Reducing-Balance Loans - Financial Solver.

Handout: Financial Solver Overview.

Example. Pg 320

Andrew borrows $20,000 at an interest rate of 7.25% p.a., compounding Monthly. The loan is paid over 4 years with repayments of $481.25 each month.

a) How much does Andrew owe after 3 years

b) What will Andrew's final payment be to fully repay the loan in 4 years?

Sol:

a) $N = 3 \times 12 = 36$ $I = 7.25\%$

$PMT = -481.25$ $PV = +20000$

↑ He pays ↑ He gets

$P/Y = 12$ $C/Y = 12$.

$FV = ?$ -5554.36.

∴ He owes $5554.36 after 3 years.

b) $N = 4 \times 12 = 48$ everything else the same.

$FV = +\$0.11$ this indicates he is owed money.

∴ Final payment $= 481.25 - 11$

$= \$481.14$

Pg 321 Eg 7.

Example.

Spiro borrows $10,000 to be repaid in equal payments over a period of 5 years. Interest is charged at a rate of 8% p.a., compounding monthly.

Find

a) the monthly payment
b) the total cost of the loan.
c) the amount of interest paid in $

Soln

a) $N = 5 \times 12 = 60$ $I = 8$

$PV = 10,000$ $FV = 0$

↖ When fully repaid

$C/Y = 12$ $P/Y = 12$.

$PMT = ?$ -202.76.

His payments are $202.76 per Month.

b). Total Cost = No. Repayments × Repayment Value

$= 60 \times 202.76$

$= 12165.60$

c) Interest in $ = Loan Cost − Principal

$= 12165.60 - 10000$

$= \$2165.60$

Pg 322 Eg 8.

Example.

Jane borrows $150 000 over 25 years at an interest rate of 6.8% p.a., Compounding Monthly.

a) What are the monthly payments for the loan.
b) How much is still owing after 3 years.
After 3 years, the interest rate changes to 7.2% pa.

c) What are the new monthly payments for the loan term to remain at 25 years.
d) How much extra does it now cost for the loan?

Sol $\cong$

a) $N = 25 \times 12 = 300$ $I = 6.8$
$PV = 150,000$ $FV = 0$.
$C/Y = 12$ $P/Y = 12$.

$PMT = ?$ $\$1041.11$

b). $N = 3 \times 12 = 36$. $I = 6.8$
$PV = 150,000$ $FV = ?$
$C/Y = 12$ $P/Y = 12$
$PMT = -1041.11$
↖ Jane pays out.

After 3 years Jane owes $\$142,391.84$

c) $N = 22 \times 12 = 264$ $I = 7.2$

$PV = 142391.84$ $FV = 0$

$C/Y = 12$ $P/Y = 12$.

$PMT = ?$ $\$1076.18$.

d). Payment increases by $1076.18 - 1041.11$
$= 35.07$ per Month.

Total extra $= 264 \times 35.07$
$= \$9258.48$.

Questions: Ex 9C Page 324 All Questions.