7.5 Problem Solving-Mortgages

Let's look at how much a mortgage can cost and how you can easily save $$$

Look at the completed chart below:

Using a fixed term of 5 years and a 5% rate of interest,your payments for a $250 000 at various payment frequency's (i.e. monthly or weekly) and Amortization lengths (ie 25 years and 20 years) are displayed.

Note the difference in interest paid at the end of the amortization period.

You can compare other rates and terms by using **Mortgage** Amortization Schedule **Generator - Fiscal Agents**

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 doyou save in total by choosing to pay weekly instead of monthly in a 20 year Amortization?**		

Don't write -just read-this is on your homework handout

TVM Solver for Mortgage Calculations

N =total number of payments (# of payments X # of years)
I% =annual interest rate as a percent
PV =present value, or amount of the mortgage
PMT =the payment amount (a negative value (-) for mortgages)
FV =future value ("0" for paid-off mortgage, otherwise balance)
P/Y =number of payments per year
C/Y = number of compound periods per year
PMT: = place cursor to indicate whether payments are made at the end or beginning of each payment period (use END for mortgages)

Other Important Items:

- In Canada mortgage interest is always compounded semi-annually (but in the U.S. mortgage interest is compounded monthly) and payments may be made at a different time ie monthly or bi weekly so your P/Y and C/Y do not need to match
- Always input C/Y (= 2) after P/Y, or the calculator automatically resets C/Y to match the P/Y.
- Cash outflows, like Mortgage Payments, are negative.
- Cash inflows, like the Mortgage Amount, are positive.
- To calculate an unknown value move the cursor to the correct line and press:
  ALPHA: ENTER, which accesses the "SOLVE" command.
- A small black box to the left of the screen indicates which variable you have solved for.
- You must quit the TVM Solver (2nd: MODE) before using other FINANCE applications (like "bal", " $\sum$Int").
- The most common term for mortgages is a five year term. After 5 years you must renew the mortgage, means taking out a new mortgage at current interest rates for the balance owing after 5 years.

Problem Solving....

Ex.1 You got $173,500 mortgage, with monthly payments, at 3.2%/a over 25 years

a) How much money have you paid over the first 5 years

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

b) How much of that was the principal

c) how much was interest?

Ex. 2

Ms. Mes makes monthly payments on a $ 72,000 mortgage over 25 years at 11.125% 5 years. After 2 years she decides to increase the monthly payment by $100 and at the end of the 4th yr. she is able to make an extra principal payment of $ 2000.

a) What is the principal balance owing at the end of 5 yrs?

b) By how long has the amortization period been shortened.

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

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

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

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

b) By how long has the amortization period been shortened.

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

Homework:

Handout- 7.5 Using the TVM Solver for Mortgage Calculations

Text p 567 # 10, 11, 12, 14

Test Review

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