hp calculators

HP 20b Solving problems involving dates

Date calculations on the HP 20b

Practice solving problems involving dates
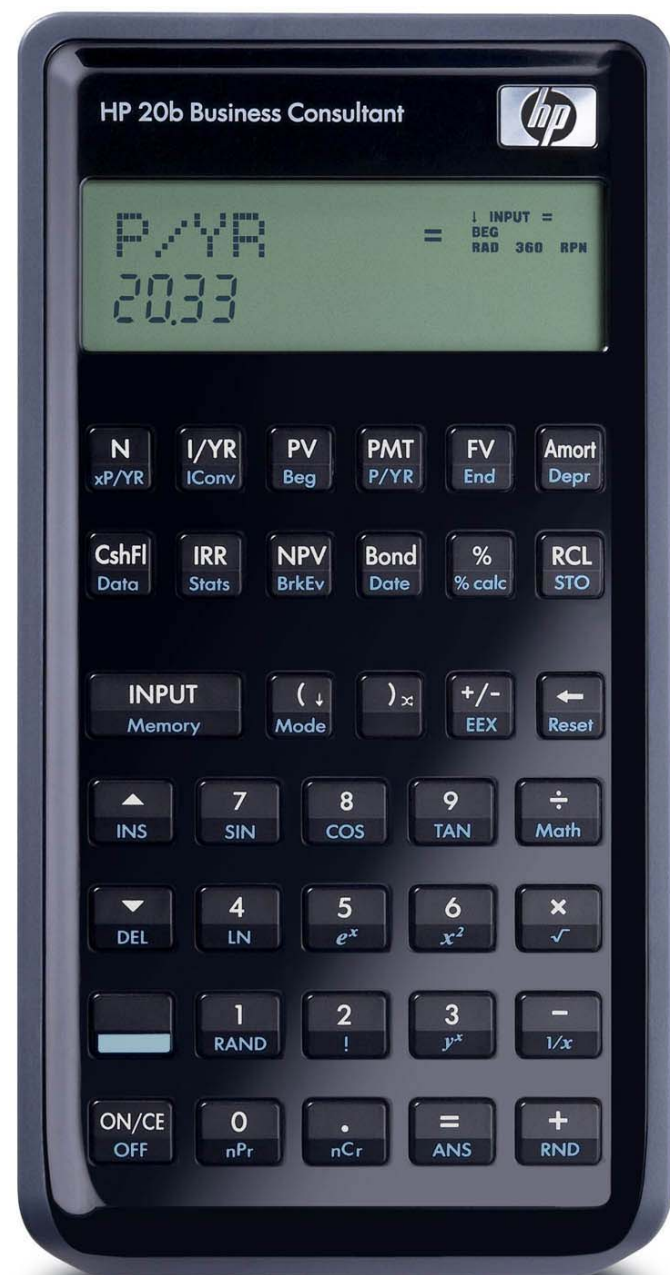
Date calculations on the HP 20b

The HP 20b has a built-in calendar that can be used to make calculations involving dates. These abilities are found in the Date menu which is accessed by pressing ▭ [Date]. Two of the three values for Date 1, Date 2 or the Days between the two dates must be entered and then the remaining value can be computed. Enter two of these three values and press [INPUT]. To move from one item in the menu to the next, press the down arrow key [▼]. This key is abbreviated DWN in the map below. To compute a menu item from the other two entered values, press [=] when that menu item to be computed is displayed.
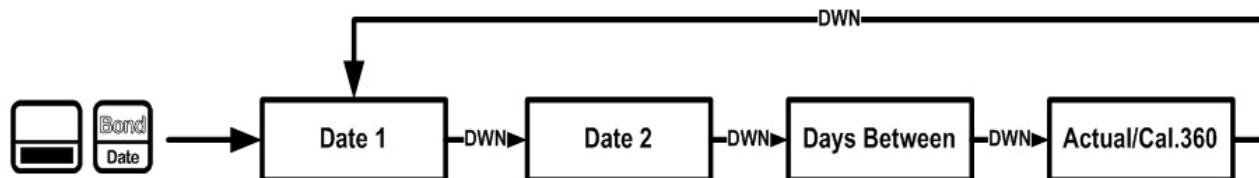

Figure 1 The Menu Map for the Date Menu

Table 1 Date Menu items

| Variable	Description
Date 1	Displays the value stored for Date 1 in either *mm.ddyyyy* or *dd.mmyyyy* format. This date format is controlled in the ▭ [Mode] menu.
Date 2	Displays the value stored for Date 2 in either *mm.ddyyyy* or *dd.mmyyyy* format. This date format is controlled in the ▭ [Mode] menu.
Days Between	Displays the days between Date 1 and Date 2. This can be an input value to allow for the computation of Date 1 or Date 2, or computed from two entered dates.
Actual/Cal.360	Actual (365-day calendar) or Cal.360 (30-day month/360-day year calendar). Press [INPUT] to change the mode. Default is Actual.

Each of these menu items other than Actual/Cal.360 is considered a read/write menu item, because when it is selected, both the *INPUT* and small (=) annunciators are lit in the top right corner of the HP 20b display. When lit, these annunciators indicate that entering a number and pressing [INPUT] will store the entered number in the displayed menu item. Pressing [=] (outside of a mathematical operation) will calculate the value for that item based on available data.

To clear the Date menu <u>while in the menu</u>, press ▭ [Reset] [INPUT]. If you are in one part of the Date menu and wish to do another type of Date calculation, you can press ▭ [Date] to re-enter the menu and begin again.

When a date is entered, the HP 20b displays the day of the week upon which it falls as a small number at the far right of the display, as shown in figure 2 below. This value ranges from a 1, indicating Monday, to 7, indicating Sunday. For the New Year's Eve 2008 date shown below, the 3 indicates this is a Wednesday. This value is not always meaningful in Cal.360 mode.

Figure 2

Practice solving problems involving dates

NOTES: 1) All examples assume mm.ddyyyy date mode. If you are using dd.mmyyyy date mode, make the appropriate changes to the keystrokes shown below for that approach to dates.

2) All examples assume ACTUAL rather than Cal.360 mode, unless otherwise specified.

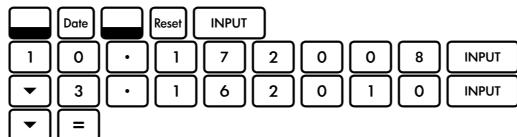Example 1: How many days are between October 17, 2008 and March 16, 2010? Use a 365 day year.

Solution:

```
[■][Date][■][Reset][INPUT]
[1][0][.][1][7][2][0][0][8][INPUT]
[▼][3][.][1][6][2][0][1][0][INPUT]
[▼][=]
```

Days Betw= ᴵᴺᴾᵁᵀ =
5 15.00

Figure 3

Answer: 515 days.

Example 2: What day of the week is March 16, 2010? Assume you have just worked example 1.

Solution: [▲]

Date 2   = ᴵᴺᴾᵁᵀ =
3 16 2010   2

Figure 4

Answer: March 16, 2010 is a Tuesday, because the 2 is displayed.

Example 3: On what day will the United States be 100,000 days old? In other words, what day is 100,000 days after July 4, 1776? Use a 365 day calendar.
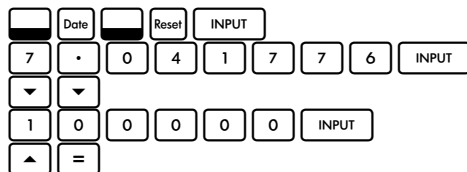
Solution:

```
[■][Date][■][Reset][INPUT]
[7][.][0][4][1][7][7][6][INPUT]
[▼][▼]
[1][0][0][0][0][0][INPUT]
[▲][=]
```

Date 2   = ᴵᴺᴾᵁᵀ =
4 19 2050   2

Figure 5

Answer: The United States will be 100,000 days old on April 19, 2050, a Tuesday.

Example 4: What day of the week was July 4, 1776? Assume you have just worked example 3.

Solution: [▲]

```
Date 1    =  INPUT =
7 04 1776        4
```
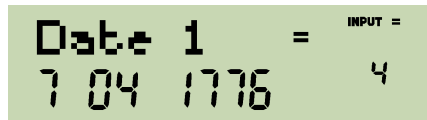Figure 6

Answer: July 4, 1776 was a Thursday.

Example 5: On what day will the United States be 100,000 days old? In other words, what day is 100,000 days after
July 4, 1776? Use Cal.360 mode for this example. Assume the calculator was already in Actual mode and
will need to be switched to Cal.360 mode.

Solution:

```
Date 2    =  INPUT =
4 14 2054       360
                  2
```
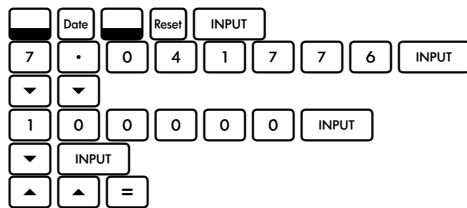Figure 7

Answer: Using a Cal.360 calendar approach, the United States will be 100,000 days old on April 14, 2054, although
the usefulness of this approach is unclear.