

Name: _____

Understanding Simple and Compound Interest

For calculations of simple and compound interest, use one of the following digital tools:

Simple Interest Calculator: http://www.moneychimp.com/features/simple_interest_calculator.htm

Compound Interest Calculator: <https://www.getsmarteraboutmoney.ca/calculators/compound-interest-calculator/>

Investment Calculator: <https://www.calculator.net/investment-calculator.html>

1. Sam has \$250 as the principal amount. He wants to invest the money for 20 years, but he cannot decide which is the best option. **Help Sam choose the best option and explain your thinking.** If you want to do calculations (optional), use a digital tool from above.

Option A: Invest in the stock market with an 8% monthly compound interest for 20 years.

Your explanation:

Option B: Invest in a savings account with an 8% annual simple interest for 20 years.

Your explanation:

2. George needs \$75 to buy a new pair of shoes.
 - a. Should George use his credit card that will charge him 19.99% interest rate compounded monthly, or should he use his student line of credit that will charge him 7% annual simple interest? Explain.

 - b. If George used his credit card, how much would his new shoes cost him in one year if he did not pay off his credit card? Use a digital tool for your calculation.

 - c. If George purchased the shoes using his line of credit, how much would his shoes cost him in one year? Use a digital tool for your calculation.

3. Using the Investment Calculator (<https://www.calculator.net/investment-calculator.html>), compare the two investment options below. Which option is the better choice?

Starting Amount = Principal Amount

Return Rate = Interest Rate

Additional Contribution = Input \$0

Option A: Invest \$500 at 7% interest rate compounded quarterly for 25 years.

Option B: Invest \$500 at 5% interest rate compounded monthly for 25 years.

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Understanding Simple and Compound Interest: Answer Key

For calculations of simple and compound interest, use one of the following digital tools:

Simple Interest Calculator: http://www.moneychimp.com/features/simple_interest_calculator.htm

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Investment Calculator: <https://www.calculator.net/investment-calculator.html>

4. Sam has \$250 as the principal amount. He wants to invest the money for 20 years, but he cannot decide which is the best option. **Help Sam choose the best option and explain your thinking.** If you want to do calculations (optional), use a digital tool from above.

Option A: Invest in the stock market with an 8% monthly compound interest for 20 years.

Your explanation:

Student explanation may vary. Students do not need to do calculations to determine that Option A is the better option. Given the same interest rate, compound interest will always yield a higher return (a higher interest) on investment.

Option A will yield a total of \$1,231.70.

Option B: Invest in a savings account with an 8% annual simple interest for 20 years.

Your explanation:

Option B will yield a total of \$650.

5. George needs \$75 to buy a new pair of shoes.
d. Should George use his credit card that will charge him 19.99% interest rate compounded monthly, or should he use his student line of credit that will charge him 7% annual simple interest? Explain.

Student explanation may vary.

George should use his line of credit. Not only is the credit card interest rate of 19.99% much higher than 7%, but it is also compounded monthly while the line of credit offers a simple interest rate.

- e. If George used his credit card, how much would his new shoes cost him in one year if he did not pay off his credit card? Use a digital tool for your calculation.

\$91.45, which means George pays an extra \$16.45 in interest.

- f. If George purchased the shoes using his line of credit, how much would his shoes cost him in one year? Use a digital tool for your calculation.

\$80.25, which means George pays an extra \$5.25 in interest.

6. Using the Investment Calculator (<https://www.calculator.net/investment-calculator.html>), compare the two investment options below. Which option is the better choice?

Starting Amount = Principal Amount

Return Rate = Interest Rate

Additional Contribution = input \$0

Option A: Invest \$500 at 7% interest rate compounded quarterly for 25 years.

Total investment = \$2,834.08, interest earned = \$2,334.08

Option B: Invest \$500 at 5% interest rate compounded monthly for 25 years.

Total investment = \$1,740.65, interest earned = \$1,240.65

Option A is the better choice.

Even though Option B accrues interest more frequently, because of the lower rate and the length of time (25 years), Option A yields a higher return.