Credit Card Activity

Introduction:
Students will use what they have already learned to create a spreadsheet for the monthly expenses of a credit card. Most students are not very familiar with how a credit card works. This is a great introduction and definitely eye opening.

Mathematics Content/Connection to Previous Lesson:
The main content in this activity is percents and decimals.

Connected Mathematics: Bits and Pieces II

Materials:
Student Activity Sheets
Computers or I-books

Time Table: (Based on 40 minute periods)
Day 1: Launch and Explore
Day 2: Continue to Explore and Summarize

General Outline of the Activity:
Launch:
Most students will not be familiar with the workings of a credit card. Spend 10-12 minutes talking with kids about credit cards. Many students will think that the interest charge is added on to the total price. We all know this is not the case and in fact, we are charged this interest every month that we have a balance.

Explore:
Have students work in pairs to complete this activity. However, each student should complete his or her own activity sheet.

Make sure that students are writing the rules into their spreadsheets. Many students like to find the answers on a calculator and then type them in. This defeats the whole purpose of using a spreadsheet. Make sure students’ rules are correct, also.

In this activity, students do not know ahead of time, how many cells they need under the “months” column. Because of this, they may need to continue to “fill down” until they find the last month needed to pay off their debt.

Also, some spreadsheet applications may not show a negative balance, instead, it will put parenthesis around the positive value. Students should recognize this as a negative balance and find where their spreadsheet jumps from a negative to a positive value. This is the month that they are finished paying for their computer. You may want to show students an example of this before they go off on their own, just to clear up any confusion later in the lesson.
There are different answers and interpretations involved within this activity. As long as an answer can be justified, it should be accepted. Teachers can determine whether the justification is sufficient.

There is a lot of 'filling down' in this activity. Refer to the teacher's notes for spreadsheets for instructions of how to do this or anything else involving the spreadsheet.

Don't be alarmed if while filling down in the first few columns there are negatives or numbers that don't make sense. After the filling down process is completed for every column, the numbers will make sense.

Make sure that students print out after question #8. After that point, they can either make a new spreadsheet for David or redo their original. However, David and Julie's spreadsheets will have to be 2 different spreadsheets.

Teachers may wish to have their students print out their spreadsheets and the formulas that make up the spreadsheet. Instructions are included in the teacher's notes for spreadsheets.

**Summarize:**
After students have completed the activity, come back together as a class to share their findings. Many students, and even you, will be surprised by their findings.

Some questions to consider asking:
After this activity, would you consider using a credit card?

Do you see any advantages or disadvantages to using a credit card?

Once Timmy has paid off his computer in four years, will the computer still be the computer of Timmy’s dreams?

What have you learned from this activity?

Here is an extend that you can use:
You are buying a car and you have to choose between:
- $2500 Cash Back and 2.9% interest
  or
- 0% interest

You will have to discuss with students how the interest is applied in a different way in the case of buying a car.
Imagine your dream computer. The one you drool over every time you go into Best Buy. If you could buy it for just $25 a month would you? Timmy has found the computer he has dreamed about for months. It’s on sale at Best Buy for 20% off its original price of $1,000.

1.) Find the sale price of the computer. __________________________

2.) Find the total price after a 8% sales tax. ____________________________

Unfortunately, Timmy hasn’t saved enough money to pay for the computer. However, he has recently received a credit card with 12% annual interest, and the best part is his minimum monthly payment is $25. Timmy knows that he can definitely save $25 each month and decides to go ahead and purchase the computer on his credit card.

3.) How long do you think it will take Timmy to pay off the computer?

4.) Use the following chart to create a spreadsheet to track Timmy’s Payments.

**Note monthly interest = annual interest / 12

<table>
<thead>
<tr>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>F</th>
<th>G</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td># Of Months</td>
<td>Amount Owed</td>
<td>Monthly Payment</td>
<td>New Balance</td>
<td>Annual Interest</td>
<td>Monthly Interest</td>
</tr>
<tr>
<td>2</td>
<td>1</td>
<td>Total Price</td>
<td>$25</td>
<td>After $25 payment</td>
<td>12% of New Balance</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>2</td>
<td>G from line above</td>
<td>$25</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

5.) Add up column C to see how much Timmy spent on his computer___________

6.) How many months did it take Timmy to pay off his computer?

7.) If Timmy was 14 when he bought the computer, how old will he be when it is finally paid off?
8.) How much money did Timmy spend in interest?

9.) If Timmy wanted to pay a total of no more than $1000, how much should each of his payments be?

10.) Was it worth it for Timmy to put it on his credit card? Why or Why not? If you were Timmy, would you have put it on your credit card?

Print out your spreadsheet now!

11.) David sees the same deal, 20% off a $1,000 computer. He also hasn’t saved enough money so he decides to use his credit card to purchase the computer. He figures he can save up a $90 payment each month until it is paid off. The annual interest on his credit card is 18%.

Julie wants to purchase the same computer, however, she has only saved up $250. She doesn’t want to let this deal pass, so she has decided to put the rest of the cost of the computer on her credit card. Her interest rate is much better that David’s, it’s 7.25%. However, she can only make $25 monthly payments.

PREDICT:
12.) Will Julie take more or less time than Timmy to pay off the computer? Why?

13.) Who will pay more for their computer? Why?

14.) Create two more spreadsheets, one for Julie and one for David.

Julie Paid ___________ in _______ months

David Paid ___________ in _______ months

15.) Who paid more for their computer?

16.) Who took longer to pay off the computer?
17.) Who paid more interest?

18.) Who has the better credit card?

19.) Suppose Julie wants to pay off her credit card in $1 \frac{1}{2}$ years. How much should each of her payments be?

20.) Suppose David wanted to add $100 to his payment every 4 months. How much less time would it take him to pay off his credit card?

21.) What have you learned from this activity?