3

\[ P \times 2.46 = 200 \times 745.62 \]

\[ \frac{100,000}{100} = 100 \]

\[ \text{Int} \]

100.745.62

\[ PV = -100,000 \]

\[ \text{Int} = 8\% \]

\[ N = 240 \]

\[ \text{mt}\left( PV - 100,000 \right) = 240, \text{Int} = 8\% \]

- 8360.44

(c) If repaid after 8 yr what balance will be repaid, and how much interest paid to that date.

Input

96

2. Amount

Int 57,500 90

Bal 77,777 66

(a) If instead, the owner home, after 5 yr, made a principle payment of $50,000 will the new maturity be?
The loan will mature 10 yrs ago, how will payoff in 30 yrs?

1) If he can reduce his income what will the new payment be?
Original PMT

\[ \text{PMT}(PV = 75,000, \text{N} = 360, \text{I/YR} = 9) \]

\[ = 653.18 \]

Calculate the balance after 120 payments:

\[ \text{PMT} \]

\[ 20 \text{ } \text{BAL} \]

\[ \text{BAL} = 68,203.21 \]

\[ \text{pay prin } 10,000 \text{ } \text{owe} \]

\[ \frac{-58,203.21}{58,203.21} \]

NEWBAL

(2) Calculate New PMT

\[ \text{PMT}(PV = -58,203.21, \text{I/YR} = 10, \text{N} = 240) \]

\[ = 61.07 \]

(3) Call new # of PMTS if PMT stays the same

\[ N(PV = -58,203.21, \text{I/YR} = 10, \text{PMT} = 653.18) \]

\[ = 160.90 \]

161 remaining payments

With the final payment being a partial payment.
#7
\[ n \left( PV \ 10,000 \ + \ I/Y \ 7.5 \%, \ PMT \ 1000 \right) \]
\[ 15 \ 7.42 \]
16 52 payments

#8
\[ I/Y \left( PV \ 20,000, \ n \ 300 \ PMT \ 300 \right) \]
\[ = \ 2.96 \]

#9.
60,000 for 10 yr
Balance at end is 20,000
I/Y 9%
What is PMT
\[ \text{PMT} \left( PV \ 60,000, \ FV \ 20,000, I/Y = 9, \ n \ 60 \right) \]
\[ = 656 \]

(b) After 5 years, the borrower decided to repay this loan. What balance must be repay

1. INPUT
2. Press AMORT
3. BAL = 141,409.9
Non-amortizing (Interest only or Bullet Loan)

80,000 loan, 12% interest 10 yrs

(a) What is the monthly payment
\[ \text{PMT} = 800 \]
\[ \text{PMT} = \frac{2}{12} \times 80,000 \times 0.02 \]

(b) Balance after N period = 80,000

(c) If repaid after 5 yr without
\[ \text{IS yield to bankers} \quad 12\% \]

(d) If repaid after 10 yr
\[ \text{the yield} \quad 12\% \]

To check Port C or D
\[ i = \left( \frac{P}{80,000}, FV \quad 80,000 \right) \]
\[ \text{PMT} = 800 \]
\[ n (\% \quad \text{Yield}) \]

\[ 12\% \]

\[ i = 2\% \]
What is the yield to lender if you repay after 4 years?

Bal 48 = 68,438.83

\[
\text{IMR}(PV = -98,200, FV = 68,438.83, N = 48, Pmt = 982.63) = 8.66\%
\]
4.2 \( \frac{50,000 \text{ Com.}}{0.08} \) Payments:

(a) How much will be due at year 10?

\[ \text{FV} = \text{PV} \times (1 + \frac{r}{n})^{nt} \]

\[ \text{FV} = 50,000 \times \left(1 + \frac{0.08}{12}\right)^{120} \]

\[ \text{FV} = 50,000 \times \left(1 + 0.006667\right)^{120} \]

\[ \text{FV} = 50,000 \times (2.219648) \]

\[ \text{FV} = 110,982 \text{ 0} \]

(b) Yield to lender = 8%

(c) What is the yield to lender if 1 point is charged and you repay after 8 years?
Cash Disbursed $ 800,000

\[ \text{Balance to repay after 8 yr} \]
\[ \text{FV} (PV \ 50,000 \ N \ 9\% \ IYR \ 8) \]
\[ \text{YLD to lender} \]
\[ \text{IYR} (PV \ 49,500, N \ 9\% \ PV \ 94,322 \ YLD) \]
\[ \text{8/12/65} \]

P 114 # 13 9/24/02 Best

Note: Amount $24,000
\[ N = 360 \ \text{mon} \]
\[ \text{IYR} - 2 \]

\[ \text{Originating Fees} \ 3,500 \]

a) Amount Disbursed
\[ \frac{84,000}{3,500} = \frac{80,500}{3,500} \]

b) Effective cost to borrower = \( \frac{80,500}{2,58} \)

Step 2 \( \text{IYR} (PV \ 80,500 \ N \ 360 \ PMT \ 864.03) \ 2.58 \)

Step 1 \( \text{PMT} (PV \ -84,000, N \ 360 \ IYR \ 12) \ 864.02 \)
(b) Effective interest cost to borrower?

Note: Amount PV/YR = 12

\[
PMT \left( PV = 80,500, \text{I/YR} = 12, N = 360 \right)
\]

= 864.03

The effective interest cost on the IFR to the lender (Internal Rate of Return). Recall the IFR is the discount rate you have to apply to the payments to equal the present value.

\[
\text{I/YR} \left( PV = -80,500, \text{PMT} = 864.03, N = 360 \right)
\]

= 12.58%

To compute the effective interest cost as a EAR

\[
\text{EFF\%} = 13.33\%
\]
What is FTL ARR?

Round the ARR computed above closest 1/8 to

\[
\frac{1}{8} \cdot 16 = 12.625
\]

\[
12.58 < 12.625 < 12.58
\]

which is 25% closest to

Can compute the difference

\[
\text{ABS}(25\% - 12.625) = 0.045
\]

\[
\text{ABS}(25\% - 12.58) = 0.020
\]

\[
\text{ABS} - \text{Absolute Value}
\]

Smallest distance is to 12.625

which is the FTL ARR

What is effective cost if loan is paid off after 5yr.

\[
\text{BAL} = \text{- re-calculate PMT to set up calculator}
\]

\[
\text{PMT}(-\text{data-})
\]

\[
\text{input 60 amount EAL}
\]

\[
\text{BAL} \approx 0.710
\]
Now compute the IRR (\( \approx 9.23\% \)) for this series of CF's

\[
\text{IRR} \left( \text{PV} \ 80,500, \text{PMT} \ 864.03, \text{N} \ 60, \text{FV} \ 82,037.00 \right) \\
3.52 \%
\]

Why is this higher? Because of the PV effect of counting off your points faster.

(2) What if there is a 2% property penalty?

\[
\text{IRR} \left( \text{PV}= \ -80,500, \text{PMT} \ 864.03, \text{N} \ 60, \text{FV} \ 82,037.00 \times 0.98 \right)
\]

The easiest way to solve is to

- Press [REC][FV] to set 82037.00
- Then press \( X \) \times \( 0.98 \)
- Then press \( \text{FV} \)
- Then press \( \text{FV} \)
- Then press \( 1 \) \( 3 \) \( 4 \) \( 4 \) %
Why higher than FTL APR?

- Shorter payback of 'fees' i.e. time value of money effect
- The FTL APR calculation did not include the effect of a pre-payment penalty

PMT: \( \text{PV} = 95,000, \text{r} = 9\% \) per annum, \( n = 300 \) months

\[
PMT = \frac{\text{PV} \times r}{1 - \left(\frac{1}{1 + r}\right)^n}
\]

\[
PMT = \frac{95,000 \times 0.09}{1 - \left(\frac{1}{1 + 0.09}\right)^{300}}
\]

\[
PMT \approx 797.29
\]

\[
\text{PV} = \frac{797.29 \times 300}{0.09}
\]

\[
\text{PV} = 297,240
\]

This cost would be the PV (evaluated at 10%) of getting 797.29 per month for 300 months.

\[
87,733.67
\]

This is the amount the lender will dis
the fee is the difference between the loan amount and the funds disbursed.

Note: Amort.
Funds Disbursed: 777,336.7
Fee: 726,633

What if the lender expects the loan to be repaid after 10 yrs. What fee should be charged?

Once again the lender focuses on the PV of the CFs received.
The CF will be the monthly payments for 120 months, plus the loan balance at that time.

\[
PV = -95,000, \quad PMT = 797.24, \quad \text{PAY} = 9
\]

PV for Long
PV (Pmt 797.24 1/yr ON 20 fu)
777,336.7
for 95,000 77,363.79 543621
Loan Amt = 63,000  INT = 
Initial Amt = 498.57  Term 360 Mo
Homeowner sells for $20,000 in 7 years
Pmt increase 2.5% per year for 5 yrs
Assume 5% increase

Payments from start to highest point will be

<table>
<thead>
<tr>
<th>Year</th>
<th>Pmt</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>498.57</td>
</tr>
<tr>
<td>2</td>
<td>535.96</td>
</tr>
<tr>
<td>3</td>
<td>576.16</td>
</tr>
<tr>
<td>4</td>
<td>619.37</td>
</tr>
<tr>
<td>5</td>
<td>665.82</td>
</tr>
<tr>
<td>6-30</td>
<td>715.76</td>
</tr>
</tbody>
</table>

The balance on a loan, at any point in time is the Present Value of all future payments (for fixed interest rates when PV computed at the note rate).
a) If the property is sold for $80,000 after 7 years, what would the net proceeds from the sale be?

Net Proceeds = Sale Price - Loan Balance

The loan balance is the PV of

\[ P(\text{N-276, I14R} \text{ 2 Pmt 715 76}) \]

\[ 66,983.30 \]

is the loan balance after 7 yrs.

\[ \text{Net Proceeds} \]

\[ \frac{80,000.00}{66,983.30} \]

\[ 0 16.70 \]

b) What would the payment be if a CPM was available?

\[ \text{PMT} (PV 68800, N 360, I14) ? \]

\[ 648.07 \]

c) If the CPM was originated with 2 discount points, what is the effective yield (as an APR)?

Assume the sale at year 7
<table>
<thead>
<tr>
<th>CF_\text{j}</th>
<th>N_\text{h}</th>
</tr>
</thead>
<tbody>
<tr>
<td>61.740</td>
<td>—</td>
</tr>
<tr>
<td>498.57</td>
<td>12</td>
</tr>
<tr>
<td>535.96</td>
<td>12</td>
</tr>
<tr>
<td>576.16</td>
<td>12</td>
</tr>
<tr>
<td>619.37</td>
<td>12</td>
</tr>
<tr>
<td>665.82</td>
<td>12</td>
</tr>
<tr>
<td>715.76</td>
<td>23</td>
</tr>
<tr>
<td>67699.06</td>
<td>—</td>
</tr>
</tbody>
</table>

Note: 67699.06 = End of yr 7, also meant 66783.30 + 715.76

So I calculated 49442 for 2
Enter Host CF's & N
then press <enter> to get yield
on header = 746
Loan A 75,000 at 8.75 3.05% 6 points
Loan B 75,000 at 9% 3.05% 2 points

What is the yield to loan A?

a) you pay off after 15 yr
b) you pay off after 5 yr

<table>
<thead>
<tr>
<th>Loan</th>
<th>A</th>
<th>B</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pmt</td>
<td>658.8</td>
<td>714.24</td>
</tr>
<tr>
<td>Pmt at 7%</td>
<td>72,430.64</td>
<td>72,077.72</td>
</tr>
<tr>
<td>Pmt at 8%</td>
<td>62,248</td>
<td>67,811.73</td>
</tr>
<tr>
<td>Annual Disbursed</td>
<td>70,500</td>
<td>73,500</td>
</tr>
<tr>
<td>$94 * 75,000</td>
<td>$98 * 75,000</td>
<td></td>
</tr>
</tbody>
</table>

Yield to loan A

60 month

I/YR (60, PV = 70,500, PMT = 658.18, FV = 72,108) 6%

80 month

I/YR (N = 80, PV = -70,500, PMT = 658.18, FV = 61,248.42) 10.85%

Yield loan B

60 month

I/YR (N = 60, PV = 73,500, PMT = 714.24, FV = 72,873.72) 11.53%

180 month

I/YR (N = 180, PV = 73,500, PMT = 714.44, FV = 62,841.73) 12.9%
Passive Amortize by Mortgage

% = 3.14% 
N = 20

Rate is not to exceed 3.82% 

What will the monthly part be?

\[ \text{PMT} \left( \text{FV} \ 300,000 \ n \ (20 \ \text{yr}) \right) \]
\[ \approx 382.50 \]

5) Converse crude monthly parts to 2000 
For 50 months what will the 
payment be for the remaining months?

First compute what your cash one 
after 50 months

\[ \text{FV} \left( \text{PMT} \ 2000, \ n=50, \ i=3.14 \% \right) \]
\[ \approx 26,3910 \]

What will the payment reset to?

\[ \text{PMT} \left( \text{PV} \ 176,3910, \ i=3.91\%, \ n=70 \right) \]
\[ \approx 200,000 \]