7.8 Saving Plans and Loans: Creating Amortization Tables

If you buy a car or a house or are making an expensive purchase that you cannot pay for in one payment there is a way to pay back the amount by making payments over some period of time.

Usually you sign a contract agreeing to repay (**amortize**) the loan plus the interest on that loan (This is an annuity!)
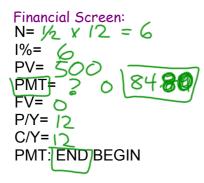
Amortization- is the process of gradually reducing a debt through equal regular payments of principal and interest.

Sometimes you can reduce the amount of the loan by making a payment at the time of the purchase which is called a **down payment**.

The process of completely reducing the debt on your account can be shown in an amortization table.

Ex 1:

You want to buy a bicycle for $500 and want to pay for it during (a 6 months) period of time by making regular payments toward the principal and interest. Calculate the regular monthly payment that you will have to make then look at an amortization table that would show the amortizing process if the interest rate is 6% /a compounded monthly.

Financial Screen:
N= ½ x 12 = 6
I%= 6
PV= 500
PMT= ? 0 | 84.80 |
FV= 0
P/Y= 12
C/Y= 12
PMT: [END] BEGIN

Look at the chart to see how it works:

Total Cost $500			Annual Rate: 6%	
Regular Payment $84.80			Monthly Rate: (Interest) $\frac{0.06}{12} = 0.005$	
			Number of Payments 6	
Pay ment #	Pay ment ($)	Interest Paid ($)	Principal Paid ($)	Outstanding Balance
0	/	/	/	500
1	84.80	500×0.005 $=2.50$	$84.80 - 2.50$ $=82.30$	$500 - 82.30$ $=417.70$
2	84.80	417.70×0.005 $=2.08$	$84.80 - 2.08$ $=82.92$	$417.70 - 82.92$ $=334.98$
3	84.80	334.98×0.005 $=1.67$	$84.80 - 1.67$ $=83.13$	$334.98 - 83.13$ $=251.85$
4	84.80	1.26	83.54	168.32
5	84.80	0.84	83.96	84.36
6	84.80 84.78	0.42	84.38	$84.36 - 84.38$ $=0$ 84.78
Total	508.78	$8.78	500	

Ex 2
Compare the amount of interest earned, at age of 65, on an
RRSP at 6%/a compounded annually for each option:

Option 1: Making an annual deposit of $1000 starting at age 20
Option 2: Making an annual deposit of $3000 starting at age 50

Option 1
```
N= 45 x 1
I%= 6
PV= 0
PMT= 1000
* FV=0 ?  $212 743.51
P/Y= 1
C/Y= 1
PMT:(END)  BEGIN
```

Option 2
```
N= 15 x 1
I%= 6
PV= 0
PMT= 3000
FV= ?  $69 827.91
P/Y= 1
C/Y= 1
PMT:(END)  BEGIN
```

Total amount deposited:
1000 x 45
= $45 000

Total amount deposited:
3000 x 15
= 45 000

Interest Earned:
212 743.51 - 45000
= 167 743.51

Interest Earned:
69 827.91 - 45 000
= $24 827.91

Compare: → EARN WAY
MORE INTEREST
ω #1

Google **Mortgage** Amortization Schedule **Generator - Fiscal Agents**

Complete the chart below, using a fixed term of 5 years and a 5% rate of interest,
find your payments for a $250 000 at various and payment frequency's (i.e. monthly or weekly)
and Amortization lengths (ie 25 years and 20 years).
  Note the difference in interest paid at the end of the amortization period.

25 year Amortization		20 year Amortization		
Weekly Payments	**Total interest**	**Weekly Payments**	**Total interest**	**For weekly payments, how much do you save in total by choosing a 20 year term instead of a 25 year?**
◦	◦	◦	◦	◦
Monthly Payments	**Total interest**	**Monthly Payments**	**Total interest**	**For monthly payments, how much do you save in total by choosing a 20 year term instead of a 25 year?**
◦	◦	◦	◦	◦
How much do you save in total by choosing to pay weekly instead of monthly in a 25 year Amortization?	◦	**How much do you save in total by choosing to pay weekly instead of monthly in a 20 year Amortization?**	◦	◦

Now let's use the graphing calculator to find the payments and total interest paid for a $250 000 mortgage, 5%/a interest, with monthly payments and a 25 year amortization length

Financial Screen:
N=
I%=
PV=
PMT=
FV=
P/Y=
C/Y=
PMT: END BEGIN

Important Note

To find interest paid
    2nd Quit then Apps Enter then scroll down to A:ΣInt (1,300)
    * the value 1 is the starting payment number and the value 300 (25x12)
      is the end payment number

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Mortgage Practice Hand out