

**Date!** □□□□

11

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1.

date!

`date` `time` `date` `time` 24  
Red `date` ISO 8601

Note:

- date! の 00000000 01582 は、日付の範囲が 1/Jan/-16384 から 31/Dec/16383 までである
- 日付の範囲が 1/Jan/-16384 から 31/Dec/16383 までである。日付の範囲が 1/Jan/-9999 から 31/Dec/9999 までである。

## 2. □□

date! `make` to

## 2.1. □□□□□□

Rebol ISO

```
<date>/<time>  
<date>/<time><zone>  
<date>T<time>  
<date>T<time>Z  
<date>T<time><zone>
```

```
<date> 00000000
      <yyyy><sep><mmm><sep><dd>
      <dd><sep><mmm><sep><yyyy>
      <dd><sep><mmm><sep><yy>
```

```
T<date>
<yyyy><mm><dd>
<yyyy>-W<ww>
<yyyy>-W<ww>-<d>
<yyyy>-<ddd>
```

```
<mmm> 000000 0000
<m>
<mon>
<month>
```

```
<time> 00000000
    <hour>:<min>:<sec>
    <hour>:<min>:<sec><zone>
    <hhmmss>
    <hhmmss><zone>
    <hhmmss>.<dec>
    <hhmmss>.<dec><zone>
    <hhmm>
    <hhmm><zone>
```

```
<zone> 0000000000000000
      <sign><hour>
```

<sign><hhmm>

<ss>.<dec>

<hhmmss> : 00000000600000000000

[illegible]

```
<dd>-<mon>-<yyyy>/<hour>:<min>:<sec><sign><hour>:<min15>
```

[illegible]

Notes:

- 前2000年yy前到前500年前2000年到前500年1900年到前

date

1999-10-5  
1999/10/5  
5-10-1999  
5/10/1999  
5-October-1999  
1999-9-11  
11-9-1999  
5/sep/2012  
5-SEPTEMBER-2012

02/03/04  
02/03/71

5/9/2012/6:0  
5/9/2012/6:00  
5/9/2012/6:00+8  
5/9/2012/6:0+0430  
4/Apr/2000/6:00+8:00  
1999-10-2/2:00-4:30  
1/1/1990/12:20:25-6

2017-07-07T08:22:23+00:00  
2017-07-07T08:22:23Z  
20170707T082223Z  
20170707T0822Z  
20170707T082223+0530

2017-W01  
2017-W23-5  
2017-W23-5T10:50Z  
2017-001  
2017-153T10:50:00-4:00

## 2.2. □□□□□□

```

make date! [<day> <month> <year>]
make date! [<year> <month> <day>]
make date! [<day> <month> <year> <time>]
make date! [<day> <month> <year> <time> <zone>]
make date! [<day> <month> <year> <hour> <minute> <second>]
make date! [<day> <month> <year> <hour> <minute> <second> <zone>]

```

```

<year>    : integer!
<month>   : integer!
<day>     : integer!
<time>    : time!
<zone>    : integer!time!pair!
<hour>    : integer!
<minute>  : integer!
<second>  : integer!

```

## Notes:

- 使用 make 函数时，to 后面的数字表示时间单位，如 100 表示 100 天，3 表示 3 小时，1 表示 1 分钟，3 表示 3 秒。
- year 和 day 后面的数字表示年份和天数，如 100 表示 100 年，3 表示 3 天，1 表示 1 天，3 表示 3 天。

□

```
make date! [1978 2 3]
== 3-Feb-1978

make date! [1978 2 3 5:0:0 8]
== 3-Feb-1978/5:00:00+08:00

make date! [1978 2 3 5:0:0]
== 3-Feb-1978/5:00:00

make date! [1978 2 3 5 20 30]
== 3-Feb-1978/5:20:30

make date! [1978 2 3 5 20 30 -4]
== 3-Feb-1978/5:20:30-4:00

make date! [100 12 31]
== 31-Dec-0100

; 32 isn't a valid day
make date! [100 12 32]
*** Script Error: cannot MAKE/TO date! from: [100 12 32]
*** Where: make

; First field is < 100, so not considered as a year
make date! [99 12 31]
*** Script Error: cannot MAKE/TO date! from: [99 12 31]
*** Where: make
```

## 3. □□□□□□

□□□□□□□□□□□□ **date!** □□□□□□□□□□□□

### 3.1. /date

□□

```
<date>/date
<date>/date: <date2>

<date>   : date!□□□□□□word□□□□□□
<date2>  : date!□□
```

□□

□□□□□□□□□□□□time□zone□□□□□□□□□□□□□□□□□□□□□□□□ **date!** □□□□□□□□□□

```
d: now
== 10-Jul-2017/22:46:22-06:00
d/date
== 10-Jul-2017
```

```
d/date: 15/09/2017
== 15-Sep-2017/22:46:22-06:00
```

## 00

```
<date>/year
<date>/year: <year>
```

```
<date> : date!word
<year> : integer!
```

[illegible]

```
d: now
== 10-Jul-2017/22:46:22-06:00
d/year: 16383
== 16383
d
== 10-Jul-16383/22:46:22-06:00
d/year: 16384
== 16384
d
== 10/Jul/-16384/22:46:22-06:00 ; 16384
d/year: 32767
== 32767
d
== 10/Jul/-1/22:46:22-06:00
d/year: 32768
== 32768
d
== 10-Jul-0000/22:46:22-06:00
```

## 7

11

```
<date>/month
<date>/month: <month>

<date>  : date!word
<month> : integer!
```

11

[illegible]

1

```
d: now
== 10-Jul-2017/22:48:31-06:00
d/month: 12
== 12
d
== 10-Dec-2017/22:48:31-06:00
d/month: 13
== 13
d
== 10-Jan-2018/22:48:31-06:00 ; 
d/month ; 
== 1 ;
```

### 3.4. /day

11

```
<date>/day
<date>/day: <day>

<date> : date!word
<day>  : integer!
```

11

[illegible]



□

```
d: 1-jan-2017
== 1-Jan-2017
d/day: 32
== 32
d
== 1-Feb-2017
d/day: 0 ; 0
== 0
d
== 31-Jan-2017
```

## 3.5. /time

□□

```
<date>/time
<date>/time: <time>

<date> : date!word
<time> : time!none!
```

□□

time! time none!

time none! timezone0

□

```
d: now
== 10-Jul-2017/23:18:54-06:00
d/time: 1:2:3
== 1:02:03
d
== 10-Jul-2017/1:02:03-06:00
d/time: none
== 10-Jul-2017
```

## 3.6. /hour

11

```
<date>/hour
<date>/hour: <hour>
```

```
<date> : date!word
<hour> : integer!
```

11

[illegible]

1

```
d: now
== 10-Jul-2017/23:19:40-06:00
d/hour: 0
== 0
d
== 10-Jul-2017/0:19:40-06:00
d/hour: 24
== 24
d
== 11-Jul-2017/0:19:40-06:00
```

### 3.7. /minute

11

```
<date>/minute
<date>/minute: <minute>
```

```
<date>    : date!word
<minute>  : integer!
```

11

[illegible]

```
== 10-Jul-2017/23:20:25-06:00
d/minute: 0
== 0
d
== 10-Jul-2017/23:00:25-06:00
d/minute: 60
== 60
d
== 11-Jul-2017/0:00:25-06:00
```

11

11

1

11

11

```
<date>/zone
<date>/zone: <zone>

<date> : date!word
<zone> : time!integer!
```

11

```
00000000000000000000000000000000 -16:00 00 +15:00 000 time! 00000000 /zone
00000000000000000000zone000000000000time000000000000000000000000000000
```

integer! 0

000000000015000000000000001500000000000000

1

```
d: 1/3/2017/5:30:0
d/zone: 8
== 1-Mar-2017/5:30:00+08:00

d/zone: -4:00
== 1-Mar-2017/5:30:00-04:00
```

### 3.10. /timezone

11

```
<date>/timezone
<date>/timezone: <zone>

<date>      : date!word
<timezone>  : integer!time!pair!
```

11

```

##### -16:00  ## +15:00  ### time! ##### /timezone
#####time#####zone#####zone#####time#####

```

```
timezone integer! [0]
```

000000000015000000000000001500000000000000

```
d: 1/3/2017/5:30:0
d/timezone: 8
== 1-Mar-2017/13:30:00+08:00

d/timezone: -4:00
== 1-Mar-2017/1:30:00-04:00
```

- /timezone 0000000000UTC000000

## 00

11

- `/yearday` 日付を日数に変換 `/julian` 日付をJulian日数に変換 `Rebol` 日付をJulian日数に変換

```
d: 1-jan-2017
== 1-Jan-2017
d/yearday
== 1
d: 31-dec-2017
== 31-Dec-2017
d/yearday
== 365
d: 31-dec-2020
== 31-Dec-2020
d/yearday
== 366 ; 閏年
d: 31-dec-2017
== 31-Dec-2017
d/yearday: 366
== 366
d
== 1-Jan-2018
```

11

```
<date>/weekday
<date>/weekday: <day>

<date>      : date!word
<weekday>   : integer!
```

[illegible]

```
d: now
== 10-Jul-2017/23:25:35-06:00
d/weekday
== 1
d/weekday: 2
== 2
d
== 11-Jul-2017/23:25:35-06:00
d/weekday: 7
== 7
d
== 16-Jul-2017/23:25:35-06:00
d/weekday: 8
== 8
d
== 17-Jul-2017/23:25:35-06:00
```

## 00

```
<date>/week
<date>/week: <day>

<date> : date!word
<week> : integer!
```

[illegible][illegible]

```
d: now
== 10-Jul-2017/23:28:07-06:00
d/week
== 28
d/week: 29
== 29
d
== 16-Jul-2017/23:28:07-06:00
d/week: 52
== 52
d
== 24-Dec-2017/23:28:07-06:00
d/week: 53
== 53
d
== 31-Dec-2017/23:28:07-06:00
d/week: 54
== 54
d
== 7-Jan-2018/23:28:07-06:00
```

11

```
<date>/isoweek
<date>/isoweek: <day>

<date>      : date!word
<isoweek>   : integer!
```

ISO

8601

15253



```
d: now
== 10-Jul-2017/23:29:13-06:00
d/isoweek
== 28
d/isoweek: 29
== 29
d
== 17-Jul-2017/23:29:13-06:00
d/isoweek: 52
== 52
d
== 25-Dec-2017/23:29:13-06:00
d/isoweek: 53
== 53
d
== 1-Jan-2018/23:29:13-06:00
```

word

```
<date> : date!word!
<index> : integer!
```

項目番号	項目名
1	date
2	year
3	month
4	day
5	zone
6	time
7	hour
8	minute
9	second
10	weekday
11	yearday

番号	名前
12	timezone
13	week
14	isoweek

## 3.16. Pickオブジェクトの作成

オブジェクトを作成する際には、`pick` オブジェクト

を

```
pick <date> <field>
```

```
<date> : date!
```

```
<field> : integer!
```

integerオブジェクトを作成する際には、

を

```
d: now
== 10-Jul-2017/23:35:01-06:00
names: system/catalog/accessors/date!
repeat i 14 [print [pad i 4 pad names/:i 10 pick d i]]
1   date      11-Jul-2017
2   year      2017
3   month     7
4   day       11
5   zone      8:00:00
6   time      21:43:52
7   hour      21
8   minute    43
9   second    52.0
10  weekday   2
11  yearday   192
12  timezone  8:00:00
13  week      28
14  isoweek   28
```

## 4. 日付

### 4.1. UNIX日付

UNIX日付は、`to` オブジェクト

11

```
to-integer <date>
to-date <epoch>

<date> : date!
<epoch> : UNIXinteger!
```

UNIX UTC UTC UNIX

```
d: 8-Jul-2017/17:49:27+08:00
to-integer d
== 1499507367

to-integer 8-Jul-2017/9:49:27
== 1499507367

to-date to-integer d
== 8-Jul-2017/9:49:27
```

UNIX2038

## 4.2. □□□□□□□□□□

11

```
to date! <spec>

<spec> : 0000000000000000
```

make 2.20 date!  
make

5. ☐ ☐

`00000000000000000000=, ==, <>, >, <, >=, <=, same? minmaxsort 0000000000`

1

```
3-Jul-2017/9:41:40+2:00 = 3-Jul-2017/5:41:40-2:00
== true
```

```
10/10/2017 < 1/1/2017
== false
```

```
max 10/10/2017 1/1/2017
== 10-Oct-2017
```

```
same? 1/1/1980 1-JAN-1980
== true
```

```
sort [1/1/2017 5/10/1999 3-Jul-2017/5:41:40-2:00 1/1/1950 1/1/1980/2:2:2]
== [1-Jan-1950 1-Jan-1980/2:02:02 5-Oct-1999 1-Jan-2017 3-Jul-2017/5:41:40-02:00]
```

6. □□□□

□ □

- 時間の計算は、`time`と`date`の2種類がある
- 2つの時刻の差を計算する場合は、`difference`を使う
- 2つの時刻の差を計算する場合は、`time!`を使う

11

```
20-Feb-1980 + 50
== 10-Apr-1980
```

$$20\text{-Feb-1980} + 3 \\ == 23\text{-Feb-1980}$$

20-Feb-1980 - 25  
== 26-Jan-1980

20-Feb-1980 + 100  
== 30-May-1980

28-Feb-1980 + 20:30:45  
== 28-Feb-1980/20:30:45

```
28-Feb-1980/8:30:00 + 20:30:45
== 29-Feb-1980/5:00:45
```

```
d: 20-Feb-1980
d/day: d/day + 50
== 10-Apr-1980
```

```
d: 20-Feb-1980
d/month: d/month + 5
== 20-Jul-1980
```

```
d: 28-Feb-1980/8:30:00
d/hour: d/hour + 48
== 1-Mar-1980/8:30:00
```

```
08/07/2017/10:45:00 - 20-Feb-1980/05:30:00
== 13653
```

```
difference 08/07/2017/10:45:00 20-Feb-1980/05:30:0
327677:15:00
```

7.

**now** OS

- `/utc` UTC
- `/precise` Windows 60 1 Unix

□

```
now
== 8-Jul-2017/18:32:25+08:00

now/year
== 2017

now/hour
== 18

now/month
== 7

now/day
== 8

now/hour
== 18

now/zone
== 8:00:00

now/utc
== 8-Jul-2017/10:32:25
```

## 8. □□□□□□□□□□□□□□

### 8.1. Random

□□

```
random <date>

<date> : date!□
```

□□

□□□□□□□□□□□□□□□□□□□□□□time□timezone□□□□□□□□□□□□□□□□□□time□timezone□□□□□□□□

□

```
random 09/07/2017
```

```
== 18-May-1972
```

```
random 09/07/2017
```

```
== 13-Aug-0981
```

```
random 09/07/2017/12:00:00+8
```

```
== 28-Feb-0341/17:57:12+04:00
```

```
random 09/07/2017/12:00:00+8
```

```
== 13-Dec-1062/5:09:12-00:30
```