7. 8 Saving Plans and Loans: Creating Amortization Tables

If you buy a car or a house or basically 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.

Amortization- is the process of gradually reducing a debt through equal regular payments of principal and interest.

Some times 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 exhausting 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 payments 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:
$\mathrm{N}=$
$1 \%=$
PV=
PMT=
FV=
$P / Y=$
$C / Y=$
PMT: END BEGIN

Look at the chart to see how it works:


## 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


Total amount deposited:

Interest Earned:

Compare:

Complete the chart below, using a fixed term of 5 years and a $5 \%$ rate of interest,
find your payments for a $\$ 250000$ 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 <br> Amortization |  | 20 year <br> Amortization |  |  |
| :--- | :--- | :--- | :--- | :--- |
| Weekly <br> Payments | Total <br> interest | Weekly <br> Payments | Total <br> interest | For weekly payments, how <br> much do you save in total <br> by choosing a 20 year term <br> instead of a 25 year? |
| $\$ 335.24$ | $\$ 18408$ | $\$ 379.11$ <br> (only $\$ 43.87$ more/week) | $\$ 143210$ | $\$ 40870$ |
| Monthly <br> Payments | Total <br> interest | Monthly <br> Payments | Total <br> interest | For monthly payments, <br> how much do you save in <br> total by choosing a 20 year <br> term instead of a 25 year? |
| $\$ 1454.01$ | $\$ 186204$ | $\$ 1642.81$ <br> (only $\$ 188.80$ more/month $)$ | $\$ 144275$ | $\$ 41929$ |
| How much do <br> you save in <br> total by <br> choosing to <br> pay weekly <br> instead of <br> monthly in a <br> 25 year <br> Amortization? | $\$ 2124$ | How much do you <br> save in total by <br> choosing to pay <br> weekly instead of <br> monthly in a 20 <br> year <br> Amortization? | $\$ 1065$ | $\$ 1059$ |

ivow let's use the graphing calculator to find the payments and total interest paid for a $\$ 250000$ mortgage, 5\%/a interest, with monthly payments and a 25 year amortization length
Financial Screen:
$\mathrm{N}=$
1\%=
PV=
PMT=
$\mathrm{FV}=$
$P / Y=$

$C / Y=$
PMT: END BEGIN

To find interest paid press 2nd Quit then Apps Enter then scroll down to $A: \Sigma \operatorname{Int}(1,300)$ the value 1 is the starting payment number and the value 300 is the end payment number

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Mortgage Practice Hand out


