1) Calculating FV given PMT (BGN)
#1 PMT = $1200 Annually
N 25 x 1 = 25
IPT 5.21%
PV &
PMT #2200 (BGN)
FV ?
P1Y 1
C1Y 1

#2 PMT = $350 Monthly
N 25 x 12 = 300
IPT 5.21%
PV &
PMT #350
FV ?
P1Y 12
C1Y 1

Interest Earned
#1 25 x $1200 = $55000
#2 300 x $350 = $105000
$160000
$160000 Amount Invested

2) Calculating PV given PMT (BGN) and Down payment
(N) 5 x 12 = 60
I1Y 2.81%
P1Y 2
PMT #15005.74 + #2500 = $17505.74
FV #189,91 (BGN)
P1Y 12
C1Y 1 (Effective)
3) Calculating PMT given FV
   \[ N \times 12 = \frac{5}{6} \]
   \[ \pm 14 \times 6.75\% \]
   \[ PV \]
   \[ PMT = \frac{FV}{(BGN)} \]
   \[ \pm \frac{14}{12} \times 59 \]
   \[ FV = 15000 \times 0.5 = 7500 \]
   \[ \frac{1}{4} \times 12 \]
   \[ CLY 4 \]

4) Calculating N given PMT and Fv
   \[ N = \frac{28.98 \times 29}{4} = 7.25 \]
   \[ \pm 14 \times 4.35\% \]
   \[ PV = -29000 \]
   \[ PMT = \frac{1000 (BGN)}{X12} \]
   \[ FV = -4 \]
   \[ \frac{1}{4} \times 12 \]
   \[ CLY 12 \]
   \[ 7 \text{ Years } 3 \text{ Months} \]

5) Calculating I/Y given PMT and PV
   \[ N = \frac{2.5 \times 12 = 300}{I/Y} = \frac{7.16}{4} \]
   \[ PV = -8500 \]
   \[ PMT = \frac{100 (BGN)}{FV = 0} \]
   \[ I/Y 12 \]
   \[ CLY 2 \]

6) Calculating PV of a Deferred PMT
   \[ N = 2 \times 12 - 24 \]
   \[ \frac{1}{4} \times 16\% \rightarrow I/Y 16\% \]
   \[ PV = \frac{3246.6}{2775.32} \]
   \[ PMT = \frac{-152.58 (BGN)}{FV = 0} \]
   \[ PMT = \frac{3246.6}{12} \]
   \[ \frac{1}{4} \times 4 \rightarrow CLY 4 \]

7) Calculating PV of a Perpetual PMT
   \[ N = 500 \times 12 = 500 \]
   \[ \frac{1}{4} \times 7.5\% \]
   \[ PV = \frac{20000}{1500 (FV =)} \]
   \[ PV = 0 \]
   \[ \frac{1}{4} \times 1 \]
   \[ CLY 1 \]

8) Calculating Perpetual PMT given PV
   \[ N = 500 \times 12 = 500 \]
   \[ \frac{1}{4} \times 9\% \]
   \[ PV = 17200 \]
   \[ PMT = \frac{1420.18}{BGN} \]
   \[ FV = 0 \]
   \[ \frac{1}{4} \times 1 \]
   \[ CLY 1 \]
Business Math Review Chapters 12, 13, 14, 16

Answer key by Michael Reimer

9) a) Calculating Pmts given P & I

\[ N = 25 \times 12 = 300 \]
\[ P_1 = 180 \]
\[ P_2 = 180 \]
\[ \text{PRN} = 8,777.20 \]

\[ P = \#25,000 \]
\[ \text{PMT} = 1704.13 \]
\[ \text{FV} \]
\[ \text{P} = 12 \]
\[ \text{Make sure to round OFF} \]
\[ \text{the extra decimals} \]
\[ \text{c) P1} = 75 \]
\[ \text{P2} = 75 \]

\[ \text{INT} = \#12,136.5 \]

Also, if PMT is - you must enter it as a -

d) \[ P_2 = \text{Period WANTED} \times \text{PMT} \]
\[ c) P_1 = 120 \]
\[ 15 \times 12 = 180 \]
\[ P_2 = 144 \]
\[ \text{INT} = \#25,796.73 \]

\[ P_1 = P_2 - \text{PMT} + 1 \]
\[ 180 - 12 + 1 = 169 \]

f) \[ P_1 = 3 \times 12 = 36 \]
\[ P_2 = 36 \]
\[ \text{BAL} = \#236,983.58 \]

9) Final Payment

\[ \text{Find BAL after 2nd last payment} \]
\[ P_1 = 299 \]
\[ P_2 = 299 \]
\[ \text{BAL} = \#16,980.00 \]

\[ \text{Find INT of last payment} \]
\[ P_1 = 300 \]
\[ P_2 = 300 \]
\[ \text{INT} = 9.36 \]

\[ \text{Add BAL + INT} \]
\[ \#16,980.00 + 9.36 = \#1707.36 \]
10) Calculating PV given PMT and Down payment

\[ N = 30 \times 12 = 360 \]
\[ I/Y = 3.69\% \]
\[ PV = \$163,707.76 \]
\[ PMT = \$750 \text{ (END)} \]
\[ FV = 0 \]
\[ P/Y = 12 \]
\[ C/Y = 2 \]

\[ \text{PV} = \$19,370.76 \]

11) Option 1: Buy Car w/Residual

Calculate PV of Residual Value and Subtract for Purchase Price

\[ N = 5 \times 12 = 60 \]
\[ I/Y = 2.85\% \]
\[ PV = \$4,336.67 \]
\[ PMT = \$13,500 \]
\[ FV = 0 \]
\[ P/Y = 12 \]
\[ C/Y = 2 \]

\[ \text{PV} = \$9,163.33 \]

Option 2: Lease

Calculate PV of Lease

\[ N = 5 \times 12 = 60 \]
\[ I/Y = 2.85\% \]
\[ PV = \$919,860 \]
\[ PMT = \$175 \text{ (BGN)} \]
\[ FV = 0 \]
\[ P/Y = 12 \]
\[ C/Y = 12 \]

You should buy the car. You will save $6,352.77

\[ \$979,600 - \$9163.33 = \$6352.77 \]
<table>
<thead>
<tr>
<th></th>
<th>Year 1</th>
<th>Year 2</th>
<th>Year 3</th>
<th>Year 4</th>
<th>Year 5</th>
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<td>$60,000</td>
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<tr>
<td>C01</td>
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<td>$9,500</td>
<td>$9,500</td>
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</tr>
</tbody>
</table>

**Cash Flow Work**

CFo $-150,000 Enter
C01 $60,000 Enter
F01 4 Enter
C02 $9,500 Enter
F02 1 Enter

**NPV**

\[
I = 12 \quad \text{Enter} \quad \left[ \text{NPV} \right] = -86,146.51
\]

Yes, Economic value today is $86,146.51