



# Smart Money

## Part 1: Compound Interest

Because your math grades have been good, your parents tell you that they would like to give you some money and they want to tell you a secret about it. They explain to you that banks use something called **compound interest**. Normally compound interest works slowly, but your parents have thought of a way to speed it up in order to show you how it works.

Your parents put \$1.00 in a jar. They tell you that every night at dinner they will add 10% interest to the money in the jar. You begin with \$1.00. On the first night, they add 10% of \$1.00, or 10 cents. The next night, your parents pay 10% of the \$1.10 that is in the jar, or 11 cents.

1. You now have \$1.21 in the jar. How much will your parents add on the third night, and what will the total be at that point?
2. Your parents explain to you that they are willing to do this compound interest experiment for a month. How much money will be in the jar at the end of thirty days?(Use the attached sheet to keep track of your calculations.)
3. At the end of the month you are amazed at how much your dollar grew, and you ask your parents if you can continue playing the compound interest game for another thirty days. They agree, as long as you promise to put all the money into a savings account at the bank at the end of the second month. How much money will you have in the jar at the end of the second month? (Again, use the attached sheet to keep track of your calculations.)
4. Your parents take you to the bank to open your savings account. The banker explains that compound interest in banks works more slowly than at your house; the interest will be 10% compounded **annually**, not daily. If you deposit \$300 in an account under these

terms, and leave it for five years without taking any out, how much money will be in your account at the end of the five years?

## **Part 2: Delaying Compound Interest**

Your parents decide to play this compound interest game with both you and your sister. They say that you will each have your own jar and you will each begin with \$1.00. However, they have something that both of you want; a giant bag of candy. Your parents decide to give a choice; the person who gets the candy won't get the compound interest for all of the month, and the person who does not get the candy will get the compound interest for all thirty days. Your sister, who has never done the compound interest experiment, chooses the bag of candy and therefore is told that she will not collect compound interest for the first three days.

5. Use the attached form to track your sister's compound interest, and compare it with what you had at the end of the month. How much money did your sister lose by starting the compounding three days late?

### Part 3: Understanding Credit Cards

Your parents explain to you that when you buy things using a credit card, you are **charged** interest. They want to show you how this works, but they don't want to charge you. Instead, they will pretend to pay you interest of 2% for thirty days, to illustrate how much money it can cost you to use a credit card.

6. On the attached sheet, calculate 2% interest, compounded daily on \$600.00, for thirty days. What is the total at the end of the month?
  
7. Your parents remind you that it is a lot of fun **earning** interest, but credit cards **charge** interest. If you charged a bicycle on your credit card for \$600.00 and your credit card company charges 24% annual interest, or 2% monthly on the unpaid balance, how much would the bicycle cost you if you paid it off at the end of 1 month? If you paid nothing for one year?

### Part 4: Putting it all Together

Write a letter to a friend and tell them about the advantages of compound interest. Then, tell them what happens when you charge things on a credit card. Make a suggestion that would help your friend save money.