

ClassPad 101

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for ClassPad Version 3.00+

Lesson 9

Introduction to Financial

Welcome

In this lesson, we will work with a few very important financial calculations that will help us manage money. The ClassPad's Financial application is easy to use and has many different financial calculations that you may find useful in your studies or at work.

Lesson Goals

- To understand simple interest
- To understand compound interest
- To understand what is meant by APR
- To become comfortable finding the amount of interest paid
- To understand what principal is

In Lesson 9, you will learn how to:

- Input data into a financial calculation
- Calculate simple interest
- Calculate interest compounded daily or monthly
- Find the total amount paid when purchasing on credit

Upon completion of this lesson, you will be able to answer the following questions:

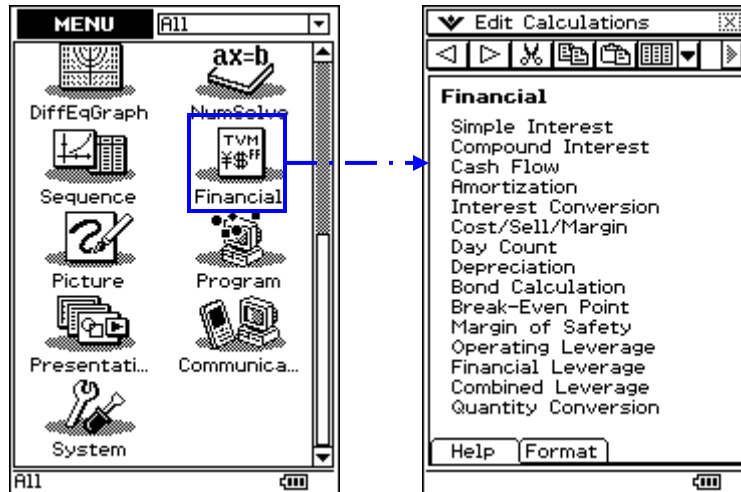
1. What does PMT stand for?
2. In the world of finance, what does principal mean?
3. What is an input box called in the Financial application?
4. Is it better to pay cash or buy on credit? Why?
5. What does APR stand for?
6. What is one way that we can reduce the amount of interest that we pay on a loan?

Time required

About 70 minutes.

Getting Started



When you first open the Financial application you will see a list of financial calculation types. We will work with simple interest, compound interest and amortization during the lesson.

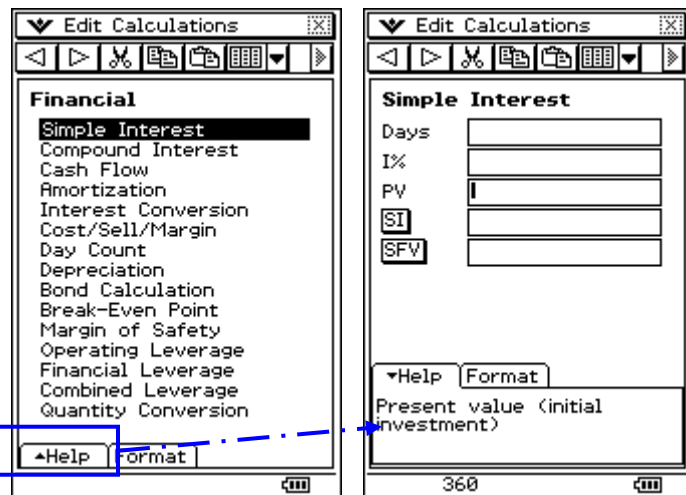


PART I


In this part, we will learn how to input data into a financial application and experiment with simple interest.

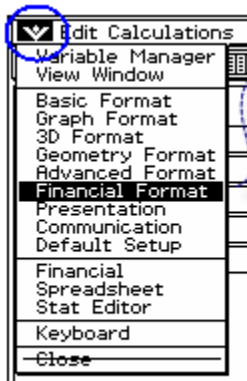
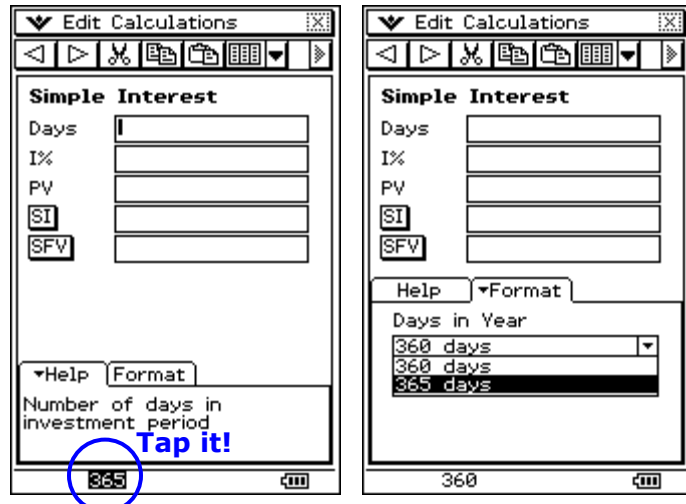
1. Using Help in Financial

- Click  and then 
Financial
- If the main calculation list does not appear, select **Edit/Clear All**
- Click on **Simple Interest**
- Click on the **Help** tab
- Click in different boxes (called fields) and notice the help changes
- What does PV stand for?



2. Changing the Days in a Year Mode

- There are three ways to change a mode setting
 - One way: Click the status bar to change between 360 and 365 days
 - Another way: Click on the **Format** tab and again to close it
 - Open the  menu and select **Financial Format**
- *The Financial Format dialog contains settings for all financial calculations

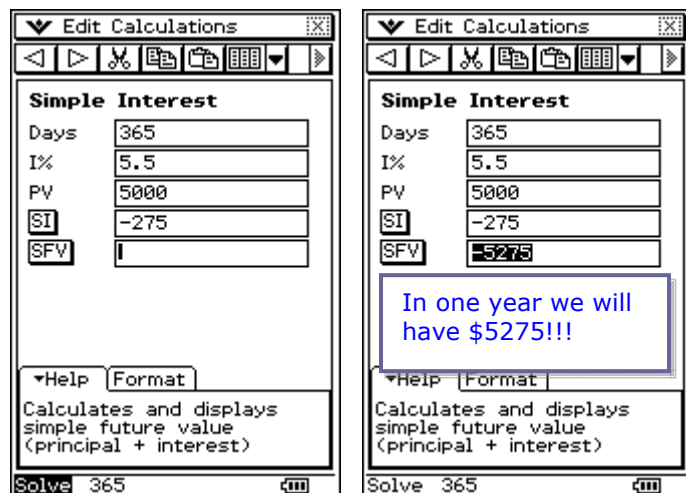


Very useful when your result does not make sense!

3. Calculating Interest on Money Invested

How much money can you earn if you invest \$5000 at 5.5% for 1 year?

- Set days in year to **365**
 - Click in the field following **Days** and input **365**
 - For **I%**, input **5.5**
 - For **PV** (present value), input **5000**
 - Click the **SI** button to calculate simple interest
- *The negative only indicates a change in value (for an investment, it is a gain; for a loan, it is your loss)
- Click the **SFV** button or tap **Solve** in the status bar



PART I

Practice Exercises

Before beginning the practice exercises, open a word document, type in the following information and then save it as Lesson9 in your CASIO folder within My Documents:

- Date: (enter today's date)
- To: (put your instructor's name here)
- From: (put your name here)
- Re: Lesson 9



1. Please open the Financial application and select **Edit/Clear All**.
2. Select **Simple Interest** from the main menu.
3. How much money could you earn if you invested \$5000 at 5.5% for 5 years?
4. Change the days in a year to 365 (look in the status bar).
5. In the **Days** field, input 5*365.
6. In the **I%** field, input 5.5%.
7. In the **PV** field, input 5000.
8. Calculate the simple interest earned (**SI**).
9. Calculate the simple future value (**SFV**).
10. Get a **screen capture** and paste it into your Lesson9 document (under a title of PART I).
11. How much money could you earn if you invested \$5000 at 5.5% for 10 years instead of 5 years?
12. Change the Days field to 10*365 and recalculate SI and SFV.
13. Get a **screen capture**. Add two blank spaces following the first screen capture and then paste this one.
14. How much money could you earn if you invested \$5000 at 5.5% for 50 years?
15. Get a **screen capture** with the amount of money you would earn by investing \$5000 for 50 years at 5.5% interest. Add two blank spaces following the second screen capture and then paste this one.
16. Investing when you are young does pay off!

PART II

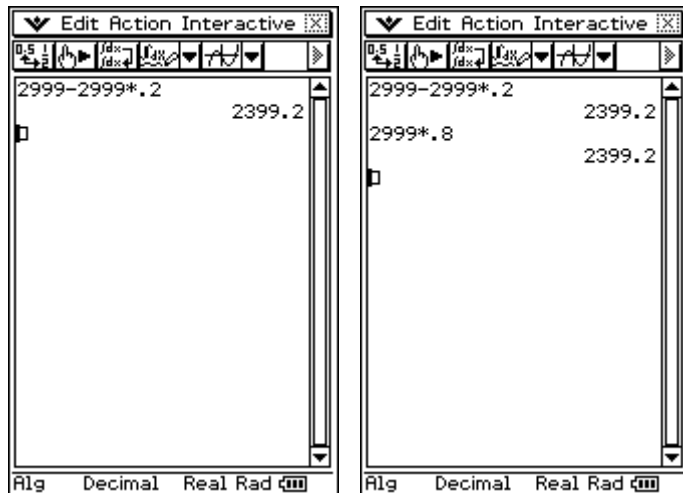
In this part, we will work with Financial from within the Main application and explore compound interest. But, instead of investing, we will look at how much additional money needs to be paid when we take out a loan.

1. Buying a Big Screen TV



The local appliance store is having a sale. Big screen TV's are 20% off the original price and they will finance any purchase with 0 down and an APR of 10.9% for 60 months. Is this a good deal? What will be your monthly payment? If the TV's original price is \$2,999 and you finance, how much will you really pay for the TV?

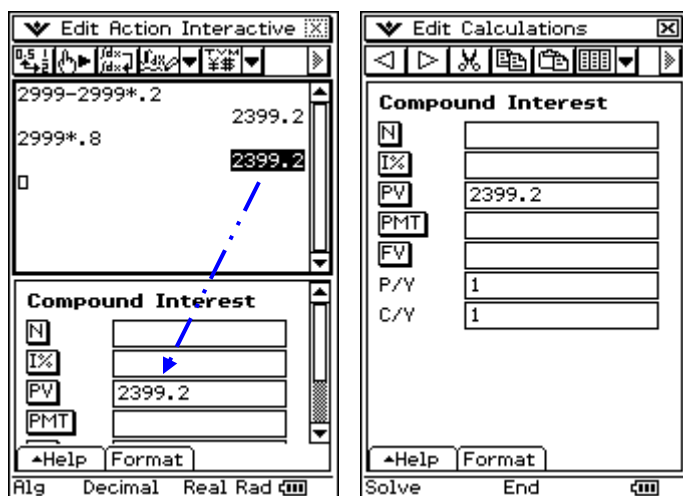
- Click  and then 
- Edit/Clear All (if needed)
- Change to decimal mode (tap the status bar)
- Input **2999-2999*.20** and press **EXE**
- Input **2999*.80** and press **EXE**

*Both calculations give the sale price (100%-20% or 80% of the original)



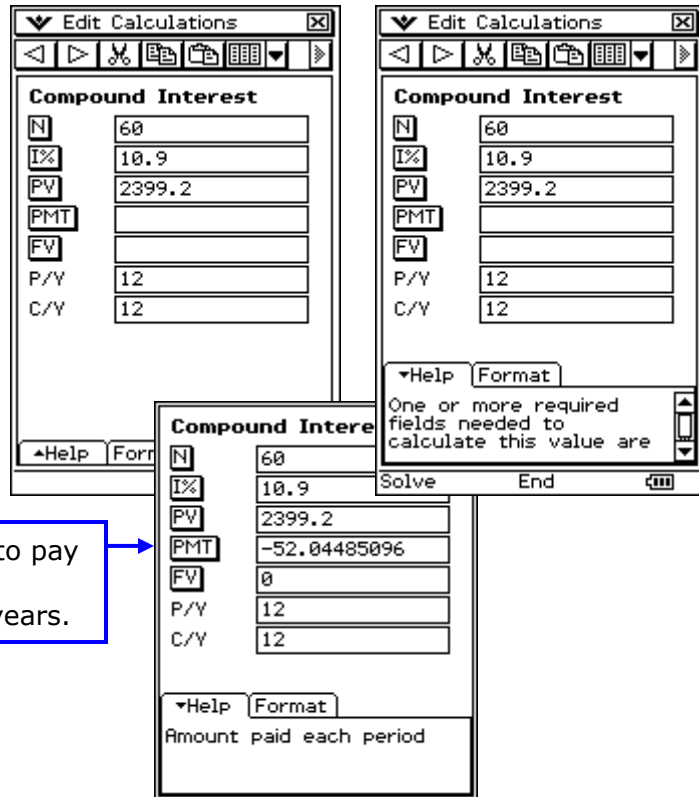
2. APR stands for "annual percent rate". When you read the small print on a loan, it will say something about compounded monthly, daily, etc. How a loan is compounded will change the amount of interest that you pay.

- Select the **2nd**  on Main's toolbar
- From the button palette, select 
- Select **Edit/Clear All**
- Select **Compound Interest**
- Select **2399.2** and let go
- Press and drag the sale price to the **PV** field
- Click in Financial to give it focus
- Click **Resize** or press **Ctrl+r**



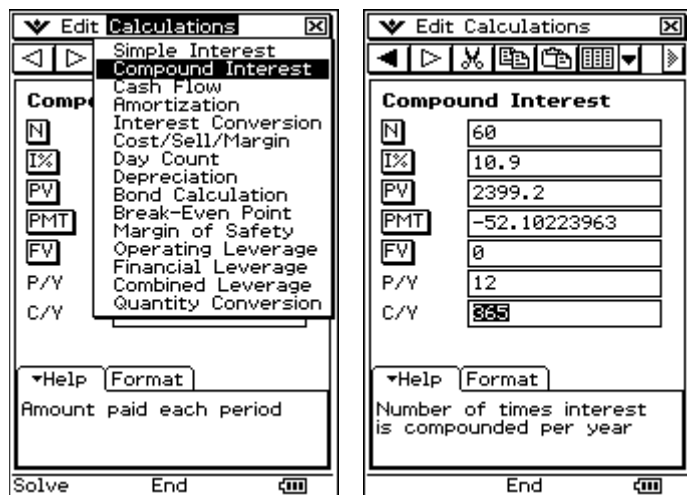
3. To begin, assume the loan for the TV is compounded **monthly** with an **APR of 10.9%** for **60** months. What will be your monthly payment?

- Open **Help** to understand what each field is for
- Input the data shown including 12 for P/Y and C/Y
- Click **PMT** to calculate your monthly payment
- We get an error!
- Input 0 for **FV** (future value)
- Click **PMT** again




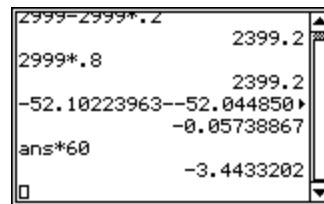
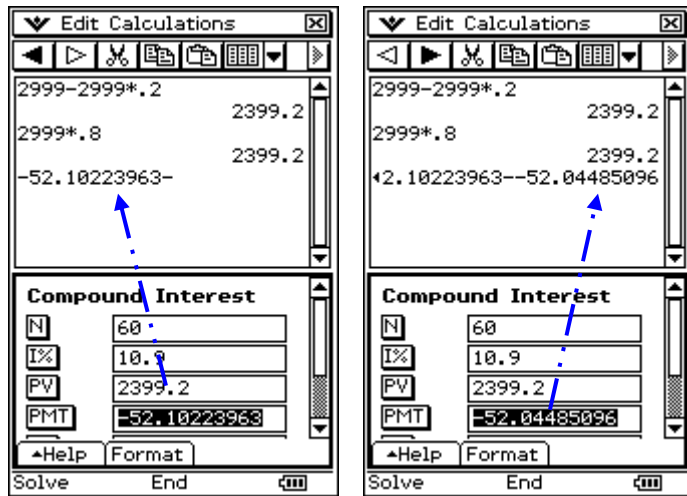
4. Next, assume the loan for the TV is compounded **daily** with an **APR of 10.9%** for **60** months. What will be your monthly payment?

- Open the **Calculations** menu and select **Compound Interest**
- Great, the data from part 3 is placed in the new calculation for us
- Change the **C/Y** field to **365**
- Click the **PMT** button to recalculate payment
- Click the toolbar button to see the **PMT** amount when **C/Y is 12**
- Click to get back



5. If the interest is compounded daily instead of monthly, how much more will you have to pay for the TV? We could write the numbers on a piece of paper and then type them into Main, but drag and drop is more fun!

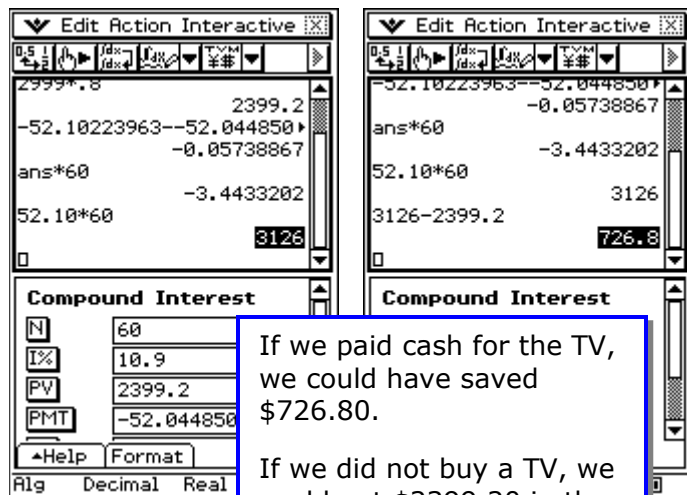
- Click **Resize** again or press **Ctrl+r** to make Main visible
- Tap **Help** to close it
- Select the **PMT** (monthly payment) for **C/Y=365** and drag to Main
- Input a minus (-) following the number
- Click back in Financial
- Click 
- Select the **PMT** (monthly payment) for **C/Y=12** and drag to Main
- Press **EXE** to find the difference
- Input ***60** and press **EXE**



If interest is compounded daily instead of monthly, the customer will pay an additional \$3.44 in interest.

6. So, how much are you really paying for the TV that was initially on sale for \$2399.20? Assume the store is compounding interest daily.

- Click in Main to give it focus
- Type in **52.10*60** and press **EXE**
- Wow! This is an expensive TV
- How much money would we have saved if we paid cash?
(Amount paid over 60 months – sale price)



If we paid cash for the TV, we could have saved \$726.80.

If we did not buy a TV, we could put \$2399.20 in the bank and earn interest 😊

PART II Practice Exercises

1. Please start with a clean Main window. Are you ready?
2. Insert a Financial window within Main.
3. Open a Compound Interest calculation page.
4. You are considering buying a mountain bike for \$995. The bike store is offering a payment option of 0 down with 8.5% interest for 36 months.
5. If the interest is compounded monthly, what will be your monthly payment?
6. Get a **screen capture** and paste it into your Lesson9 document (under a title of PART II).
7. If the interest is compounded daily, what will be your monthly payment?
8. Get a **screen capture**. Add two blank spaces following the first screen capture and then paste this one.
9. Assume the interest is compounded daily. How much will you pay for the bike if you pay all 36 payments? Hint: Use the Main window.
10. Get a **screen capture**. Add two blank spaces following the second screen capture and then paste this one.

PART III

In this part, you will be considering options in buying a house and the interest involved! The cost of a home varies greatly depending on where you live. In 2006, the cost of a 1,000 square foot home on the west side of Portland, Oregon was about \$250,000.

1. Calculating a House Payment

Assume you are planning to buy a house. The final cost (including all closing costs) is \$250,000. You locked into a 6.5% interest for 30 years compounded monthly and will put 0 down. What will be your monthly payment?

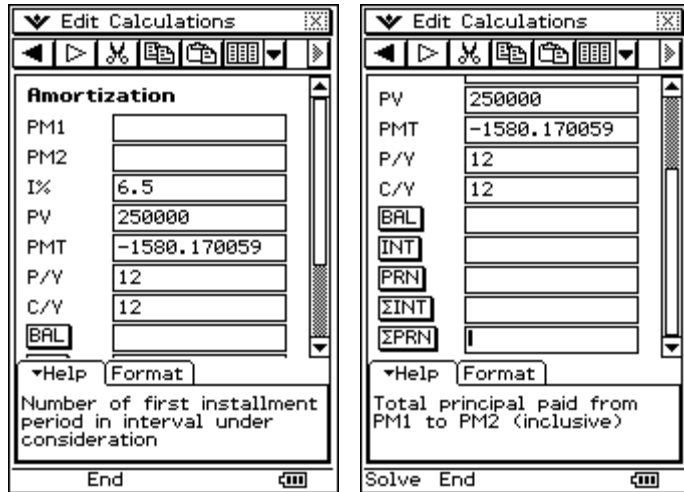
- a. Open **Financial** and select **Edit/Clear All**
- b. Select **Compound Interest**
- c. Fill in the fields as shown
- d. Calculate your monthly payment (PMT)
- e. Open the **Calculations** menu and select **Amortization**

Compound Interest	
N	30*12
I%	6.5
PV	250000
PMT	-1580.170059
FV	0
P/Y	12
C/Y	12
Amount paid each period	

Amortization	
PM1	
PM2	
I%	6.5
PV	250000
PMT	-1580.170059
P/Y	12
C/Y	12
BAL	
INT	
PRN	
ΣINT	

2. What are all the fields?

- Click inside the **PM1** field and open **Help** (tap it)
- Use your keyboard's down arrow to move to the next field (notice the help text updated automatically)
- Read the help message for each field to gain a general feeling for Amortization



3. Experimenting with *Interest* using Amortization

When you buy a home you will get a mortgage payment! The mortgage payment will state how much of your money is going to pay *interest* and how much is going to pay *principal*.

This is important to know: What is *principal*?

Principal is the amount of money that you borrow. This **initial principal** is used to calculate how much of your first monthly payment will go to pay interest. The remaining amount of the monthly payment will go to pay part of your **initial principal**.

The slightly reduced **principal** will be used to calculate how much of your second payment will go to pay interest. What remains will pay off more of the **principal** amount!

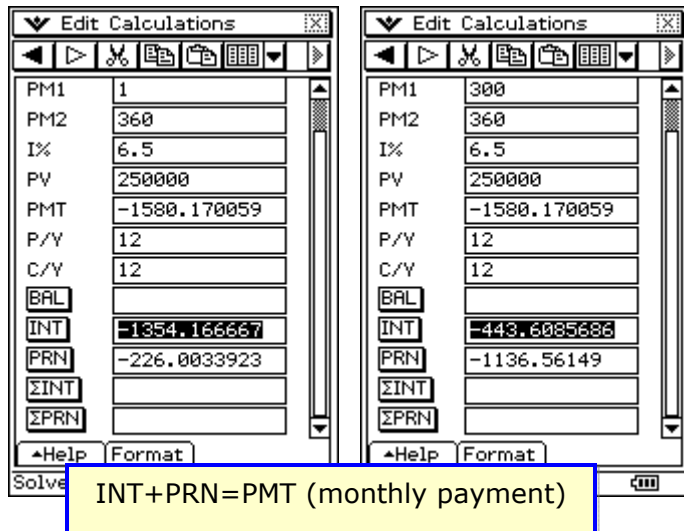
How much of a payment is paying interest? How much is paying off principal?

Your 1st payment:

- Input **1** for **PM1**
- Input **360** for **PM2** (or any # greater than PM1)
- Click the **INT** button
- Click the **PRN** button

Your 300th payment:

- Input **300** for **PM1**
- Click the **INT** button
- Click the **PRN** button



4. How much are we really paying for the house?

If we pay the exact monthly payment on time for the life of the loan, how much are we paying for the house?

- Change **PM1** to **1**
- Make sure **PM2** is **360**
- Click on **ΣINT**
*Over 30 years we have paid \$318,861.22 in interest!
- Click on **ΣPRN**
*Over 30 years we also paid back the entire principal amount of \$250,000
- Click **BAL**
*Note that $-2.946250002E-4 \approx -.00029 \approx 0$



Edit Calculations	
PM1	1
PM2	360
I%	6.5
PV	250000
PMT	-1580.170059
P/Y	12
C/Y	12
BAL	-2.946250002E
INT	-443.6085686
PRN	-1136.56149
ΣINT	-318861.2209
ΣPRN	-250000.0000

At the end of 30 years, we will have paid $\$318,861.22 + \$250,000.00 = \$568,861.22$ for the house.

5. How can we reduce the amount of interest that we pay?

Many people will pay their monthly payment and a little extra with a note that the extra amount is to pay principal only. As your principal amount decreases, the amount of interest in your mortgage payment decreases and so the remaining amount paying off principal increases.

If we pay an extra \$100 per month, how many payments will we need to make?

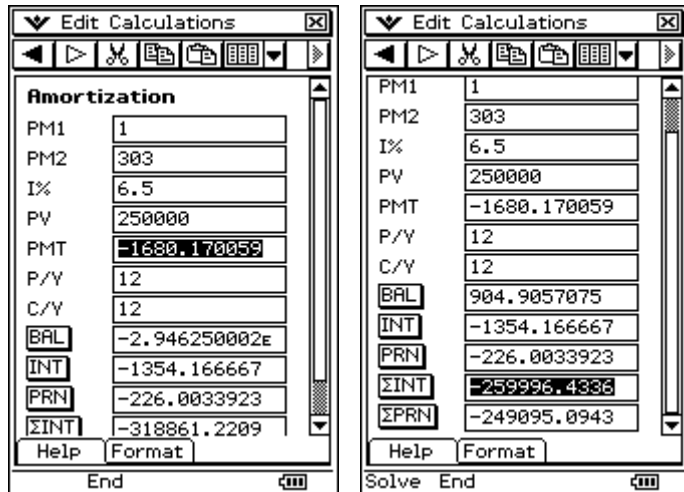
- Click the  button to return to the **Compound Interest** work page
- Change **PMT** to -1680.170059
- Click **N**
- Remember **N** ≈ 303
- Click  to get back to Amortization

Compound Interest	
N	303.5408264
I%	6.5
PV	250000
PMT	-1680.170059
FV	0
P/Y	12
C/Y	12

Amortization	
PM1	1
PM2	360
I%	6.5
PV	250000
PMT	-1580.170059
P/Y	12
C/Y	12
BAL	-2.946250002E
INT	-1354.166667
PRN	-226.0033923
ΣINT	-318861.2209

If we are able to pay an extra \$100 a month, how much will we pay for the house?

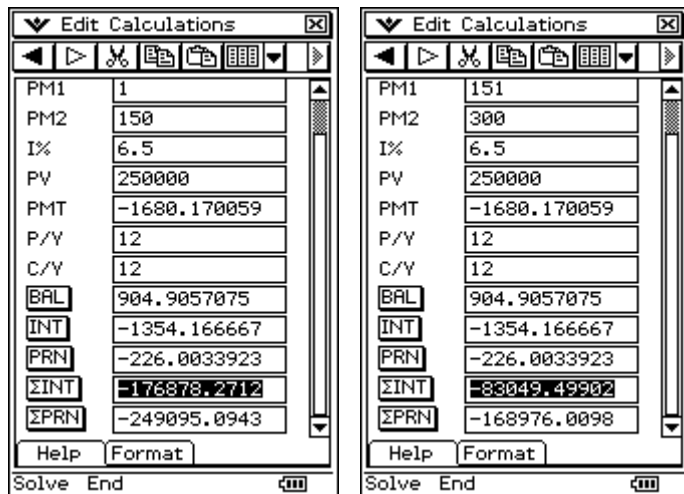
- In Amortization, change **PM2** to **303**
- Change **PMT** to -1680.170059
- Click on **ΣINT**
*Over the life of the loan, we will pay about \$259,996.43 in interest!
- Click on **ΣPRN**
*Click **BAL**: We still need to pay about \$905 as a final payment



By paying \$100 extra against the principal each month, we are saving $\$318,861.22 - \$259,996.43 = \$58,864.79$ in interest because we lowered the principal amount faster.

6. How much interest is paid over a period of time?

- Change **PM2** to **150**
- Click on **ΣINT**
*During the 1st 150 payments, \$176,878.27 is going to pay interest
- Click on **ΣPRN**
* During the 1st 150 payments, \$ 75,147.24 is going to pay off principal
- Change **PM1** to **151**
- Change **PM2** to **300**
- Click on **ΣINT**
- Click on **ΣPRN**
*Compare the differences!



Please note that loan types and savings accounts vary! For example, some loans have an early payment penalty and others do not. Some savings accounts require a minimum balance and others do not.

The ClassPad's Financial application can help you understand loans and can give you a general idea of ways to pay a loan or earn interest. The bank or institution providing the saving plan or loan will provide you with exact values and also some type of contract. Read the contract carefully!

PART III

Practice Exercises

1. You are considering buying a new car that is good on gas.
2. One car under consideration costs \$22,995.
3. One option for financing is 5.9% APR for 60 months with 0 down.
4. Open a new **Compound Interest** calculation page within the Financial application.
5. Fill in the fields needed to calculate the monthly payment (PMT). Be sure to set FV (future value) to 0, P/Y to 12 and C/Y to 12.
6. With the monthly payment showing, get a **screen capture** and paste it into your Lesson9 document (under a title of PART III).
7. Next, open a new **Amortization** calculation page (your current compound interest data should carry over).
8. Calculate the amount of interest you will have to pay in addition to the principal of \$22,995.
9. Get a **screen capture** with the interest summation showing. Add two blank spaces following the first screen capture and then paste this one.
10. Another option for financing is 4.9% APR for 48 months with a \$3,000 down payment.
11. **Open** a new **Compound Interest** calculation page from the Calculations menu.
12. Fill in the fields needed to calculate the monthly payment (PMT) for the second option. Be sure to set FV (future value) to 0, P/Y to 12 and C/Y to 12.
13. Next, open a new **Amortization** calculation page (your current compound interest data should carry over).
14. Calculate the amount of interest you will have to pay in addition to the principal of \$19,995 ($\$22,995 - \$3,000$).
15. Get a **screen capture** with the interest summation for the second option showing. Add two blank spaces following the second screen capture and then paste this one.

PART IV

Reflection Exercises

You have just completed the ninth lesson in ClassPad 101. Remember to consider your options before taking out a loan! Please take a few moments to copy and paste the following three questions at the end of your Lesson9 document and answer them.

1. Approximately how long did it take you to complete this lesson?
2. Which activity did you enjoy the most?
3. Did you find any part of this activity difficult to follow? If so, which part? Also, how did you overcome the difficulty?

Assessment 9: Introduction to Financial

- **Checkpoint:** Your word processed document, titled "Lesson9", should contain the following activities:
 1. Three screen captures from PART I.
 2. Three screen captures from PART II.
 3. Three screen captures from PART III.
 4. Three reflection questions with answers from PART IV.
- **Submit** your **Lesson9 document** to your instructor for grading.