HOME EQUITY CONVERSION MORTGAGE
Using an HP12C to Calculate Payments to Borrowers

This appendix illustrates use of an HP12C for calculating payments to borrowers under the Home Equity Conversion Mortgage Insurance program. For simplicity, the examples assume a 75 year old borrower in a $100,000 house with either a 10 percent interest rate and no servicing fee or a 9.5 percent interest rate and a $12 servicing fee.

### Screen

<table>
<thead>
<tr>
<th>Displays</th>
<th>You Enter</th>
<th>Keystrokes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Determining the Principal Limit</td>
<td>.416</td>
<td>.416</td>
</tr>
<tr>
<td>Clear register.</td>
<td>[f] [REG]</td>
<td>0.000</td>
</tr>
<tr>
<td>Enter principal limit factor from table in Appendix 16 for 75 year old borrower and 10 percent interest rate.</td>
<td>.416</td>
<td>.416</td>
</tr>
<tr>
<td>Multiply by maximum claim amount.</td>
<td>100,000</td>
<td>[x] 41,600.000</td>
</tr>
<tr>
<td>Calculating Tenure Payments</td>
<td>41,600</td>
<td>[ENTER] 41,600.000</td>
</tr>
<tr>
<td>Clear register.</td>
<td>[f] [REG]</td>
<td>0.000</td>
</tr>
<tr>
<td>Set calculator for payments at beginning of period.</td>
<td>[g] [BEG]</td>
<td>0.000</td>
</tr>
<tr>
<td>Enter principal limit</td>
<td>41,600</td>
<td>[ENTER] 41,600.000</td>
</tr>
<tr>
<td>Subtract initial payments—e.g., $2,000 mortgage insurance premium (MIP) and</td>
<td>3,500</td>
<td>[-] 38,100.000</td>
</tr>
</tbody>
</table>

$1,500 closing costs.
Enter net principal limit. [PV] 38,100.000
Enter expected rate. 10 [ENTER] 10.000
Add periodic MIP to calculate compounding rate. .5 [+ 10.500
Enter monthly compounding rate. [g] [i] .875
Calculate years until borrower turns 100. 100 [ENTER] 100.000
Subtract age of youngest borrower rounded to nearest whole year. 75 [- 25.000
Enter term in months. [g] [n] 300.000
Calculate future value of principal limit. [FV] -519,983.179
Prepare to calculate monthly payments. 0 [PV] 0.000
Calculate monthly tenure payment. [PMT] 356.613
Calculating Term Payments
Clear register. [f] [REG] 0.000
Set calculator for payments at beginning of period. [g] [BEG] 0.000

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Enter principal limit. 41,600 [ENTER] 41,600.000
Subtract initial payment --e.g., $2,000 mortgage insurance premium (MIP) and $1,500 closing costs. 3,500 [-] 38,100.000
Enter net principal limit. [PV] 38,100.000

Enter monthly compounding rate. 10.5 [g] [i] .875

Enter term (10 years). 10 [g] [n] 120.000


Prepare to calculate monthly payments. [PV] 0.000

Calculate monthly term payment. [PMT] 509.643

Calculating Tenure Payment With Monthly Servicing Charge Set-Aside

Clear register. [f] [REG] 0.000

Set calculator for payments at beginning of period. [g] [BEG] 0.000

Enter monthly servicing charge. 12 [PMT] 12.000

Enter compounding rate (9.5% + .5%). 10 [g] [i] .833

Enter term (100 - 75). 25 [g] [n] 300.000

Calculate servicing fee set-aside. [PV] -1,331.571

Add principal limit. (.443 x 100,000) 44,300 [+] 42,968.429

Subtract initial payments ($2,000 +$1,500). 3,500 [-] 39,468.429

Enter net principal [PV] 39,468.429
limit.

Prepare to calculate monthly payments.

Calculate future value of principal limit.

Prepare to calculate monthly payments.

Calculate monthly tenure payment.

Calculating Term Payment With Initial Draw and Line of Credit Set-Aside

Clear register.

Set calculator for payments at beginning of period.

Enter principal limit.

----------------------------------
Subtract initial payment --e.g., $2,000 mortgage insurance premium (MIP) and $1,500 closing costs.

Subtract initial draw.

Subtract line of credit set-aside.

Enter net principal limit.

Enter monthly compounding rate.

Enter term (10 years).

Calculate future value of principal limit.
Prepare to calculate monthly payments.  

Calculate monthly term payment.  

Change in Payment Plan  
After 60 Months From  
Line of Credit to  
7-Year Term (Assumes $5,000 Initial Draw and Financing of Closing Costs)  

<table>
<thead>
<tr>
<th>Operation</th>
<th>Calculation</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clear register.</td>
<td>[f] [REG]</td>
<td>0.000</td>
</tr>
<tr>
<td>Set calculator for payments at beginning of period.</td>
<td>[g] [BEG]</td>
<td>0.000</td>
</tr>
<tr>
<td>Enter principal limit.</td>
<td>41,600</td>
<td>[ENTER] 41,600.000</td>
</tr>
<tr>
<td>Subtract initial payment --e.g., $2,000 mortgage insurance premium (MIP) and $1,500 closing costs.</td>
<td>3,500</td>
<td>[-] 38,100.000</td>
</tr>
<tr>
<td>Subtract initial draw.</td>
<td>5,000</td>
<td>[-] 33,100.000</td>
</tr>
<tr>
<td>Enter net principal limits.</td>
<td>33,100.000</td>
<td>[PV]</td>
</tr>
<tr>
<td>Enter monthly compounding rate.</td>
<td>10.5</td>
<td>[g] [i] .875</td>
</tr>
<tr>
<td>Enter lapsed months.</td>
<td>60</td>
<td>[n] 60.000</td>
</tr>
<tr>
<td>Calculate future value of principal limit.</td>
<td>[FV]</td>
<td>-55,826.559</td>
</tr>
<tr>
<td>Prepare to calculate net principal limit.</td>
<td>[CHS]</td>
<td>55,826.559</td>
</tr>
<tr>
<td>Enter initial mortgage balance (3,500 + 5,000).</td>
<td>8,500</td>
<td>[PV] 8,500.000</td>
</tr>
<tr>
<td>Calculate current mortgage balance.</td>
<td>[FV]</td>
<td>-14,336.125</td>
</tr>
</tbody>
</table>
Calculate net principal limit. [+] 41,490.433

Enter net principal limit. [PV] 41,490.433

Enter term (7 years). 7 [g] [n] 84.000

Calculate future value of principal limit. [FV] -86,251.365

Prepare to calculate monthly payments. 0 [PV] 0.000

Calculate monthly term payment. [PMT] 693.489

Change in Payment Plan After 36 Months From Tenure to 8-Year Term

Clear register. [f] [REG] 0.000

Set calculator for payments at beginning of period. [g] [BEG] 0.000

Enter principal limit. 41,600 [ENTER] 41,600.000

Subtract initial payment --e.g., $2,000 mortgage insurance premium (MIP) and $1,500 closing costs. 3,500 [-] 38,100.000

Enter net principal limit. [PV] 33,100.000

Enter monthly compounding rate. 10.5 [g] [i] .875

Enter initial term. 25 [g] [n] 300.000
Calculate future value of principal limit.

Prepare to calculate monthly payments.

Calculate monthly tenure payment.

Prepare to calculate mortgage balance:
Enter initial payments ($2,000 + $1,500).
Enter lapsed months.

Calculate current mortgage balance.

Prepare to calculate principal limit.
Enter initial principal limit.

Calculate current principal limit.

Prepare to calculate net principal limit.

Calculate net principal limit.
Enter net principal limit.

Enter term (8 years).

Calculate future value of principal limit.

Prepare to calculate monthly payments.

Calculate future value of principal limit.

Prepare to calculate monthly payments.

Calculate monthly tenure payment.

Prepare to calculate mortgage balance:
Enter initial payments ($2,000 + $1,500).
Enter lapsed months.

Calculate current mortgage balance.

Prepare to calculate principal limit.
Enter initial principal limit.

Calculate current principal limit.

Prepare to calculate net principal limit.

Calculate net principal limit.
Enter net principal limit.

Enter term (8 years).

Calculate future value of principal limit.

Prepare to calculate monthly payments.

Calculate future value of principal limit.

Prepare to calculate monthly payments.

Calculate monthly tenure payment.

Prepare to calculate mortgage balance:
Enter initial payments ($2,000 + $1,500).
Enter lapsed months.

Calculate current mortgage balance.

Prepare to calculate principal limit.
Enter initial principal limit.

Calculate current principal limit.

Prepare to calculate net principal limit.

Calculate net principal limit.
Enter net principal limit.

Enter term (8 years).

Calculate future value of principal limit.
monthly payment.

Calculate monthly term payment.

Change in Payment Plan
After 48 Months

From 10-Year Term with Service Fee to 14-Year Term

Clear register.  
[f] [REG] 0.000

Set calculator for payments at beginning of period.

Enter monthly servicing charge.  12 [PMT] 12.000

Enter compounding rate (9.5% + .5%).  10 [g] [i] .833

Enter term (100 - 75).  25 [g] [n] 300.000

Calculate servicing fee set-aside.  [PV] -1,331.571

Add principal limit. (.443 x 100,000)  44,300 [+] 42,968.429

Subtract initial payments ($2,000 + $1,500).  3,500 [-] 39,468.429

Enter net principal limit.  [PV] 39,468.429

Prepare to calculate monthly payments.

[PMT] 0.000

Enter initial term.  10 [g][n] 120.000

Calculate future value of principal limit.  [FV] -106,842.674
Prepare to calculate monthly payments.

Calculate monthly term payment.

Add monthly service fee.

Enter total monthly payment.

Enter initial payments ($2,000 + $1,500).

Enter lapsed months.

Calculate current mortgage balance.

Enter initial principal limit.

Prepare to calculate current principal limit.

Calculate current principal limit.

Prepare to calculate net principal limit.

Calculate net principal limit.

Store net principal limit.

Clear entries.

Recalculate servicing set-aside.

Enter compounding rate.

Enter original term
of set-aside.

<table>
<thead>
<tr>
<th>Action</th>
<th>Value</th>
<th>1st Value</th>
<th>2nd Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Subtract lapsed months.</td>
<td>48</td>
<td>[-]</td>
<td>252.000</td>
</tr>
<tr>
<td>Enter new term of set-aside.</td>
<td>[n]</td>
<td>252.000</td>
<td></td>
</tr>
<tr>
<td>Calculate servicing set-aside.</td>
<td>[PV]</td>
<td>-1,272.639</td>
<td></td>
</tr>
<tr>
<td>Recall net principal limit.</td>
<td>[RCL] [1]</td>
<td>29,426.734</td>
<td></td>
</tr>
<tr>
<td>Add net principal limit.</td>
<td>[+]</td>
<td>28,154.095</td>
<td></td>
</tr>
<tr>
<td>Enter net principal limit.</td>
<td>[PV]</td>
<td>28,154.095</td>
<td></td>
</tr>
<tr>
<td>Prepare to calculate monthly payment.</td>
<td>0</td>
<td>[PMT]</td>
<td>0.000</td>
</tr>
<tr>
<td>Enter new term.</td>
<td>14</td>
<td>[g] [n]</td>
<td>168.000</td>
</tr>
<tr>
<td>Calculate future value of principal limit.</td>
<td>[FV]</td>
<td>-113,510.085</td>
<td></td>
</tr>
<tr>
<td>Prepare to calculate monthly payment.</td>
<td>0</td>
<td>[PV]</td>
<td>0.000</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Action</th>
<th>Value</th>
<th>1st Value</th>
<th>2nd Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Calculate monthly payment.</td>
<td>[PMT]</td>
<td>309.426</td>
<td></td>
</tr>
</tbody>
</table>