HEWLETT-PACKARD

SOLVING PROBLEMS WITH YOUR HEWLETT-PACKARD CALCULATOR

HEWLETT PACKARD

Solving Problems With Your Hewlett-Packard Calculator

August 1980

5955-5267 Rev. B 8/80

Printed in U.S.A.

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Solving Problems With Your Hewlett-Packard Calculator

ENTER↑

It's the "key" to solving problems with ease and confidence. It's part of the RPN logic system in your new Hewlett-Packard calculator. A logic system so amazing in its simplicity and power that, once you've tried it, you'll never be content with any other system.

This book describes the Hewlett-Packard RPN logic system. If you're new to HP calculators, taking the time to read it thoroughly will be the second best investment you've made (the first was purchasing your new HP calculator). Even if you already own another HP calculator, you may find some new features you're not familiar with.

If you're like most people who buy a new calculator, you can't wait to get started using it. We don't blame you. In fact, that's just what we want you to do. That's why we wrote this book. It's not very long and, when you've worked your way through it with your new calculator, you'll be well on your way to being an RPN expert like other HP owners. And, you'll wonder why anybody makes a scientific calculator without an ENTER↑ key. We wonder too.

So, turn the page and get started.

Section 1

Getting Started

Power On

To begin working with your HP calculator, set the power switch to ON. If your calculator has a PRGM ▮▮ RUN switch, set it to RUN.

Operating Power

Your Hewlett-Packard calculator is shipped fully assembled, including a battery pack. You can run the calculator on battery power alone, or you can connect the battery recharger and use the calculator while the battery is charging. If you want to use the calculator on battery power only, charge the battery first (refer to Battery Charging in your owner's handbook). Whether you operate from batteries or from the recharger, *the battery pack must be in the calculator.*

Self Check Routine

Your new Hewlett-Packard calculator is loaded with features that help you operate it with ease and confidence. The self check routine, a feature found on many sophisticated electronic instruments and computers, was designed for just this reason. We don't expect you to ever have a problem with your calculator, but if you think that it isn't operating properly, try this:

Keystrokes	**Display**
STO ENTER↑	-8,8,8,8,8,8,8,8,8,8,

The display shown above will appear if the self check determines that your calculator is operating properly. Press any key to clear the display. If the display shows **Error 9**, the self check routine has determined that your calculator is not operating properly. You should then send it in for service (refer to Shipping Instructions in your owner's handbook). Pressing any key will replace the **Error 9** in the display with a number that tells a Hewlett-Packard service engineer which circuit in the calculator is at fault. That's right. The calculator not only tells you it's having problems, it tells us where the problem is, so we can fix it as quickly and inexpensively as possible and return it to you without delay.

> **Note:** Using the self check may cause memory and the registers to be cleared, depending on which calculator model you have.

Keying In Numbers

Key in a number by pressing the digits in sequence, as though you were writing on paper. A decimal point must be keyed in if it is part of the number.

Example: Key in 10912.45 (the depth in meters reached by the Bathyscaphe *Trieste* in the Marianas Trench on January 23, 1960.)

Keystrokes	Display
10912.45	10,912.45

The resulting number 10,912.45 is seen in the display. Notice that commas are automatically inserted for you. Answers can be read quickly and easily, with less chance for error.

Negative Numbers

To key in a negative number, key in the digits, then press [CHS] *(change sign)*. The number, preceded by a minus (−) sign, will appear in the display.

Example: Change the sign of the number now in the display:

Keystrokes	Display
[CHS]	-10,912.45

You can change the signs of negative or positive numbers in the display. Change the sign of −10,912.45 now in the display.

Keystrokes	Display
[CHS]	10,912.45

Clearing

Any number that is in the display can be cleared by pressing [CLx] *(clear X)*. This key erases the displayed number and replaces it with zero.

Keystrokes	Display
[CLx]	0.0000

If a mistake is made while keying in a number, press [CLx] to clear the entire number. Then key in the correct number.

Note: The number shown in the display is always designated by x on the function key.

Functions

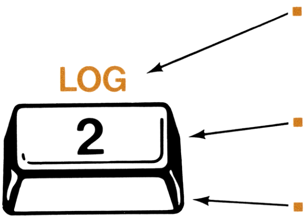
Keyboard

Most keys on the keyboard perform two or more functions. One function is indicated by the symbol on the flat face of the key, another by the symbol on the slanted key face, and a third by the symbol written above the key on the calculator case.

To select the function printed on the flat face of the key, press the key.

To select the function printed above the key, first press the prefix key [f], then press the function key.

To select the function printed on the slanted face of the key, first press the prefix key [g], then press the function key.



- To select the function printed in gold above the key, first press the gold prefix key [f], then press the function key.
- To select the function printed on the flat face of the key, press the key.
- To select the function printed in blue on the slanted face of the key, first press the blue prefix key [g] then press the function key.

Some keystroke sequences in this handbook require the use of prefix keys to make them applicable to your calculator. Check your calculator keyboard for proper execution sequences.

One-Number Functions

One-number functions are functions that require only one number present in order for an operation to be performed, such as [1/x], [LOG], or [SIN].

To execute one-number functions:

1. Key in the number.
2. Press the function key (or press the applicable prefix key, then the function key).

To use the one-number function [1/x] (reciprocal) key, key in the X-number then press [1/x].

Example: Calculate $^1/_8$.

Keystrokes	Display	
8	8.	Key in X-number.
[1/x]	0.1250	Press function key for answer.

Remember: *First key in the number, then press the function key.*

Try these other one-number function problems:

Keystrokes	Display	
1/35	0.0286	Use the [1/x] key.
$\sqrt{3500}$	59.1608	Use the [$\sqrt{x}$] key.
log 16.40291	1.2149	Use the [LOG] key.

Two-Number Functions

Two-number functions are functions that must have two numbers present in order for an operation to be performed. The [+], [−], [×], and [÷] keys are examples of two-number function keys.

Two-number functions work the same way as one-number functions—operations are performed only when the function key is pressed. Therefore, *both numbers must be in the calculator before the function key is pressed.*

To place two numbers into the calculator and perform an operation:

1. Key in the first number.
2. Press [ENTER↑] to separate the first number from the second.
3. Key in the second number.
4. Press the function key to perform the operation.

All arithmetic functions are performed the same way:

To perform	Keystrokes	Display
13 + 2	13 [ENTER↑] 2 [+]	15.000
13 − 2	13 [ENTER↑] 2 [−]	11.0000
13 × 2	13 [ENTER↑] 2 [×]	26.0000
13 ÷ 2	13 [ENTER↑] 2 [÷]	6.5000

The [y^x] key is also a two-number operation. Used to raise a number to a power, it works in the same simple way as every other two-number function key:

1. Key in the first number (y).
2. Press [ENTER↑] to separate the first number from the second.
3. Key in the second number (power).
4. Perform the operation (if applicable, press the *prefix key,* then [y^x]).

When working with any function key (including [y^x]), remember, the number shown in the display is always designated by x on the function key on the calculator.

Example: Calculate 7^8.

Keystrokes	Display	
7	7.	
[ENTER↑]	7.0000	
8	8.	8 is designated by X.
[y^x]	5,764,801.000	The answer.

Try the following problems using the [y^x] key. Keep the simple rules for two-number functions in mind.

15^3	(15 to the third power)	=	3,375.0000
72^2	(72 squared)	=	5,184.0000
$601^{.5}$	(601 to the $^5/_{10}$ power)	=	24.5153
3^{18}	(3 to the 18th power)	=	387,420,489.0

Chain Calculations

The simplicity and power of the Hewlett-Packard RPN logic system becomes very apparent during chain calculations. Even during extremely long calculations, you still perform only one operation at a time. The automatic memory stack stores up to four intermediate results until you need them, then inserts them into the calculation. Thus, working through a problem is as natural as if you were working it out with pencil and paper—except the calculator takes care of the hard part.

Example: Solve (13 + 2) × 5.

If working the problem with pencil and paper, you would first calculate the intermediate result of (13 + 2)...

$$\overset{15}{\cancel{(13 +}}\ 2) \times 5 =$$

...then you would multiply this intermediate result by 5.

$$(1\overset{15}{\cancel{3 +}}\ 2) \times 5 = 75$$

You work through the problem the same way with your calculator—one operation at a time. Solve for the intermediate result first...

(13 + 2)

Keystrokes	Display	
13	13.	
[ENTER↑]	13.0000	
2	2.	
[+]	15.0000	Intermediate result.

...and then solve for the final answer. The intermediate result is automatically stored inside the calculator when you key in the next number. To continue...

Keystrokes	Display	
5	5.	Intermediate result from preceding operation is automatically stored when you key in this number.
[×]	75.0000	Pressing the function key gives you the final answer.

Try these problems. Notice that you have to press [ENTER↑] to separate numbers only when they are being keyed in one immediately after the other. A calculated *result* and a new number are automatically separated.

Solve:	Keystrokes	Display
$\dfrac{(2 + 4)}{12}$	2	2.
	[ENTER↑]	2.0000
	4	4.
	[+]	6.0000
	12	12.
	[÷]	0.5000
$(18 - 6) \times 3$	18	18.
	[ENTER↑]	18.0000
	6	6.
	[−]	12.0000
	3	3.
	[×]	36.0000
$\dfrac{13 + 6 + 4 - 5}{8}$	13	13.
	[ENTER↑]	13.0000
	6	6.
	[+]	19.0000
	4	4.
	[+]	23.0000
	5	5.
	[−]	18.0000
	8	8.
	[÷]	2.2500

Even more complicated problems are solved in the same simple manner—using automatic storage of intermediate results.

Example: Solve (3 + 4) × (5 + 6).

Solving with pencil and paper, you would:

$$\underbrace{(3+4)}_{\text{First calculate for the result of these parentheses...}} \times \underbrace{(5+6)}_{\text{...then for these parentheses...}}$$

...and then you would multiply the two intermediate answers together.

The problem is solved the same way using your calculator.

First add 3 and 4:

Keystrokes	Display
3 [ENTER↑] 4 [+]	7.0000

Then add 5 and 6:

Since another *pair of numbers* must be keyed in, one immediately after the other, before you can perform a function, you must use the [ENTER↑] key again to separate the first number from the second. There is no need to press [ENTER↑] before you key in the 5. The intermediate result is stored automatically.

Keystrokes	Display
5 [ENTER↑] 6 [+]	11.0000

Then multiply the intermediate answers together for the final answer:

Procedure	Keystrokes	Display	
(7) × (11)	[×]	77.0000	The two intermediate results are multiplied together.

Notice that your calculator automatically stored the intermediate answers and brought them out when it was time to multiply. You didn't have to write down or key in the immediate answers from inside the parentheses before you multiplied.

Remember, the ENTER↑ key is used only for separating the first number from the second in any operation requiring the entry of two numbers. The calculator knows that after it completes a calculation, any new digits keyed in are part of a new number.

Now that you've done some calculating, you can begin to fully appreciate the benefits of the Hewlett-Packard logic system.

Here are just a few of the benefits of RPN:

- *You never have to work with more than one function at a time.* Your HP calculator cuts problems down to size instead of making them more complex.
- *Intermediate results appear as they are calculated.*
- *Pressing a function key executes that function immediately so each step can be checked as you go.*
- *Intermediate results are handled automatically*. There is no need to write down long intermediate answers when working on a problem.
- *You calculate in the same order as you do with pencil and paper.* Thinking the problem through ahead of time is unnecessary.

Now, continue on through the book to learn more about your calculator and the power of RPN.

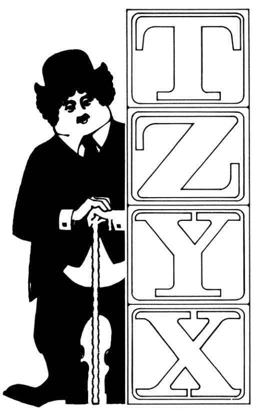
Section 2

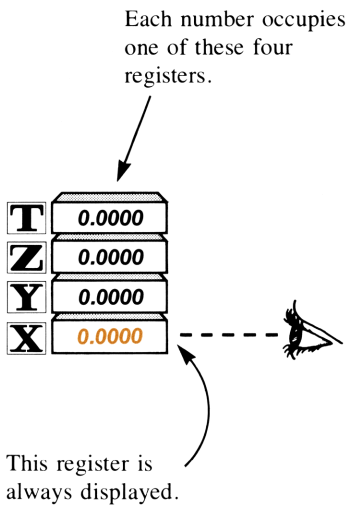
The Automatic Memory Stack

Automatic storage of intermediate results is the reason your calculator slides so easily through the most complex equations. The key to automatic storage is the Hewlett-Packard automatic memory stack. To get the most from your calculator you must have a good understanding of how the stack works. So read this section carefully.

Initial Display

Numbers are stored and manipulated in the machine "registers." The displayed X-register—the only visible register—is one of four registers positioned inside the calculator to form the automatic memory stack. These registers are labelled X, Y, Z and T. Each number, no matter how many digits comprise it, occupies one entire register.





Manipulating Stack Contents

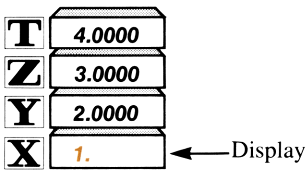
The [R↓] *(roll down)*, [R↑] *(roll up)*, and [x⇄y] *(X exchange Y)* keys enable you to review the stack contents or shift data within the stack for computation at any time.

Reviewing the Stack

To see how the [R↓] key works, load the stack with numbers 1 through 4 by pressing:

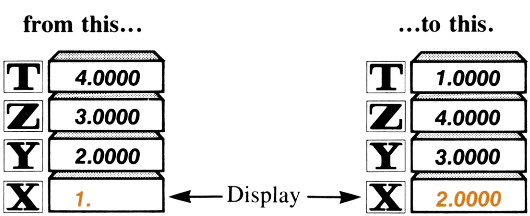
4 [ENTER↑] 3 [ENTER↑] 2 [ENTER↑] 1

These numbers are now loaded into the stack. Its contents look like this:



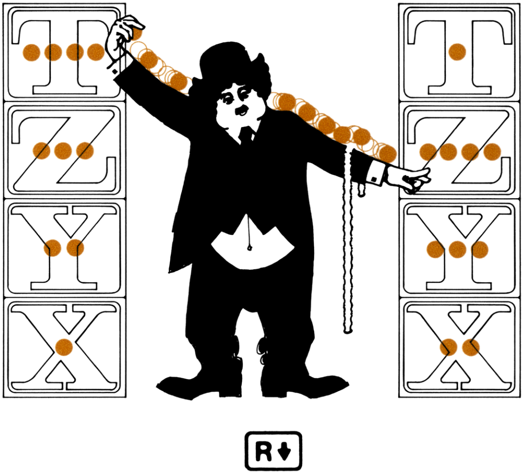
Each time the [R↓] key is pressed, stack contents shift downward one register. By pressing [R↓], the last number keyed in will be rotated to the T-register.

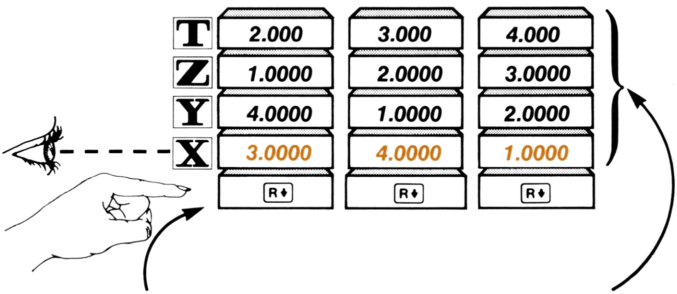
Press the [R↓] key. Stack contents are rotated



The registers themselves maintain their positions. The contents of the X-register are always displayed, so **2.0000** is now visible.

Each time you press [R↓] the stack contents are shifted.





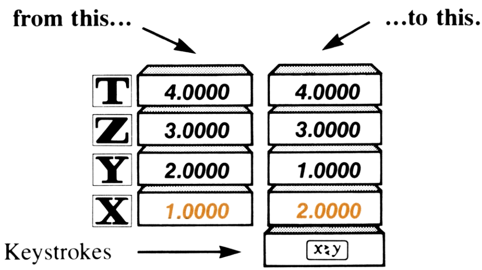
Now press these keys... ...to get these numbers in the stack.

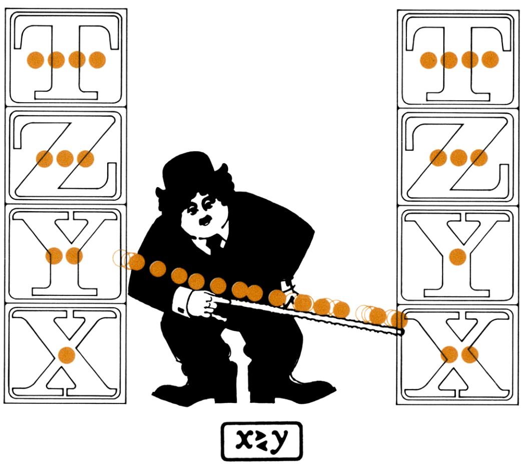
The number 1.0000 is in the displayed X-register once again. The R↓ key can be used to review the stack contents to see what is in the calculator. Remember, *you must press the* R↓ *key four times to return the contents to their original registers.*

Exchanging X and Y

The [x⇄y] *(X exchange Y)* key exchanges the contents of the X- and Y-registers without affecting the Z- and T-registers. It is used to reposition numbers in the stack or to view the Y-register.

If you press [x⇄y] with data intact from the previous example, the numbers in the X- and Y-registers will be changed

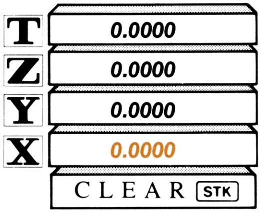




Pressing [x⇄y] again will return the numbers in the X- and Y-registers to their original positions.

It is not necessary to clear the stack or the displayed X-register when starting a new calculation. This will become obvious when you see how intermediate results in the stack are automatically lifted into the stack by new entries.

For clarity, the following examples are shown with the stack cleared to all zeros initally. If you want the contents of your stack registers to match the ones here, first clear the stack by pressing CLEAR [STK]. All examples will be as if the stack registers are filled with zeros.

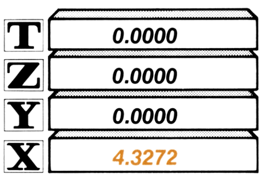


The [ENTER↑] Key

When a number is keyed into the calculator, its contents are placed in the displayed X-register.

Key in 4.3272.

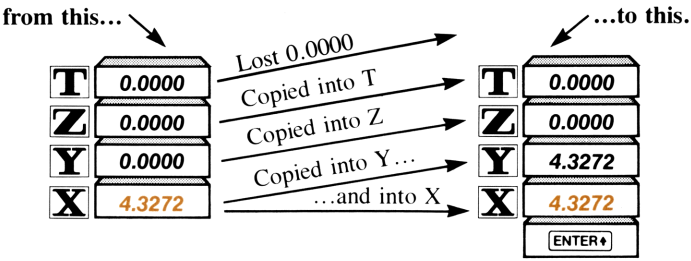
The stack registers look like this:

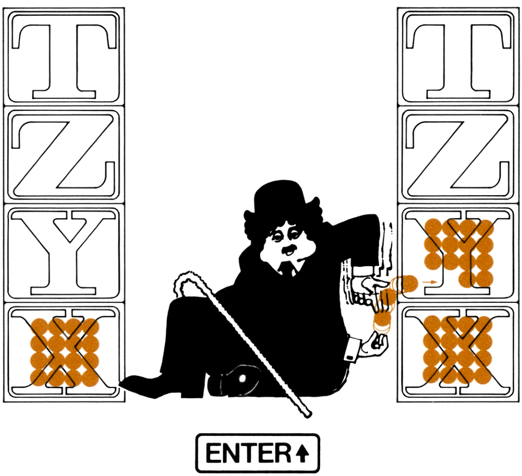


To key in a second number, you must separate the digits of the first number from the digits of the second. One way to separate numbers is to press [ENTER↑].

Press [ENTER↑].

The contents of the registers change



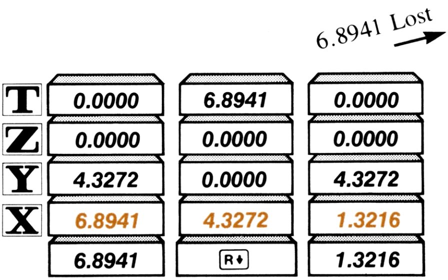


The number in the displayed X-register has been copied into Y. Numbers in Y and Z have also been pushed up into the Z- and T-registers, respectively. The number in T has been lost off the top of the stack. This process will be more apparent when different numbers are in all four stack registers.

After pressing ENTER↑ , the X-register is prepared for a new number. That new number writes over the current number in X.

Now press the following keystrokes and follow the stack diagram to see how the contents are affected.

Press these keys.



Note that in this step we lose the contents of the T-register.

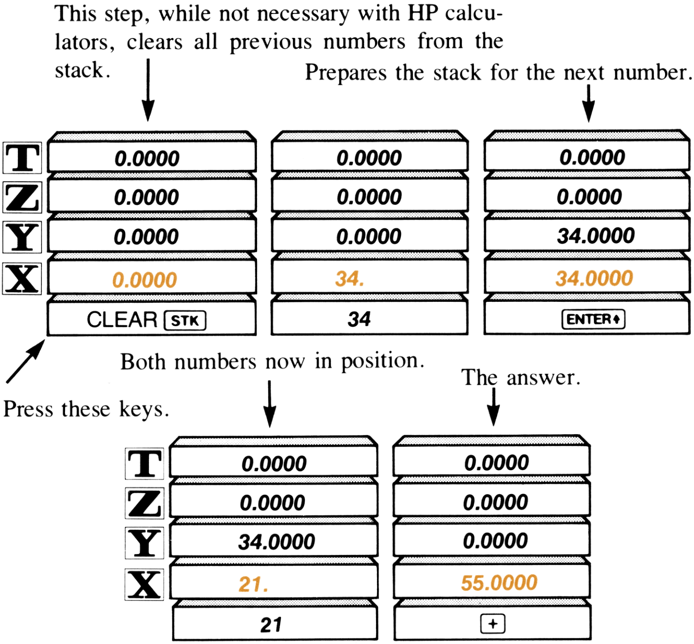
Arithmetic—How the Stack Does It

Your Hewlett-Packard calculator does arithmetic by positioning numbers in the stack the same way they would be positioned on paper. For instance, to add 34 and 21, 34 would first be written down with 21 placed beneath it like this:

$$\begin{array}{r} 34 \\ \underline{21} \end{array}$$

then added together like this:

$$\begin{array}{r} 34 \\ \underline{+21} \\ 55 \end{array}$$



Position both numbers in the stack first; then execute the operation by pressing the key. There are no exceptions to this rule.

Chain Arithmetic

In the calculation just performed, numbers were manually positioned in the stack using the ENTER↑ key. However, the stack also performs many movements automatically.

These automatic movements add to the stack's computing efficiency and ease of use. *It is these movements that automatically store intermediate results.*

Every number that resulted from a calculation in the stack is "lifted" automatically when a new number is keyed in. The stack knows that after it completes a calculation, any new digits keyed in are a part of a new number. The stack also "drops" automatically when you perform an operation.

Example: Calculate 16 + 30 + 11 = ?
Clear stack.

Stack drops during calculations involving both X- and Y-registers.

After any calculation or number manipulation, the stack automatically lifts when a new number is keyed in. Length of chain problems is unlimited until a number in one of the stack registers exceeds the range of the calculator (up to 9.999999×10^{99}).

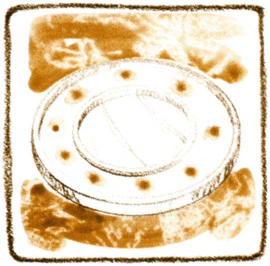
This same dropping action also occurs with [−], [×], and [÷]. The numbers in Y and X combine to give the answer—visible in the X-register. The number in Z drops to Y and the number in T duplicates in T and drops to Z.

The automatic stack lift and drop afford tremendous computing power. Intermediate results can be retained and positioned in long calculations without reentering numbers.

Constant Arithmetic

Whenever the stack drops because of a two-number operation (not because of [R↓]), the number in the T-register drops to Z and is reproduced in T.

Example: Bacteriologist Darwin Inquire tests a certain strain whose population increases by 15% each day under ideal conditions. If he starts a sample culture of 1000, what will be the bacteria population at the end of each day for six consecutive days?



Method: The growth factor is 1.15. Put 1.15 in the Y-, Z- and T-registers. Put 1000 (the original population) in the X-register. Each time $\boxed{\times}$ is pressed the new population is given.

T	0.0000	0.0000	0.0000	1.1500	1.1500
Z	0.0000	0.0000	1.1500	1.1500	1.1500
Y	0.0000	1.1500	1.1500	1.1500	1.1500
X	1.15	1.1500	1.1500	1.1500	1,000.
	1.15	ENTER↑	ENTER↑	ENTER↑	1000

The starting sample of 1,000 is now in the X-register and the growth factor is now in the other three registers. Let's see what happens when we press $\boxed{\times}$ …

T	1.1500	1.1500	1.1500
Z	1.1500	1.1500	1.1500
Y	1.1500	1.1500	1.1500
X	1,150.0000	1,322.5000	1,520.8750
	$\boxed{\times}$	$\boxed{\times}$	$\boxed{\times}$

T	1.1500	1.1500	1.1500
Z	1.1500	1.1500	1.1500
Y	1.1500	1.1500	1.1500
X	1,749.0063	2,011.3572	2,313.0608
	$\boxed{\times}$	$\boxed{\times}$	$\boxed{\times}$

Population at the end of each of the six days.

Note that even though the stack "drops" as x and y are multiplied together, the value in T reappears after each multiplication.

> When the stack lifts, t is lost; when the stack drops, t is duplicated in Z and T.

Order of Execution

When solving a problem like this one:

$$5 \times \frac{\left[(3 \div 4) - (5 \div 2) + (4 \times 3)\right]}{(3 \times .213)}$$

you must decide where to start before pressing any keys.

Work the problem just as you would with pencil and paper—start at an inner number or set of parentheses and work outward.

To solve the problem above:

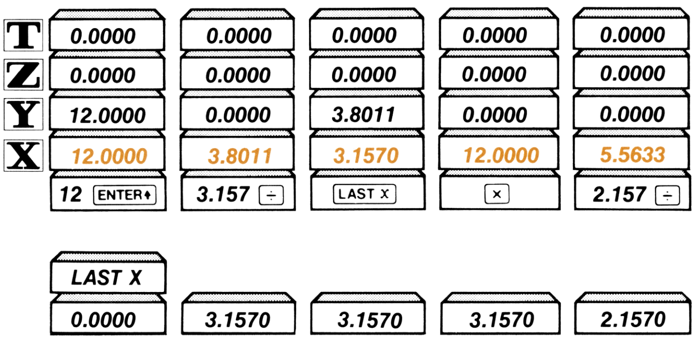
T	0.0000	0.0000	0.0000
Z	0.0000	0.0000	0.0000
Y	0.0000	0.7500	0.0000
X	0.7500	2.5000	-1.7500
	3 [ENTER↑] 4 [÷]	5 [ENTER↑] 2 [÷]	[−]

T	0.0000	0.0000	0.0000
Z	0.0000	0.0000	0.0000
Y	-1.7500	0.0000	10.2500
X	12.0000	10.2500	0.6390
	4 [ENTER↑] 3 [×]	[+]	3 [ENTER↑] .213 [×]

LAST X

The [LAST x] *(last x)* register automatically preserves the last value that was in the X-register before executing a function. When you press [LAST x], that value is recalled to the X-register.

Example: Divide 12 by 2.157 after you have mistakenly divided by 3.157.



This step takes us back to the beginning.

Section 3

Display Control

In your calculator, numbers in the display normally appear rounded to four decimal places.

For example, the fixed constant π, which is *actually* used in the calculator as 3.141592654, normally *appears in the display* as ***3.1416***.

Although a number is normally shown to only four decimal places, your calculator always computes internally using 10 digits of each number. For example, when you compute $2 \times \pi$, you *see* the answer to only four decimal places:

Keystrokes	**Display**
2 [ENTER↑] π [×]	6.2832

However, inside the calculator all numbers have 10 digits. So the calculator *actually* calculates using full 10-digit numbers:

2.000000000 [ENTER↑] 3.141592654 [×]

yields an answer that is actually carried to 10 digits:

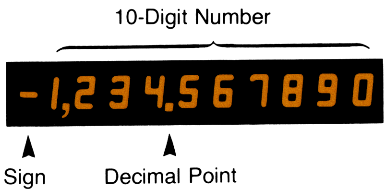
$$\underbrace{6.2831}_{\text{You see only these digits...}}\underbrace{85308}_{\text{...but these digits are also present.}}$$

Note: In Continuous Memory models when you switch your calculator on, the display appears in the last display setting used.

Display Control Keys

Depending upon your calculator, up to four keys, [FIX] *(fixed point display)*, [SCI] *(scientific notation display)*, [ENG] *(engineering notation display)*, and [MANT] *(mantissa)* allow you to control the manner in which a number is displayed. The number itself is not altered by these keys. Your calculator always calculates internally using full 10-digit numbers.

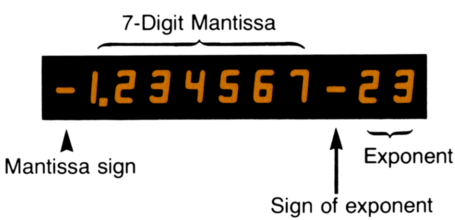
Fixed Point Display



Fixed point display is selected by pressing FIX followed by the appropriate number key to specify the number of decimal places (0 to 9) to which the display is to be rounded. Fixed point display allows answers to be shown with the same number of places after the decimal point. The number begins at the left side of the display and includes trailing zeros within the setting selected.

Keystrokes	Display	
123.45678 ENTER↑	123.4568	Display is rounded off to 4 decimal places. Internally, however, the number maintains its original value to 10 digits.
FIX 6	123.456780	
FIX 2	123.46	
FIX 0	123.	
FIX 4	123.4568	Normal FIX 4 display.

Scientific Notation Display



This means $-1.234567 \times 10^{-23}$.

Scientific notation display is useful when you are working with large or very small numbers and allows all answers to be displayed with a specific number of digits after the decimal point. It is selected by pressing [SCI] followed by the appropriate number key to specify the number of decimal places to which the number is seen rounded. Again, the display is left-justified and includes trailing zeros within the selected setting. For example:

Keystrokes	Display	
123.45678 [ENTER↑]	123.4568	
[SCI] 2	1.23 02	Equals 1.23×10^2.
[SCI] 4	1.2346 02	Equals 1.2346×10^2.
[SCI] 7	1.234567 02	Equals 1.234567×10^2.

In scientific notation display, your HP calculator shows only seven digits plus the two-digit exponent of 10. So even though you may try to carry the digits out farther, the calculator will display a maximum of seven digits unless you use the mantissa feature. For example, continuing the above operation results in no apparent change in the display:

Keystrokes	Display	
[SCI] 8	1.234567 02	No change in display.
[SCI] 9	1.234567 02	No change in display.

In scientific notation display, your calculator contains a 10-digit number and a two-digit exponent of 10 inside the calculator, even though it displays only out to six digits after the decimal point.

For example, if you key in 1.00000094 and specify full scientific notation display ([SCI] 6), the calculator rounds off to the sixth digit after the decimal point:

1.00000094

↑

Calculator rounds to this digit in [SCI] 6.

Keystrokes	Display
1.00000094	1.00000094
[SCI] 6	1.000001 00

In SCI 7, the calculator rounds off to the seventh digit after the decimal point, but you see only out to six digits after the decimal:

1.00000094

You see to here... ...but the calculator rounds to here in SCI 7.

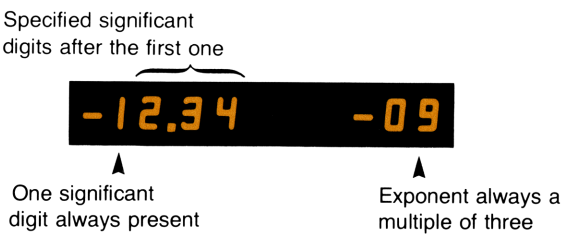
Keystrokes	Display
SCI 7	1.000000 00

You can see that if you had keyed in 1.00000095, SCI 7 would also have caused the sixth and final displayed digit to be rounded to a 1.

Mantissa

When, in scientific notation display, you wish to view the contents of the true mantissa (all decimal places), press MANT and hold down the key. This operation will clear the exponent and display all the digits of the mantissa held internally. Release the key and the display will revert back to scientific notation display. This can also be used with the display set for engineering and fixed notation.

Engineering Notation Display



Engineering notation allows all numbers to be shown with exponents of 10 that are multiples of three (e.g., 10^3, 10^{-6}, 10^{12}).

This is particularly useful in scientific and engineering calculations, where units of measure are often specified in multiples of three.

Engineering notation is selected by pressing ENG followed by a number key. The first significant digit is always present in the display, and the number key specifies the number of *additional* significant digits to which the display is rounded. The decimal point always appears in the display. For example:

Keystrokes	Display	
.012345	0.012345	
ENG 1	12. -03	Engineering notation display. Number appears in the display rounded off to one significant digit after the first significant figure that is always present. Power of 10 is proper multiple of three.
ENG 3	12.35 -03	Display is rounded off to third significant digit after the first one.
ENG 6	12.34500-03	
ENG 0	10. -03	Display rounded off to first significant digit.

Notice that rounding can occur to the *left* of the decimal point, as in the case of ENG 0 specified above.

When engineering notation has been selected, the decimal point shifts to show the mantissa as units, tens, or hundreds in order to maintain the exponent of 10 as a multiple of three. For example, multiplying the number now in the calculator by 10 causes the decimal point to shift to the right without altering the exponent of 10:

Keystrokes	Display
ENG 2	12.3 -03
10 ×	123. -03

However, multiplying again by 10 causes the exponent to shift to another multiple of three. Since you specified ENG 2 earlier, the calculator maintains two significant digits after the first one when you multiply by 10.

Keystrokes	Display	
10 [×]	**1.23 00**	Decimal point shifts. Power of 10 shifts to 10^0. Display maintains two significant digits after the first one.

Automatic Display Switching

Your Hewlett-Packard calculator features automatic overflow and underflow that switch the display to scientific notation display whenever the number is too large or too small for the selected fixed decimal point display. For example, compute $(.005)^2$:

Keystrokes	Display	
.005 [FIX]		
4 [ENTER↑]	**0.0050**	[FIX] 4 display.
[×]	**2.5000 -05**	The display automatically switches to scientific notation display to let you see the answer. (If your calculator has the [x^2] function key, you could have used it instead of [ENTER↑] [×].)

Another way of displaying the answer would be ***0.000025*** (in [FIX] 6).

Your calculator also switches to scientific notation if the answer is too large for fixed point display ($>10^{10}$). For example, compute 1582000 × 1842.

Keystrokes	Display	
1582000 [ENTER↑]	**1,582,000.000**	
1842 [×]	**2,914,044,000.**	Fixed point display.

The answer does not overflow, so it remains in fixed notation. However, multiply by 10.

Keystrokes	Display	
10 [×]	**2.9140 10**	Scientific display.

The number is too large for fixed point display, so it is automatically displayed in scientific notation. Four places are shown to the right of the decimal point ([SCI] 4) since your display is set in [FIX] 4.

Keying In Exponents

You can key in numbers multiplied by powers of 10 by pressing [EEX] *(enter exponent)*. For example, key in 15.6 trillion (15.6×10^{12}), and multiply it by 25:

Keystrokes	Display	
15.6	15.6	
[EEX]	15.6 00	
12	15.6 12	(This means 15.6×10^{12}.)

Now Press		
[ENTER↑]	1.5600 13	
25 [×]	3.9000 14	

You can save time when keying in exact powers of 10 by pressing [EEX] and then pressing the desired power of 10. For example, key in 1 million (10^6) and divide by 52.

Keystrokes	Display	
[EEX]	1. 00	You do not have to key in the number 1 before pressing [EEX] when the number is an exact power of 10.
6	1. 06	
[ENTER↑]	1,000,000.000	Since you have not specified scientific notation, the answer reverts to fixed point display when you press [ENTER↑].
52 [÷]	19,230.7692	

To see your answer in scientific notation with six decimal places:

Keystrokes	Display
SCI 6	1.923077 04

Revert back to SCI 4.

Keystrokes	Display
SCI 4	1.9231 04

Press FIX 4 to revert back to fixed point display.

To key in negative exponents of 10, key in the number, press EEX, press CHS to make the exponent negative, then key in the power of 10. For example, key in Planck's constant (h)—roughly, 6.625×10^{-27} erg seconds—and multiply it by 50.

Keystrokes	Display	
6.625 EEX	6.625 00	
CHS	6.625 -00	
27	6.625 -27	
ENTER↑	6.6250 -27	
50 ×	3.3125 -25	Erg seconds.

Using the EEX key, you can key in numbers made up of 10-digit mantissas and two-digit exponents of 10. However, when you use the EEX key, your calculator displays each number as a seven-digit mantissa and a two-digit exponent of 10. In a few cases, a number may have to be altered slightly in form before you can key it in using EEX.

If you key in a number whose mantissa contains more than seven digits to the left of the decimal point, the exponent field is overwritten and the EEX key will not operate. To key in the number correctly, begin again and key in the number in a form that displays the mantissa with seven digits or less to the left of the decimal point before pressing the EEX key. (Thus, $123456789.1 \times 10^{23}$ could be keyed in as $1234567.891 \times 10^{25}$.)

If you key in a number whose first significant digit occurs *after* the first seven digits of the display, the EEX key will not operate. To key in the number correctly, begin again and place the number in a form such that its first significant digit is one of the first seven digits of the display, then proceed using the EEX key. (Thus, 0000.000025 $\times 10^{55}$ must not be keyed in in that form. It could be keyed in as 0.000025 $\times 10^{55}$, or as 00.00025 $\times 10^{54}$, for example.)

EEX and y^x

Do not confuse the use of the EEX *(enter exponent)* key with the use of the y^x key. EEX is used to specify the power of 10 by which a number is multiplied. y^x is used to raise a number to a power.

For example, compute the cube of Avogadro's number: $(6.02 \times 10^{23})^3$.

Keystrokes	Display		
6.02	6.02		
EEX 23	6.02	23	
ENTER↑	6.0200	23	
3	3.		
y^x	2.1817	71	2.181672×10^{71} is the cube of Avogadro's number.

Overflow Calculations

When the number displayed would be greater than 9.999999×10^{99}, your calculator displays all 9's to indicate that the problem has exceeded the calculator's range. For example, if you solve $(1 \times 10^{49}) \times (1 \times 10^{50})$, the calculator will display the answer.

Keystrokes	Display	
EEX 49 ENTER↑	1.0000	49
EEX 50 ×	1.0000	99

But if you attempt to multiply the above result by 100, the calculator display indicates that the calculator range has overflowed by showing you all 9's.

Keystrokes	Display	
100 ×	9.999999	99

Error Display

If you attempt an improper operation, the word ***Error*** followed by a number will appear in the display. These numbers correspond to a particular error condition.

For example, find the square root of −2 (your calculator will recognize this as an illegal operation):

$$\sqrt{-2}$$

Keystrokes	Display
2	***2.***
[CHS]	***-2.***
[√x]	***Error 0***

You can clear the error by pressing [CLx] or any other key. The next key pressed after an ***Error*** display is not executed.

Keystrokes	Display	
7	***-2.0000***	The argument (−2) just before the Error occured is now back in the display. The "7" is ignored.

All those operations that cause the word ***Error*** and a corresponding number to appear in the display are listed in your owner's handbook.

Section 4

Storing and Recalling Numbers

Storage Registers

In addition to automatic storage of intermediate results that is provided by the four-register automatic memory stack and the LAST X register, your calculator also has addressable storage registers that are unaffected by operations within the stack. These storage registers allow you to set aside numbers for use in later calculations, and they can be used either manually or as part of a program if you have a programmable calculator.

Storing Numbers

To copy a number from the display into one of the storage registers, press the [STO] *(store)* key followed by the number key of the register address. For example, to store Avogadro's number (6.02×10^{23}) in register R_2.

Keystrokes	Display		
6.02 [EEX] 23	6.02	23	
[STO] 2	6.0200	23	The number is now stored in register R_2.

When a number is stored, it is merely *copied* into the storage register, so 6.0200×10^{23} also remains in the displayed X-register.

Recalling Numbers

To copy a number from one of the storage registers into the display, press the [RCL] *(recall)* key followed by the number key of the register address.

For example, to recall Avogadro's number.

Keystrokes	Display	
[CLX]	0.0000	
[RCL] 2	6.0200	23

Recalling a number causes the stack to lift unless the preceding keystroke was [ENTER↑], [CLX], or [Σ+] (more about [Σ+] in your owner's handbook if this key is on your calculator).

When you recall a number, it is copied from the storage register into the display, and it also remains in the storage register. You can recall a number from a storage register any number of times without altering it—the number will remain in the storage register as a 10-digit number with a two-digit exponent of 10 until you overwrite it by storing another number there, or until you clear the storage registers.

Clearing Storage Registers

To clear the number from a single storage register, simply store the quantity zero in the register by pressing 0 [STO] followed by the number key of the register address. To clear register 2 (R_2) press 0 [STO] 2.

To clear data from *all* manual storage registers at once, without affecting data in other portions of the calculator, press CLEAR [REG]. This places zero in all of the storage registers. Of course, turning the calculator OFF also clears all registers unless you have a Continuous Memory calculator.

Storage Register Arithmetic

Arithmetic is performed *upon the contents of the storage register* by pressing [STO] followed by the arithmetic function key followed in turn by the register address. For example:

Keystrokes	Result
[STO] [+] 0	Number in displayed X-register added to contents of storage register R_0, and sum placed into R_0.
[STO] [−] 1	Number in displayed X-register subtracted from contents of storage register R_1, and difference placed into R_1.
[STO] [×] 2	Number in displayed X-register multiplied by contents of storage register R_2, and the product placed into R_2.
[STO] [÷] 3	Contents of storage register R_3 divided by number in displayed X-register, and quotient placed into R_3.

When storage register arithmetic operations are performed, the answer is written into the selected storage register, while the contents of the displayed X-register and the rest of the stack remain unchanged.

Example: During harvest, a farmer trucks tomatoes to the cannery for three days. On Monday and Tuesday he hauls loads of 25 tons, 27 tons, 19 tons, and 23 tons, for which the cannery pays him $55 per ton. On Wednesday the price rises to $57.50 per ton, and he ships loads of 26 tons and 28 tons. If the cannery deducts 2% of the price on Monday and Tuesday and 3% on Wednesday because of blight on the tomatoes, what is the farmer's total net income?

Method: Keep total amount in a storage register while using the stack to add tonnages and calculate amounts of loss.

Keystrokes	Display	
25 [ENTER↑] 27 [+]		
19 [+] 23 [+]	94.0000	Total of Monday's and Tuesday's tonnage.
55 [×]	5,170.0000	Gross amount for Monday and Tuesday.
[STO] 1	5,170.0000	Gross placed in storage register R_1.
2 [%]	103.4000	Deductions for Monday and Tuesday.
[STO] [−] 1	103.4000	Deductions subtracted from total in storage register R_1.
26 [ENTER↑] 28 [+]	54.0000	Wednesday's tonnage.
57.50 [×]	3,105.0000	Gross amount for Wednesday.
[STO] [+] 1	3,105.0000	Wednesday's gross amount added to total in storage register R_1.
3 [%]	93.1500	Deduction for Wednesday.

[STO] [−] 1	93.1500	Wednesday deduction subtracted from total in storage register R_1.
[RCL] 1	8,078.4500	The farmer's total net income from his tomatoes—$8,078.45.

(You could also work this problem using the stack alone, but it illustrates how storage register aritmetic works.)

Storage Register Overflow

If the magnitude of a number in any of the storage registers exceeds 9.999999×10^{99}, the display immediately shows **Error 1** to indicate that a storage register has overflowed.

For example, if you use storage register arithmetic to attempt to calculate the product of 1×10^{50} and 7.5×10^{50} in register R_0, the register overflows and the display shows **Error 1**. To see the result of storage register overflow:

Keystrokes	Display		
[EEX] 50	1.	50	
[STO] 0	1.0000	50	1×10^{50} placed into storage register R_0.
7.5 [EEX] 50	7.5	50	
[STO] [×] 0	Error 1		When you multiplied using storage register arithmetic, register R_0 overflowed.

To clear the **Error 1** display, merely press any key and the last displayed number will reappear in the display.

Section 5

Function Keys

Some of the functions listed in this section may not be applicable to your calculator.

Keystroke sequences in the following examples may require the use of prefix keys to make them applicable to your calculator. See page 8 for further explanation.

Prefix Clear

The CLEAR [PREFIX] *(clear prefix)* key will cancel any of the following keys: [FIX], [SCI], [ENG], [f], [g], [STO], [RCL], [STO]([+][−][÷][×]), [GSB] or [GTO]. To clear a prefix key mistakenly pressed, press the shift key, then CLEAR [PREFIX]. Then press the correct key.

For example, to change a prefix keystroke to that of another key during the calculation of 6-2.

Keystrokes	Display	
6 [ENTER↑]	6.0000	
2 [STO]	2.	Oops! You meant to subtract 2 from 6, but pressed [STO] by mistake.
CLEAR [PREFIX]	2.	Clears the [STO].
[−]	4.0000	The correct operation, subtract, is performed.

Many errors can be corrected without using the CLEAR [PREFIX]. This is because *the calculator executes the first legitimate key sequence you give it, ignoring all previous, incomplete keystrokes.* If, in the example above, when you pressed [STO], you really meant to press [CHS], you can just go ahead and press [CHS]. Since you didn't complete the [STO] keystroke by following it with a register number or an arithmetic operation and register number, the [STO] would be ignored and the [CHS] would be executed.

Reciprocals

To calculate the reciprocal of a number in the displayed X-register, press [1/x].

Example: Find the reciprocal of 33.

Keystrokes	Display
33 [1/x]	0.0303

Reciprocals of a value in a previous calculation may be performed without reentering the number because the stack retains your intermediate results.

Example: Calculate

$$\frac{1}{1/5 + 1/7}$$

Keystrokes	Display	
5 [1/x]	0.2000	Reciprocal of 5.
7 [1/x]	0.1429	Reciprocal of 7.
[+]	0.3429	Sum of reciprocals.
[1/x]	2.9167	Reciprocal of sum.

Square Roots

Press [√x] to calculate the square root of a number in the displayed X-register.

Example: Find the square root of 32.

Keystrokes	Display
32 [√x]	5.6569

Now find the square root of the result.

Keystrokes	Display
[√x]	2.3784

Squaring

To square a number in the displayed X-register, press $\boxed{x^2}$.

Example: Calculate the square of 53.

Keystrokes	Display
53 $\boxed{x^2}$	2,809.0000

Now square the result.

Keystrokes	Display
$\boxed{x^2}$	7,890,481.000

Using Pi

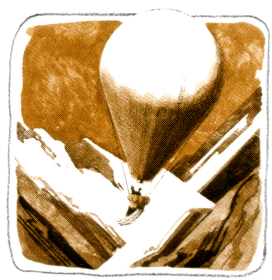
The value π accurate to 10 places (3.141592654) is a fixed constant in the calculator. Press $\boxed{\pi}$ whenever it is needed in a calculation.

Example: Calculate 8 π.

Keystrokes	Display
8 $\boxed{\pi}$ $\boxed{\times}$	25.1327

You did not have to press $\boxed{\text{ENTER}\uparrow}$ between 8 and π. Since π is built in, when it is pressed, the calculator knows you are through keying in the first number.

Example: Finding himself floating dangerously close to the jagged peaks of the Canadian Rockies, intrepid balloonist Chauncy Donn frantically cranks open the helium valve on his spherical balloon. Gas from the helium tank increases the balloon's radius from 7.5 meters to 8.25 meters. Donn clears the mountain tops safely. How much did the volume of the balloon increase?



Solution: Volume of a sphere is equal to $^4/_3\ \pi\ r^3$.
Increased volume equals $(^4/_3)\ \pi\ (8.25)^3$ minus $(^4/_3)\ \pi\ (7.5^3)$.
Simplified: $^4/_3\ \pi \left[(8.25)^3 - (7.5)^3\right]$.

Keystrokes	Display	
8.25 [ENTER↑] 3 [y^x]	561.5156	
7.5 [ENTER↑] 3 [y^x]	421.8750	
[−]	139.6406	
4 [×]	558.5625	
3 [÷]	186.1875	
[π]	3.1416	
[×]	584.9253	Cubic meter increase of balloon's volume.

Percentages

The [%] key is a two-number function used to calculate percentages. To find the percentage of a number:

1. Key in the base number.
2. Press [ENTER↑].
3. Key in the percentage rate.
4. Press [%].

Example: Hollywood starlet Sheila Standish purchased a new evening gown for $1,500. Sales tax is 6.5%. How much will Sheila pay in sales tax? What is the total cost of her gown?

Keystrokes	Display	
1500 [ENTER↑]	1,500.0000	Base number.
6.5	6.5	Percent rate.
[%]	97.5000	The answer.

6.5% of $1,500 is $97.50 (sales tax).

When % is pressed, the answer is written over the percentage rate in the X-register. The base number is preserved in the Y-register. The stack contents were changed

	from this...	**...to this.**
T	0.0000	0.0000
Z	0.0000	0.0000
Y	1,500.0000	1,500.0000
X	6.5	97.5000

Since the purchase price is now in the Y-register and the amount of tax is in the X-register, total cost can be obtained by adding:

Keystrokes	Display	
+	1,597.5000	Total of price and sales tax combined. Read as $1,597.50.

Trigonometric Functions

Six basic trigonometric functions are provided by the calculator:

SIN *(sine)*
SIN⁻¹ *(arc sine)*
COS *(cosine)*
COS⁻¹ *(arc cosine)*
TAN *(tangent)*
TAN⁻¹ *(arc tangent)*

Trigonometric Modes

Each trig function assumes angles in decimal degrees, radians or grads. The calculator turns on in degrees mode. Set the calculator to mode desired by pressing DEG , RAD , or GRD . Note: 360 degrees = $2\pi°$ radians = 400 grads. Once a mode is selected the calculator will remain in that mode until it is changed or the calculator is turned off. Trigonometric functions are one-number functions. To use them key in the number, then press the appropriate function key.

Example: Find cosine of 35°. *Set the calculator to degrees mode.*

Keystrokes	Display
35	35.
DEG	35.0000
COS	0.8192

Example: Find the sine of π radians. *Set calculator to radians mode.*

Keystrokes	Display	
π	3.1416	
RAD	3.1416	
SIN	-4.1000 -10	The sine of π is really zero. However, since the calculator can hold 10 digits, you didn't calculate the sine of π. You calculated the sine of a 10-digit approximation (3.141592654) of π.

Example: Find the arc sine of grads of .374. *Set calculator to grads mode.*

Keystrokes	Display
.374	.374
GRD	.3740
SIN^{-1}	24.4028

Degrees/Radians Conversions

The →DEG and →RAD functions are used to convert angles between decimal degrees and radians. To convert an angle from decimal degrees to radians, key in the angle and press →RAD .

Example: Change 45° to radians.

Keystrokes	Display	
45	45.	
→RAD	0.7854	Radians.

To convert an angle from radians to decimal degrees, key in angle and press [→DEG].

Example: Convert 4 radians to decimal degrees.

Keystrokes	Display	
4	4.	
[→DEG]	229.1831	Decimal degrees.

This conversion works as shown above regardless of which trigonometric mode ([DEG], [RAD], [GRD]) you set on your calculator.

Hours, Minutes, Seconds

The [→H.MS] *(to hours, minutes, seconds)* key converts decimal hours to the format of hours, minutes, and seconds.

Example: Convert 17.63 hours to hours, minutes, seconds.

Keystrokes	Display	
17.63	17.63	Decimal hours.
[→H.MS]	17.3748	This is read as 17 hours, 37 minutes, 48 seconds.

Conversely, the [→H] *(to decimal hours)* key is used to change hours, minutes, seconds into decimal hours.

Example: Convert 17 hours, 37 minutes, 48 seconds (the 17.3748 showing in the display) back into decimal hours.

Keystrokes	Display	
[→H]	17.6300	Decimal hours.

The [→H] and [→H.MS] keys also allow changing degrees, minutes, seconds to decimal degrees, and vice versa.

Example: Convert 137° 45′ 12″ to decimal degrees.

Keystrokes	Display	
137.4512	137.4512	
[→H]	137.7533	Decimal degrees.

Example: Convert 137.7533 decimal degrees to degrees, minutes, seconds.

Keystrokes	**Display**
[→H.MS]	137.4512

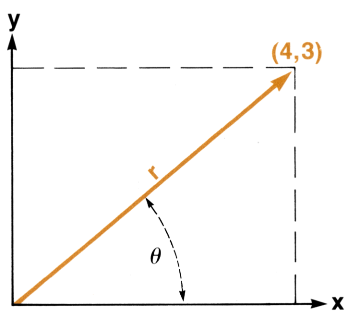
This conversion is important because trigonometric functions operate on angles in *decimal degrees,* but not in *degrees, minutes, seconds.* To calculate any trigonometric functions of an angle given in degrees, minutes, seconds, the angle must first be converted to decimal degrees.

Polar/Rectangular Coordinate Conversions

Two functions ([→P], [→R]) are provided for polar/rectangular coordinate conversion. Press [→P] to convert values in the X- and Y-registers representing rectangular coordinates (x, y), to polar coordinates (r, θ). Magnitude *r* then appears in the X-register, with the angle θ appearing in the Y-register.

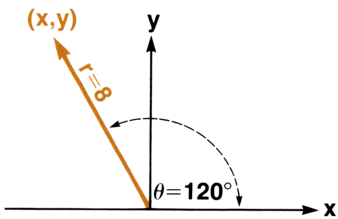
Conversely, press [→R] to convert values in the X- and Y-registers representing polar coordinates (r, θ) to rectangular coordinates (x, y).

Example: Convert rectangular coordinates (4, 3) to polar form with the angle expressed in radians. *Set the calculator to radians mode.*



Keystrokes	Display	
3 ENTER↑ 4	4.	Rectangular coordinates y and x placed in Y- and X-registers, respectively.
RAD	4.0000	
→P	5.0000	Magnitude r.
x⇄y	0.6435	Angle θ in radians.

Example: Convert polar coordinates (8, 120°) to rectangular coordinates. *Set calculator to degrees mode.*



Keystrokes	Display	
120 ENTER↑ 8	8.	Polar coordinates θ and r placed in Y- and X-registers respectively.
DEG	8.0000	
→R	-4.0000	X-coordinate.
x⇄y	6.9282	Y-coordinate.

Metric Conversions

The six functions provided for converting English measurements and SI measurements are:

→in	*(millimeters to inches)*
→mm	*(inches to millimeters)*
→°F	*(degrees Celsius to degrees Fahrenheit)*
→°C	*(degrees Fahrenheit to degrees Celsius)*
→lbm	*(kilograms to pounds mass)*
→kg	*(pounds mass to kilograms)*
→gal	*(liters to U.S. gallons)*
→ltr	*(U.S. gallons to liters)*

All measurement conversion functions are one-number functions. To use them, key in the number, then press the function key.

Example: Convert 98.6 degrees Farenheit to degrees Celsius.

Keystrokes	Display	
98.6	98.6	
[→°C]	37.0000	°C.

Example: Convert 7 pounds (mass) to kilograms.

Keystrokes	Display	
7	7.	
[→KG]	3.1751	Kilograms.

Example: Convert 843 millimeters to inches.

Keystrokes	Display	
843	843.	
[→IN]	33.1890	Inches.

Logarithmic and Exponential Functions

Natural and common logarithms (as well as their inverses—antilogarithms) can be computed by the calculator:

[LN] is $\log_e$ *(natural log)*. It takes the logarithm of the value in the X-register to base e (2.718281828).

[e^x] is antilog_e *(natural antilog)*. It raises e (2.718281828) to the power of the value in the X-register. (To display the value of e, press 1 [e^x].)

[LOG] is $\log_{10}$ *(common log)*. It computes the logarithm of the value in the X-register to base 10.

[10^x] is antilog_{10} *(common antilog)*. It raises 10 to the power of the value in the X-register.

Example: The 1906 San Francisco earthquake had a magnitude of 8.25 on the Richter scale. This was estimated to be 105 times greater than the 1972 Nicaraguan quake. What was the magnitude of the Nicaraguan earthquake on the Richter Scale using the following equation if R = rating on Richter Scale and M = magnitude of the earthquake.

$$R_1 = R_2 - \log \frac{M_2}{M_1} = 8.25 - \left(\log \frac{105}{1}\right)$$

Solution:

Keystrokes	**Display**	
8.25 [ENTER↑]	8.2500	
105 [LOG]	2.0212	
[−]	6.2288	Rating on Richter Scale.

Example: With most of his equipment lost in an avalanche, mountaineer Wallace Quagmire must use an ordinary barometer as an altimeter. Knowing the pressure at sea level is 760 mm of mercury, Quagmire continues his ascent until the barometer indicates 238 mm of mercury. Although the exact relationship of pressure and altitude is a function of many factors, Quagmire knows that an approximation is given by the formula:

$$\text{Altitude in meters} = 7620 \ln \frac{760}{\text{Pressure}} = 7620 \ln \frac{760}{238}$$

Where is Wallace Quagmire?

Solution:

Keystrokes	Display	
760 [ENTER↑]	760.0000	
238 [÷]	3.1933	
[LN]	1.1610	
7620	7,620.	
[×]	8,847.1839	Altitude in meters.

Quagmire appears to be near the summit of Mount Everest (8,848 meters).

Raising Numbers to Powers

The [y^x] key enables a number to be raised to a power.

When y is positive, x can be any number—an integer, a fraction, or a mixed number. However when y is negative, x must be an integer.

Example: Calculate 3^9.

Keystrokes	Display
3 [ENTER↑] 9	9.
[y^x]	19,683.0000

Example: Calculate $8^{-1.2345}$.

Keystrokes	Display
8 [ENTER↑]	8.0000
1.2345 [CHS]	-1.2345
[y^x]	0.0768

Example: Calculate $(-2.7)^5$.

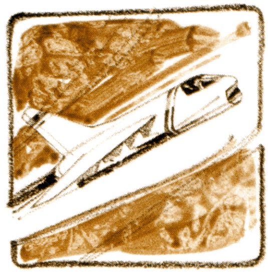
Keystrokes	Display
2 7 [CHS] [ENTER↑]	-2.7000
5	5.
[y^x]	-143.4891

In conjunction with [$1/x$], [y^x] provides a simple way to extract roots.

Example: Find the cube root of 6. (This is equivalent to $6^{1/3}$.)

Keystrokes	Display	
6 [ENTER↑]	6.0000	
3 [1/x]	0.3333	Reciprocal of 3.
[y^x]	1.8171	Cube root of 6.

Example: In an attempt to shatter the sound barrier, ace test pilot Charles Yoger cranks open the throttle of his surplus Hawker Siddeley Harrier aircraft. Glancing at his instruments, Yoger reads a pressure altitude (PALT) of 25,500 feet with a calibrated airspeed (CAS) of 350 knots. What is the flight Mach number?



$$M = \frac{\text{Speed of aircraft}}{\text{Speed of sound}}$$

if the following formula is applicable?

$$M = \sqrt{5\left[\left(\left\{\left[\left(1 + 0.2\left[\frac{350}{661.5}\right]^{2}\right)^{3.5} - 1\right]\left[1 - (6.875 \times 10^{-6})\,25{,}500\right]^{-5.2656}\right\} + 1\right)^{0.286} - 1\right]}$$

Method:

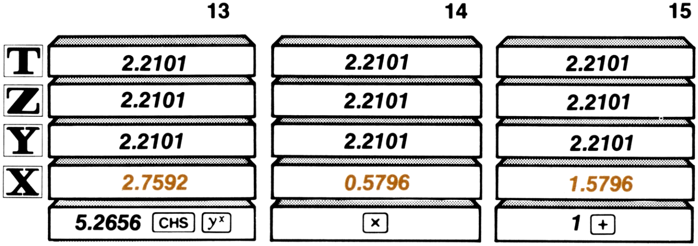
Start with $\left[\dfrac{350}{661.5}\right]^2$ and proceed outward.

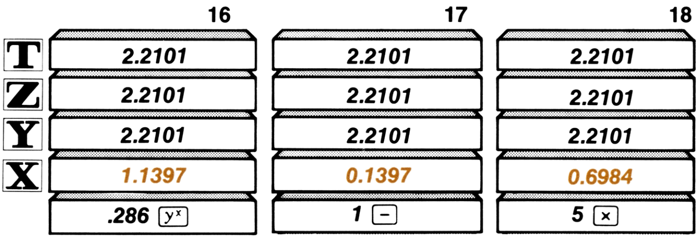
	1	2	3
T	0.0000	0.0000	0.0000
Z	0.0000	0.0000	0.0000
Y	350.0000	0.0000	0.0000
X	350.0000	0.5291	0.2799
	350 ENTER↑	661.5 ÷	x^2

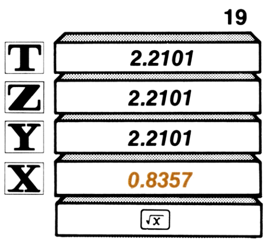
	4	5	6
T	0.0000	0.0000	0.0000
Z	0.0000	0.0000	0.0000
Y	0.0000	0.0000	0.0000
X	0.0560	1.0560	1.2101
	.2 ×	1 +	3.5 y^x

	7	8	9
T	0.0000	0.0000	0.0000
Z	0.0000	0.2101	2.2101
Y	0.0000	1.0000	1.0000
X	0.2101	1.0000	6.875 −06
	1 −	1 ENTER↑	6.875 EEX CHS 6

	10	11	12
T	2.2101	2.2101	2.2101
Z	1.0000	2.2101	2.2101
Y	6.8750 −06	1.0000	2.2101
X	6.8750 −06	0.1753	0.8247
	ENTER↑	25500 ×	−







The final answer.

The value of Hewlett-Packard's RPN logic system becomes evident when working through a complex problem such as this one.

- You calculate one step at a time.
- You don't get lost within the problem.
- You see every intermediate result.
- You are confident of the final answer.
- Intermediate results are handled automatically.

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5955-5267 Rev. B 8/80 Printed in U.S.A.