

Suzie's Savings Decision

One year ago, Suzie received \$1,000 from her grandmother with instructions to save it for college two years from now. She deposited the money in her checking account for which she was paid no interest. She had considered putting the \$1,000 in a savings account that paid 5 percent interest compounded semiannually, but she never got around to it. How much money did Suzie lose by leaving her \$1,000 in a non-interest bearing account for 12 months? Follow the steps below to find the answer.



1. Because the interest on the account is compounded semiannually, the interest is added to the principal every six months. Therefore, divide the annual amount of interest—5 percent—by two to determine interest paid at the end of each six-month period. Every six months, the saver would receive .025 ($.05 \div 2$) interest on the principal plus any accumulated interest. Multiply the principal (plus any accrued interest) by the interest rate. Round to the nearest hundredth. (For example, $\$25.625 = \25.63 .) Note that the principal will change each time interest accrues.

Months	Principal (p)	Interest (i)	p + i
6	\$1,000.00	\$	\$
12	\$	\$	\$

2. Fill in the following chart, which shows these two savings options.

Type of Account	Original Principal	Interest after 12 Months	Total Principal and Interest after 12 Months
Zero-Interest Checking Account	\$1,000.00	\$	\$
5% Compounded Semi-Annually	\$1,000.00	\$	\$

3. Suzie lost \$_____ by keeping her money in a non-interest bearing account rather than putting it in an account that paid 5 percent compounded semiannually.

4. Now, complete the chart below by using the information from question one for months six and 12, and calculate the interest paid for years two and three in the account that pays 5 percent compounded semiannually. Round to the nearest hundredth. Remember that the principal will change each time interest accrues.

Months	Principal (p)	Interest (i)	p + i
6	\$1,000.00	\$	\$
12	\$	\$25.63	\$
18	\$	\$	\$
24	\$1,076.90	\$	\$
30	\$	\$27.60	\$
36	\$	\$	\$

The Rule of 72

The Rule of 72 is a method to determine the number of years it will take for your savings to double in value.

Complete the following chart by shading in the bar chart below. Begin at 0 years, and shade horizontally to the number of years it will take for an amount of money to double for each interest rate. Use pencil!

Your money will double in . . .	0 years	10 years	20 years	30 years	40 years	50 years
If your interest rate is . . .						
2% (72 ÷ 2)						
4% (72 ÷ 4)						
6% (72 ÷ 6)						
8% (72 ÷ 8)						
12% (72 ÷ 12)						

Charlie's Financial Goal

1. Charlie is saving to buy a car a year and a half from today. He has \$12,000 in a savings account with an interest rate of 4 percent compounded quarterly. How much will Charlie have in his savings account after 18 months? Calculate and fill in the chart below. Round to the nearest hundredth.

(hint: remember to divide the interest rate by 4 because it compounds quarterly!)

Months	Principal (p)	Interest (i)	p + i
3	\$12,000.00	\$	\$
6	\$	\$	\$
9	\$	\$	\$
12	\$	\$	\$
15	\$	\$	\$
18	\$	\$	\$

2. How long will it take Charlie's money to double at an interest rate of 4 percent?

3. Charlie wants to explain the risk-reward relationship to his nephew, who is a sophomore in high school. If you were Charlie, how would you explain the principal of risk-reward?