

Compound Interest Worksheet

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Part 1: Foundational Knowledge

What is the formula for calculating compound interest?

Hint: Consider the different formulas for interest calculations.

- A) $A = P(1 + rt)$
- B) $A = P(1 + \frac{r}{n})^{nt}$
- C) $A = P \times r \times t$
- D) $A = P + rt$

What is the formula for calculating compound interest?

Hint: Recall the formulas you have learned.

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- B) $A = P(1 + r/n)^{nt}$
- C) $A = P \times r \times t$
- D) $A = P + rt$

Which of the following are factors that affect compound interest?

Hint: Think about what influences the growth of an investment.

- A) Principal amount
- B) Interest rate
- C) Time period
- D) Compounding frequency

Which of the following are factors that affect compound interest?

Hint: Consider the elements that influence interest calculations.

- A) Principal amount

- B) Interest rate
- C) Time period
- D) Compounding frequency

Explain the difference between compound interest and simple interest.

Hint: Consider how each type of interest is calculated over time.

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Hint: Think about how each type of interest is calculated.

Part 2: Comprehension

If the interest is compounded annually, how many times is the interest applied in a year?

Hint: Consider the definition of annual compounding.

- A) 1
- B) 2
- C) 4
- D) 12

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- D) 12

Which statements are true about the impact of compounding frequency on investment growth?

Hint: Think about how often interest is added to the principal.

- A) More frequent compounding results in higher total interest.
- B) Less frequent compounding results in lower total interest.
- C) Compounding frequency does not affect the total interest.
- D) Monthly compounding results in more interest than annual compounding.

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- D) Monthly compounding results in more interest than annual compounding.

Describe how increasing the interest rate affects the future value of an investment with compound interest.

Hint: Consider the relationship between interest rates and investment growth.

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Part 3: Application

If you invest \$1,000 at an annual interest rate of 5% compounded quarterly for 2 years, what is the approximate future value?

Hint: Use the compound interest formula to calculate the future value.

- A) \$1,100
- B) \$1,104.94
- C) \$1,200
- D) \$1,215.51

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Hint: Use the compound interest formula to calculate.

- A) \$1,100
- B) \$1,104.94
- C) \$1,200
- D) \$1,215.51

You have two investment options: Option A: 4% interest compounded annually; Option B: 3.9% interest compounded monthly. Which option will yield more interest over 5 years?

Hint: Consider the effects of compounding frequency on total interest earned.

- A) Option A
- B) Option B
- C) Both yield the same
- D) Cannot be determined without more information

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Hint: Consider the effects of compounding frequency and interest rates.

- A) Option A
- B) Option B
- C) Both yield the same
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Calculate the compound interest earned on a \$2,000 investment at a 6% annual interest rate compounded semi-annually for 3 years. Show your work.

Hint: Use the compound interest formula and show each step of your calculation.

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Part 4: Analysis

Which factor has the most significant impact on the growth of compound interest over a long period?

Hint: Consider the long-term effects of each factor.

- A) Principal amount
- B) Interest rate
- C) Time period

- D) Compounding frequency

Which factor has the most significant impact on the growth of compound interest over a long period?

Hint: Consider the elements that influence growth over time.

- A) Principal amount
 B) Interest rate
 C) Time period
 D) Compounding frequency

Analyze the following scenarios and select which will result in the highest future value: A) \$500 at 5% compounded annually for 10 years; B) \$500 at 5% compounded quarterly for 10 years; C) \$500 at 5% compounded monthly for 10 years; D) \$500 at 5% compounded daily for 10 years.

Hint: Consider how compounding frequency affects the total amount over time.

- A) \$500 at 5% compounded annually for 10 years
 B) \$500 at 5% compounded quarterly for 10 years
 C) \$500 at 5% compounded monthly for 10 years
 D) \$500 at 5% compounded daily for 10 years

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Hint: Consider the effects of compounding frequency on future value.

- A) \$500 at 5% compounded annually for 10 years
 B) \$500 at 5% compounded quarterly for 10 years
 C) \$500 at 5% compounded monthly for 10 years
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Discuss how the time period of an investment affects the total compound interest earned. Use examples to support your analysis.

Hint: Consider the relationship between time and interest accumulation.

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Part 5: Evaluation and Creation

Given two investments with the same principal and interest rate, one compounded annually and the other monthly, which will have a higher effective annual rate (EAR)?

Hint: Consider how compounding frequency affects the effective annual rate.

- A) Annually compounded
- B) Monthly compounded
- C) Both have the same EAR
- D) Cannot be determined

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Hint: Consider how compounding frequency affects the effective rate.

- A) Annually compounded
- B) Monthly compounded
- C) Both have the same EAR
- D) Cannot be determined

Evaluate the following statements about compound interest: A) Compound interest benefits long-term investments more than short-term ones; B) The principal amount has no effect on the total interest earned; C) A higher interest rate always results in more interest earned; D) Compounding frequency can significantly affect the future value of an investment.

Hint: Consider the validity of each statement based on your understanding of compound interest.

- A) Compound interest benefits long-term investments more than short-term ones.
- B) The principal amount has no effect on the total interest earned.
- C) A higher interest rate always results in more interest earned.
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Hint: Consider the validity of each statement.

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- B) The principal amount has no effect on the total interest earned.
- C) A higher interest rate always results in more interest earned.
- D) Compounding frequency can significantly affect the future value of an investment.

Design a savings plan using compound interest to achieve a financial goal of \$10,000 in 5 years. Specify the principal, interest rate, and compounding frequency, and justify your choices.

Hint: Consider how much you need to save and the interest rate you can achieve.

Design a savings plan using compound interest to achieve a financial goal of \$10,000 in 5 years. Specify the principal, interest rate, and compounding frequency, and justify your choices.

Hint: Consider how to structure your plan effectively.

