NO PREP

What is Compound Interest?

The Secret to Growing Your Money

Includes: Student reading, case study, differentiated questions, teacher key

Name: Period: Date:

What is Compound Interest? The Secret to Growing Your Money

Compound interest is often referred to as the "eighth wonder of the world," and for a good reason. Unlike simple interest, which is calculated only on the principal amount, compound interest allows your money to grow faster over time by earning interest on both the principal and previously earned interest. This creates a snowball effect where your savings or investments grow exponentially, making it a powerful tool for building wealth. Imagine putting your money to work while you sleep. That's the magic of compound interest.

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The Basics of Compound Interest

Compound interest is calculated on the principal amount (the initial deposit or loan amount) and the accumulated interest from previous periods. Unlike simple interest, where only the principal earns interest, compounding adds a layer of growth. For example, if you deposit $1,000 into a savings account with a 5% annual interest rate compounded yearly, you'll earn $50 in the first year. In the second year, you'll earn interest on $1,050 instead of just $1,000. Over time, this compounding effect accelerates the growth of your savings.

The formula for compound interest is:

$A = P \times (1 + r/n)^{(n \times t)}$. Where: A is the future value of the investment/loan, including interest. P is the principal amount. r is the annual interest rate (in decimal form). n is the number of times interest is compounded per year. t is the time in years. Let's see this formula in action with a real-world example to better understand its potential.

Real-Life Example: The Cost of Waiting

Consider two individuals, Alex and Jamie, who both want to save for retirement. Alex starts investing $200 per month at the age of 20, while Jamie starts the same plan at 30. Both earn an average annual return of 6%. By the time Alex turns 60, their investment will have grown to approximately $400,000. On the other hand, Jamie will only accumulate around $200,000—even though both contributed the same monthly amount. This stark difference highlights the importance of starting early. Time is a critical factor in compound interest. The earlier you start, the longer your money has to grow.

Simple vs. Compound Interest: Key Differences

It's important to distinguish between simple interest and compound interest. Simple interest only earns money on the principal, making it less effective for long-term growth. The table below summarizes the differences between the two: Understanding these differences can help students choose the right financial products for their goals. For example, a high-yield savings account with compound interest is better for long-term savings, while simple interest may suffice for short-term needs.

The Rule of 72

A quick way to estimate how long it will take for your money to double is by using the Rule of 72. Simply divide 72 by the annual interest rate to get the approximate number of years. For example, at an annual interest rate of 6%, your money will double in about 12 years (72 ÷ 6 = 12). This rule underscores the importance of choosing financial products with competitive interest rates.

Practical Applications: Using Compound Interest Wisely

While compound interest can grow savings, it can also work against you when it comes to debt. For example, credit card balances often accrue compound interest daily, significantly increasing what you owe if not paid off promptly. This makes understanding compound interest critical for both saving and borrowing. Here are some practical tips: Start saving early to maximize growth. Choose accounts or investments with compounding periods that suit your goals (e.g., monthly or yearly). Avoid carrying credit card balances to prevent interest from compounding against you.

Why Start Now?

The most powerful aspect of compound interest is time. Even small contributions made consistently over several years can lead to significant growth. Waiting just a few years can mean missing out on thousands of dollars in potential earnings.

Conclusion

Compound interest is more than just a financial concept; it's a life-changing tool. By understanding how it works and applying it strategically, you can unlock your financial potential. Whether saving for college, retirement, or an emergency fund, compound interest ensures your money works as hard as you do. Remember, the earlier you start, the more powerful its effect. So why wait?

Key Information

Feature	Simple Interest	Compound Interest
Earnings Basis	Principal only	Principal + accumulated interest
Growth Pattern	Linear	Exponential
Best For	Short-term loans or savings	Long-term savings or investments

Case Study: Sarah's College Fund

Sarah's parents opened a savings account for her at birth, depositing $5,000 at a 4% annual interest rate, compounded yearly. By the time Sarah turned 18, the account grew to $10,129. Instead of withdrawing it, Sarah decided to leave the money untouched until she turned 30, allowing the account to continue growing. At 30, her account balance was $16,217—without adding a single dollar after the initial deposit.

1. How much interest did Sarah's account earn from age 18 to 30 compared to the initial deposit?

_____

_____

2. Why is compound interest particularly effective over long periods, as seen in Sarah's case?

_____

_____

Multiple Choice

1. What does compound interest calculate interest on?

    a) Monthly deposits to a savings account

    b) Annual contributions only

    c) Principal and accumulated interest

    d) Only the principal amount

2. Which of the following best illustrates the Rule of 72?

    a) Divide 72 by the interest rate to find how long it takes money to double.

    b) Divide 72 by the number of times interest is compounded in a single year.

    c) Multiply 72 by the interest rate to estimate growth.

    d) Add 72 to the principal to calculate compound interest.

3. What is the primary advantage of compound interest compared to simple interest?

    a) It only requires a single contribution.

    b) It avoids all risks associated with investing.

    c) It grows money linearly at a steady rate over a long time period.

    d) It accelerates growth by earning interest on interest.

Matching

Write the letter of the correct definition on the line next to each term.

Term	Definition
1. ___ Exponential growth	A) Simple interest
2. ___ Principal amount	B) Compound interest
3. ___ Rule of 72	C) Interest on interest
4. ___ Linear growth	D) $5,000 initial deposit
5. ___ Sarah's account balance growth	E) Rule of 72

Fill-in-the-Blank

1. The formula for compound interest is _____.

2. Interest that grows on both principal and past interest is called _____.

3. A quick way to estimate doubling time for an investment is the _____.

Short Answer

Answer each question in 2-4 complete sentences.

1. Explain why compound interest is better suited for long-term savings than simple interest.

_____

_____

_____

2. How does starting early impact the total amount earned through compound interest?

3. Why might understanding compound interest be important when managing debt?