The HP 10BII Q-Card

The Display

Contrast With the machine on, press and hold down the o key. Then use [+] or [−] to adjust the display contrast.

Decimal Places Press [DISP], then specify the decimal places. ([DISP] [.] shows all but trailing 0's.) [DISP] rounds just the display; [RND] rounds the actual value to match the display.

Decimal Point Press [.,], which is a toggle that selects either a comma or a period as the decimal point.

Clearing [←] clears the last digit of any entry in progress on the calculator line; only a complete entry is completely cleared by [←]. By contrast, [C] will always clear the entire calculator line; [C ALL] always clears the calculator line and memory.

Arithmetic and Math

Arithmetic To calculate **2 + 5**, press [2] [+] [5] [=].
To find **40%** of **200**, press [4] [0] [%] [×] [2] [0] [0] [=].

Scientific Notation To find **2,000,000 x 2,000,000**, press [2] [E] [6] [×] [2] [E] [6] [=]. The result, **4.00E 12**, is "four times ten to the 12th power" (4 trillion)—a 4 followed by 12 zeros.

Powers and Roots To calculate -19^7, press [1] [9] [+/−] [y^x] [7] [=]. To calculate $\sqrt{144}$, press [1] [4] [4] [$\sqrt{x}$]. To find $\sqrt[6]{729}$, press [7] [2] [9] [y^x] [6] [$1/x$] [=].

Logarithms To calculate **LN(149.5)**, press [1] [4] [9] [.] [5] [LN]. To calculate $e^{1.5}$, press [1] [.] [5] [e^x].

Factorials To calculate **10!**, press [1] [0] [n!].

Memory and Storage

The M Register To store a value into the M register, press [→M]. To recall the current contents of the M register, press [RM]. To add to the current contents of the M register, press [M+]. (To subtract from the current contents of the M register, just add a negative value.)

To clear the M register, press [0] [→M]. (The M register will also be cleared when you clear all registers via [C ALL].)

The Numbered Storage Registers Besides the M register, you also have 10 other storage registers, denoted with the numbers from 0 to 9. Use [STO] and [RCL] to access these registers. Thus, to store the result of 789÷5 into register 4, you'd press [7] [8] [9] [÷] [5] [=] [STO] [4].

You can also add, subtract, multiply or divide directly into the numbered storage registers. For example, to multiply the current contents of register 4 by 1.9 (storing the new result in register 4), you would press [1] [•] [9] [STO] [+] [4]. And [STO] [−], [STO] [×] and [STO] [÷] work similarly.

To clear any numbered storage register, simply store a value of 0 there. (And all numbered registers will be cleared when you use [C ALL].)

Other Storage and Recall Operations You can also use [STO] and/or [RCL] to access other built-in storage registers, such as those for TVM or statistics. For example, to recall the value currently stored in the PV register, you could press [RCL] [PV].

Storing an Operation The [K] key lets you store an operation for repeated use. For example, to store "+3," first do it manually, *noting it in passing* with [K]: [7] [+] [3] [K] [=]. Thereafter, just key in a value and use [=]: [•] [4] [+/−] [=] (2.60); [2] [9] [0] [=] (293.00); etc. You can store percentage operations similarly: [1] [−] [2] [5] [%] [K] [=] will then let you deduct 25% from any number (using just [=]). Powers and roots work, too: Try [1] [y^x] [2] [K] [=] or [1] [y^x] [3] [1/x] [K] [=].

Statistics and Data Analysis

Storing Statistical Data To begin, press [−][CLΣ] to clear the six statistical registers. Then key in each data point and press [Σ+]. (For two-variable data, key in the *x* value first, press [INPUT], then key in the *y* value, then press [Σ+].) The display will show the number of data points entered so far.

Editing/Correcting Statistical Data If you enter a data point in error or wish to delete a point for any other reason, just enter it again (using [INPUT] to separate x and y values for two-variable data) but then use [Σ−] rather than [Σ+]. This will delete its contribution to the statistical accumulation (and the display will reflect this by decrementing the point count).

Statistical Sums and Calculations Once you've entered a correct set of data, here are the calculations you can do:

[−][n] shows the total number of points accumulated.
[−][Σx] shows the sum of all the *x* data.
[−][Σy] shows the sum of all the *y* data.
[−][Σx²] shows the sum of the squares of all the *x* data.
[−][Σy²] shows the sum of the squares of all the *y* data.
[−][Σxy] shows the sum of the products of each *x* and *y*.

[−][$\bar{x}$,$\bar{y}$] shows the simple mean (average) of the *x* data;
[−][SWAP] then shows the simple mean of the *y* data.
[−][$\bar{x}_w$] shows the weighted mean of the *x* data.
(The *y* data are used as the respective weight factors.)
[−][Sx,Sy] shows the sample standard deviation of the *x* data;
[−][SWAP] then shows the sample stand. dev. of the *y* data.
[−][σx,σy] shows the population stand. deviation of the *x* data;
[−][SWAP] then shows the pop. stand. dev. of the *y* data.

Linear Regression: Key in an *x* value, then use [−][$\hat{y}$,m] to see the corresponding estimated *y* value; [−][SWAP] then shows the correlation coefficient, *r*. Or, key in a *y* value, then use [−][$\hat{x}$,r] to see the corresponding estimated *x* value; [−][SWAP] then shows the slope, *m*, of the regression line.

Time Value of Money (TVM) Calculations

To solve for payment (PMT), Future Value (FV) or Present Value (PV) in a uniform cash flow scenario, using the Time Value of Money (TVM) formula:

Calculating PMT

Press [▬][BEG/END], as needed, to set the annuity mode.
Type the # of payments per year and press [▬][P/YR].
Type the # years in the loan term and press [▬][x P/YR].
Type the annual interest rate and press [I/YR].
Type the amount financed* and press [PV].
Type the final remaining balance* and press [FV].
Calculate the payment amount (PMT) by pressing [PMT].

Calculating FV

Press [▬][BEG/END], as needed, to set the annuity mode.
Type the # of payments per year and press [▬][P/YR].
Type the # years in the loan term and press [▬][x P/YR].
Type the annual interest rate and press [I/YR].
Type the amount financed* and press [PV].
Type the periodic payment* and press [PMT].
Calculate the Future Value (FV) by pressing [FV].

Calculating PV

Press [▬][BEG/END], as needed, to set the annuity mode.
Type the # of payments per year and press [▬][P/YR].
Type the # years in the loan term and press [▬][x P/YR].
Type the annual interest rate and press [I/YR].
Type the periodic payment* and press [PMT].
Type the final remaining balance* and press [FV].
Calculate the Present Value (PV) by pressing [PV].

*The signs of the values of PV, PMT and FV must reflect the direction money is flowing—either *to* you or *from* you. (Pick one perspective—either the lender's or the borrower's—and stick with it.) For example, if PV is positive (i.e. as a borrower, you receive the loan amount), then FV and PMT are usually negative (the amounts you must repay).

TVM Calculations (*cont.*)

To solve for annual interest rate (I/YR) or number of periods (N) in a uniform cash flow scenario, using the TVM formula:

Calculating I/YR

Press [▬][BEG/END], as needed, to set the annuity mode.
Type the # of payments per year and press [▬][P/YR].
Type the # years in the loan term and press [▬][x P/YR].
Type the amount financed* and press [PV].
Type the periodic payment* and press [PMT].
Type the final remaining balance* and press [FV].
Find the annual interest rate (I/YR) by pressing [I/YR].

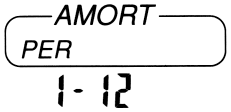
Calculating N

Press [▬][BEG/END], as needed, to set the annuity mode.
Type the # of payments per year and press [▬][P/YR].
Type the annual interest rate and press [I/YR].
Type the amount financed* and press [PV].
Type the periodic payment* and press [PMT].
Type the final remaining balance* and press [FV].
Find the # of payment periods (N) by pressing [N].

*(See the note at the bottom of page 4.)

Amortization (AMORT)

To amortize a loan, do a normal TVM calculation, solving for PMT. Then press [▬][AMORT]. You'll see:



Press [=] to see the principal paid.
Press [=] to see the interest paid.
Press [=] to see the remaining balance.
Press [▬][AMORT] to amortize the next year of payments, etc.

You can also amortize any arbitrary set of periods in the loan. For example, to amortize periods 7 through 9, you would press [7] [INPUT] [9] [▬][AMORT].

Converting Interest Rates

When an interest rate compounds either more or less frequently than the periods in a TVM payment stream, you must find an equivalent rate whose periodicity does match the payments:

Type the quoted rate; press [▬][NOM%].

Type that rate's compounding periods/year; press [▬][P/YR].

Press [▬][EFF%].

Type the P/YR of the TVM payment stream; press [▬][P/YR].

Press [▬][NOM%] to find the equivalent I/YR to use in TVM.

Percentages and Pricing

Finding and Adding Percentages Unless it is preceded by a [+] or [−], the [%] key simply divides a number by 100. For example to take **73%** of **19**, press [7][3][%][×][1][9][=]. And [%] can also add (or subtract) a percentage from a number. For example, to add **25%** to **256**, press [2][5][6][+][2][5][%][=]. To subtract **12%** from **3.5**, press [3][•][5][−][1][2][%][=].

Finding Percentage Change To find the relative change between known values, use [▬][%CHG]. For example, to find the percentage change in a stock that you bought at **9.75** and sold at **13.25**, press [9][•][7][5][INPUT][1][3][•][2][5][▬][%CHG].

Margins and Markups When pricing goods for sale, use the [CST], [PRC], [MU] and [MAR] keys. **MARGIN** = (**PRICE**–**COST**)÷**PRICE**, as a percent, and **MARKUP** = (**PRICE**–**COST**)÷**COST**, as a percent. If you know two of the four values, including either **COST** or **PRICE**, you can calculate the other two values.

For example, if a book costs you $5.50 wholesale, and you sell it at retail for $9.95, what's your margin? Press [5][•][5][CST][9][•][9][5][PRC][MAR]. (44.72%) What's your markup? Press [MU]. (80.91%) What should you sell the book for to get a 60% margin? Press [6][0][MAR][PRC]. ($13.75)

Cash Flow Lists

Creating a Cash Flow List A cash flow list is a description of the amounts and signs (income is +; outlay is –) of the cash flows in an investment scenario. The flow amounts may differ, but they must be periodic in occurrence. The list consists of an initial cash flow and then up to 14 *groups* of identical consecutive cash flows (up to 99 flows per group).

To start a new list, press [-] [C ALL]. Then:
Key in the initial cash flow amount ("Group 0"), including its sign (±); press [CFj].
Key in the flow amount and sign of Group 1; press [CFj].
Key in the number of consecutive occurrences of the cash flow amount in Group 1; press [-] [Nj].
Key in the flow amount and sign of Group 2; press [CFj].
Key in the number of consecutive occurrences of the cash flow amount in Group 2; press [-] [Nj].
...And so on—for all such groups (up to 14) in the scenario.

NPV and IRR/YR

Calculating NPV After you have completely entered a cash flow list (see above), to find the Net Present Value (*NPV*), key in the number of compounding periods per year and press [-] [P/YR]. Then key in the annual discount rate and press [I/YR]. Then press [-] [NPV].

Calculating IRR% After you have completely entered a desired cash flow list (see above), to find an annualized Internal Rate of Return (*IRR/YR*), key in the number of compounding periods per year and press [-] [P/YR]. Then press [-] [IRR/YR]. Keep in mind that *IRR/YR* is an iterative calculation that sometimes has either no solution or multiple solutions, including possible negative values. If you encounter such a situation, you'll usually get an error message. See page 8 here for more about such error messages.

Errors and Troubleshooting

Common Errors

no Solution Check the signs of PV, PMT and FV—at least one of those values must be negative. If solving for n, be sure that PMT is at least enough to cover the interest accruing each period. If you see this message while computing IRR/YR, look for a sign error among your cash flows.

not Found: If you get this message while trying to compute IRR/YR, either there is no solution for IRR/YR, or there is more than one. To find out, key in a guess and press ▬STO ▬IRR/YR. (Note: If the result of an IRR/YR calculation is negative, you may also get a message, **POS Irr ALSO**. If so, you need to key in a guess to find the positive solution.)

Clearing Machine Memory Press *and hold down* the ON key, then press *and hold down* the N key. Then press and release FV, then release the other keys. You should see something like **COPr HP 2000**, then **ALL CLEAr**.

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