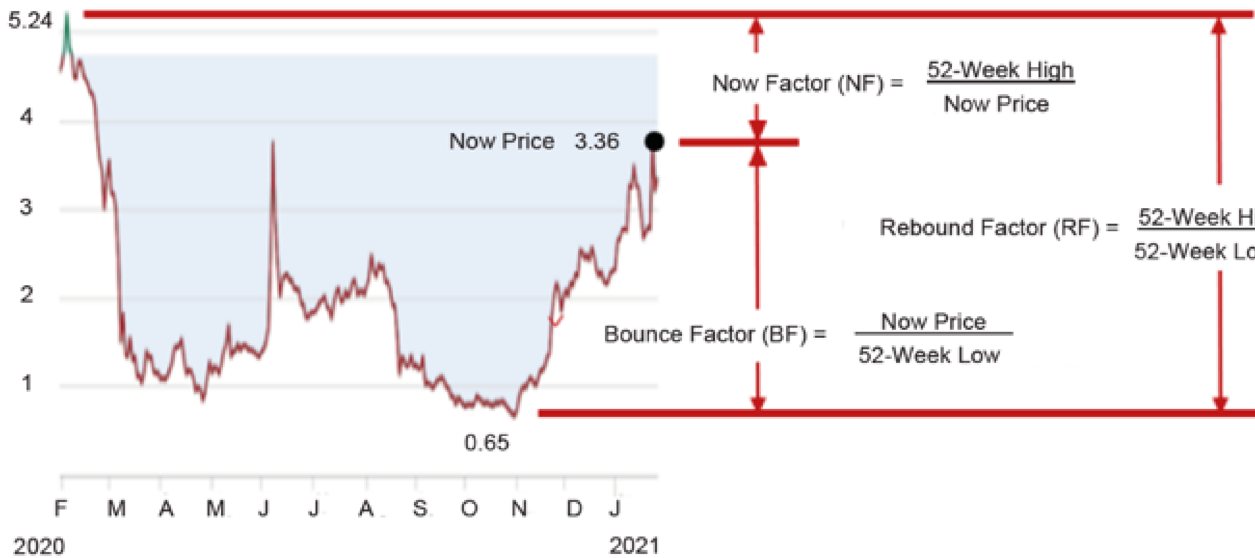
Yes, the only difference between the two hands is you started the second hand with $32,000 instead of $1,000 on the first hand. Let's take a break here and visit a quote that is commonly attributed to millionaires "The hardest thing they ever did was to earn their first million." Let me help you focus, Wayne Boston says, "Growing your investment account to $32,000 may be the hardest thing you do towards funding your Nest Egg to $1 million." It has been quoted that the average American has less than $10,000 in their retirement account.

This is a reality because most people live from paycheck to paycheck. This money constrained living can exist for anyone and even for those who might make over $500,000 a year. The quickest and most reliable way to reach $32,000 is to fund your investment account with your savings. Yes, I said it, your savings from your paycheck is the primary fuel for your investment portfolio growth. You need to pay off your debts so you can fund your retirement with your working income. Also, you need to be disciplined to stay focused as your investment dollars grow.

Any spending of your investment dollars on the way to $32,000 will cost you years to recover and significantly delay the time to reaching your financial goal. Patience and disciple are required to grow your investment to $32,000.

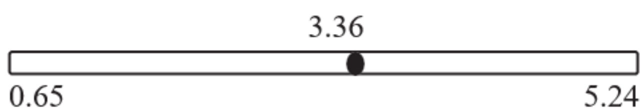
Lesson 2

**Figure 1. Big Bank Boss Triple Point for RIG as of Jan. 29, 2021**




52-Week High: 5.24
52-Week Low: 0.65
Now Price: 3.36

The three price positions for Transocean Ltd. (RIG) immediately above are shown in the figure above and in the bar below.




*Big Bank Boss Triple Point Equations*

These three equations are always positive and make it easy to convert ratios to percentages. Also, a unique thing about these ratios is an equation can be formed to solve for one unknown. These equations can be combined to solve for one unknown and are the building blocks for a program to monitor stock price movement.

Rebound Factor (RF)
= (52-Week High) / (52-Week Low)
= (5.24 / 0.65) = 8.06

Now Factor (NF)
= (52-Week High) / (Now Price)
= (5.24 / 3.36) = 1.56

Bounce Factor (BF)
= (Now Price) / (52-Week Low)
= (3.36 / 0.65) = 5.17

The three Big Bank Boss Triple Point equations are linked in the single equation shown below.

NF = RF / BF

Lesson 3

**Table 1. Price Dip with Now Factor (NF)% and Rebound Factor (RF)**

| | Price | Dip (%) | Now Factor (NF) (%) | Rebound Factor (RF) | Rebound Factor (RF) (%) |
|---|---|---|---|---|---|
| $60 is the Reference Price | 1,200.00 | 0.0% | 0.0% | 20.0 | 1900.0% |
| | 540.00 | 0.0% | 0.0% | 9.0 | 800.0% |
| | 420.00 | 0.0% | 0.0% | 7.0 | 600.0% |
| | 300.00 | 0.0% | 0.0% | 5.0 | 400.0% |
| | 180.00 | 0.0% | 0.0% | 3.0 | 200.0% |
| | 150.00 | 0.0% | 0.0% | 2.5 | 150.0% |
| | 120.00 | 0.0% | 0.0% | **2.0** | **100.0%** |
| | 108.00 | 0.0% | 0.0% | 1.8 | 80.0% |
| | 90.00 | 0.0% | 0.0% | 1.5 | 50.0% |
| | **60.00** | **0.0%** | **0.0%** | **1.0** | **0.0%** |
| | 40.00 | -33.3% | 50.0% | 1.5 | 50.0% |
| | 33.36 | -44.4% | 80.0% | 1.8 | 80.0% |
| | 30.00 | -50.0% | 100.0% | 2.0 | 100.0% |
| | 24.00 | -60.0% | 150.0% | 2.5 | 150.0% |
| | 20.00 | **-66.7%** | 200.0% | **3.0** | 200.0% |
| | 15.00 | -75.0% | 300.0% | 4.0 | 300.0% |
| | 12.00 | -80.0% | 400.0% | 5.0 | 400.0% |
| | 10.00 | -83.3% | 500.0% | 6.0 | 500.0% |
| | 8.57 | -85.7% | 600.0% | 7.0 | 600.0% |
| | 7.50 | -87.5% | 700.0% | 8.0 | 700.0% |
| | 6.67 | -88.9% | 800.0% | 9.0 | 800.0% |
| | 6.00 | -90.0% | 900.0% | 10.0 | 900.0% |
| | 3.00 | -95.0% | 1,900.0% | 20.0 | 1,900.0% |

Notice with a dip of 33.3% the corresponding Rebound is 50%. The significance of this relationship is amplified when you look at a dip of 75% that has a corresponding Rebound of 300%.

Stock market corrections or dips are great opportunities to purchase stocks or Average Down into stocks you own at discounted prices and reap huge future gains.

The Now Factor (NF) % shown in Table 1 increase as the stock price falls from a referenced high price ($60 in this example). This chart shows the significance of purchasing a stock that have higher rebounds. If a stock were to dip 80% and it was a solid company, the stock could potentially see a Rebound of 400% when and if it returns to the original referenced price. The results in Table 1 should look a little strange to you.

This is a new concept that I am bringing to you. Notice the Rebound Factor is 1 when it is at $60 and it increases positive in both directions regardless if the price is growing negative or positive.

This is a great thing because the Rebound Potential is set at the maximum spread from a fixed reference point to a new fixed low or high price. The Now Factor (NF) % is a positive replacement for the Below 52-Week High that is always positive. Also, the Now Factor (NF) % represents the actual Rebound Percentage back to the previous 52-Week High.

Let's look at an example that would represent gambling or impulsive trading. In true gambling, you would lose all of your money, but we will be overly conservative and say you only lose 66.7% of it. Also, you can't add any additional money. Here is the example that starts with $1,000 and you win (up 100%), you lose (down 66.7%), you win (up 100%), and finally you lose (down 66.7%).

Here are consecutive transactions. The price started at $1,000 and you win (up 100%), the new value would be $1,000 x 2 equals $2,000. Now you lose (down 66.7%), the new value would be $2,000 x 0.333 equals $666. Now, you win (up 100%), the new value would be $666 x 2 equals $1,332. Now, you lose (down 66.7%), the new value would be $1,332 x 0.333 equals $443.6. Regardless of the sequence of transactions, you've lost $556.4 after four transactions.

The results in this example are a little different than you thought. A simple magnitude comparison says 100% gain is greater than a loss of 66.7%, so you should have more money. Wrong, this is where you see the counterintuitive relationship between gains and losses. Look at Table 1 to grasp the significance of losses. The 66.7% loss has a Rebound Factor (RF) of 3. The 100% gain has a Rebound Factor (RF) of 2. The 66.7% loss with a RF of 3 requires a gain of at least 200% or RF of 3 just to break even.

This explains why the end result of the dollar movement up and down causes a negative growth from the initial dollar amount. This example was very conservative. When anyone loses all of your money with any transaction, you can never catch up even if you double the money amount every once in a while.

The layout of price trends in Table 1 provides you with a real measurement of potential to make decisions. It is never suggested that you blindly choose a stock based on its potential. You must make sure the stock has a viable business and is not going into bankruptcy.

The last column to the right is what I described to you earlier as the Rebound Factor (RF). It is a ratio number to signify the magnitude of the dip as a ratio. Notice that as the dip increases the RF increases. Also, the RF ratio number is easily converted to a RF % as described earlier. I wish I had this understanding when the Stock Market Crashed in March 2008 and during the recent Government Furlough in December 2019.

## Lesson 4

**Table 5. The Law of 72 w/ Associated Error**

| | Growth Rate Equations % | | |
|---|---|---|---|
| Years to Double ( $y$ ) | $\left(\left(\sqrt[y]{2}\right)-1\right)$ % | Law of 72 % | Law of 72 % Error |
| 72 | 0.97% | 1.0% | 3.09% |
| 8 | 9.05% | 9.0% | -0.55% |
| 6 | 12.25% | 12.0% | -2.04% |
| 4 | 18.92% | 18.0% | -4.86% |
| 3 | 25.99% | 24.0% | -7.66% |
| 2.5 | 31.95% | 28.8% | -9.86% |
| 2 | 41.42% | 36.0% | -13.09% |
| 1.5 | 58.74% | 48.0% | -18.28% |
| 1 | 100.00% | 72.0% | -28.00% |

This chart is provided to show that a pure exponential formula has no error compared to the values provided by the Law of 72. This chart is provided to show you the impact of interest rate and the corresponding doubling rate.

The doubling rate is in years. Earlier we found out a rate of return of 9% would double your investment in 8 years. If we increase the rate of return, it is more accurate to use the exponential equation to determine the relationship between rate of growth and number of years to double your investment.

When using the exponential function, you work the process backwards. First, determine the years to double and the growth multiple is computed; then, you convert the growth multiple to a growth rate. You can see the Growth Rates in the chart that are associated with the Years to Double. I want to challenge your thinking to believe Hyper Growth Rates are possible.

I have taken some of the data from Table 5 and created Growth Rate projection charts for you to take a peek into the future as you invest different amounts. I have included a non-Hyper Growth rate of 9.05% in Figure 6 so you can see the lengthy time horizon associated with conservative investment rates of return.

I have also provided four additional charts that show Hyper Growth Rate curves for 12.25%, 19%, 26%, and 31.95%. For simplicity, all 4 investors us a Roth IRA retirement vehicle with 2021 limits for contributions and their incomes were below the modified AGI to allow a full contribution: (1) Single investment of $1,000, (2) Annual investment of $3,600, (3) Annual investment of $6,000 (age less than 50), and (4) Annual investment of $7,000 (50 plus).

Let's assume Growth Rates of 12.25%, 19%, 26%, and 31.95% with Years to Double of 6 years, 4 years, 3 years, and 2.5 years, respectively. Now a single investment of $1,000 and 10 double would take 60 years, 40 years, 30 years, and 25 years to reach $1,024,000 at 12.25%, 19%, 26%, and 31.95%, respectively. A single investment of $1,000 takes way too long to reach the $1,024,000 Nest Egg goal.

The investment of your savings enables you to leapfrog to $32,000 with a Growth Rate of 12.25% and an annual investment of $3,600, $6,000, and $7,000 in 5.9 years, 4.0 years, and 3.5 years, respectively.

At the higher Growth Rate of 31.95% and an annual investment of $3,600, $6,000, and $7,000, the time to reach $32,000 has been reduced to 4.1 years, 3.0 years, and 2.7 years, respectively. As expressed earlier, reaching the initial $32,000 is a key milestone on your way to $1,024,000.

With this framework, the road map to reach your $1,024,000 Nest Egg goal is a real possibility within your lifetime. Now that the time to reach $32,000 has been accelerated by you investing monthly, the subsequent ultimate goal of $1,024,000 is reduced. The results in Figure 7 – Based on 12.25% Annual Growth Rate – 6 years to Double Investment, shows the significance of yearly investments of $3,600, $6,000, and $7,000 grows to $1,024,000 in 30.0 years, 25.8 years, and 24.5 years, respectively.

Let's look at the most extreme case Figure 10 – Based on 31.95% Annual Growth Rate – 2.5 years to Double Investment, the same annual investments of $3,600, $6,000, and $7,000 were used and the time is shortened to reach $1,024,000 in 15.3 years, 13.5 years, and 13.0 years, respectively.

This simple example shows the significance of growing your money with a higher growth rate and investing monthly. I must say it again that you can achieve high growth rates while minimizing risk. The next five charts are exact mathematical curves that should be used to help measure the effective growth of your investment account. Also, you can see the approximate arrival time at your Nest Egg goal of $1,024,000 with different funding levels and constant growth rates.

Lesson 5

*Understanding Compounded Interest*

Let's take a step back, the first thing you need to understand when dealing with money is to understand the Present Value (PV) equation. This equation helps you understand how to calculate dollar growth with changing interest rates.

The Present Value (PV) equation is:

$$PV = \frac{FV}{(1+r)^\wedge y}$$

$$(1 + r) = \sqrt[y]{\frac{FV}{PV}}$$

FV = future value, r = Growth Rate, and y = number of periods.

Let's substitute 2 for FV and 1 for PV:

Growth Multiple (x) $= \frac{FV}{PV} = \frac{2}{1} = 2$

Let's substitute 2 for y and 1 for x:

$$\text{Growth Multiplier } (1 + r) = \sqrt[y]{x} = \sqrt[2]{2}$$
$$= 1.41423$$
$$\text{Growth Rate } (r) = (1.41423 - 1) \times 100$$
$$= 41.423\%$$

This special substituting has significant meaning. You have seen $\sqrt[2]{2}$ trigonometry as the hypotenuse of an Isosceles right-angled triangle.

The Growth Multiplier can be used for any sales transaction (money, cars, house flipping, lemonade sales, hair, services, …etc).

Here is what all this math means. This simple math concept can be applied to any product that experiences an Annual Growth Multiplier of 1.41423 and compounded twice would double the investment's value.

1st Compound $10,000.0 x 1.41423 = $14,142.3
2nd Compound $14,142.3 x 1.41423 = $20,000.5

Let's substitute 3 for *y* and 2 for *x:*

$$\text{Growth Multiplier } (1+r) = \sqrt[y]{x} = \sqrt[3]{2} = 1.25992$$

$$\text{Growth Rate } (r) = (1.25992 - 1) \times 100 = 25.992\%$$

Here is what all this math means. This simple illustration showed that any product that experiences an Annual Growth Multiplier of 1.25992 and compounded three times would double the investment's value. See below.

1st Compound $10,000.00 x 1.25992 = $12,599.20
2nd Compound $12,599.20 x 1.25992 = $15,873.98
3rd Compound $15,9873.98 x 1.25992 = $20,000.00

Let's substitute 4 for *y* and 2 for *x:*

$$\text{Growth Multiplier } (1+r) = \sqrt[y]{x} = \sqrt[4]{2} = 1.18921$$

$$\text{Growth Rate } (r) = (1.18921 - 1) \times 100 = 18.921\%$$

Here is what all this math means. This simple illustration showed that any product that experiences an Annual Growth Multiplier of 1.18921 and compounded four times would double the investment's value. See below.

1st Compound $10,000.00 x 1.18921 = $11,892.10
2nd Compound $11,892.10 x 1.18921 = $14,142.20
3rd Compound $14,142.20 x 1.18921 = $16,818.05
4th Compound $16,818.05 x 1.18921 = $20,000.20

**Special Note:** Let me point out one other special thing about compounded growth rates, the calculation is not restricted by time. You can get the compounded growth rates in days, weeks, months, or years. The only thing that limits your investment growth is your imagination and creativity. You should always be mindful of a general principle in finance which states, "Higher Risk equal Higher Return." I endeavor to show you how to achieve High Returns while managing risk.

Lesson 6

## Employer based and Independent Business owned retirement plans contributions

This section provides you with a financial understanding and with an activation plan. Everyone's retirement plans will be separated into two buckets: employer-sponsored or self-employed. If you have an employer-sponsored employment plan, it is suggested that you contribute to your retirement account to or above the dollar-for-dollar match amount. No need to leave any money in the employers' hands when they are willing to fund your retirement account.

Most retirement accounts have a Stock Market Fund that mirrors the Stock Market growth. Employers traditionally use the S&P 500 for this fund. The best performing Index over the last 30 years has been the NASDAQ. You are being short changed if you stay with S&P 500 instead of the NASDAQ.

If you were to look at the last 10 years performance (Feb. 8, 2011 through Feb. 8, 2021) of the S&P 500 versus the NASDAQ, the 10-year growth rate would have been 194% (2.94 growth multiple) as opposed to 400% (5.0 growth multiple), respectively. The NASDAQ performance is 1.7 times greater than S&P 500 over a 10-year period.

If your retirement account started with $32,000 and you did not invest additional money for 10-years in the S&P 500 and NASDAQ, your final balance (annual % growth) would be $94,080 (11.39% annually) and $160,000 (17.46% annually), respectively.

At first glance, the final balance difference of $65,920 and the annual % growth difference of 6.07% between the S&P 500 and NASDAQ doesn't seem alarming, but the time horizon to a fully funded $1M Nest Egg is substantial longer. The Present Value function discussed earlier can be transformed into the Years to Reach $1M Nest Egg Goal equation.

**S&P 500**

Goal: $1,024,000
Initial Balance: $32,000
Annual Growth Multiplier: 1.1139

Years to Reach Goal: $\dfrac{ln\left(\dfrac{\$1,024,000}{\$32,000}\right)}{ln(1.1139)}$ = 32.13 years

**NASDAQ**

Goal: $1,024,000
Initial Balance: $32,000
Annual Growth Multiplier: 1.1746

Years to Reach Goal: $\dfrac{ln\left(\dfrac{\$1,024,000}{\$32,000}\right)}{ln(1.1746)}$ = 21.54 years

The higher growth rate obtained by the NASDAQ arrives at the Nest Egg goal 10 years before a portfolio that is made up of the S&P 500. This simplified equation is only designed for a single investment. The results obtained here can be approximated without calculation by viewing the Hyper Growth Rate Curves described in Chapter 4 - Hyper Return Concept. The closest approximate for the S&P 500 w/ 11.39% growth rate is the Single Investment $1,000 plot @ 12.25% Annual Growth Rate (30 years). The closest approximate for the NASDAQ w/ 17.46 growth rate is the Single Investment $1,000 plot @ 18.92% Annual Growth Rate (20 years).

Lesson 7

# Income Types w/ Tax Liability

**Table 44. 2020 Federal Tax Brackets**

| Tax Brackets/Rate | Single Filing | Married Filing Jointly | Married Filing Separetly | Head of Household |
|---|---|---|---|---|
| 10% | 0 to $9,875 | $0 – $19,750 | $0 – $9,875 | $0 – $14,100 |
| 12% | $9,876 – $40,125 | $19,751 – $80,250 | $9,876 – $40,125 | $14,101 – $53,700 |
| 22% | $40,126 – $85,525 | $80,251 – $171,050 | $40,126 – $85,525 | $53,701 – $85,500 |
| 24% | $85,526 – $163,300 | $171,051 – $326,600 | $85,526 – $163,300 | $85,501 – $163,300 |
| 32% | $163,301 – $207,350 | $326,601 – $414,700 | $163,301 – $207,350 | $163,301 – $207,350 |
| 35% | $207,351 – $518,400 | $414,701 – $622,050 | $207,351 – $518,400 | $207,351 – $518,400 |
| 37% | $518,400 + | $622,051 + | $518,401 + | $518,401 + |

*Capital Gains Income*

Capital gains are the profits you make when you sell an asset such as a stock, real estate, or business. These gains are usually considered taxable income.

Your capital gains tax rate can vary from year to year. That's because Congress can change the tax brackets, or your income level may change.

You'll also have to pay a different rate if your capital gains are classed as long or short term.

**Short-term capital gains** are from any assets that you held for one year or less. They're taxed at your ordinary-income rate.

**Long-term capital gains** are from any investments you sell after owning for more than a year. These have their special tax rates, unlike short-term capital gains.

Since the tax rate can change year to year, I have provided the 2020 capital gains tax rates for long-term and short-term gains. The 2020 tax rates for short-term gains are 10%, 12%, 22%, 24%, 32%, 35%, and 37%. Remember, short-term capital gains are taxed just like ordinary income see Table 44. 2020 Federal Tax Bracket. Thus, things like your filing status, income, and deductions come into play.

**Table 45. 2020 Long-Term Capital Gains Tax**

| Tax Brackets/Rate | Single Filing | Married Filing Jointly | Married Filing Separetly | Head of Household |
|---|---|---|---|---|
| 0% | $0-$40,000 | $0-$80,000 | $0-$40,000 | $0-$53,600 |
| 15% | $40,000-$441,450 | $80,000-$496,600 | $40,000-$248,300 | $53,600-$469,050 |
| 20% | $441,550 + | $496,600 + | $248,300 + | $469,050 + |

For long-term gains, the rates change to 0%, 15%, and 20%. These rates are based purely on income levels. Please don't overlook the fact that a Married Filing Jointly can withdraw up to $80,000 as Long-Term Capital Gains tax-free. A withdrawal from a Roth IRA at the retirement age would be an avenue for a tax-free withdrawal.