



November 2026

The Power of Compounding: How Time Helps Money Grow

Mary Hails, Economic Education Intern

Scott A. Wolla, PhD, Assistant Vice President

“Money can beget Money, and its Offspring can beget more, and so on.”

—Benjamin Franklin, [Advice to a Young Tradesman](#)

Introduction

Before his death in 1790, Benjamin Franklin left £1,000 sterling ([approximately \\$4,444 at the time](#)) to Boston, his birthplace, and another £1,000 (\$4,444) to Philadelphia, his adopted home. He directed the cities to [lend the money at 5% interest to young tradesmen](#). After 100 years, each city could use most of its funds for public works while keeping the remainder invested for another century. [By 1991, the two funds were worth roughly \\$6.5 million combined.](#)

How did such a modest sum grow to be nearly \$6.5 million? The cities made loans and distributions as they managed the funds, illustrating how reinvesting earnings allows money to build on previous earnings over time.

Benjamin Franklin’s gift is a real-world illustration of **compound interest**, one of the most powerful forces in long-term saving and investing.

Compounding is the process by which earnings generate additional earnings. In a savings account, this happens through compound interest: Interest is calculated on both the original deposit and previously credited interest. By contrast, **simple interest** is calculated only on the **principal**, which is the original amount deposited.

Investments can compound too when **capital gains** remain invested and **dividends** are reinvested. For example, if a \$100 investment gains 10% in each of two consecutive years, it grows to \$110 after the first year and to \$121 after the second. The second year’s \$11 gain is based on both the original investment and the first year’s \$10 gain. The extra \$1 earned in the second year may seem small, but as the balance grows and compounding continues, the effect becomes much larger over time.

Unlike the interest rate on many savings accounts, however, investment returns fluctuate and can be negative. For simplicity, the examples that follow assume a constant annual return, but actual investment results vary.

Three Drivers of Money Growth: Time, Rate of Return, and Contributions

1. Time

Time is especially powerful when investing because it gives earnings more opportunities to generate additional earnings.

Imagine this scenario: You decide to start saving at age 25, so you open an investment account that you want to add to each year. Assume the investment account earns an average annual return of 8%. If you add \$5,000 into this account each year for 10 years and then stop and let the account sit until your retirement at age 65, you will have roughly \$787,180 saved up. (These examples assume that contributions are made at the beginning of each year and that the account earns exactly 8% annually, with no taxes, fees, or withdrawals.)

Meanwhile, your friend does not begin saving early and opens an account with an 8% annual return at the age of 35. Even if they deposit \$5,000 into their account each year for 30 years until they retire, they will have roughly \$611,730 in their account. Even though your friend deposited \$150,000 over 30 years compared with your \$50,000 over 10 years, you still end up with more money for retirement: Starting to save at 25 years old, 10 years earlier than your friend, means your money has more time to compound and accrue interest.

And this is if you make only 10 contributions, from ages 25 through 34! If you add \$5,000 into this account each year from age 25 until your retirement at age 65, your savings will have grown to \$1,398,905. By starting 10 years earlier than your friend and making 10 additional contributions, you accumulate more than twice as much.

Time is an important factor in compounding because once you start to earn interest, you can do so on both your original investment and the interest you have already earned. The more time your money has to compound, the more your money can grow.

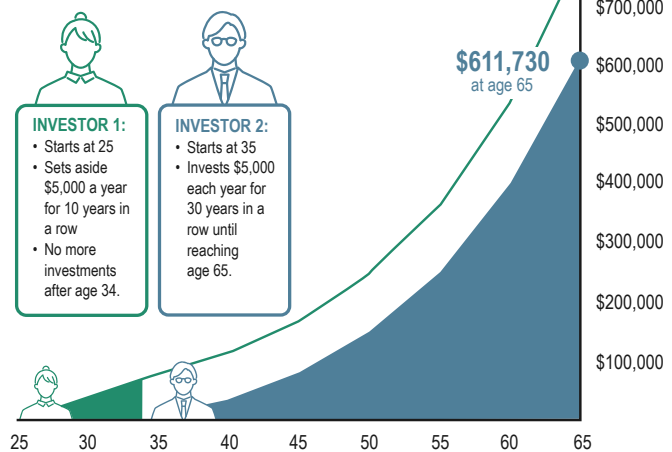
2. Rate of Return

The interest rate, or rate of return, is another important factor in compounding calculations. While the period of time determines how often your money is compounded, the rate of return determines the speed at which your money grows.

There is a quick rule of thumb when working with compounding called [the Rule of 72](#). You can divide 72 by an investment's annual interest rate or average rate of return to estimate the number of years it

Compound Interest: Who Will Earn More?

This example shows how the earlier a person takes advantage of compound interest, the more time that money has to grow.



NOTE: Assumes an 8 percent interest rate, compounded annually. Balances shown are approximate.
SOURCE: Author's calculations.

FRE FEDERAL RESERVE EDUCATION

will take for your initial sum to double. For example, if you deposit your money into a savings account with a 2% interest rate, it will take roughly 36 years for your original deposit to double. With a 6% interest rate, it will take only about 12 years for your money to double. At 8%, your money will double in 9 years.

Higher interest rates mean that your savings balance grows more quickly.

3. Contributions

A third factor in compounding calculations is the amount of money that you contribute, including the original amount and monthly or yearly deposits. The more money you put aside to save or invest, the more money you earn as compounded interest.

If we return to the earlier example with the same 8% average returns, but you invest only \$1,000 into the account each year for the first 10 years, after 40 years you will have \$157,435. This is still a considerable amount of money, but it's significantly less than what you would have with a larger annual investment.

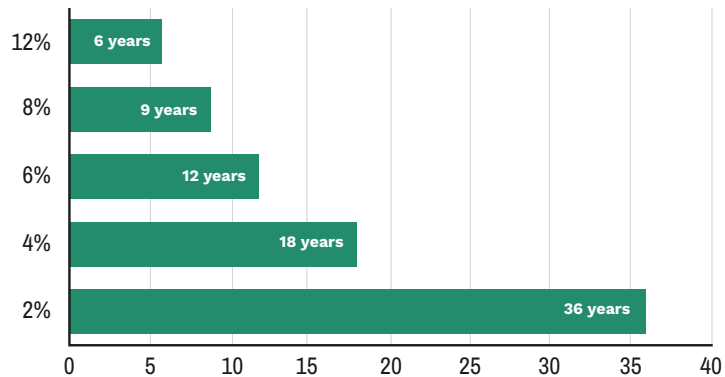
A larger investment or deposit means there is more money to earn interest and compound over time.

Understanding the Rule of 72

The Rule of 72 is an easy compound interest calculation to estimate how long it will take to double your money.

$$72 \div \text{INTEREST RATE} = \text{YEARS TO DOUBLE MONEY}$$

Using the rates shown, here is about how long it would take to double an initial investment.



FRE FEDERAL RESERVE EDUCATION

A Warning About Compounding

Compounding is important to understand and use to your advantage as a saver, but factors such as time and interest rates can also work against you as a borrower. With some types of debt, such as credit cards, unpaid interest can be added to the balance, causing the debt itself to compound. For example, if you borrow \$100 with 10% interest and it takes you more than a year to pay it back, you will end up paying more than \$110 because of the compounded interest. The longer the balance remains unpaid, the more interest you pay, so plan your borrowing and saving wisely.

Conclusion

While we may not have 200 years for our money to earn interest like the cities of Boston and Philadelphia, we can still harness the power of compounding by starting early. If you're saving for retirement, a home, college, or any other significant purchase, it's helpful to understand how compounding works: It combines time, interest rates, and the amount invested to amplify your savings. (It can also amplify your debt!) Time determines how many opportunities your money has to compound; interest rates influence how quickly your balance grows; and your contributions determine how much money is available to

earn a return. Remember that while saving and investing means you earn money from the compounding interest, having credit card debt and loans means you will owe more money as the compounding interest is added to the entire balance and calculated into future payments.

Saving or investing now gives your money the maximum amount of time to compound, so even modest amounts of money can transform into substantial sums in the long run.

Try out the [Compound Interest Calculator](#) from Investor.gov.

Glossary

Capital gains: A profit from the sale of financial investments.

Compound interest: Interest computed on the sum of the original principal and accrued interest.

Dividend: A share of a company's net profits paid to stockholders.

Principal: The original amount of money deposited or invested, excluding any interest or dividends. Also refers to the original amount of a loan without any interest.

Simple interest: Interest paid or earned based on only the principal of a loan or account.

References

Catanzaro, Mark. "How Does Compound Interest Work?" Federal Reserve Bank of St. Louis *Open Vault Blog*, September 12, 2018.

Chen, James. "Compounding Interest: Formulas and Examples." *Investopedia*, June 2, 2025.

Fidelity Learn. "What is Compound Interest?" Fidelity Investments, October 9, 2025.

Franklin, Benjamin. "Advice to a Young Tradesman." Printed in George Fisher, *The American Instructor: or Young Man's Best Companion*, Ninth Edition Revised and Corrected. Yale University Library. Philadelphia: Printed by B. Franklin and D. Hall, at the New-Printing-Office, in Market-Street, 1748, pp. 375–7.

Franklin, Benjamin. *The Will of Benjamin Franklin and Proceedings of Trustees and Courts Relating Thereto*. Boston, Rockwell and Churchill, City Printer, 1790. Archive.org.

Maverick, JB. "S&P 500 Average Returns and Historical Performance." *Investopedia*, May 14, 2026.

Picardo, Elvis. "Simple vs. Compound Interest: Definition and Formulas." *Investopedia*, June 18, 2026.

U.S. Congress. *An Act to Regulate the Collection of the Duties Imposed by Law on the Tonnage of Ships or Vessels, and on Goods, Wares and Merchandises Imported into the United States*, July 31, 1789, sec. 18, 1 Stat. 29, 36.

Yenawine, Bruce Harley. "Benjamin Franklin's Legacy of Virtue: The Franklin Trusts of Boston and Philadelphia." Syracuse University Libraries History – Dissertations No. 30, 1995.

Name _____ Period _____

Reading Q&A

The Power of Compounding: How Time Helps Money Grow

After reading the article, complete the following:

1. What is compound interest?
 - a. Interest calculated only on the original principal
 - b. Interest calculated on principal plus accrued interest
 - c. Interest charged only when payments are late
 - d. Interest paid once when an account is closed
2. What primarily allowed Benjamin Franklin's gifts to grow over two centuries?
 - a. The cities made new deposits every year.
 - b. The borrowers repaid all loans in foreign currency.
 - c. The funds repeatedly reinvested earnings over many years.
 - d. The cities avoided making withdrawals from the funds.
3. What are the three main drivers of growth through compounding?
 - a. Time, rate of return, and contributions
 - b. Income, rate of inflation, and taxes
 - c. Saving, household spending, and borrowing
 - d. Principal, loan payments, and credit scores
4. Why did the saver who started at age 25 accumulate more than the friend who started at age 35?
 - a. The later saver made smaller yearly deposits.
 - b. The early saver earned a higher annual return.
 - c. The later saver stopped after only 10 years.
 - d. The earlier deposits had 10 more years to compound.
5. How do you use the Rule of 72 to estimate the time required for money to double?
 - a. Add the annual rate to 72.
 - b. Multiply the annual rate by 72.
 - c. Divide 72 by the annual rate.
 - d. Subtract the annual rate from 72.

6. According to the Rule of 72, about how long will money take to double at an 8% annual return?
 - a. Approximately 6 years
 - b. Approximately 9 years
 - c. Approximately 12 years
 - d. Approximately 36 years
7. How does a higher rate of return generally affect the growth of savings?
 - a. The balance grows at the same speed.
 - b. The balance grows more slowly over time.
 - c. The balance stops earning additional returns.
 - d. The balance grows more quickly over time.
8. Why do larger contributions generally produce a larger future balance?
 - a. More money is available to earn a return.
 - b. Less time is available for earnings to grow.
 - c. Lower interest rates are applied to the account.
 - d. Future investment losses are completely prevented.
9. Why can compounding cause credit card debt to grow?
 - a. New purchases receive a lower interest rate.
 - b. Monthly payments automatically erase the principal.
 - c. Unpaid interest may be added to the balance.
 - d. Credit limits fall whenever interest is charged.
10. Why does the article recommend beginning to save as early as possible?
 - a. Saving guarantees the same return every year.
 - b. Saving early gives money more time to compound.
 - c. Saving early removes the need for later contributions.
 - d. Saving guarantees protection from all investment losses.