

Simple Interest

$$I = Prt$$

$$A = P + I$$

Compound Interest

$$A = P(1 + r)^t$$

$$I = A - P$$

Variables

I = interest, P = principle, r = percentage rate(dec),

t = time(yr), A = total/balance

There are two basic types of bank accounts designed to save money: savings accounts and certificates of deposit (CD). While savings accounts give unlimited access to your money, they do not pay a very high interest rate. CDs on the other hand pay a much higher interest rate. However, the money in a CD is locked away for a specified amount of time.

Calculate the balance and interest earned, if compounded yearly, for the given information. All rates and information is from Washington Mutual.

1. You open a Statement Savings account with \$500. The money is left untouched for 2 years at 0.4%.
2. You open a Platinum Savings account with \$15,000. The money is left untouched for 2 years at 0.75%.
3. You open a CD with \$4321. The money is left untouched for 6 months at 4.31%
4. You open a CD with \$9000. The money is left untouched for 3 years at 3.93%.
5. You open a CD with \$50,000. The money is left untouched for 4 years at 3.93%.
6. You open a CD with \$8888. The money is left untouched for 18 months at 4.6%.
7. You have \$25,000. A Platinum Savings account pays a 2.91% apr. A CD will pay a 3.93% apr.
 - a. How much would a Platinum Savings account be worth, total, after 5 years?
 - b. How much would a CD be worth, total, after 5 years?
 - c. How much money would be lost by selecting the savings account over the CD?

Having a credit card is like having a loan. The credit card company loans you money on a monthly period. If your monthly bill is not paid in full, your credit card balance begins to earn interest. Credit cards use a compound interest formula. However, they do not compound interest yearly, they compound interest monthly. The formula used is the same, $A = P(1 + r)^t$, but r is a **monthly** interest rate and t is time in **months**.

8. A credit card has an 18% annual interest rate.
 - a. What is the monthly interest rate?
 - b. \$1234 was charged to the credit card. What is the balance on the card, assuming no payments, after:
 - i. One month?
 - ii. Six months?
 - iii. One year?
9. Let's compare credit card interest, compounded monthly, and bank loan interest, compounded yearly. An account has a balance of \$5000. The yearly interest rate is 9%

Credit Card

Bank Loan

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| <ol style="list-style-type: none"> a. What is the monthly interest rate? b. What is the balance after six months? c. What is the balance after one year? | <ol style="list-style-type: none"> a. Six months is what fraction of a year? b. What is the balance after six months? c. What is the balance after one year? |
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10. Based on question nine, will more interest accumulate when it is compounded monthly or yearly? Explain.