

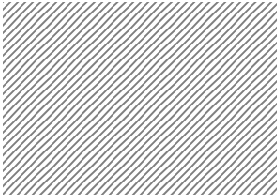
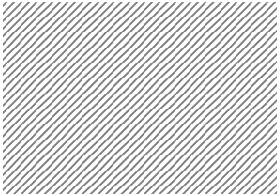
Contents of NP34 Hex files

The firmware file has the extension **.hex**.

This is an **Intel HEX** file.

This file represents the contents of the **NP-34**'s memory, divided into two main parts:

- The NP-34's "Firmware"
- The **NP-34**'s "RAM," divided into several parts, each corresponding to the registers and programs of each calculator.

		Page
Firmware		
?	F000 ... F0FF	
RAM 37E	F100 ... F1FF	
RAM 22	F200 ... F2FF	4
RAM 25	F300 ... F3FF	5
RAM 29C	F400 ... F5FF	8
RAM 27	F600 ... F6FF	11
RAM 31E	F700 ... F7FF	
RAM 32E	F800 ... F8FF	
RAM 33C	F900 ... F9FF	12
RAM 34C	FA00 ... FBFF	15
RAM 38C	FC00 ... FCFF	21

NP34 Intel Hex File Contents

```

:02100003F3F3F3F3F3F3F005448414E4B3F594FB9 | F
:0211000553F003F4D454D3F534156454400303FEC | I
:021200031324142433344454634474849354A4BAE | R
:02130004C364D4E4F3750515253385455563957EF | M
      .../...
:04E688007ACF010242 | W
:08F04000464143544F525900B0 | A
:0BF080005448414E4B3F594F553F0094 | R
      .../...
:10F0000FFFFFFFFFFFFFFFFFFFFFFFFFFFF10 | E
      .../...
:10F080005448414E4B3F594F553F00FFFFFFFF94 | 21 ?
      .../...
:10F0F000FFFFFFFFFFFFFFFFFFFFFFFFFFFF20 |
:10F10000FFFFFFFFFFFFFFFFFFFFFFFFFFFF0F |
      .../...
:10F1F000FFFFFFFFFFFFFFFFFFFFFFFFFFFF1F | 37E
:10F20000000000000000000000000000FE |
      .../...
:10F2F000FFFFFFFFFFFFFFFFFFFFFFFFFFFF1E | 22
:10F30000000000000000000000000000FD |
      .../...
:10F3F000FFFFFFFFFFFFFFFFFFFFFFFFFFFF1D | 25
:10F40000000000000000000000000000FC |
      .../...
:10F4F000000000000000000000000000000C | 29C
:10F5000000000000000000000000000000FB |
      .../...
:10F5F000FFFFFFFFFFFFFFFFFFFFFFFFFFFF1B | ??
:10F6000000000000000000000000000000FA |
      .../...
:10F6F000FFFFFFFFFFFFFFFFFFFFFFFFFFFF1A | 27
:10F7000000000000000000000000000000F9 |
      .../...
:10F7F000FFFFFFFFFFFFFFFFFFFFFFFFFFFF19 | 31E
:10F8000000000000000000000000000000F8 |
      .../...
:10F8F000FFFFFFFFFFFFFFFFFFFFFFFFFFFF18 | 32E

```


- Number of bytes in the line
- Address
- Record type
- Data
- Checksum

The line **F040** (**factory**) is the signature of an "original" firmware. When the **.hex** file is completed with additional RAM, this line must be deleted to prevent these RAMs from being reset.

File example

This example shows a file that has four data records followed by an end-of-file record:

```
:10010000214601360121470136007EFE09D2190140
:100110002146017E17C20001FF5F16002148011928
:10012000194E79234623965778239EDA3F01B2CAA7
:100130003F0156702B5E712B7228732146013421C7
:00000001FF
```

 Start code  Byte count  Address  Record type  Data  Checksum

```
VBA Checksum
Function IntelHexChecksum(HexLine As String)
  Dim checksum As Integer
  checksum = 0
  For a = 1 To Len(HexLine) Step 2
    checksum = checksum + CDec("&H" & Mid(HexLine, a, 2))
  Next
  checksum = ((checksum Xor 255) + 1) And 255
  IntelHexChecksum = Right(("00" & Hex(checksum)), 2)
End Function
```

Checksum calculation

A record's checksum byte is the two's complement of the least significant byte (LSB) of the sum of all decoded byte values in the record preceding the checksum. It is computed by summing the decoded byte values and extracting the LSB of the sum (i.e., the data checksum), and then calculating the two's complement of the LSB (e.g., by inverting its bits and adding one).

For example, in the case of the record :0300300002337A1E, the sum of the decoded byte values is 03 + 00 + 30 + 00 + 02 + 33 + 7A = E2, which has LSB value E2. The two's complement of E2 is 1E, which is the checksum byte appearing at the end of the record.

The validity of a record can be checked by computing its checksum and verifying that the computed checksum equals the checksum appearing in the record; an error is indicated if the checksums differ. Since the record's checksum byte is the two's complement – and therefore the additive inverse – of the data checksum, this process can be reduced to summing all decoded byte values, including the record's checksum, and verifying that the LSB of the sum is zero. When applied to the preceding example, this method produces the following result: 03 + 00 + 30 + 00 + 02 + 33 + 7A + 1E = 100, which has LSB value 00.

NP-22

10 REGS

```
:10F200 00 0950896745230109101111111010920 C5 R0 R1 R2
:10F210 00 2222222020930333333330309404444 8B R2 R3 R4
:10F220 00 444404095055555550509606666666 9F R4 R5 R6
:10F230 00 060970777777707098088888880809 B2 R6 R7 R8 R9
:10F240 00 9099999990909102331122301094056 7F R9 n i
:10F250 00 64455604097089977889070280156302 0E i PMT PV
:10F260 00 7301999099999990909708997788907 F3 PV FV ??
:10F270 00 FFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFF 9E
:10F280 00 FFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFF 8E
:10F290 00 FFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFF 7E
:10F2A0 00 FFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFF 6E
:10F2B0 00 FFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFF 5E
:10F2C0 00 FFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFF 4E
:10F2D0 00 FFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFF 3E
:10F2E0 00 FFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFF 2E
:10F2F0 00 FFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFF 1E
```

NP-25

49 STEPS - 8 REGS

```
:10 F300 00 09508967452301091011111111010920 C4 R0 R1 R2
:10 F310 00 222222202093033333330309404444 8A R2 R3 R4
:10 F320 00 444404095055555550509606666666 9E R4 R5 R6
:10 F330 00 060970777777707000000000000007 A4 R6 R7 PRGM
:10 F340 00 06050403020114131211100908212019 BB PRGM
:10 F350 00 18171615282726252423223534333231 61 PRGM
:10 F360 00 30294241403938373649484746454443 18 PRGM
:10 F370 00 FFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFF 9D
:10 F380 00 FFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFF 8D
:10 F390 00 FFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFF 7D
:10 F3A0 00 FFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFF 6D
:10 F3B0 00 FFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFF 5D
:10 F3C0 00 FFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFF 4D
:10 F3D0 00 FFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFF 3D
:10 F3E0 00 FFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFF 2D
:10 F3F0 00 FFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFF 1D
```

NP-34 RAM - Program coding for 25

13 00	GTO 00	00
13 01	GTO 01	01
13 02	GTO 02	02
13 03	GTO 03	03
13 04	GTO 04	04
13 05	GTO 05	05
13 06	GTO 06	06
13 07	GTO 07	07
13 08	GTO 08	08
13 09	GTO 09	09
23 00	STO 0	0A
24 00	RCL 0	0B
23 41 00	STO- 0	0C
23 51 00	STO+ 0	0D
23 61 00	STO* 0	0E
23 71 00	STO/ 0	0F
13 10	GTO 10	10
13 11	GTO 11	11
13 12	GTO 12	12
13 13	GTO 13	13
13 14	GTO 14	14
13 15	GTO 15	15
13 16	GTO 16	16
13 17	GTO 17	17
13 18	GTO 18	18
13 19	GTO 19	19
23 01	STO 1	1A
24 01	RCL 1	1B
23 41 01	STO- 1	1C
23 51 01	STO+ 1	1D
23 61 01	STO* 1	1E
23 71 01	STO/ 1	1F

13 20	GTO 20	20
13 21	GTO 21	21
13 22	GTO 22	22
13 23	GTO 23	23
13 24	GTO 24	24
13 25	GTO 25	25
13 26	GTO 26	26
13 27	GTO 27	27
13 28	GTO 28	28
13 29	GTO 29	29
23 02	STO 2	2A
24 02	RCL 2	2B
23 41 02	STO- 2	2C
23 51 02	STO+ 2	2D
23 61 02	STO* 2	2E
23 71 02	STO/ 2	2F
13 30	GTO 30	30
13 31	GTO 31	31
13 32	GTO 32	32
13 33	GTO 33	33
13 34	GTO 34	34
13 35	GTO 35	35
13 36	GTO 36	36
13 37	GTO 37	37
13 38	GTO 38	38
13 39	GTO 39	39
23 03	STO 3	3A
24 03	RCL 3	3B
23 41 03	STO- 3	3C
23 51 03	STO+ 3	3D
23 61 03	STO* 3	3E
23 71 03	STO/ 3	3F

13 40	GTO 40	40
13 41	GTO 41	41
13 42	GTO 42	42
13 43	GTO 43	43
13 44	GTO 44	44
13 45	GTO 45	45
13 46	GTO 46	46
13 47	GTO 47	47
13 48	GTO 48	48
13 49	GTO 49	49
23 04	STO 4	4A
24 04	RCL 4	4B
23 41 04	STO- 4	4C
23 51 04	STO+ 4	4D
23 61 04	STO* 4	4E
23 71 04	STO/ 4	4F
14 11 00	FIX 0	50
14 11 01	FIX 1	51
14 11 02	FIX 2	52
14 11 03	FIX 3	53
14 11 04	FIX 4	54
14 11 05	FIX 5	55
14 11 06	FIX 6	56
14 11 07	FIX 7	57
14 11 08	FIX 8	58
14 11 09	FIX 9	59
23 05	STO 5	5A
24 05	RCL 5	5B
23 41 05	STO- 5	5C
23 51 05	STO+ 5	5D
23 61 05	STO* 5	5E
23 71 05	STO/ 5	5F

14 12 00	SCI 0	60
14 12 01	SCI 1	61
14 12 02	SCI 2	62
14 12 03	SCI 3	63
14 12 04	SCI 4	64
14 12 05	SCI 5	65
14 12 06	SCI 6	66
14 12 07	SCI 7	67
14 12 08	SCI 8	68
14 12 09	SCI 9	69
23 06	STO 6	6A
24 06	RCL 6	6B
23 41 06	STO- 6	6C
23 51 06	STO+ 6	6D
23 61 06	STO* 6	6E
23 71 06	STO/ 6	6F
14 13 00	ENG 0	70
14 13 01	ENG 1	71
14 13 02	ENG 2	72
14 13 03	ENG 3	73
14 13 04	ENG 4	74
14 13 05	ENG 5	75
14 13 06	ENG 6	76
14 13 07	ENG 7	77
14 13 08	ENG 8	78
14 13 09	ENG 9	79
23 07	STO 7	7A
24 07	RCL 7	7B
23 41 07	STO- 7	7C
23 51 07	STO+ 7	7D
23 61 07	STO* 7	7E
23 71 07	STO/ 7	7F

		80
		81
		82
		83
		84
		85
		86
		87
		88
		89
		8A
		8B
		8C
		8D
		8E
		8F
		90
		91
		92
		93
		94
		95
		96
		97
		98
		99
		9A
		9B
		9C
		9D
		9E
		9F

14 00	>H.MS	A0
14 01	INT	A1
14 02	SQRT	A2
14 03	Y^X	A3
14 04	SIN	A4
14 05	COS	A5
14 06	TAN	A6
14 07	LN	A7
14 08	LOG	A8
14 09	>R	A9
		AA
		AB
		AC
		AD
		AE
		AF
15 00	>H	B0
15 01	FRAC	B1
15 02	X2	B2
15 03	ABS	B3
15 04	SIN-1	B4
15 05	COS-1	B5
15 06	TAN-1	B6
15 07	e^x	B7
15 08	10^x	B8
15 09	>P	B9
		BA
		BB
		BC
		BD
		BE
		BF

00	0	C0
01	1	C1
02	2	C2
03	3	C3
04	4	C4
05	5	C5
06	6	C6
07	7	C7
08	8	C8
09	9	C9
		CA
		CB
		CC
		CD
		CE
		CF
14 41	X<Y	D0
14 51	X>=Y	D1
14 61	X#Y	D2
14 71	X=Y	D3
14 73	LASTx	D4
14 74	PAUSE	D5
		D6
		D7
14 33	CL REGS	D8
14 34	CL STK	D9
14 21	~x	DA
14 22	s	DB
14 25	Sigma-	DC
		DD
		DE
		DF

15 41	X<0	E0
15 51	X>=0	E1
15 61	X#0	E2
15 71	X=0	E3
15 73	PI	E4
15 74	NOP	E5
		E6
15 32	DEG	E7
15 33	RAD	E8
15 34	GRD	E9
15 21	%	EA
15 22	1/X	EB
15 25	??	EC
		ED
		EE
		EF
41	-	F0
51	+	F1
61	*	F2
71	/	F3
73	.	F4
74	R/S	F5
31	ENTER	F6
32	CHS	F7
33	EEX	F8
34	CLX	F9
21	X<>y	FA
22	Rv	FB
25	Sigma+	FC
		FD
		FE
		FF

NP-29

30 REGS - 98 Steps

```
:10 F400 00 0100000000900209101111111010920 E2 R0 R1 R2 |
:10 F410 00 2222222020930333333309404444 89 R2 R3 R4 |
:10 F420 00 4444040950555555509606666666 9D R4 R5 R6 |
:10 F430 00 060970777777707098088888880809 B0 R6 R7 R8 R9 > DIRECT addressing
:10 F440 00 9099999990908502143658799091011 54 R9 R.0 R.1 |
:10 F450 00 11111910920222222920930333333 D3 R.1 R.2 R.3 |
:10 F460 00 33930940444444449408008997788907 B9 R.3 R.4 R.5 |
:10 F470 00 08006061616101080070717171010800 2C R16 R17 R18 |
:10 F480 00 808181810108009091910108000002 22 R18 R19 R20 |
:10 F490 00 0202020800101212120208002022222 88 R20 R21 R22 > INDIRECT addressing
:10 F4A0 00 02080030323232020800404242420208 72 R22 R23 R24 R25 | Index => R0
:10 F4B0 00 00505252520208006062626202080070 FC R25 R26 R27 |
:10 F4C0 00 72727202080080828282020930211332 35 R27 R28 R29 |
:10 F4D0 00 210300000000000000100000006001 A6 R29
:10 F4E0 00 92939495969798858687888990917879 2C |
:10 F4F0 00 80818283847172737475767764656667 1C |
:10 F500 00 68697057585960616263505152535455 0B \
:10 F510 00 56434445464748493637383940414229 77 > Program 98 steps
:10 F520 00 30313233343522232425262728151617 0F /
:10 F530 00 18192021080910111213140102030405 71 |
:10 F540 00 0607F0F0FFFFFFFFF0F000000000000 85 |
:10 F550 00 FFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFF BB
```

NP-34 RAM - Program coding for 29C

74	R/S	00
31	ENTER	01
32	CHS	02
33	EEX	03
34	CLx	04
14 33	CL REG	05
14 34	CLR Sigma	06
12 22	GSB I	07
13 22	GTO I	08
24 22	RCL I	09
23 22	STO I	0A
23 41 22	STO- I	0B
23 51 22	STO+ I	0C
23 61 22	STO* I	0D
23 71 22	STO/ I	0E
24 25	RCL Sigma	0F
00	0	10
01	1	11
02	2	12
03	3	13
04	4	14
05	5	15
06	6	16
07	7	17
08	8	18
09	9	19
73	.	1A
41	-	1B
51	+	1C
61	*	1D
71	/	1E
15 E 6	??	1F

14 72	>H.MS	20
14 62	INT	21
14 63	SQRT	22
14 64	Y^X	23
14 52	SIN	24
14 53	COS	25
14 54	TAN	26
14 42	LN	27
14 43	LOG	28
14 44	>R	29
14 73	LASTx	2A
14 41	X<=Y	2B
14 51	X>Y	2C
14 61	X#Y	2D
14 71	X=Y	2E
15 13 6	LBL 6	2F
15 72	>H	30
15 62	FRAC	31
15 63	X2	32
15 64	ABS	33
15 52	SIN-1	34
15 53	COS-1	35
15 54	TAN-1	36
15 42	e^x	37
15 43	10^x	38
15 44	>P	39
15 73	PI	3A
15 41	X<=0	3B
15 51	X>0	3C
15 61	X#0	3D
15 71	X=0	3E
15 14 6	??	3F

14 11 0	FIX 0	40
14 11 1	FIX 1	41
14 11 2	FIX 2	42
14 11 3	FIX 3	43
14 11 4	FIX 4	44
14 11 5	FIX 5	45
14 11 6	FIX 6	46
14 11 7	FIX 7	47
14 11 8	FIX 8	48
14 11 9	FIX 9	49
21	X<>Y	4A
22	R down	4B
15 34	DEG	4C
15 33	RAD	4D
25	Sigma+	4E
15 34	DEG	4F
14 12 00	SCI 0	50
14 12 01	SCI 1	51
14 12 02	SCI 2	52
14 12 03	SCI 3	53
14 12 04	SCI 4	54
14 12 05	SCI 5	55
14 12 06	SCI 6	56
14 12 07	SCI 7	57
14 12 08	SCI 8	58
14 12 09	SCI 9	59
14 21	~x	5A
14 22	s	5B
14 74	PAUSE	5C
14 24	??	5D
14 25	Sigma-	5E
15 33	RAD	5F

14 13 00	ENG 0	60
14 13 01	ENG 1	61
14 13 02	ENG 2	62
14 13 03	ENG 3	63
14 13 04	ENG 4	64
14 13 05	ENG 5	65
14 13 06	ENG 6	66
14 13 07	ENG 7	67
14 13 08	ENG 8	68
14 13 09	ENG 9	69
15 21	%	6A
15 74	1/x	6B
15 23	DSZ	6C
15 24	ISZ	6D
15 12	RTN	6E
15 32	GRD	6F
12 00	GSB 0	70
12 01	GSB 1	71
12 02	GSB 2	72
12 03	GSB 3	73
12 04	GSB 4	74
12 05	GSB 5	75
12 06	GSB 6	76
12 07	GSB 7	77
12 08	GSB 8	78
12 09	GSB 9	79
12 0	GSB .0	7A
12 1	GSB .1	7B
12 2	GSB .2	7C
12 3	GSB .3	7D
12 4	GSB .4	7E
12 5	GSB .5	7F

13 00	GTO 0	80
13 01	GTO 1	81
13 02	GTO 2	82
13 03	GTO 3	83
13 04	GTO 4	84
13 05	GTO 5	85
13 06	GTO 6	86
13 07	GTO 7	87
13 08	GTO 8	88
13 09	GTO 9	89
13 0	GTO .0	8A
13 1	GTO .1	8B
13 2	GTO .2	8C
13 3	GTO .3	8D
13 4	GTO .4	8E
13 5	GTO .5	8F
24 00	RCL 0	90
24 01	RCL 1	91
24 02	RCL 2	92
24 03	RCL 3	93
24 04	RCL 4	94
24 05	RCL 5	95
24 06	RCL 6	96
24 07	RCL 7	97
24 08	RCL 8	98
24 09	RCL 9	99
24 0	RCL .0	9A
24 1	RCL .1	9B
24 2	RCL .2	9C
24 3	RCL .3	9D
24 4	RCL .4	9E
24 5	RCL .5	9F

23 00	STO 0	A0
23 01	STO 1	A1
23 02	STO 2	A2
23 03	STO 3	A3
23 04	STO 4	A4
23 05	STO 5	A5
23 06	STO 6	A6
23 07	STO 7	A7
23 08	STO 8	A8
23 09	STO 9	A9
23 0	STO .0	AA
23 1	STO .1	AB
23 2	STO .2	AC
23 3	STO .3	AD
23 4	STO .4	AE
23 5	STO .5	AF
23 41 00	STO- 0	B0
23 41 01	STO- 1	B1
23 41 02	STO- 2	B2
23 41 03	STO- 3	B3
23 41 04	STO- 4	B4
23 41 05	STO- 5	B5
23 41 06	STO- 6	B6
23 41 07	STO- 7	B7
23 41 08	STO- 8	B8
23 41 09	STO- 9	B9
23 41 0	STO- .0	BA
23 41 1	STO- .1	BB
23 41 2	STO- .2	BC
23 41 3	STO- .3	BD
23 41 4	STO- .4	BE
23 41 5	STO- .5	BF

23 51 00	STO+ 0	C0
23 51 01	STO+ 1	C1
23 51 02	STO+ 2	C2
23 51 03	STO+ 3	C3
23 51 04	STO+ 4	C4
23 51 05	STO+ 5	C5
23 51 06	STO+ 6	C6
23 51 07	STO+ 7	C7
23 51 08	STO+ 8	C8
23 51 09	STO+ 9	C9
23 51 0	STO+ .0	CA
23 51 1	STO+ .1	CB
23 51 2	STO+ .2	CC
23 51 3	STO+ .3	CD
23 51 4	STO+ .4	CE
23 51 5	STO+ .5	CF
23 61 00	STO* 0	D0
23 61 01	STO* 1	D1
23 61 02	STO* 2	D2
23 61 03	STO* 3	D3
23 61 04	STO* 4	D4
23 61 05	STO* 5	D5
23 61 06	STO* 6	D6
23 61 07	STO* 7	D7
23 61 08	STO* 8	D8
23 61 09	STO* 9	D9
23 61 0	STO* .0	DA
23 61 1	STO* .1	DB
23 61 2	STO* .2	DC
23 61 3	STO* .3	DD
23 61 4	STO* .4	DE
23 61 5	STO* .5	DF

23 71 00	STO/ 0	E0
23 71 01	STO/ 1	E1
23 71 02	STO/ 2	E2
23 71 03	STO/ 3	E3
23 71 04	STO/ 4	E4
23 71 05	STO/ 5	E5
23 71 06	STO/ 6	E6
23 71 07	STO/ 7	E7
23 71 08	STO/ 8	E8
23 71 09	STO/ 9	E9
23 71 0	STO/ .0	EA
23 71 1	STO/ .1	EB
23 71 2	STO/ .2	EC
23 71 3	STO/ .3	ED
23 71 4	STO/ .4	EE
23 71 5	STO/ .5	EF
15 13 0	LBL 0	F0
15 13 1	LBL 1	F1
15 13 2	LBL 2	F2
15 13 3	LBL 3	F3
15 13 4	LBL 4	F4
15 13 5	LBL 5	F5
15 13 6	LBL 6	F6
15 13 7	LBL 7	F7
15 13 8	LBL 8	F8
15 13 9	LBL 9	F9
15 13 0	LBL .0	FA
15 13 1	LBL .1	FB
15 13 2	LBL .2	FC
15 13 3	LBL .3	FD
15 13 4	LBL .4	FE
74	R/S	FF

NP-27

10 REGS

```
:10F60000 09008967452301091011111111010920 11 R0 R1 R2
:10F61000 22222222020930333333330309404444 87 R2 R3 R4
:10F62000 4444040950555555509606666666 9B R4 R5 R6
:10F63000 060970777777707098088888880809 AE R6 R7 R8 R9
:10F64000 9099999990908002331122301094056 8C R9 n i
:10F65000 6445560409708997788907FFFFFFFFF 0B i PMT
:10F66000 FFFFFFFFFFFFFFFFFF05000030966309 6C
:10F67000 FFFFFFFFFFFFFFFFFF 9A
:10F68000 FFFFFFFFFFFFFFFFFF 8A
:10F69000 FFFFFFFFFFFFFFFFFF 7A
:10F6A000 FFFFFFFFFFFFFFFFFF 6A
:10F6B000 FFFFFFFFFFFFFFFFFF 5A
:10F6C000 FFFFFFFFFFFFFFFFFF 4A
:10F6D000 FFFFFFFFFFFFFFFFFF 3A
:10F6E000 FFFFFFFFFFFFFFFFFF 2A
:10F6F000 FFFFFFFFFFFFFFFFFF 1A
```

NP-33

49 STEPS - 8 REGS

```

:10 F900 00 0950896745230109101111111010920 BE R0 R1 R2
:10 F910 00 2222222020930333333309404444 84 R2 R3 R4
:10 F920 00 4444040950555555509606666666 98 R4 R5 R6
:10 F930 00 0609707777777070000000000406 06 R6 R7 #steps PRGM
:10 F940 00 05040302010713121110090814201918 07 PRGM
:10 F950 00 17161521272625242322283433323130 F7 PRGM
:10 F960 00 29354140393837364248474645444349 E7 PRGM
:10 F970 00 000000000000000000000000000000 87
:10 F980 00 000000000000000000000000FFFAFAC 1E
:10 F990 00 EAAFFD000000000000000000000000 D1
:10 F9A0 00 000000000000000000000000000000 57
:10 F9B0 00 000000000000000000000000000000 47
:10 F9C0 00 000000000000000000000000000000 37
:10 F9D0 00 000000000000000000000000000000 27
:10 F9E0 00 FFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFF 27
:10 F9F0 00 FFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFF 17

```

Number of steps (*#steps*) : 2 bytes F939 and F93A

- byte F939 left character = tens digit in decimal
- byte F93A right character = units digit in decimal.

Examples :

```

2001 = 12 steps
9002 = 29 steps
8004 = 48 steps

```

Exception : 0 step => 0000
49 steps => 0000

NP-34 RAM - Program coding for 33C

13 00	GTO 00	00
13 01	GTO 01	01
13 02	GTO 02	02
13 03	GTO 03	03
13 04	GTO 04	04
13 05	GTO 05	05
13 06	GTO 06	06
13 07	GTO 07	07
13 08	GTO 08	08
13 09	GTO 09	09
24 0	RCL 0	0A
23 0	STO 0	0B
23 41 0	STO- 0	0C
23 51 0	STO+ 0	0D
23 61 0	STO* 0	0E
23 71 0	STO/ 0	0F
13 10	GTO 10	10
13 11	GTO 11	11
13 12	GTO 12	12
13 13	GTO 13	13
13 14	GTO 14	14
13 15	GTO 15	15
13 16	GTO 16	16
13 17	GTO 17	17
13 18	GTO 18	18
13 19	GTO 19	19
24 1	RCL 1	1A
23 1	STO 1	1B
23 41 1	STO- 1	1C
23 51 1	STO+ 1	1D
23 61 1	STO* 1	1E
23 71 1	STO/ 1	1F

13 20	GTO 20	20
13 21	GTO 21	21
13 22	GTO 22	22
13 23	GTO 23	23
13 24	GTO 24	24
13 25	GTO 25	25
13 26	GTO 26	26
13 27	GTO 27	27
13 28	GTO 28	28
13 29	GTO 29	29
24 2	RCL 2	2A
23 2	STO 2	2B
23 41 2	STO- 2	2C
23 51 2	STO+ 2	2D
23 61 2	STO* 2	2E
23 71 2	STO/ 2	2E
13 30	GTO 30	30
13 31	GTO 31	31
13 32	GTO 32	32
13 33	GTO 33	33
13 34	GTO 34	34
13 35	GTO 35	35
13 36	GTO 36	36
13 37	GTO 37	37
13 38	GTO 38	38
13 39	GTO 39	39
24 3	RCL 3	3A
23 3	STO 3	3B
23 41 3	STO- 3	3C
23 51 3	STO+ 3	3D
23 61 3	STO* 3	3E
23 71 3	STO/ 3	3F

13 40	GTO 40	40
13 41	GTO 41	41
13 42	GTO 42	42
13 43	GTO 43	43
13 44	GTO 44	44
13 45	GTO 45	45
13 46	GTO 46	46
13 47	GTO 47	47
13 48	GTO 48	48
13 49	GTO 49	49
24 4	RCL 4	4A
23 4	STO 4	4B
23 41 4	STO- 4	4C
23 51 4	STO+ 4	4D
23 61 4	STO* 4	4E
23 71 4	STO/ 4	4F
15 12	RTN	50
12 01	GSB 01	51
12 02	GSB 02	52
12 03	GSB 03	53
12 04	GSB 04	54
12 05	GSB 05	55
12 06	GSB 06	56
12 07	GSB 07	57
12 08	GSB 08	58
12 09	GSB 09	59
24 5	RCL 5	5A
23 5	STO 5	5B
23 41 5	STO- 5	5C
23 51 5	STO+ 5	5D
23 61 5	STO* 5	5E
23 71 5	STO/ 5	5F

12 10	GSB 10	60
12 11	GSB 11	61
12 12	GSB 12	62
12 13	GSB 13	63
12 14	GSB 14	64
12 15	GSB 15	65
12 16	GSB 16	66
12 17	GSB 17	67
12 18	GSB 18	68
12 19	GSB 19	69
24 6	RCL 6	6A
23 6	STO 6	6B
23 41 6	STO- 6	6C
23 51 6	STO+ 6	6D
23 61 6	STO* 6	6E
23 71 6	STO/ 6	6F
12 20	GSB 20	70
12 21	GSB 21	71
12 22	GSB 22	72
12 23	GSB 23	73
12 24	GSB 24	74
12 25	GSB 25	75
12 26	GSB 26	76
12 27	GSB 27	77
12 28	GSB 28	78
12 29	GSB 29	79
24 7	RCL 7	7A
23 7	STO 7	7B
23 41 7	STO- 7	7C
23 51 7	STO+ 7	7D
23 61 7	STO* 7	7E
23 71 7	STO/ 7	7F

12 30	GSB 30	80
12 31	GSB 31	81
12 32	GSB 32	82
12 33	GSB 33	83
12 34	GSB 34	84
12 35	GSB 35	85
12 36	GSB 36	86
12 37	GSB 37	87
12 38	GSB 38	88
12 39	GSB 39	89
		8A
		8B
		8C
21	X<>Y	8D
22	R down	8E
14 23	r	8F
12 40	GSB 40	90
12 41	GSB 41	91
12 42	GSB 42	92
12 43	GSB 43	93
12 44	GSB 44	94
12 45	GSB 45	95
12 46	GSB 46	96
12 47	GSB 47	97
12 48	GSB 48	98
12 49	GSB 49	99
		9A
		9B
		9C
14 21	^x	9D
14 22	^y	9E
24 25	RCL S+	9F

0	0	A0
1	1	A1
2	2	A2
3	3	A3
4	4	A4
5	5	A5
6	6	A6
7	7	A7
8	8	A8
9	9	A9
73	.	AA
74	R/S	AB
41	-	AC
51	+	AD
61	*	AE
71	/	AF
14 0	SQRT	B0
14 1	LN	B1
14 2	LOG	B2
14 3	Y^X	B3
14 4	>R	B4
14 5	>RAD	B5
14 6	>H.MS	B6
14 7	SIN	B7
14 8	COS	B8
14 9	TAN	B9
14 73	LASTx	BA
14 74	PAUSE	BB
14 41	X<=Y	BC
14 51	X>Y	BD
14 61	X#Y	BE
14 71	X=Y	BF

15 0	X2	C0
15 1	e^x	C1
15 2	10^X	C2
15 3	1/X	C3
15 4	>P	C4
15 5	>DEG	C5
15 6	>H	C6
15 7	SIN-1	C7
15 8	COS-1	C8
15 9	TAN-1	C9
15 73	PI	CA
15 74	%	CB
15 41	X<=0	CC
15 51	X>0	CD
15 61	X#0	CE
15 71	X=0	CF
14 13 0	ENG 0	D0
14 13 1	ENG 1	D1
14 13 2	ENG 2	D2
14 13 3	ENG 3	D3
14 13 4	ENG 4	D4
14 13 5	ENG 5	D5
14 13 6	ENG 6	D6
14 13 7	ENG 7	D7
14 13 8	ENG 8	D8
14 13 9	ENG 9	D9
15 23	GRD	DA
14 24	L.R.	DB
25	Sigma+	DC
32	CHS	DD
33	EEX	DE
34	CLx	DF

14 12 0	SCI 0	E0
14 12 1	SCI 1	E1
14 12 2	SCI 2	E2
14 12 3	SCI 3	E3
14 12 4	SCI 4	E4
14 12 5	SCI 5	E5
14 12 6	SCI 6	E6
14 12 7	SCI 7	E7
14 12 8	SCI 8	E8
14 12 9	SCI 9	E9
15 22	RAD	EA
15 24	~x	EB
14 25	Sigma-	EC
31	ENTER	ED
14 33	CLREGS	EE
14 34	CLSTK	EF
14 11 0	FIX 0	F0
14 11 1	FIX 1	F1
14 11 2	FIX 2	F2
14 11 3	FIX 3	F3
14 11 4	FIX 4	F4
14 11 5	FIX 5	F5
14 11 6	FIX 6	F6
14 11 7	FIX 7	F7
14 11 8	FIX 8	F8
14 11 9	FIX 9	F9
15 21	DEG	FA
15 13	NOP	FB
15 25	s	FC
15 32	INT	FD
15 33	FRAC	FE
15 34	ABS	FF

NP-34

70 STEPS 20 REGS + I

Steps	Regs
70	20
77	19
84	18
91	17
98	16
105	15
112	14
119	13
126	12
133	11
140	10
147	9
154	8
161	7
168	6
175	5
182	4
189	3
196	2
203	1
210	0

```

:10FA000009808967452301091011111110109208D R0 R1 R2
:10FA10002222222020930333333330940444483 R2 R3 R4
:10FA200044440409505555555050960666666697 R4 R5 R6
:10FA30000609707777777070980888888809AA R6 R7 R8 R9
:10FA40009099999909095021436587990910114D R9 R.0 R.1
:10FA5000111111910920222222292093033333CD R.1 R.2 R.3
:10FA6000339309404444444940950877998870962 R.3 R.4 I R.5
:10FA7000950555555950960666666696097034 R.5 R.6 R.7
:10FA8000777777797098088888889809909999F7 R.7 R.8 R.9
:10FA9000999999FFFFFFFFFFFFFFFFFFFFFFFFA8 R.9
:10FAA000FFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFF66 |
:10FAB000FFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFF56 > PRGM (FF=R/S)
:10FAC000FFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFF46 |
:10FAD000FFFFFFFFFFFFFFFF15070000000020F3 | groups / steps
:10FAE000000000000000000000000000000016
:10FAF000000000000000000000000000000006
  
```

groups
 number of groups of 7 steps not fully used = 30 max
(expressed in hexadecimal)

pas
 number of steps used in the last group = 7 max
(expressed in hexadecimal)

Calculating the total number of steps
 total = (210 - (groups * 7)) + steps

Example :
 15 HEX -> 21 DEC
 total = (210 - (21 * 7)) + 07 = 70 steps

NP-34 RAM - Program coding for 34C

25 13 0	LBL 0	00
25 13 1	LBL 1	01
25 13 2	LBL 2	02
25 13 3	LBL 3	03
25 13 4	LBL 4	04
25 13 5	LBL 5	05
25 13 6	LBL 6	06
25 13 7	LBL 7	07
25 13 8	LBL 8	08
25 13 9	LBL 9	09
25 13 11	LBL A	0A
25 13 12	LBL B	0B
25 0	LSTX	0C
15 13	GRD	0D
15 24	ISG	0E
0	0	0F
14 73 0	SOLVE 0	10
14 73 1	SOLVE 1	11
14 73 2	SOLVE 2	12
14 73 3	SOLVE 2	13
14 73 11	SOLVE A	14
14 73 12	SOLVE B	15
14 33	CLREG	16
14 34	CLCUM	17
25 51 0	SF 0	18
25 51 1	SF 1	19
25 51 2	SF 2	1A
25 51 3	SF 3	1B
25 1	X!	1C
15 1	e^x	1D
14 1	LN	1E
1	1	1F

14 72 0	Fxy 0	20
14 72 1	Fxy 1	21
14 72 2	Fxy 2	22
14 72 3	Fxy 3	23
14 72 11	Fxy A	24
14 42 12	Fxy B	25
25 12	RTN	26
25 12	RTN	27
25 61 0	CF 0	28
25 61 1	CF 1	29
25 61 2	CF 2	2A
25 61 3	CF 3	2B
25 2	1/x	2C
15 2	10^X	2D
14 2	LOG	2E
2	2	2F
14 13 0	ENG 0	30
14 13 1	ENG 1	31
14 13 2	ENG 2	32
14 13 3	ENG 3	33
14 13 4	ENG 4	34
14 13 5	ENG 5	35
14 13 6	ENG 6	36
14 13 7	ENG 7	37
25 71 0	F? 0	38
25 71 1	F? 1	39
25 71 2	F? 1	3A
25 71 3	F? 3	3B
25 3	Y^X	3C
15 3	X^2	3D
14 3	SQRT	3E
3	3	3F

14 12 0	SCI 0	40
14 12 1	SCI 1	41
14 12 2	SCI 2	42
14 12 3	SCI 3	43
14 12 4	SCI 4	44
14 12 5	SCI 5	45
14 12 6	SCI 6	46
14 12 7	SCI 7	47
15 11	DEG	48
15 12	RAD	49
25 73	PI	4A
73	.	4B
25 4	y	4C
15 4	R>P	4D
14 4	P>R	4E
4	4	4F
14 11 0	FIX 0	50
14 11 1	FIX 1	51
14 11 2	FIX 2	52
14 11 3	FIX 3	53
14 11 4	FIX 4	54
14 11 5	FIX 5	55
14 11 6	FIX 6	56
14 11 7	FIX 7	57
14 11 8	FIX 8	58
14 11 9	FIX 9	59
24 14 74	RCL S+	5A
14 22	R up	5B
25 5	r	5C
15 5	D>R	5D
14 5	R>D	5E
5	5	5F

24 0	RCL 0	60
24 1	RCL 1	61
24 2	RCL 2	62
24 3	RCL 3	63
24 4	RCL 4	64
24 5	RCL 5	65
24 6	RCL 6	66
24 7	RCL 7	67
24 8	RCL 8	68
24 9	RCL 9	69
24 14 24	RCL (i)	6A
24 14 23	RCL I	6B
25 6	L.R.	6C
15 6	>H	6D
14 6	>H.MS	6E
6	6	6F
24 .0	RCL .0	70
24 .1	RCL .1	71
24 .2	RCL .2	72
24 .3	RCL .3	73
24 .4	RCL .4	74
24 .5	RCL .5	75
24 .6	RCL .6	76
24 .7	RCL .7	77
24 .8	RCL .8	78
24 .9	RCL .9	79
15 23	DSE	7A
13 14 23	GSB I	7B
25 7	D%	7C
15 7	SIN-1	7D
14 7	SIN	7E
7	7	7F

23 0	STO 0	80
23 1	STO 1	81
23 2	STO 2	82
23 3	STO 3	83
23 4	STO 4	84
23 5	STO 5	85
23 6	STO 6	86
23 7	STO 7	87
23 8	STO 8	88
23 9	STO 9	89
23 14 24	STO (i)	8A
23 14 23	STO I	8B
25 8	x	8C
15 8	COS-1	8D
14 8	COS	8E
8	8	8F
23 .0	STO .0	90
23 .1	STO .1	91
23 .2	STO .2	92
23 .3	STO .3	93
23 .4	STO .4	94
23 .5	STO .5	95
23 .6	STO .6	96
23 .7	STO .7	97
23 .8	STO .8	98
23 .9	STO .9	99
25 11	DISP I	9A
22 14 23	GTO I	9B
25 9	s	9C
15 9	TAN-1	9D
14 9	TAN	9E
9	9	9F

23 41 0	STO- 0	A0
23 41 1	STO- 1	A1
23 41 2	STO- 2	A2
23 41 3	STO- 3	A3
23 41 4	STO- 4	A4
23 41 5	STO- 5	A5
23 41 6	STO- 6	A6
23 41 7	STO- 7	A7
23 41 8	STO- 8	A8
23 41 9	STO- 9	A9
23 41 24	STO- (I)	AA
31	ENTER	AB
25 41	%	AC
15 41	x<0	AD
14 41	x<=y	AE
41	-	AF
23 51 0	STO+ 0	B0
23 51 1	STO+ 1	B1
23 51 2	STO+ 2	B2
23 51 3	STO+ 3	B3
23 51 4	STO+ 4	B4
23 51 5	STO+ 5	B5
23 51 6	STO+ 6	B6
23 51 7	STO+ 7	B7
23 51 8	STO+ 8	B8
23 51 9	STO+ 9	B9
23 51 24	STO+ (I)	BA
32	CHS	BB
25 32	INT	BC
15 51	x>0	BD
14 51	x>y	BE
51	+	BF

23 61 0	STO* 0	C0
23 61 1	STO* 1	C1
23 61 2	STO* 2	C2
23 61 3	STO* 3	C3
23 61 4	STO* 4	C4
23 61 5	STO* 5	C5
23 61 6	STO* 6	C6
23 61 7	STO* 7	C7
23 61 8	STO* 8	C8
23 61 9	STO* 9	C9
23 61 24	STO* (I)	CA
33	EEX	CB
25 33	FRAC	CC
15 61	10^X	CD
14 61	LOG	CE
61	*	CF
23 71 0	STO/ 0	D0
23 71 1	STO/ 1	D1
23 71 2	STO/ 2	D2
23 71 3	STO/ 3	D3
23 71 4	STO/ 4	D4
23 71 5	STO/ 5	D5
23 71 6	STO/ 6	D6
23 71 7	STO/ 7	D7
23 71 8	STO/ 8	D8
23 71 9	STO/ 9	D9
23 71 24	STO/ (I)	DA
34	CLx	DB
25 34	ABS	DC
15 71	x=0	DD
14 71	x=y	DE
71	/	DF

22 0	GTO 0	E0
22 1	GTO 1	E1
22 2	GTO 2	E2
22 3	GTO 3	E3
22 4	GTO 4	E4
22 5	GTO 5	E5
22 6	GTO 6	E6
22 7	GTO 7	E7
22 8	GTO 8	E8
22 9	GTO 9	E9
22 11	GTO A	EA
22 12	GTO B	EB
25 21	x<>(i)	EC
15 22	R dwn	ED
14 21	x<>I	EE
21	x<>y	EF
13 0	GSB 0	F0
13 1	GSB 1	F1
13 2	GSB 2	F2
13 3	GSB 3	F3
13 4	GSB 4	F4
13 5	GSB 5	F5
13 6	GSB 6	F6
13 7	GSB 7	F7
13 8	GSB 8	F8
13 9	GSB 9	F9
13 11	GSB A	FA
13 12	GSB B	FB
25 74	PSE	FC
15 74	SUM-	FD
14 74	SUM+	FE
74	R/S	FF

Organization of the program in memory
if steps > 105

:10FA000009808967452301091011111110109208D
:10FA10002222222202093033333333030940444483
:10FA2000444440409505555555050960666666697
:10FA300060970777777707098088888880809AA
:10FA400090999999909095021436587990910114D
:10FA50000000000000000000000000001314151617CD
:10FA600033930607080910111200000000000062
:10FA70009900010203040592939495969798858634
:10FA800087888990917879808182838471727374F7
:10FA900075757764656667686970575859606162A8
:10FAA0006350515253545556434445464748493666
:10FAB0003738394041422930313233343522232456
:10FAC0002526272815161718192021080910111246
:10FAD00013140102030405060715070000000020F3

CAUTION :

When the number of program steps exceeds 105, an offset of 7 is added because register I remains in its position from FA69 to FA06F and the program continues with step #106 at FA62.

In this case (steps > 105), the group / steps indicators present at FAD9 and FADA are calculated based on the number of steps + 7.

Flags in memory

:10FA000009808967452301091011111110109208D
:10FA100022222220209303333333030940444483
:10FA200044440409505555555050960666666697
:10FA300060970777777707098088888880809AA
:10FA400090999999909095021436587990910114D
:10FA500000000000000000000000001314151617CD
:10FA600033930607080910111200000000000062
:10FA70009900010203040592939495969798858634
:10FA800087888990917879808182838471727374F7
:10FA900075757764656667686970575859606162A8
:10FAA0006350515253545556434445464748493666
:10FAB0003738394041422930313233343522232456
:10FAC0002526272815161718192021080910111246
:10FAD00013140102030405060715070000000020F3
:10FAE0000000000000000000000000000000016
:10FAF0000000000000000000000000000000006

| **Flag 0** : FADB 10=up, 00=down
/ **Flag 1** : FADC 01 or 11=up, 00 or 10=down
\ **Flag 2** : FADC 10 or 11=up, 00 or 01=down
| **Flag 3** : FADD 01=up, 00=down

NP-38

Steps	Regs
8	20
15	19
22	18
29	17
36	16
43	15
50	14
57	13
64	12
71	11
78	10
85	9
92	8
99	7

7 STEPS - 20 REGS (0 to 9, .0 to .9) and n i PV PMT FV

```

:10 FC00 00 0910111111110109202222222020930AA R1 R2 R3
:10 FC10 00 33333333030940444444440409505555B5 R3 R4 R5
:10 FC20 00 555050960666666606088089674523E R5 R6 R0
:10 FC30 00 010000000000000000000000000000C3 R0 ?? ??
:10 FC40 00 00000000000000000000000009909697 ?? ?? FV
:10 FC50 00 969696060950585858580809202121218F FV PMT PV
:10 FC60 00 2101095054545454040980878787870719 PV I n
:10 FC70 00 09707777777707098088888888080990DE R7 R8 R9
:10 FC80 00 99999999090910214365879909101111CA R9 R.0 R.1
:10 FC90 00 11119109202222222920930333333369 R.1 R.2 R.3
:10 FCA0 00 930940444444449409505555555950989 R.3 R.4 R.5 R.6
:10 FCB0 00 606666666960970777777797098088B9 R.6 R.7 R.8
:10 FCC0 00 888889809909999999990000000006E R.8 R.9 PRGM
:10 FCD0 00 0000000D0000000000000000000017 PRGM
:10 FCE0 00 200000000000021000000000002200B1
:10 FCF0 00 0000000002300000000000FFFFFFE5

```

```

:10 FC00 00 0000000000000000000000000000F4
:10 FC10 00 0000000000000000000000000000E4
:10 FC20 00 0000000000000000000000000000D4
:10 FC30 00 0000000000000000000000000000C4
:10 FC40 00 0000000000000000000000000000B4
:10 FC50 00 0000000000000000000000000000A4
:10 FC60 00 000000000000000000000000000094
:10 FC70 00 1F2F3F4F5F6F7F1F2F3F4F5F6F7F1F2F35 93949596979899 86878889909192 7980
:10 FC80 00 3F4F5F6F7F1F2F3F4F5F6F7F1F2F3F4F74 8182838485 72737475767778 65666768
:10 FC90 00 5F6F7F1F2F3F4F5F6F7F1F2F3F4F5F6F24 697071 58596061626364 515253545556
:10 FCA0 00 7F1F2F3F4F5F6F7F1F2F3F4F5F6F7F1FB4 57 44454647484950 37383940414243 30
:10 FCB0 00 2F3F4F5F6F7F1F2F3F4F5F6F7F1F2F3F64 313233343536 23242526272829 16171819
:10 FCC0 00 4F5F6F7F1F2F3F4F5F6F7F1F2F3F4F5F14 202122 09101112131415 0203040506
:10 FCD0 00 6F7F000000000001F00000000000067 0708 00 01
:10 FCE0 00 200000000000021000000000002200B1 ^
:10 FCF0 00 0000000002300000000000FFFFFFE5

```

STEPS

number of registers available - 7
00 to 0D <- INT((99-#steps)/7)

NP-34 RAM - Program coding for 38C

25 7 00	GTO 00	00
25 7 01	GTO 01	01
25 7 02	GTO 02	02
25 7 03	GTO 03	03
25 7 04	GTO 04	04
25 7 05	GTO 05	05
25 7 06	GTO 06	06
25 7 07	GTO 07	07
25 7 08	GTO 08	08
25 7 09	GTO 09	09
22 11	RCL n	0A
25 0	~x	0B
21 0	STO 0	0C
24 0	FIX 0	0D
22 0	RCL 0	0E
0	0	0F
25 7 10	GTO 10	10
25 7 11	GTO 11	11
25 7 12	GTO 12	12
25 7 13	GTO 13	13
25 7 14	GTO 14	14
25 7 15	GTO 15	15
25 7 16	GTO 16	16
25 7 17	GTO 17	17
25 7 18	GTO 18	18
25 7 19	GTO 19	19
22 12	RCL I	1A
25 1	^x,r	1B
21 1	STO 1	1C
24 1	FIX 1	1D
22 1	RCL 1	1E
1	1	1F

25 7 20	GTO 20	20
25 7 21	GTO 21	21
25 7 22	GTO 22	22
25 7 23	GTO 23	23
25 7 24	GTO 24	24
25 7 25	GTO 25	25
25 7 26	GTO 26	26
25 7 27	GTO 27	27
25 7 28	GTO 28	28
25 7 29	GTO 29	29
22 13	RCL PV	2A
25 2	^y,r	2B
21 2	STO 2	2C
24 2	FIX 2	2D
22 2	RCL 2	2E
2	2	2F
25 7 30	GTO 30	30
25 7 31	GTO 31	31
25 7 32	GTO 32	32
25 7 33	GTO 33	33
25 7 34	GTO 34	34
25 7 35	GTO 35	35
25 7 36	GTO 36	36
25 7 37	GTO 37	37
25 7 38	GTO 38	38
25 7 39	GTO 39	39
22 14	RCL PMT	3A
25 3	n!	3B
21 3	STO 3	3C
24 3	FIX 3	3D
22 3	RCL 3	3E
3	3	3F

25 7 40	GTO 40	40
25 7 41	GTO 41	41
25 7 42	GTO 42	42
25 7 43	GTO 43	43
25 7 44	GTO 44	44
25 7 45	GTO 45	45
25 7 46	GTO 46	46
25 7 47	GTO 47	47
25 7 48	GTO 48	48
25 7 49	GTO 49	49
22 15	RCL FV	4A
25 4	PSE	4B
21 4	STO 4	4C
24 4	FIX 4	4D
22 4	RCL 4	4E
4	4	4F
25 7 50	GTO 50	50
25 7 51	GTO 51	51
25 7 52	GTO 52	52
25 7 53	GTO 53	53
25 7 54	GTO 54	54
25 7 55	GTO 55	55
25 7 56	GTO 56	56
25 7 57	GTO 57	57
25 7 58	GTO 58	58
25 7 59	GTO 59	59
21 11	STO n	5A
25 5	X<=y	5B
21 5	STO 5	5C
25 5	FIX 5	5D
22 5	RCL 5	5E
5	5	5F

25 7 60	GTO 60	60
25 7 61	GTO 61	61
25 7 62	GTO 62	62
25 7 63	GTO 63	63
25 7 64	GTO 64	64
25 7 65	GTO 65	65
25 7 66	GTO 66	66
25 7 67	GTO 67	67
25 7 68	GTO 68	68
25 7 69	GTO 69	69
21 12	STO I	6A
25 6	x=0	6B
21 6	STO 6	6C
24 6	FIX 6	6D
22 6	RCL 6	6E
6	6	6F
25 7 70	GTO 70	70
25 7 71	GTO 71	71
25 7 72	GTO 72	72
25 7 73	GTO 73	73
25 7 74	GTO 74	74
25 7 75	GTO 75	75
25 7 76	GTO 76	76
25 7 77	GTO 77	77
25 7 78	GTO 78	78
25 7 79	GTO 79	79
21 13	STO PV	7A
24 71	1/X	7B
21 7	STO 7	7C
24 7	FIX 7	7D
22 7	RCL 7	7E
7	7	7F

25 7 80	GTO 80	80
25 7 81	GTO 81	81
25 7 82	GTO 82	82
25 7 83	GTO 83	83
25 7 84	GTO 84	84
25 7 85	GTO 85	85
25 7 86	GTO 86	86
25 7 87	GTO 87	87
25 7 88	GTO 88	88
25 7 89	GTO 89	89
21 14	STO PMT	8A
22 25 11	RCL 12x	8B
21 8	STO 8	8C
24 8	FIX 8	8D
22 8	RCL 8	8E
8	8	8F
25 7 90	GTO 90	90
25 7 91	GTO 91	91
25 7 92	GTO 92	92
25 7 93	GTO 93	93
25 7 94	GTO 94	94
25 7 95	GTO 95	95
25 7 96	GTO 96	96
25 7 97	GTO 97	97
25 7 98	GTO 98	98
25 7 99	GTO 99	99
21 15	STO FV	9A
22 25 12	RCL 12/	9B
21 9	STO 9	9C
24 9	FIX 9	9D
22 9	RCL 9	9E
9	9	9F

21 41 0	STO- 0	A0
21 41 1	STO- 1	A1
21 41 2	STO- 2	A2
21 41 3	STO- 3	A3
21 41 4	STO- 4	A4
21 41 5	STO- 5	A5
21 41 6	STO- 6	A6
24 21	SQRT	A7
25 21	yx	A8
51	+	A9
25 74	Sigma-	AA
25 73	s	AB
24 74	Sigma+	AC
24 73	SCI	AD
74	R/S	AE
73	.	AF
21 51 0	STO+ 0	B0
21 51 1	STO+ 1	B1
21 51 2	STO+ 2	B2
21 51 3	STO+ 3	B3
21 51 4	STO+ 4	B4
21 51 5	STO+ 5	B5
21 51 6	STO+ 6	B6
24 22	%T	B7
25 22	ex	B8
41	-	B9
25 31	LASTx	BA
25 11	12x	BB
22 25 14	RCL CFj	BC
24 11	AMORT	BD
31	ENTER	BE
11	n	BF

21 61 0	STO* 0	C0
21 61 1	STO* 1	C1
21 61 2	STO* 2	C2
21 61 3	STO* 3	C3
21 61 4	STO* 4	C4
21 61 5	STO* 5	C5
21 61 6	STO* 6	C6
24 41	dDAYS	C7
24 61	INTGR	C8
61	x	C9
25 32	EEX	CA
25 12	12/	CB
24 32	CL_FIN	CC
24 12	INT	CD
32	CHS	CE
12	I	CF
21 71 0	STO/ 0	D0
21 71 1	STO/ 1	D1
21 71 2	STO/ 2	D2
21 71 3	STO/ 3	D3
21 71 4	STO/ 4	D4
21 71 5	STO/ 5	D5
21 71 6	STO/ 6	D6
24 51	DATE	D7
25 71	~xw	D8
71	/	D9
25 33	R down	DA
25 13	CF0	DB
24 33	CL_CUM	DC
24 13	NPV	DD
33	x<>y	DE
13	PV	DF

21 73 0	STO .0	E0
21 73 1	STO .1	E1
21 73 2	STO .2	E2
21 73 3	STO .3	E3
21 73 4	STO .4	E4
21 73 5	STO .5	E5
21 73 6	STO .6	E6
21 73 7	STO .7	E7
21 73 8	STO .8	E8
21 73 9	STO .9	E9
25 61	FRAC	EA
25 14	CFj	EB
22 25 15	RCL Nj	EC
24 14	RND	ED
34	CLx	EE
14	PMT	EF
22 73 0	RCL .0	F0
22 73 1	RCL .1	F1
22 73 2	RCL .2	F2
22 73 3	RCL .3	F3
22 73 4	RCL .4	F4
22 73 5	RCL .5	F5
22 73 6	RCL .6	F6
22 73 7	RCL .7	F7
22 73 8	RCL .8	F8
22 73 9	RCL .9	F9
25 23	LN	FA
25 15	Nj	FB
24 23	d%	FC
24 15	IRR	FD
23	%	FE
15	FV	FF