

# Chapter 12

## Date and time arithmetic

### Date and time formats

The following table illustrates the date and time formats available on the HP 49G. The time and date illustrated is 4:31:04PM on March 21, 2001.

Clock Display	Format	Number Format
<b>Date:</b>		
03/21/2001	Month/day/year format	3.212001
21.03.2001	Day.month.year format	21.032001
<b>Time:</b>		
04:31:04P	12-hour format	16.3104
16:31:04	24-hour format	16.3104

Table 12-1: Date and time formats

### To set the format of the date and time

1. Press  $\rightarrow$  (TIME).
2. Press  $\downarrow$   $\downarrow$  to highlight the SET TIME, DATE... function and then press OK.
3. The SET TIME AND DATE input form is displayed.
4. Press the appropriate arrow keys to highlight the format field you want to change.  
The format fields are the two fields at the far right of the screen.
5. Change the format.  
You can do this by pressing  $\pm$  until the format you want is displayed, or by pressing CHOOS and selecting a format from a list of options.
6. If you want to change another format, repeat from step 4.
7. When you have finished, press OK.  
The input form closes and the date and time is displayed in the formats you set.



You can also use this procedure to set the date and time.

You can also set the date by executing the  $\rightarrow$ DATE command, and set the time by executing the  $\rightarrow$ TIME command.

## Date and time tools

Numerous tools for working with dates and times are available from the Time menu.

### Displaying the Time menu

There are two ways to access this menu:

- press  $\left[ \rightarrow \right]$  (TIME) TOOLS
- hold down  $\left[ \rightarrow \right]$  while pressing (TIME).

### To copy the date to the stack or history

1. Display the Time menu (see above).
2. Press DATE.
3. Press (ENTER).

The date is displayed in its *number format* (see the table on page page 12-1).

**In RPN mode:** follow steps 1 and 2.

### To copy the time to the stack or history

1. Display the Time menu (see above).
2. Press TIME.
3. Press (ENTER).

The time is displayed in its *number format* (see the table on page page 12-1).

**In RPN mode:** follow steps 1 and 2.

# Calculating with dates

## To add days to a given date

1. Enter the date in number format (see the table on page page 12-1).  
For example: 3.212001 (that is, March 21, 2001).
2. Press  $\text{CAT}$  DATE+.
3. Enter a real number representing the number of days you want to add to the date entered at step 1.  
For example 13.
4. Press  $\text{ENTER}$ .  
The answer is 4.032001 (that is, April 3, 2001).

**In RPN mode:** follow steps 1, 3, and 2.

## To subtract days from a given date

1. Enter the date in number format (see the table on page page 12-1).  
For example: 3.212001 (that is, March 21, 2001).
2. Press  $\text{CAT}$  DATE+.
3. Enter a real number representing the number of days you want to subtract from the date entered at step 1.  
For example 26.
4. Press  $\text{+/-}$ .  
This key converts the number of days entered at step 3 to a negative number, so that the effect of applying the DATE+ command is to subtract days.
5. Press  $\text{ENTER}$ .  
The answer is 2.232001 (that is, February 23, 2001).

**In RPN mode:** follow steps 1, 3, 4, and 2.

## To determine the number of days between two dates

1. Press  $\text{CAT}$  DDAYS.
2. Enter the first date in number format (see the table on page page 12-1).  
For example: 3.212001 (that is, March 21, 2001).
3. Press  $\text{R}$ .
4. Enter the second date, also in number format.  
For example 5.232001 (that is, May 23, 2001).
5. Press  $\text{ENTER}$ .  
The answer is 63.

**In RPN mode:** follow steps 2, 4, and 1.

## Calculating with times

You can work with times expressed in decimal format or in HMS format. A number in HMS format is displayed as *H.MMSSs* where:

*H* = zero or more digits representing the number of hours

*MM* = two digits representing the number of minutes

*SS* = two digits representing the number of seconds, and

*s* = two or more digits representing the fractional part of seconds.

## To convert decimal time to HMS format

1. Press  $\text{CAT}$   $\rightarrow$ HMS.
2. Enter the time in decimal format.  
For example: 7.125 (that is, seven-and-one-eighth hours).
3. Press  $\text{ENTER}$ .  
The answer is 7.07300 (that is, 7 hours, 7 minutes and 30 seconds).

**In RPN mode:** follow steps 2 and 1.

## To convert a time in HMS format to decimal format

1. Press  $\text{CAT}$  HMS $\rightarrow$ .
2. Enter the time in HMS format.  
For example: 5.1231 (that is, 5 hours, 12 minutes, and 31 seconds).
3. Press  $\text{ENTER}$ .  
The answer is 5.20861111 hours.

**In RPN mode:** follow steps 2 and 1.

## To add times in HMS format

1. Press  $\text{CAT}$  HMS+.
2. Enter one time in HMS format.  
For example: 5.1231 (that is, 5 hours, 12 minutes, and 31 seconds).
3. Press  $\text{R}$   $\text{D}$ .
4. Enter the other time, also in HMS format.  
For example: 4.5320 (that is, 4 hours, 53 minutes, and 20 seconds).
5. Press  $\text{ENTER}$ .  
The answer is 10.0551 (that is, 10 hours, 5 minutes and 51 seconds).

**In RPN mode:** follow steps 2, 4, and 1.

## To subtract times in HMS format

1. Press  $\text{CAT}$  HMS-.
2. Enter one time in HMS format.  
For example: 7.2201 (that is, 7 hours, 22 minutes, and 1 second).
3. Press  $\text{R}$   $\text{D}$ .
4. Enter the other time, also in HMS format.  
For example: 4.13275 (that is, 4 hours, 13 minutes, and 27.5 seconds).
5. Press  $\text{ENTER}$ .  
The answer is 3.08335 (that is, 3 hours, 8 minutes and 33.5 seconds).

**In RPN mode:** follow steps 2, 4, and 1.

# System time

System time is kept in ticks of the clock. Each tick is 1/8192 of a second in duration. System time can be converted to standard time (in both decimal format and HMS format).

## To display system time

1. Press  $\leftarrow$  (TIME) TOOLS TICKS.
2. Press (ENTER).

System time is displayed as a binary number.

**In RPN mode:** follow step 1.

The TICKS command is useful for measuring elapsed time.

## To convert system time to HMS time

1. Press  $\leftarrow$  (MTH) BASE B $\rightarrow$ R.
2. Enter the system time as a binary number.

For example: # 1D6861E78DF52h.

3. Press (ENTER).

The result of this step is the real number equivalent of the specified system time.

4. Press  $\leftarrow$  ( $\div$ ).
5. Enter 29491200.

The result of this step is the specified system time in decimal hours:  
17, 542,402.5441.

6. Press (CAT)  $\rightarrow$ HMS.
7. Press (HIST).

8. Select the result of step 5.

This result should now be the argument of the  $\rightarrow$ HMS command.

9. Press (ENTER).

The result is 17,542,402.3239 (that is, 17,542,402 hours, 32 minutes, and 39 seconds).

**In RPN mode:** follow steps 2, 1, 5, 4, and 6.

## To calculate elapsed time in seconds

1. To prepare to start timing, press  $\rightarrow$  (TIME) TOOLS TICKS.
2. To start timing, press (ENTER).
3. To prepare to stop timing, press  $\rightarrow$  (TIME) TOOLS TICKS.
4. To stop timing, press (ENTER).
5. Press  $\ominus$ .
6. Press (HIST).
7. Select the result of step 2.
8. Press (ENTER) twice.
9. Press  $\leftarrow$  (MTH) BASE B $\rightarrow$ R.
10. Select the result of step 8.
11. Press (ENTER).
12. Press  $\div$ .
13. Enter 8192.
14. Press (ENTER).

**In RPN mode:** follow steps 1, 2, press (TOOL) STACK SWAP and continue with steps 5, 9, 13, and 12.

