

User's Guide
PROM[®] 671B LoanMaker[®]
Mortgage Compliance Tool

Table of Contents

Description	3
Mortgage Routines	5
Conventional and Adjustable Mortgages	5
Construction Mortgages	10
Qualify Routine	16
Quick Payment Finder	17
Other Routines	18
Compute APR Routine	18
Compute Present Value (Price) Routine	20
Payment and Balance History	23
Sample 15-year Adjustable Rate History	24
Refinancing at a Lower Interest Rate Comparison	26
HUD Escrow Calculations	28
Battery Replacement & Maintenance	34
Adjusting the Display Contrast	34
Battery Replacement	34
Initializing the Software Cartridge	35
Year 2000 Compliant	35
Setup Routine	36

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Description

The 671B Compliance Tool computes and discloses mortgage loans with monthly payments. Several types of mortgages can be computed: conventional fixed-rate mortgages, conventional fixed-rate mortgages with a balloon, adjustable-rate mortgages, and adjustable-rate mortgages with a balloon, single-payment construction mortgages, construction-to-permanent mortgages, and adjustable-rate construction-to-permanent mortgages.

It can also compute mortgages with an initial, interest-only payment.

Provisions are included for prepaid odd-day interest, an origination fee, discount "points", and any other prepaid fee you wish to include in the prepaid finance charge and APR calculations.

Both the mortgage term and optional balloon term can be entered in years and months.

Up to 15 interest rate changes can be entered for an adjustable-rate mortgage.

For commercial mortgages, the interest can be accrued on a 365/360-day ("Actual over 360") basis.

A payment/balance history can be displayed for any adjustable-rate mortgage. This feature can also be used to generate a 15-year historical example for adjustable-rate mortgages.

The [Qualify] function key determines the maximum mortgage amount (rounded to the nearest \$100) for the borrower's income, other expenses, and qualifying rate and term.

The [Q Pmt] function key finds the initial mortgage payment based on the entered interest rate, term and principal amount.

The [Refin/Esc] function key computes the break-even point in months for a mortgage that is refinanced at a lower interest rate. The computation takes into account the origination fee, discount points, and other closing costs that must be paid at closing. The investment opportunity lost because of the prepayment of the closing costs is also considered. The number of months it will take to recover the total closing costs is computed. Knowing how long the borrower intends to keep the mortgage, you can quickly determine whether refinancing will save the borrower money.

The [APR/PV] function key performs two routines: the first computes the Annual Percentage Rate for any monthly mortgage or installment loan with up to 20

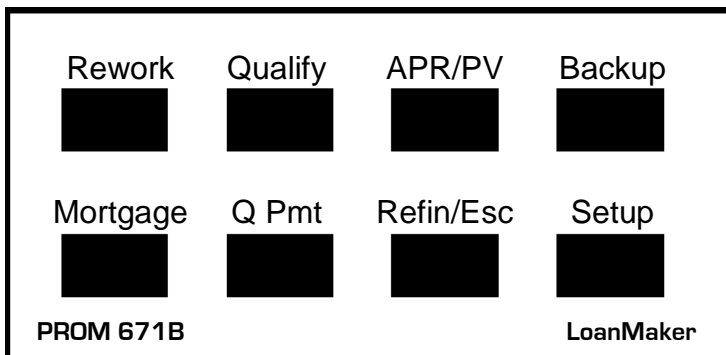
different payment levels. The Annual Percentage Rate can be computed for balloon loans, adjustable-rate mortgages or loans (with an optional balloon payment), and irregular loans with skipped payments or "pick-up" payments.

The second routine on the [APR/PV] function key computes the price (present value) of a loan or mortgage with up to 20 different payment levels. This is useful for those who purchase loans and need to discount the payment stream at the desired interest rate to compute the price. The payment stream can be very irregular, including skipped payments, "pick-up" payments, etc.

The [Rework] function key allows you to review any previously computed routine. All the original entries are retained and presented in the display for your review.

At any point in an input prompting routine, you can back up to the previous prompt by using the [Backup] function key.

In response to the prompts, enter the value and then push [ENTER]. Incorrect entries may be cleared by pushing the red [C-CE] key unless [ENTER] has already been pushed, in which case you can back up by pushing the [Backup] key or use the [Rework] key to review the input data.



Mortgage Routines

Conventional and Adjustable Mortgages

<u>Prompt</u>	<u>User Response</u>
	To start a new mortgage, push the [Mortgage] key. To rework a mortgage, push the [Rework] key.
MTGE/CONST 1/2?_	Enter "1".
PRIN ?_	Enter the principal amount and push [ENTER].
ORIG FEE %?_	Enter the origination fee as a percentage, e.g., 1.25 for 1-1/4%.
POINTS %?_	Enter any discount points as a percentage, e.g., 2 for 2 points (2%).
OTHER PP ?_	Enter any other prepaid fee in dollars.
TERM YY.MM xx?_	If the term shown is correct, push [ENTER], otherwise enter the desired term. ¹
B TERM ?_	If there is a balloon, enter the balloon term in years, months, or in years and months. ²
ODD DAYS ?_	Enter the number of odd days. ³
RATE %?_	If the initial interest rate shown is correct, push [ENTER], otherwise enter the correct initial interest rate percentage.
INT ONLY Y/N?_	Push yes if the initial payment is interest only. ⁴

¹ The term can be entered in whole years or in years and months (e.g., enter a term of 10 years and 6 months as 10.06, etc.) The maximum term is 50 years. Any entry greater than 50 is assumed to be in months, i.e., an entry of 120 is taken as 120 months or 10 years..

² The balloon feature must be enabled through the Setup Routine. Enter the term to the balloon using the same convention as for the term. The term to the balloon cannot exceed the mortgage term.

³ The default odd-day calendar base is 365. See the Setup Routine to change this.

TERM TO CHNG?_ If the initial interest rate is valid for the entire term, enter a 0 at this prompt, otherwise, enter the number of years (or years and months) the initial interest rate will be in effect. For interest-only mortgages, this entry is the interest-only term which must be specified.⁵

RATE-2 %?_ Enter the second interest rate.⁶

TERM TO CHNG ?_ If the second interest rate is valid for the remainder of the term, enter a 0 at this prompt, otherwise enter the number of years (or years and months) the second interest rate will be in effect.

RATE-3 %?_ Enter the third interest rate.

TERM TO CHNG ?_ If the third interest rate is valid for the remainder of the term, enter a 0 at this prompt, otherwise, enter the number of years (or years and months) the third interest rate will be in effect.

. Up to 15 interest rate changes can be entered.
.
.

1ST PT	xxxxx.xx	The initial principal and interest payment is displayed. Push [ENTER] to continue.
--------	----------	--

The calculator will pause for a moment or two as it calculates the annual percentage rate and will then present a complete disclosure.

⁴ The interest-only feature must be enabled through the Setup Routine.

⁵ The adjustable rate mortgage capability must be enabled through the Setup Routine. To enter the term an interest rate is in effect, use the format yy.mm, e.g., enter 1 year as "1", 9 months as ".09", 1 year and 3 months as either "1.03" or "0.15", etc.

⁶ For interest-only mortgages, this is the interest rate in effect after the interest-only period. It can be the same or different from the initial interest rate (but it cannot be 0).

Sample 30-year Fixed Mortgage

The sample mortgage is for \$100,000 at 10.00% for 30 years. There is a 1% origination fee, 15 odd days, and a prepaid charge of \$75.00.

```

PRIN ?_ 100000
ORIG FEE %?_ 1
POINTS %?_ 0
OTHER PP ?_ 75
TERM YY.MM ? 30
ODD DAYS?_ 15
RATE %?_ 10.00
TERM TO CHNG?_
    
```

```

1ST PT      877.58
    
```

```

APR          10.128%
FIN C        217414.76
AMT F         98514.04
TOT P        315928.80

-----
360 P@         877.58

-----

ORIG F         1000.00
POINTS          0.00
OTHER PC        75.00
ODI             410.96
  15 DAYS (365)
T PPD          1485.96

-----

PRIN          100000.00
T PPD         -1485.96
AMT F          98514.04

[                ]
    
```

Annual percentage rate
 Finance charge
 Amount financed
 Total of all payments

Payment disclosure.

Origination fee
 Discount points
 Other prepaid charge
 Odd-day interest
 # of odd days & odd-day calendar base
 Total prepaid finance charge

Amount financed calculation

See Footnote 12 on page 36.

Sample 30-year ARM Mortgage with Balloon

The sample mortgage is for \$100,000 at 10.25% for 30 years. There is a 1% origination fee, 1 point, 15 odd days, and a balloon due in three years. The rate changes to 11.25% after six months. (The ARM and Balloon features must be enabled to run this example -- see Setup Routine.)

```

PRIN ?_ 100000
ORIG FEE %?_ 1
POINTS %?_ 1
OTHER PP ?_
TERM YY.MM ? 30
B TERM?_ 3
ODD DAYS?_ 15
RATE %?_ 10.25
TERM TO CHNG?_.06
RATE-2 %?_ 11.25
    
```

```

1ST PT      896.10
    
```

```

APR          11.834%
FIN C        35434.38
AMT F        97578.77
TOT P        133013.15
-----
   6 P@      896.10
  29 P@      970.78
   1 P@     99483.93
-----
ORIG F        1000.00
POINTS        1000.00
OTHER PC         0.00
ODI           421.23
  15 DAYS (365)
T PPD         2421.23
-----
PRIN          100000.00
T PPD         -2421.23
AMT F          97578.77

[                ]
    
```

Annual percentage rate

Finance charge

Amount financed

Total of all payments

Payment disclosure.

Origination fee

Discount points

Other prepaid charge

Odd-day interest

of odd days & calendar base

Total prepaid finance charge

Amount financed calculation

See Footnote 12 on page 36.

Sample Interest-Only Mortgage

This sample 30-year mortgage is for \$100,000 at 5.950% with interest-only payments for the first 5 years, and then P&I payments at 7.125%. There is a 0.25% origination fee, 3/4's of a point, and 15 odd days. (The Interest-Only feature must be enabled before running this example -- See Setup Routine.)

```

PRIN ?_ 100000
ORIG FEE %?_ .25
POINTS %?_ .75
OTHER PP ?_
TERM YY.MM 30?_
ODD DAYS?_ 15
RATE %?_ 5.950
INT ONLY Y/N?_ Y
TERM TO CHNG?_ 5
RATE-2 %?_ 7.125
TERM TO CHNG ?_
    
```

```

1ST PT      495.83
    
```

```

APR          6.754%
FIN C       145428.32
AMT F       98755.48
TOT P       244183.80

-----

 60 P@      495.83
300 P@      714.78

-----

ORIG F       250.00
POINTS       750.00
OTHER PC      0.00
ODI          244.52
 15 DAYS (365)
T PPD        1244.52

-----

PRIN        100000.00
T PPD       -1244.52
AMT F       98755.48

[           ]
    
```

Annual percentage rate
 Finance charge
 Amount financed
 Total of all payments

Payment disclosure

Origination fee
 Discount points
 Other prepaid charge
 Odd-day interest
 # of odd days & odd-day calendar base
 Total prepaid finance charge

Amount financed calculation

See Footnote 12 on page 36.

Construction Mortgages

This routine computes single-payment construction and construction-to-permanent mortgages.

Prompt

User Response

	To start this routine, push the [Mortgage] function key.
MTGE/CONST 1/2?_	Enter "2" to compute construction mortgages.
PERM/SP 1/2?_	Enter "1" to compute a construction-to-permanent mortgage or "2" to compute a single-payment construction mortgage.
PRIN ?_	Enter the principal amount and push [ENTER].
ORIG FEE %?_	Enter the origination fee as a percentage, e.g., 1.25 for 1-1/4%.
POINTS %?_	Enter any discount points as a percentage, e.g., 2 for 2 points (2%).
OTHER PP ?_	Enter the amount of any other prepaid fee.
CON TERM MM?_	Enter the construction term in months. The construction term must be between 3 and 24 months.
CON RATE %?_	Enter the interest rate percentage effective during the construction period.
ODD DAYS ?_	Enter the number of odd days. If an entry is made here, odd-day interest will be calculated on the first advance (entered at the next prompt) using the interest rate in effect during the construction period.
1ST ADV xxxxx?_	If the amount of the first advance displayed is correct, push [ENTER], otherwise enter the correct amount. (The amount of the first advance cannot be greater than 1/3 of the mortgage amount nor less than the total of prepaid charges. The suggested advance is 1/xth of the mortgage amount where x is the number of months in the construction period.)

The following prompts only appear for a construction-to-permanent mortgage.

TERM YY.MM xx?_ If the term for the permanent portion of the mortgage shown is correct, push [ENTER], otherwise enter the desired term in years, months, or in years and months (e.g., enter a term of 10 years and 6 months as 10.06, etc.) An entry greater than 50 is assumed to be in months.

RATE %?_ Enter the initial interest rate for the permanent portion of the mortgage.

TERM TO CHNG
xx.xx?_ (Appears only if ARM Mortgages have been enabled -- see Setup Routine.) If the initial interest rate is valid for the entire term of the permanent mortgage, enter a 0 at this prompt. Enter the number of years (or years and months) the initial interest rate will be in effect. Use the format yy.mm, e.g., enter 1 year and 3 months as either "1.03" or "0.15", etc.

RATE-2 %?_ Enter the correct second interest rate.

1ST PT	xxxxxx.xx
--------	-----------

The initial principal and interest payment is displayed. Push [ENTER] to continue.

Sample Construction-to-Permanent Mortgage Disclosure from Reg Z

This is the sample construction-to-permanent mortgage from Appendix D of Regulation Z.⁷

MTGE/CONST 1/2?	2	
CONST MORTGAGE		
PERM/SP 1/2?	1	
PRIN?	50000	Principal amount
ORIG FEE %?	0	
POINTS %?	2	2 points
OTHER PP?	0	
CON TERM MM 9?	5	5-month construction period
CON RATE %?	10.5	Construction period interest rate

⁷ Federal Reserve Board Truth in Lending Regulation Z, Appendix D, Part II, A, B, C & D.

ODD DAYS?	0
TERM YY.MM?	30
RATE %?	10.5
TERM TO CHNG?	0

30-year permanent term
Permanent interest rate

1ST PMT	457.37

APR	10.752%
FIN C	116746.95
AMT F	49000.00
TOT P	165746.95

5 MON & 0 DAYS	
5 INT ONLY PMTS	
360 P@	457.37

ORIG F	0.00
POINTS	1000.00
OTHER PC	0.00
ODI	0.00
T PPD	1000.00

PRIN	50000.00
T PPD	-1000.00
AMT F	49000.00

T PPD	1000.00
C INT	1093.75
P INT	114653.20
TOT FC	116746.95

ESTIMATED DISC	
PER REGULATION Z	
APPENDIX D PART II	
PARA A1,B,C,D	

"Fed" box

Construction period and
Payment schedule

Origination fee
Points
Other prepaid charge
Odd-day interest
Total prepaid charge

Computation of amount financed

Total prepaid charge
Construction period interest
P&I period interest
Total finance charge

This section only appears if the
disclosure is printed

Sample Adjustable-Rate Construction-to-Permanent Mortgage with Odd Days

This is a sample construction-to-permanent mortgage with odd days and a "teaser" interest rate.

MTGE/CONST 1/2?	2	
CONST MORTGAGE		
PERM/SP 1/2?	1	
PRIN?	150000	Principal amount
ORIG FEE %?	1	1% origination fee
POINTS %?	1.25	1-1/4 points
OTHER PP?	0	
CON TERM MM 9?	9	9-month construction term
CON RATE?	10.5	10.5% during construction
ODD DAYS?	15	15 odd days (added to construction period)
1ST ADV?	15000	\$15000 advanced at signing
TERM YY.MM?	25	25-year permanent mortgage term
RATE %?	7.00	7% for first year of permanent mortgage
TERM TO CHNG?	1	
RATE-2%	7.50	7.5% for remainder of permanent mortgage

1ST PT	1060.17	Initial P&I payment amount

APR	7.853%	"Fed" box
FIN C	191268.13	
AMT F	146560.27	
TOT P	337828.40	

9 MON & 15 DAYS		Construction period and
9 INT ONLY PMTS		Payment schedule
12 P@	1060.17	
288 P@	1107.21	

ORIG F	1500.00	Origination fee
POINTS	1875.00	Points
OTHER PC	0.00	Other prepaid charge
ODI	64.73	Odd-day interest
15 DAYS (365)		Odd days & calendar base
T PPD	3439.73	Total prepaid charge

PRIN	150000.00	Computation of amount financed
T PPD	-3439.73	
AMT F	146560.27	

T PPD	3439.73
C INT	6229.88
P INT	181598.52
TOT FC	191268.13

ESTIMATED DISC	
PER REGULATION Z	
APPENDIX D PART II	
PARA A1, B, C, D	

Total prepaid charge
Construction period interest
P&I period interest
Total finance charge

This section only appears if the disclosure is printed

Sample Single-Payment Construction Mortgage from Reg Z

This is the sample single-payment construction mortgage from Appendix D of Regulation Z.⁸

MTGE/CONST 1/2?	2
CONST MORTGAGE	
PERM/SP 1/2?	2
PRIN?	50000
ORIG FEE %?	0
POINTS %?	2
OTHER PP?	0
CON TERM MM?	5
CON RATE %?	10.5
ODD DAYS?	0

Principal amount
2 points
5-month construction term
10.5% interest rate
no odd days

APR	20.937%
FIN C	2093.75
AMT F	49000.00
TOT P	51093.75

5 MON & 0 DAYS	
5 INT ONLY PMTS	
1 PMT	50000.00

ORIG F	0.00

"Fed" box

Construction period and
Payment schedule

Origination fee

⁸ Federal Reserve Board Truth in Lending Regulation Z, Appendix D, Part I, A,.

POINTS	1000.00
OTHER PC	0.00
ODI	0.00
T PPD	1000.00

PRIN	50000.00
T PPD	-1000.00
AMT F	49000.00

T PPD	1000.00
C INT	1093.75
TOT FC	2093.75

ESTIMATED DISC	
PER REGULATION Z	
APPEND D PART I(A)	

Points
Other prepaid charge
Odd-day interest
Total prepaid charge

Calculation of amount financed

Total prepaid charge
Construction period interest
Total finance charge

This section only appears if the disclosure is printed

Computational Methods for Construction Mortgages

The 671B Compliance Tool uses the Estimated Disclosure methods specified in Appendix D of Federal Reserve Board Regulation Z to disclose construction mortgages.

The construction-to-permanent method is specified in Appendix D, Part II, paragraphs A1, B, C, and D. The single-payment mortgage method is specified in Appendix D, Part I, paragraph A.

In both disclosures, the 671B Compliance Tool assumes that construction-period interest is paid only on the actual amount advanced to the borrower.

The disclosed construction-period interest assumes that one-half the principal amount is outstanding for the entire construction period. If odd-days have been entered, they are considered to occur at the start of the construction period. The odd-day interest charge is based on the amount of the first advance and is treated as a prepaid finance charge. The construction period is extended to include the odd days.

Qualify Routine

This routine can be used to qualify a borrower by calculating the maximum amount that can be borrowed with a given monthly payment and interest rate.

Prompt

User Response

	To start this routine, push the [Qualify] key.
INC/MON?_	Enter the correct monthly income.
	To skip the maximum payment calculation and enter the payment amount directly, enter a 0 here and push [ENTER].
TAX/YR?_	Enter the correct annual property taxes and insurance premiums.
UTIL/YR?_	Enter the correct annual utilities amount.
LOAN/MON?_	Enter the correct total amount of monthly loan payments (other than the mortgage payment).
MDSR xx%?_	If the mortgage debt service percentage shown is correct, push [ENTER], otherwise enter the correct percentage.
TDSR xx%?_	If the total debt service percentage shown is correct, push [ENTER], otherwise enter the correct percentage.

The maximum monthly payment will now be calculated using both the MDSR and TDSR percentages. The payment displayed is the largest payment the borrower can afford without exceeding either of the MDSR or TDSR debt service percentages.

PMT xxxx.xx?_	If the mortgage payment shown is correct, push [ENTER], otherwise enter the desired monthly payment.
RATE %?_	Enter the correct qualifying interest rate.
TERM YY.MM ?_	Enter the desired qualifying term in years, months, or in years and months (e.g., enter a term of 10 years and 6 months as 10.06, etc.) An entry greater than 50 is assumed to be in months.

PRIN xxxxxxxx.xx xxx PT@ xxxx.xx

Principal amount (to nearest \$100).
of payments and amount.

Quick Payment Finder

Prompt

User Response

Push the [Q Pmt] function key to start this routine.

PRIN?_ Enter the principal amount and push [ENTER].

RATE %?_ Enter the interest rate percentage.

TERM YY.MM ?_ Enter the term in years, months, or in years and months (see above).

The payment is computed and displayed.

XXX P@ xxxxx.xx	# and amount of payments.
PRIN xxxxxxxx.xx	Initial principal amount.

For example, find the monthly payment of a \$220,000 loan for 15 years at 7.5%.

PRIN ?	220000.00
RATE %?	7.5
TERM YY.MM?	15

180 P@ 2039.43	Computed payment amount
PRIN 220000.00	Initial principal amount

As another example, assume an existing mortgage has a current balance of 118234.50 and it is being assumed at a rate of 6.875% for the remaining term of 19 years and 2 months.

PRIN 118234.50	Don't forget the "0" in "19.02"	
RATE %?		6.875
TERM YY.MM?		19.02

230 P@ 926.35
PRIN 118234.50

Other Routines

Compute APR Routine

This routine will compute the annual percentage rate of a simple or complex mortgage. The user enters the amount financed, odd days (if any), and the number and amount of the payments in the payment stream. Up to 20 levels of payments can be entered.

The streams of payments are entered in the order in which they are made, i.e., the earliest payments are entered first.

<u>Prompt</u>	<u>User Response</u>
APR/PV 1/2? x_	Push the [APR/PV] function key and enter "1" to run this routine.
AF xxxxxxx.xx?_	If the amount financed displayed is correct, push [ENTER], otherwise enter the correct amount financed.
ODD DAYS xx?_	If the number of odd days shown is correct, push [ENTER], otherwise enter the correct number of odd days.
# PMTS?_	If the number of payments to be made at the first level is correct, push [ENTER], otherwise enter the correct number of payments to be made at the first level.
xxx@ xxxxx.xx?_	If the amount of the payment at the first level is correct, push [ENTER], otherwise enter the correct payment amount. (Payment amounts can be \$0.00 to represent a skipped payment.)
# PMTS?_	If the number of payments to be made at the second level is correct, push [ENTER], otherwise enter the correct number of payments to be made at the second level. For a final balloon payment, enter "1" as the number of payments and enter the balloon amount at the next prompt. To end the stream of payments, enter a "0" as the number of payments.
xx@ xxxxx.xx?_	If the amount of the payment at the second level is correct,

push [ENTER], otherwise enter the correct payment amount.

Continue to enter all the streams of payments and then enter a "0" in response to the "# PMTS?" prompt to terminate the entry of payment streams. The estimated APR will appear in the display as the calculator computes the actual APR.

APR	xx.xxx%
FC:	xxxxxx.xx
AF:	xxxxxx.xx
TP:	xxxxxx.xx

Sample APR Calculations

To compute the APR of the following adjustable-rate, balloon mortgage, we would make the following entries (this is the mortgage on page 8 of this User's Guide):

AF ?	97578.77	Amount financed
ODD DAYS?	15	Odd days in first period
# PMTS?	6	# pmts at first level
6@ 0.00?	896.10	Amount of first level payment
# PMTS?	29	# pmts at second level
29@ 0.00?	970.78	Amount of second level payment
# PMTS?	1	1 final balloon payment
1@ 0.00?	99483.93	Amount of balloon payment
# PMTS?		Push [ENTER] to end stream of payments

APR	11.834%	Computed APR.
FC	35434.38	Finance Charge.
AF	97578.77	Amount Financed.
TP	133013.15	Total of Payments.

Find the APR of a fixed-rate mortgage with private mortgage insurance on the payment stream (the 671B cannot compute the mortgage with private mortgage insurance, but it can calculate the APR.). The amount financed is 96322.00, there are 15 odd days, and the payment stream is as follows: 82 payments at 736.42, 204 payments at 726.84, and 14 payments at 716.42.

AF	96322.00
----	----------

ODD DAYS	15
# PMTS?	82
82 @ ?	736.42
# PMTS?	204
204 @ ?	726.84
# PMTS?	14
14 @ ?	716.42

APR	7.772%
FC	122369.68
AF	96322.00
TP	218691.68

Compute Present Value (Price) Routine

This routine will compute the present value or price of a simple or complex mortgage. The user enters the interest rate at which the streams of payments are to be discounted, the number of days to the next scheduled payment, and the numbers and amounts of the payments in the payment stream. Up to 20 levels of payments can be entered. The streams of payments are entered in the order in which they are made, i.e., the earliest payments are entered first.

Prompt

User Response

APR/PV 1/2? x_

Push the [APR/PV] function key and enter "2" to run this routine.

RATE xx.xxx%?_

If the interest rate at which to discount the payment streams is correct, push [ENTER], otherwise enter the correct interest rate.

DAYS TO 1ST 30?_

If the number of days to the next scheduled payment shown is correct, push [ENTER], otherwise enter the correct number of days.

PMTS?_

If the number of payments to be made at the first level is correct, push [ENTER], otherwise enter the correct number of payments to be made at the first level.

xxx@ xxxxx.xx?_

If the amount of the payment at the first level is correct, push [ENTER], otherwise enter the correct payment amount. (Payment amounts can be \$0.00 to represent a skipped payment.)

PMTS?_

If the number of payments to be made at the second level

is correct, push [ENTER], otherwise enter the correct number of payments to be made at the second level.

For a final balloon payment, enter "1" as the number of payments and enter the balloon amount at the next prompt.

To end the streams of payments, enter a "0" as the number of payments.

xx@ xxxxx.xx?_

If the amount of the payment at the second level is correct, push [ENTER], otherwise enter the correct payment amount.

Continue to enter all the streams of payments and then enter a "0" in response to the "# PMTS?" prompt to terminate the entry of payment streams. The present value, finance charge, total of payments, and total number of payments will be calculated.

PV: xxxxxxxx.xx	Present value (price) of the payment stream
FC: xxxxxxxx.xx	Finance charge
TP: xxxxxxxx.xx	Total amount of all payments
xxx PMTS TO GO	Total number of payments

As an example, we use the mortgage on page 8 of this User's Guide. If we were to sell this mortgage and want to yield 7.75% to the buyer (or if we're the buyer and want to obtain 7.75% on our investment), what would the mortgage be worth?

Even though the original mortgage had 15 odd days, lets assume that we are selling (or buying) the mortgage exactly 1 month prior to the first payment due date. We would make the following entries:

RATE 0.00%?	7.75	Rate we want to yield
DAYS TO 1ST	30?	Days to next payment
# PMTS?	6	First 6 payments are at \$896.10
6@ 0.00?	896.10	
# PMTS?	29	Next 29 payments are at \$970.78
29@ 0.00?	970.78	
# PMTS?	1	Final balloon payment is \$99483.93
1@ 0.00?	99483.93	
# PMTS?		

PV:	108790.49
FC:	24222.66
TP:	133013.15
36 PMTS TO GO	

Value of this mortgage at 7.75%
 Interest to be earned at 7.75%
 Total of payments to be made
 Total number of payments

As another example, suppose we want to purchase a balloon loan with a pick-up payment in the first year. We want to yield 17.5% on this transaction and need to know the price to pay for this loan. There are 9 payments at 800.00, followed by a single payment of 5500.00, followed by 49 additional payments of 800.00 each, followed by a final balloon payment of \$33,000.00. The first payment will be received 22 days after we purchase the loan.

RATE ?_	17.5
DAYS TO 1 ST ?_	22
# PMTS ?_	9
9 @ ?_	800.00
# PMTS ?	1
1 @ ?_	5500.00
# PMTS ?	49
49 @ ?_	800.00
# PMTS ?	1
1 @ ?_	33000.00
# PMTS ?	0

PV:	49610.03
FC:	35289.97
TP:	84900.00
60 PMTS TO GO	

Price to be paid (present value)
 Total charges to be earned
 Total of payments to be received
 # of payments to be received

Payment and Balance History

After a mortgage payment has been computed, you can obtain a list of the series of payments, interest rates, and principal balance at each interest rate change. You must have computed a mortgage payment and the APR before you can obtain this schedule.

In addition to providing a complete payment, interest rate, and balance history, this routine can also be used to produce a 15-year "shopping disclosure" for variable rate mortgages. (The variable rate feature must be enabled -- see Setup Routine.) You should enter the sample \$10,000 mortgage with the annual rate changes appropriate for the particular index. After the APR is disclosed, you can use this routine to produce a complete listing of the payment and ending balance for each year.

To obtain the payment/balance history, push the [Setup] key and enter a 1 in response to the "CODE?_" prompt. If no mortgage has been computed, you will see the message "COMPUTE MTGE 1ST". You need to compute a mortgage before you can obtain a payment/balance history.

PMT/BAL HISTORY		
BAL:	xxxxxxx.xx	Initial principal balance
# 1-----		First payment stream
RATE:	xx.xx%	Interest rate
xx @	xxxxx.xx	Number and payment amount
BAL:	xxxxxxx.xx	Balance at end of stream
# 2-----		Second payment stream
RATE:	xx.xx%	Interest rate
xx @	xxxxx.xx	Number and payment amount
BAL:	xxxxxxx.xx	Balance at end of stream
.		
.		
.		
# x-----		Last payment stream
RATE:	xx.xx%	Interest rate
xx @	xxxxx.xx	Number and payment amount
BAL:	x.xx	Balance at end of stream

For example, if after solving the Sample 30-year ARM Mortgage with Balloon on page 8, we would get the following payment and balance history:

PMT/BAL HISTORY	
BAL:	100000.00
# 1-----	
RATE	10.250%
6 @	896.10
BAL:	99742.97
# 2-----	
RATE	11.250%
29 @	970.78
BAL:	98559.93
# 3-----	
RATE	11.250%
1 @	99483.93
BAL:	0.00

Sample 15-year Adjustable Rate History

Assume that the previous 15-year history of the index we are using is as follows:

1	1983	8.95%
2	1984	8.91%
3	1985	14.29%
4	1986	14.48%
5	1987	10.32%
6	1988	13.18%
7	1989	9.05%
8	1990	7.41%
9	1991	7.82%
10	1992	8.22%
11	1993	8.37%
12	1994	8.40%
13	1995	7.39%
14	1996	5.60%
15	1997	5.11%

First we calculate a 30-year mortgage for \$10,000 using the above interest rates for each of the first 15 years. (The variable-rate feature must be enabled -- see Setup Routine.) The first payment is \$80.10 and the APR 9.361%. After the APR is computed, we can push the [Setup] function key and enter a "1" to get the following payment, interest rate and balance history:

PMT/BAL HISTORY

BAL: 10000.00

1-----

RATE: 8.95%

12 @ 80.10

BAL: 9931.02

2-----

RATE 8.91%

12 @ 79.82

BAL: 9854.97

3-----

RATE 14.29%

12 @ 119.60

BAL: 9826.21

4-----

RATE 14.48%

12 @ 121.05

BAL: 9794.39

5-----

RATE 10.32%

12 @ 90.49

BAL: 9715.64

6-----

RATE 13.18%

12 @ 110.90

BAL: 9662.21

.
. .
. .

Refinancing at a Lower Interest Rate Comparison

This routine computes the number of months it will take to recover the costs of refinancing a mortgage at an interest rate that is lower than the current rate.

The program calculates the break-even point in months. If you keep the mortgage for less than the calculated number of months, you would be better off not refinancing. If you keep the mortgage for more than the calculated number of months, you would be better off refinancing.

The new mortgage payment is calculated based on the remaining term of the existing mortgage.

Prompt

User Response

	Push the [Refin/Esc] function key (the [*] key on some calculators) to start this routine.
REFIN Y/N? HUD ESCROW Y/N?_	Push [YES] to the REFIN Y/N item to run this routine.
BAL ?_	Enter the existing mortgage balance.
PMT ?_	Enter the existing mortgage payment.
RATE %?_	Enter the existing mortgage rate. The minimum interest rate is 0.50%.
NEW RATE %?_	Enter the new interest rate. This must be at least 0.10% lower than the existing interest rate and greater than 0.25%.
ORIG FEE %?_	Enter the origination fee (as a percentage) for the new mortgage, e.g., enter 1 if there is a 1% origination fee.
POINTS %?_	Enter the number of points (as a percentage) for the new mortgage, e.g., enter 2 for 2 points.
OTHER ?_	Enter any other closing costs, e.g., appraisal, application fees, title search, etc.
INV RATE x.xx%?_	If the investment opportunity rate shown is correct, push [ENTER], otherwise enter the investment opportunity interest rate, or 0 to compute the break-even point without an

investment opportunity interest rate.⁹

REMAIN AM	xxx
T COSTS	xxxxx.xx
NEW PMT	xxxxx.xx
PMT DIFF	xxxx.xx
BE =	xxx MONTHS

Remaining amortization
Total closing costs
New payment amount
Difference in payment amounts
months to break-even point

Refinancing Comparison Example

Assume the existing mortgage has a balance due of \$43870.00, the existing payment is \$448.25 and the existing rate 9.75%. The new mortgage rate is 7% with an origination fee of 1% plus 2 points and other closing costs of \$500. The total closing costs are \$1816.10. The investment opportunity rate is 4.00%.

BAL?	43870.00
PMT?	448.25
RATE %?	9.75
NEW RATE %?	7.00
ORIG FEE %?	1
POINTS %?	2
OTHER ?	500.00
INV RATE %?	4.00%

The computed results are:

REMAIN AM	196
T COSTS	1816.10
NEW PMT	376.24
PMT DIFF	72.01
BE =	27 MONTHS

Remaining amortization period
Total closing costs
New payment amount
Savings in monthly payments
Break-even point in months

⁹ Use of an investment opportunity rate allows you to take into consideration the fact that the closing costs are paid for the new mortgage in advance and the savings realized from reduced monthly payments is spread over a number of months or years after the time the new mortgage is closed. The borrower is losing investment income on the amount paid for closing costs (the amount would be available for investment if the mortgage was not refinanced). You should enter an investment opportunity rate that the borrower is likely to earn on a deposit. (A good estimate is a rate 3% less than the new mortgage rate--this is the rate suggested by the routine.) To assume that there is no investment opportunity, enter a rate of 0%.

Thus, if we intend to keep the mortgage for more than 27 months, we will be better off refinancing. If we keep the mortgage for less than 27 months, we should not refinance.

If we keep the mortgage exactly 27 months, it doesn't matter (from a financial point of view) whether we refinance or not.

Refinance Error Messages

The following error messages can appear in this routine:

EXIST WON'T AM	The existing mortgage won't amortize at all with the specified payment and interest rate.
EXIST AM > 480	The existing mortgage will take more than 480 months (40 years) to amortize with the specified payment and interest rate.
MIN RATE IS x.xx%	The entered interest rate is less than the minimum allowed.
MAX RATE IS x.xx%	The entered new interest rate is greater than the maximum allowed. The new interest rate must be at least 0.10% less than the existing interest rate.
BE > 480 MONTHS	The calculated break-even point is more than 480 months (40 years).

HUD Escrow Calculations

This routine calculates the initial and monthly escrow payments that the borrower can be required to make into a mortgage escrow account for insurance and taxes. The computations are based on Appendix G of Regulation X.

The routine computes the required initial escrow deposit, the monthly payment to escrow, and the cushion amount. A schedule of escrow account balances can be printed or displayed. The lender can select a cushion (minimum balance) from 0 to 2 months (0 to 2/12ths of the total of the annual disbursements).

The initial projections are for a new mortgage and are used to calculate both the initial deposit into the escrow account and the monthly payment. The renewal projections are used to compute the annual adjustment to the escrow payment.

Prompt

User Response

REFIN Y/N?_ HUD ESCROW Y/N?_	Push the [Refin/Esc] function key and push [YES] to the HUD ESCROW menu item to run this routine.
---------------------------------	---

1ST PMT MON 1?_

Enter the month number (1 through 12) of the first mortgage payment. Enter 1 for January, 2 for February, and so forth.

For example, if the first monthly payment is due in June, enter a 6 at this prompt. For existing mortgages, enter the month number of the first payment in the 12-month period.

PEOY BAL?_

For a renewal projection, enter the previous end-of-year escrow account balance. For an initial projection (new mortgage), enter a 0.

DISB xxx?_

("xxx" represents the month name, e.g., "JAN", "FEB", etc.) If there is a disbursement to be made during the month, enter the amount. If no disbursement is to be made, press [ENTER] to proceed to the next month.

This prompt will repeat 12 times (once for each month in the year). To jump out of the loop before the 12th month, enter an amount of -1.

CUSHION 0-2?_

Enter the cushion desired as a number of months (0, 1 or 2).

ESC PMT	xxxxx.xx
INIT AMT	xxxx.xx
T DISB	xxxxx.xx
CUSHION	xxxx.xx

Monthly payment into escrow
Initial amount in escrow account
Total disbursements over the year
Amount of the cushion

PRINT Y/N?_

Press [YES] to print the schedule, or [NO] to display it.

MON	DISB ¹⁰	BALANCE
---	-----	-----
JAN	xxxx.xx	xxxxx.xx
FEB	xxxx.xx	xxxxx.xx
MAR	xxxx.xx	xxxxx.xx
.		.
.		.
DEC	xxxx.xx	xxxxx.xx

Disb & bal at end of 1st month
Disb & bal at end of 2nd month
Disb & bal at end of 3rd month
.
.
Disb & bal at end of 12th month

¹⁰ The HUD Escrow examples shown in this section were produced using the optional printer kit. If the calculator is used without the printer kit, the "DISB" column does not appear in the display.

Initial escrow projections (new mortgage)

1ST PMT MON 1? 9
 PEOY BAL ?
 DISB SEP?_
 DISB OCT? 800
 DISB NOV? 600
 DISB DEC?
 DISB JAN?
 DISB FEB?
 DISB MAR?
 DISB APR?
 DISB MAY?
 DISB JUN?
 DISB JUL? 1000
 DISB AUG?
 CUSHION 0-2 2?

Year starts in September.
 Enter 0 for new mortgage.
 No disbursement in September
 \$800 disbursement in October
 \$600 disbursement in November
 No disbursement in December
 No disbursement in January
 No disbursement in February
 No disbursement in March
 No disbursement in April
 No disbursement in May
 No disbursement in June
 \$1000 disbursement in July
 No disbursement in August
 Cushion is two months

ESCROW PAYMENT	200.00	
INITIAL AMOUNT	1200.00	
T DISB	2400.00	
CUSHION (2)	400.00	
MON	DISB	BALANCE
---	-----	-----
SEP	0.00	1400.00
OCT	800.00	800.00
NOV	600.00	400.00
DEC	0.00	600.00
JAN	0.00	800.00
FEB	0.00	1000.00
MAR	0.00	1200.00
APR	0.00	1400.00
MAY	0.00	1600.00
JUN	0.00	1800.00
JUL	1000.00	1000.00
AUG	0.00	1200.00

TOTAL	2400.00	

Escrow payment.
 Initial amount required to start.
 Total of disbursements.
 Cushion amount.

Notes:

In this example, the borrower is required to contribute \$1200 to the escrow account at closing, and to make monthly escrow payments of \$200.

The lowest escrow account balance occurs in November (\$400) and this represents the 2-month cushion selected.

If all disbursements are made as planned, the escrow account will have an ending balance of \$1200.

Renewal escrow projections with surplus requiring a refund

1ST PMT MON 1? 9
 PEOY BAL ? 1320
 DISB SEP?_
 DISB OCT? 680
 DISB NOV? 600
 DISB DEC?
 DISB JAN?
 DISB FEB?
 DISB MAR?
 DISB APR?
 DISB MAY?
 DISB JUN?
 DISB JUL? 1000
 DISB AUG?
 CUSHION 0-2 2?

Year starts in September.
 Previous year-end balance.
 No disbursement in September
 \$680 disbursement in October
 \$600 disbursement in November
 No disbursement in December
 No disbursement in January
 No disbursement in February
 No disbursement in March
 No disbursement in April
 No disbursement in May
 No disbursement in June
 \$1000 disbursement in July
 No disbursement in August
 Enter a 2 for 2-month cushion.

ESCROW PAYMENT	190.00	
PREV EOY BAL	1320.00	
SURPLUS	230.00	
REFUND	230.00	
BOY AMOUNT	1090.00	
T DISB	2280.00	
CUSHION (2)	380.00	
MON	DISB	BALANCE
---	-----	-----
SEP	0.00	1280.00
OCT	680.00	790.00
NOV	600.00	380.00
DEC	0.00	570.00
JAN	0.00	760.00
FEB	0.00	950.00
MAR	0.00	1140.00
APR	0.00	1330.00
MAY	0.00	1520.00
JUN	0.00	1710.00
JUL	1000.00	900.00
AUG	0.00	1090.00

TOTAL	2280.00	

Escrow payment.
 Balance at end of previous year.
 Surplus amount.
 Refund required.
 Initial amount for current year.

 Cushion amount.

Notes:
 Because the refund is \$50 or more, a refund is required. The previous end-of-year balance is \$1,320 and the required starting amount for the current year is only \$1,090. The difference must be refunded.

The monthly payment is reduced to \$190 and the target starting balance and ending balance to \$1,090. The lowest escrow balance of \$380 occurs in November.

Renewal escrow projections with surplus

1ST PMT MON 1? 9
PEOY BAL ? 1130
DISB SEP?_
DISB OCT? 680
DISB NOV? 600
DISB DEC?
DISB JAN?
DISB FEB?
DISB MAR?
DISB APR?
DISB MAY?
DISB JUN?
DISB JUL? 1000
DISB AUG?
CUSHION 0-2 2?

Year starts in September.
 Previous year-end balance.
 No disbursement in September.
 \$680 disbursement in October
 \$600 disbursement in November
 No disbursement in December
 No disbursement in January
 No disbursement in February
 No disbursement in March
 No disbursement in April
 No disbursement in May
 No disbursement in June
 \$1000 disbursement in July
 No disbursement in August
 Enter a 2 for 2-month cushion.

ESCROW PAYMENT	186.67	
PREV EOY BAL	1130.00	
SURPLUS	40.00	
BOY AMOUNT	1130.00	
T DISB	2280.00	
CUSHION (2)	380.00	
MON	DISB	BALANCE
---	-----	-----
SEP	0.00	1316.67
OCT	680.00	823.34
NOV	600.00	410.01
DEC	0.00	596.68
JAN	0.00	783.35
FEB	0.00	970.02
MAR	0.00	1156.69
APR	0.00	1343.36
MAY	0.00	1530.03
JUN	0.00	1716.70
JUL	1000.00	903.37
AUG	0.00	1090.04
-----		-----
TOTAL	2280.00	

Escrow payment.
 Previous year ending balance.
 Surplus.
 Initial amount for current year.
 Total disbursed.
 Cushion amount.

Notes:
 Because the surplus is less than \$50, a refund is not required.

The previous year-end balance is \$1,130 and the required current-year starting amount is only \$1,090 but the actual starting balance is \$1,130.

The difference of \$40 is spread over the next 12 monthly escrow payments reducing them from \$190 to \$186.67.

Renewal escrow projections with shortage

```

1ST PMT MON 1? 9
PEOY BAL ? 970
DISB SEP?
DISB OCT? 680
DISB NOV? 600
DISB DEC?
DISB JAN?
DISB FEB?
DISB MAR?
DISB APR?
DISB MAY?
DISB JUN?
DISB JUL? 1000
DISB AUG?
CUSHION 0-2 2?
    
```

Year starts in September.
 Previous year-end balance.
 No disbursement in September.
 \$680 disbursement in October
 \$600 disbursement in November
 No disbursement in December
 No disbursement in January
 No disbursement in February
 No disbursement in March
 No disbursement in April
 No disbursement in May
 No disbursement in June
 \$1000 disbursement in July
 No disbursement in August
 Enter a 2 for 2-month cushion.

ESC PAYMENT		200.00
PREV EOY BAL		970.00
SHORTAGE		120.00
BOY AMOUNT		970.00
T DISB		2280.00
CUSHION (2)		380.00
MON	DISB	BALANCE
---	-----	-----
SEP	0.00	1170.00
OCT	680.00	690.00
NOV	600.00	290.00
DEC	0.00	490.00
JAN	0.00	690.00
FEB	0.00	890.00
MAR	0.00	1090.00
APR	0.00	1290.00
MAY	0.00	1490.00
JUN	0.00	1690.00
JUL	1000.00	890.00
AUG	0.00	1090.00

TOTAL	2280.00	

Escrow payment.
 Previous year ending balance.
 Shortage.
 Starting amount for current year.
 Total disbursed.
 Cushion amount.

Notes:

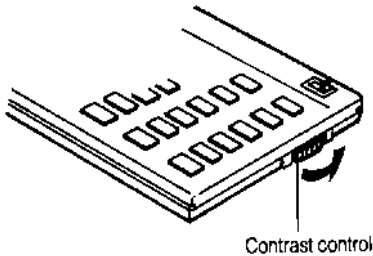
The actual starting balance is \$970 but the targeted starting amount is \$1090.

The shortage of \$120 is spread over the next 12 payments, increasing the escrow payment by \$10.00. This increased payment brings the ending balance to the target amount of \$1090.00 at the end of the year.

The lowest balance occurs in November (\$290) and is actually less than the 2-month cushion. This is because the borrower is being given 12 payments to make up the shortage.

Battery Replacement & Maintenance

Adjusting the Display Contrast



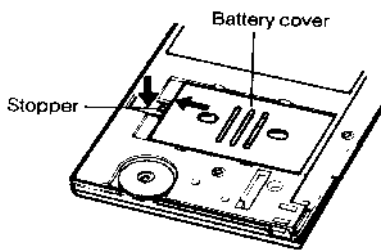
The calculator is equipped with a control to adjust the contrast of the LCD (liquid crystal display). While looking at the display from a position about 70 degrees above the keyboard, first increase the contrast until black squares are clearly visible behind the characters and then decrease the contrast slowly until the squares just disappear.

If the display contrast becomes too dim, the batteries should be replaced.

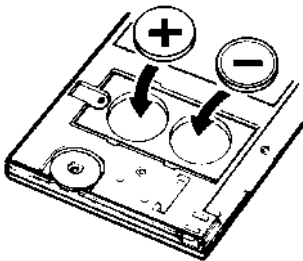
Battery Replacement

To replace the batteries, you should first have replacement batteries at hand. Two lithium type CR2032 batteries and a small screwdriver are required.

- 1) Make sure the calculator is turned off. Place the calculator face down on a table with the contrast control in the upper left-hand corner (the writing on the back of the calculator will be right-side up).
- 2) Remove the Software Cartridge from the calculator.
- 3) Using a small screwdriver, remove the two screws holding the back. While lifting the edge of the calculator's back cover closest to you, slide it up to remove it.



- 4) Slide the silver-colored battery compartment cover upwards to open the compartment; remove the cover. The batteries are now disconnected; remove and discard them.

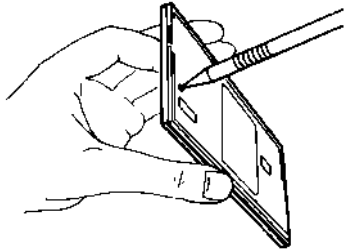


- 5) Install the new batteries, making sure the polarity (+ and -) is correct, and replace the battery compartment cover. (Make sure to replace the battery compartment cover--the batteries are not connected unless the battery compartment cover is in place.) Replace the back of the calculator by first hooking the 3 tabs on the top and then lowering the edge closest to you so you can replace the 2 screws.

- 6) Replace the Software Cartridge in the calculator. If it has been out of the calculator for more than about 5 minutes, you will have to initialize it. See below.

Initializing the Software Cartridge

After replacing the batteries or if you remove the Software Cartridge from the calculator, you may need to initialize the Software Cartridge with the following steps. Software Cartridges have a label on the back side (the side that faces the calculator) which has instructions similar to the following.)



1) Install the Software Cartridge in the calculator. With a pencil or straightened paper clip and the calculator ON, push the "ALL RESET" button on the left side of the back of the calculator. You should see 4 stars in the display (2 on the left, 2 on the right). (On some calculators, there may be a white label over the "ALL RESET" button. If so, gently lift up the lower left corner to reveal it)

2) Push [ENTER]. You should now see a single star at the right edge of the display.

3) Turn the calculator off, wait a few seconds, and then turn it back on. You should see "0." in the display. The calculator is now ready to be configured.

4) Push the [Code] key. You should see "CONFIGURING . . ." ¹¹ appear for a moment and then, after several seconds, the "CODE?" prompt will appear. Refer to the Setup Routine on page 36 to modify the default setup parameters.

Year 2000 Compliant

The routines in this calculator are not date aware. They will run properly in the Year 2000 and thereafter.

¹¹ Earlier versions of the program will say "INITIALIZING...".

Setup Routine

Code = 671	Push the [Setup] function key and enter this code to review and modify the setup parameters.
CAL BASE xxx?_	Enter the calendar base for the calculation of odd-day interest. Allowed entries are 360 and 365.
ARMS Y/N?_	Push [Yes] to compute adjustable rate mortgages.
BALLOON Y/N?_	Push [Yes] to compute balloon mortgages.
INT ONLY Y/N?_	Push [Yes] to compute interest-only mortgages.
365/360?_	Enter option "0", "1", or "2". Option "0" computes mortgages in the conventional manner. Options "1" and "2" increase the interest charged each month. ¹²

¹² For many commercial mortgages with balloon payments, it is common for data processing systems to accrue the interest on a 365/360-day (also called "Actual over 360") basis. There are two options available in this program:

Option 1 computes the monthly principal-&-interest payments, odd-day interest amount, and amortizes the loan using the "365/360" method. The message "365/360" will appear at the bottom of the disclosure statement. Option 1 also affects the Quick Payment Finder routine.

Option 2, which only applies to balloon loans, computes the odd-day interest and monthly principal-&-interest payments in the normal manner, but amortizes the loan using a 365/360 accrual basis. This method is commonly used for commercial loans with balloon payments. If there is no balloon payment, Option 2 has no effect on the computations and is the same as selecting Option 0. If there is a balloon payment and this option is selected, the message "365/360 ACCRUAL" will appear at the bottom of the disclosure statement.

With either Option 1 or 2, if the mortgage has multiple interest rates, the intermediate balances as well as the balloon payment are computed by amortizing on a 365/360-day basis.