Amortization Schedules

What is an Amortization Schedule

- An **Amortization Schedule** is a table which calculates both the **interest paid** as well as the **principal paid** for each period of a loan duration. In Excel, we must create this table from scratch with the help of a few **functions**.
- Amortization Schedules are often used to calculate payments for mortgages, but can also be used for any type of **loan** (car, vacation, or other expensive item).

Functions Used

- **PMT** – Payment – To calculate the amount you will pay each period of the loan.
- **PPMT** – Principal Payment – To calculate the amount of the monthly payment that goes towards the actual loan amount.
- **IPMT** – Interest Payment – To calculate the amount of the monthly payment that goes towards the interest on the loan for that period.

Assumptions/Base Information

- Before an Amortization Schedule can be created, we need:

  - Loan Amount (what you are trying to pay off)
  - Interest Rate (Annual)
  - Frequency of Payments (how many payments per year)
  - Initial down payments (if any)
  - Loan Duration (in years)

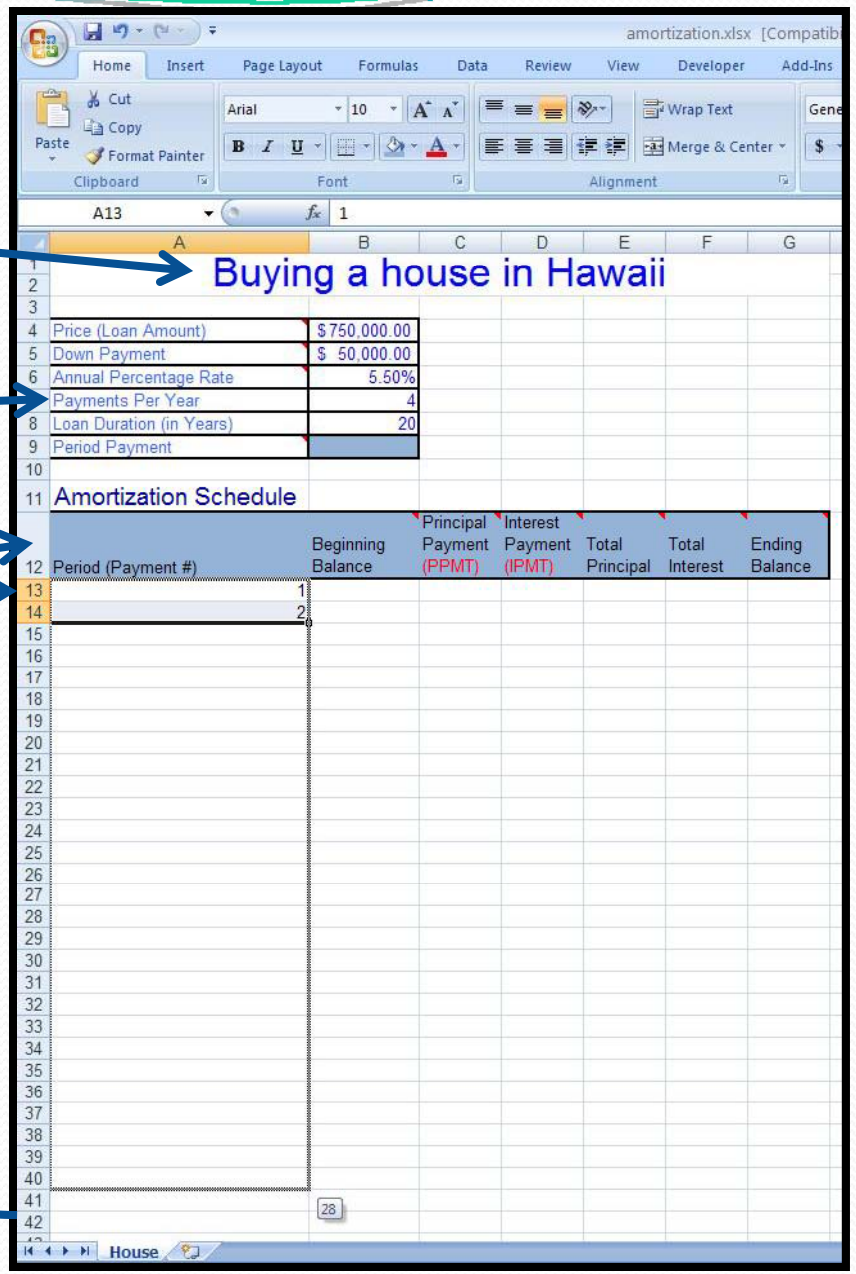
Setting up your Amortization Schedule

It is good to give your Amortization Schedule a **title** so that others know what it is for.

Usually after the title, the user will enter and label the **assumptions** that the table will be based on.

Next, you should add in **column headings** for your table so that you know what each column in your table is for.

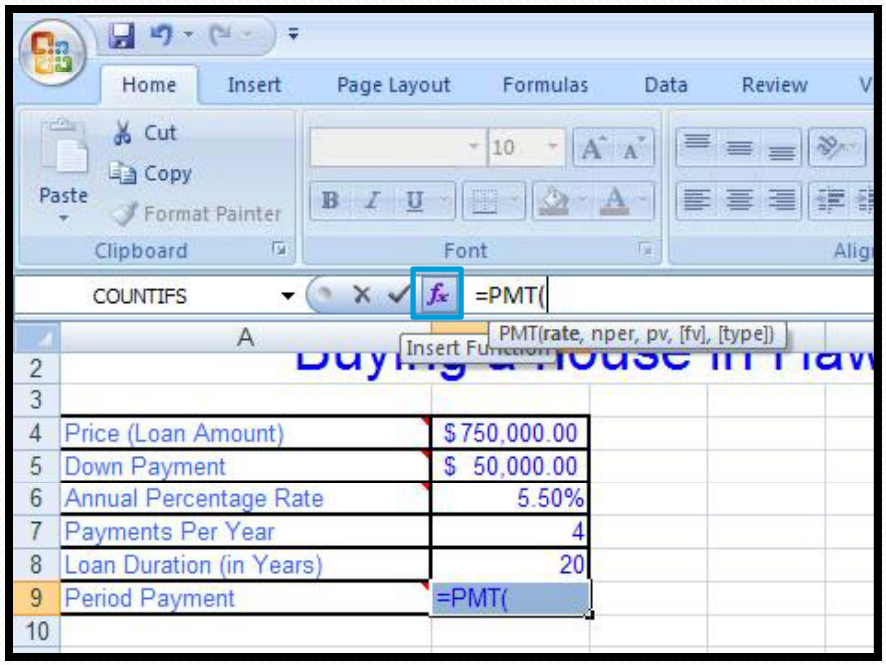
Lastly in order for your table to work properly, you need to fill in the **payment number** for the duration of the loan. For example, this loan has 4 payments per year for 20 years, this means under Period, we should list the numbers from 1 to 80 in increasing order. This can be done by **Auto-filling** numbers like in this example.

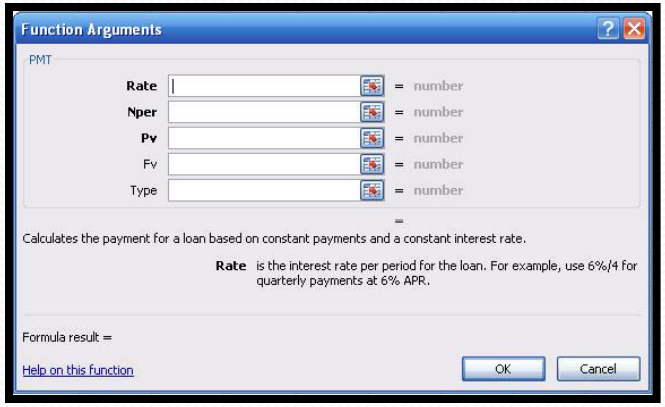


Example

You get a **loan** for **$750,000** to buy your house. The **annual percentage rate** is **5.5%**, where you will be making **4 payments per year** for the **loan duration** of **20 years.**

Using the Function Arguments Box

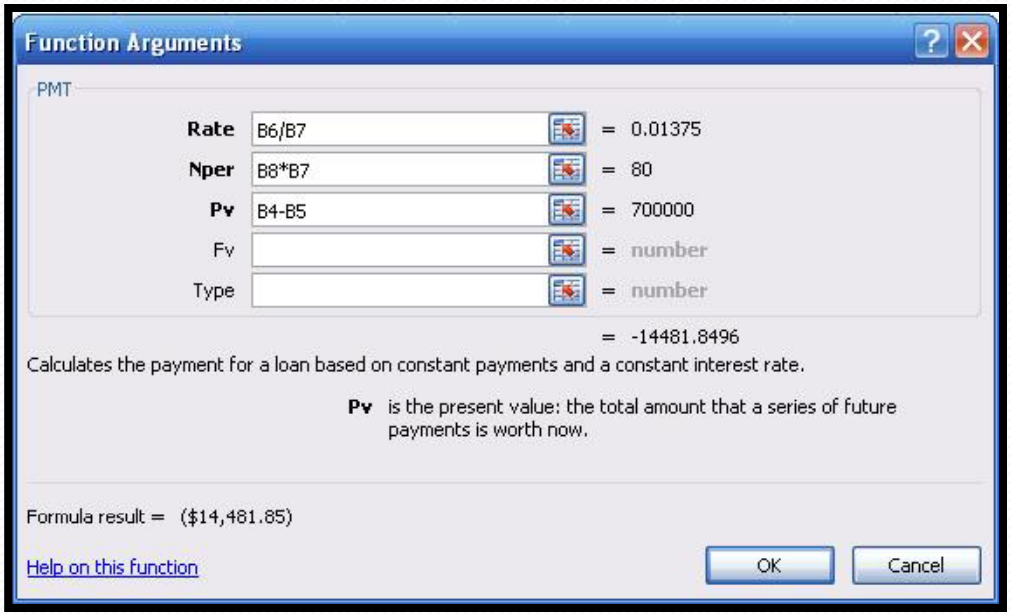




In order to make things easier, you should use the **functions arguments box** for your schedule. To do this, you must first know the name of the function you would like to use. In this case, we chose the Payment or PMT function. For this example you will type in =PMT(. The open parentheses is needed for the box to be open.

Next, click on the **Insert Function button** on your screen (the picture to your left marks this button with a red square.)

PMT (Payment)



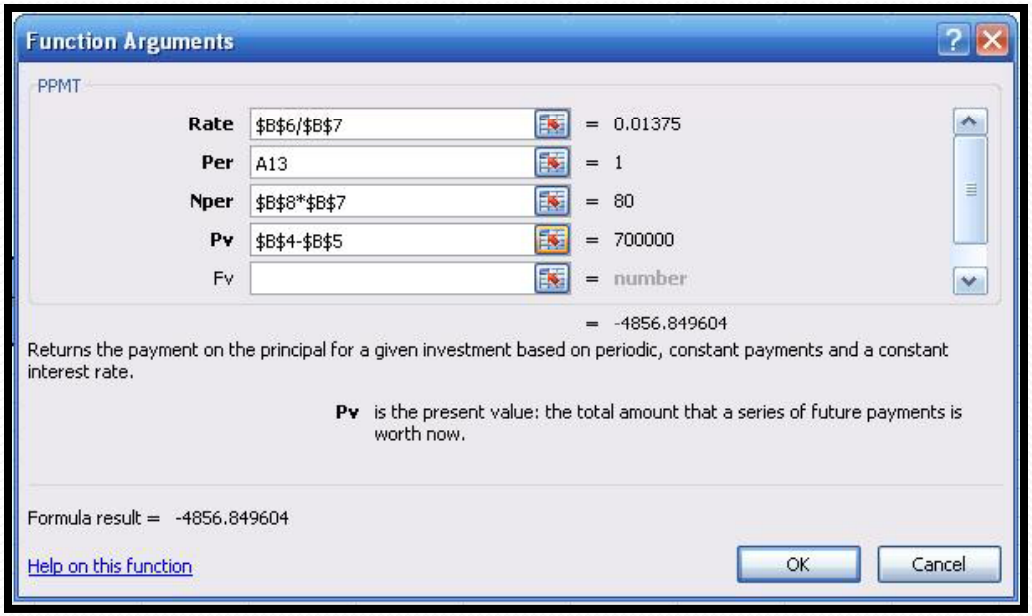
Rate* = The **Interest Rate** for a single period in the loan. In our example we were using 5.5% APR and making 4 payments per year.

Nper* = The **total number of payments** in the loan. In this case we have 4 payments per year for 20 years.

Pv * = **Present Value** which is the **amount** that your loan is for

*To make your table easily editable, use **cell referencing** whenever possible

PPMT (Principal Payment)



Rate* = **Interest Rate** for a **single period** in the loan. In our example we were using 5.5% APR and making 4 payments per year.

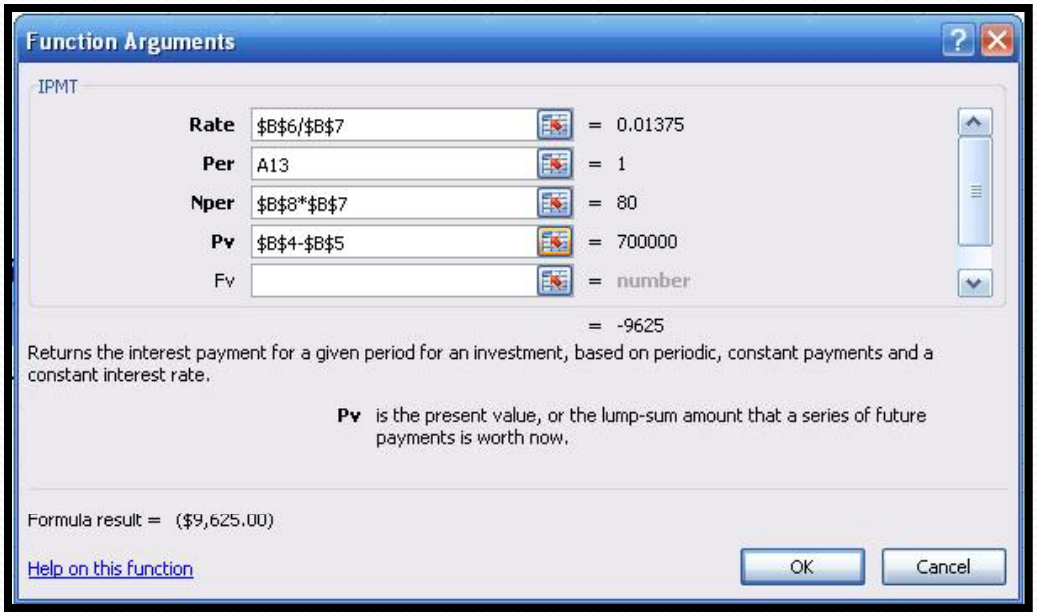
Per * = The **current period number**. To ensure your table works properly, a cell must be selected (a number should **not** be entered).

Nper * = The **total number of payments** in the loan. In this case we have 4 payments per year for 20 years.

Pv * = **Present Value** which is the **amount** that your loan is for.

* Pay careful attention to **Absolute Cell Referencing** for this part! If you do not reference cells correctly, your table will NOT work correctly when auto-filled.

IPMT (Interest Payment)



* Pay careful attention to **Absolute Cell Referencing** for this part! If you do not reference cells correctly, your table will NOT work correctly when auto-filled.

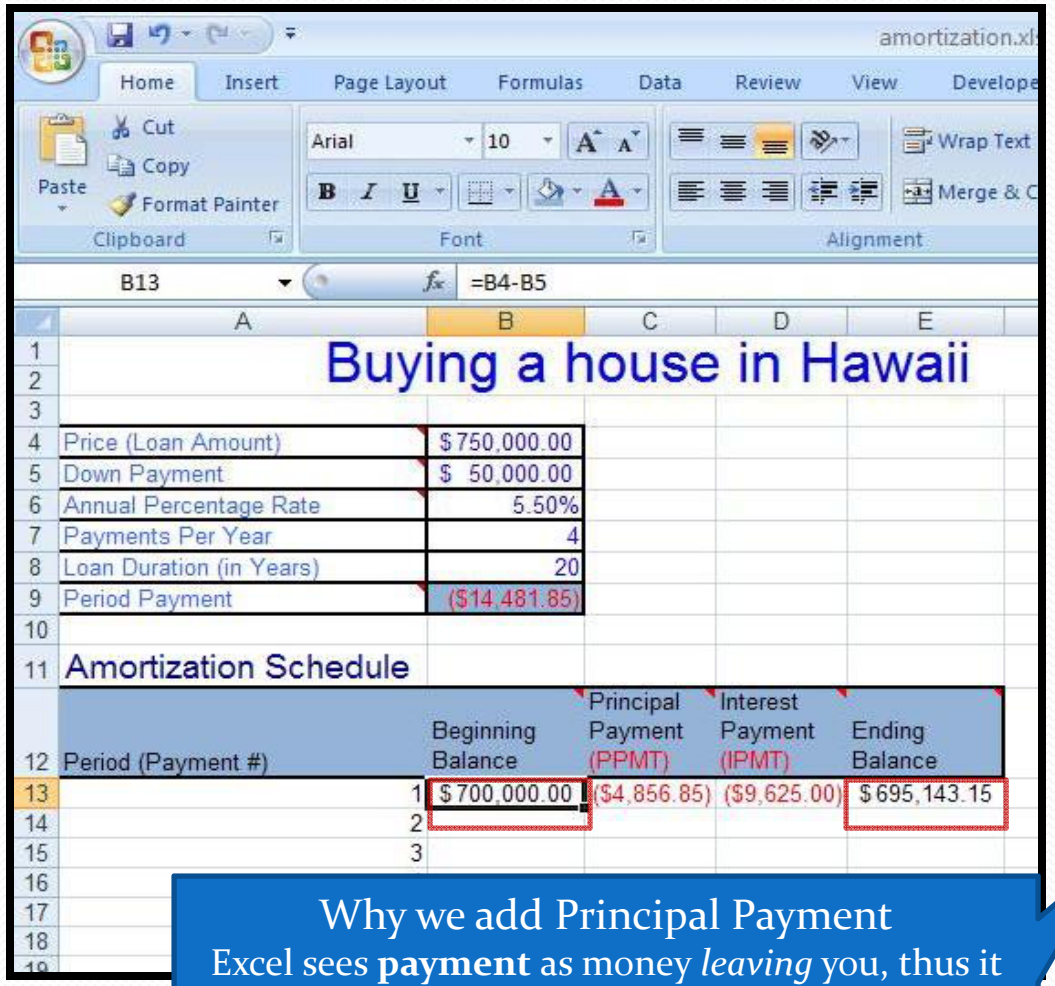
Rate * = **Interest Rate** for a **single period** in the loan. In our example we were using 5.5% APR and making 4 payments per year.

Per * = The **current period number**. To ensure your table works properly, a cell must be selected (a number should **not** be entered).

Nper * = The **total number of payments** in the loan. In this case we have 4 payments per year for 20 years.

Pv * = **Present Value** which is the **amount** that your loan is for.

Row #1 of the Schedule



Once **PPMT** and **IPMT** have been entered in the first row, all that is left is to enter the **Beginning and Ending Balance** for the first row.

Beginning Balance – Since this is the first period of the loan, Beginning Balance is just the **Amount** of the loan less any down/initial payment (if there is one).

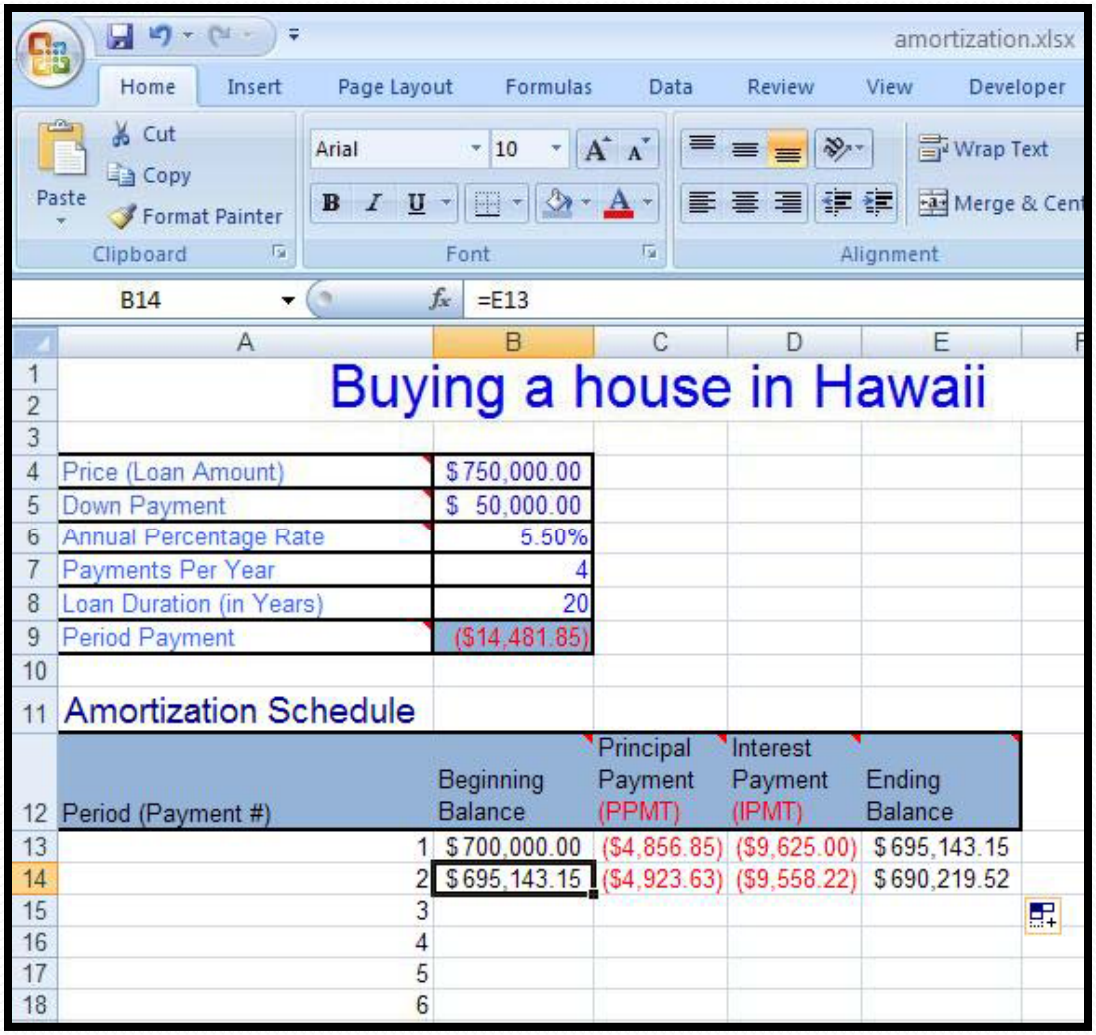
Ending Balance * – Ending Balance is the Beginning Balance for the period **plus** the Principal Payment for that month.

Why we add Principal Payment

Excel sees **payment** as money *leaving* you, thus it is a negative number (so the number is red and in parenthesis). So instead of subtracting the payment, we **add** it to the beginning balance.

* Please note that **Cell References** are needed for the Ending Balance of the first period.

Row #2 of the Schedule



Beginning Balance * – **Beginning Balance** is the **only** column that should have had a change. For the second row, Beginning Balance is equal to the **Ending Balance of the first period**.

* This **MUST** be done by a relative cell reference (ex. =E13).

Principal Payment, Interest Payment, and **Ending Balance** can all be **auto-filled** from the first row.

Row #3 and on

	A	B	C	D	E
7	Payments Per Year	4			
8	Loan Duration (in Years)	20			
9	Period Payment	($14,481.85)			
10					
11	Amortization Schedule				
12	Period (Payment #)	Beginning Balance	Principal Payment (PPMT)	Interest Payment (IPMT)	Ending Balance
13	1	$700,000.00	($4,856.85)	($9,625.00)	$695,143.15
14	2	$695,143.15	($4,923.63)	($9,558.22)	$690,219.52
15	3				
16	4				
17	5				
18	6				
19	7				
20	8				
21	9				
22	10				
23	11				
24	12				
25	13				
26	14				
27	15				
28	16				
29	17				
30	18				
31	19				
32	20				
33	21				
34	22				
35	23				
36	24				
37	25				
38	26				

The last step in completing your Amortization Schedule is to **highlight the 2nd row of your table** (and **ONLY** the 2nd row) to include Beginning Balance, Principal Payment, Interest Payment, and Ending Balance. Next, **auto-fill** the rest of your table.

If your table was filled out correctly, the Ending Balance for the last line of your table will be equal to 0.

88	76	$ 69,515.62	($13,526.01)	($955.84)	$ 55,989.61
89	77	$ 55,989.61	($13,711.99)	($769.86)	$ 42,277.62
90	78	$ 42,277.62	($13,900.53)	($581.32)	$ 28,377.09
91	79	$ 28,377.09	($14,091.66)	($390.18)	$ 14,285.43
92	80	$ 14,285.43	($14,285.43)	($196.42)	$ (0.00)