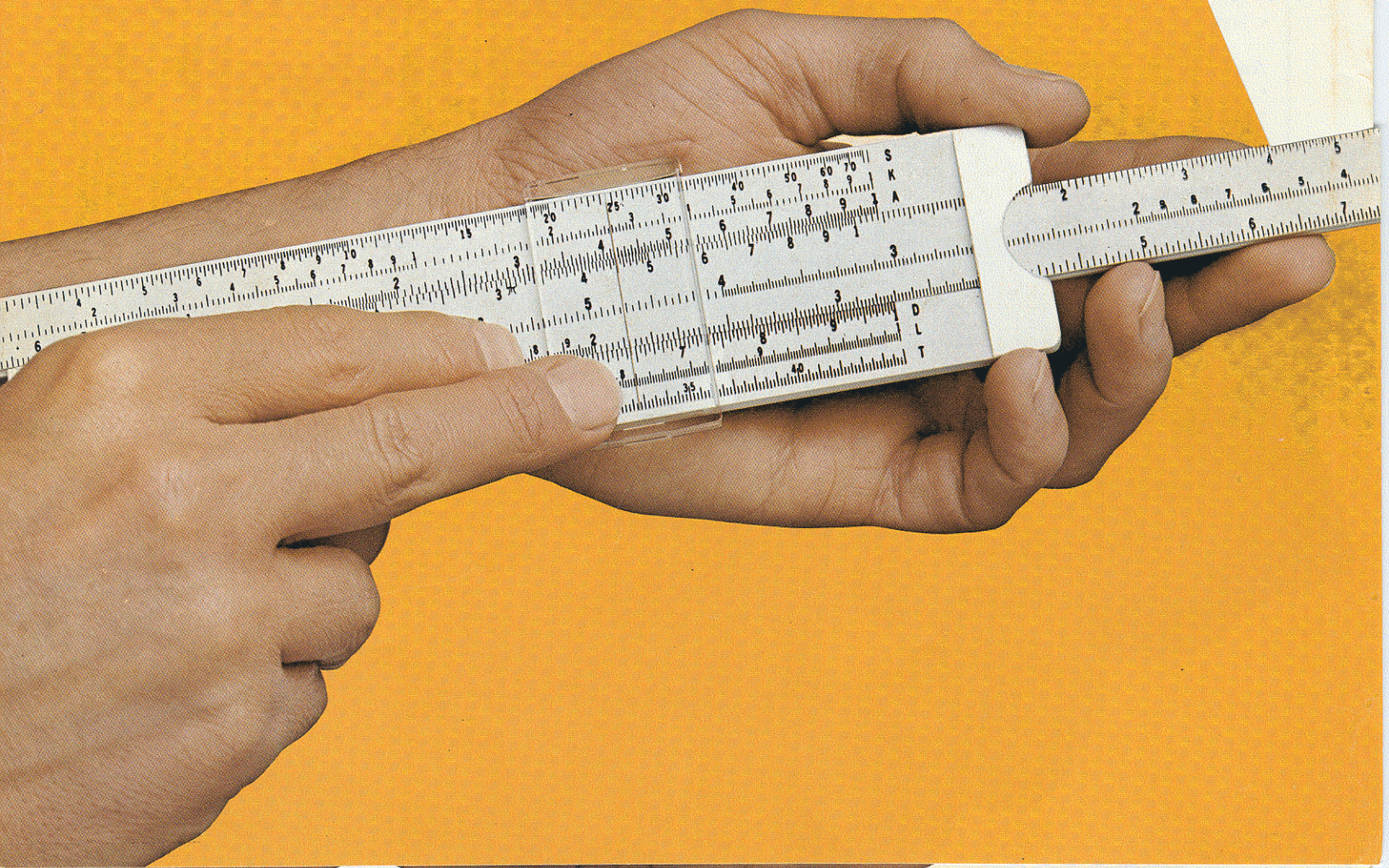


**Not only is it up to  
50 times faster  
than this...**





**It does so much more.**

**More than even our first  
“electronic slide rule”!  
It's Hewlett-Packard's new...**





# HP-45

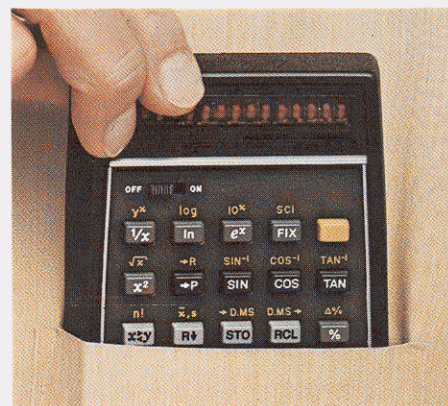
## Advanced Scientific Pocket Calculator

“The Scientist’s and Engineer’s Answer Machine”



Actual Size

It's like having a  
computer in your pocket!



It sets you free!

- *Free* from having to depend upon the slow, limited-function slide rule. The HP-45 performs many calculations up to 50 times faster than a slide rule—and with greater accuracy!
- *Free* from being tied down to cumbersome log and trig tables. They're all pre-programmed right in!
- *Free* from the tedious chore of working out complex equations. All you do is press the keys!
- *Free* from having to write down intermediate solutions. 14 registers remember them for you!
- *Free* from having to wait your turn to use an on-line computer. You can use the HP-45 any time ... anywhere!

In today's fast-moving world, your time is too valuable to spend solving problems the old-fashioned way. The HP-45 lets you solve even the most complex scientific and engineering problems quickly and easily!

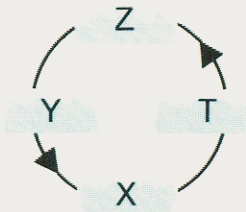


# Surpasses any calculator its size

## Unique "shift key" doubles the function of 24 keys

The Gold Key gives the HP-45 increased capability with no increase in size! Primary functions

are labeled on the keys, with alternate functions above. To utilize an alternate function, simply press the Gold Key first, then the appropriate key.



## Operational stack holds intermediate solutions

The four-register stack lets you store and retrieve intermediate solutions at the appropriate time. The stack design permits roll-down of any entry to the display for review or other operation.

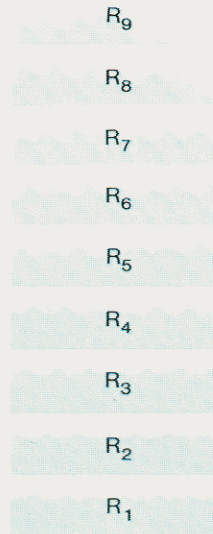
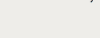


## These keys make statistical analysis easy

The "Σ+" key provides a running total when summing numbers, keeps track of the number of entries and automatically computes the sum of the squares. The "x̄,s" key calculates the arithmetic mean and the standard deviation of the numbers entered. The HP-45 can simultaneously accumulate two sets of numbers.

## The factorial function lets you quickly calculate combinations and permutations

Merely press the Gold Key, then the key for "n!" to quickly calculate the factorial of positive integers. Instead of spending many minutes on such problems, you can do them in just seconds!



## 9 memory registers are addressable

You can store data in any of the nine additional registers... retrieve data instantly from any register... even do register arithmetic using or modifying data in any register.

A 10th register is used for automatically storing the last input argument of a calculation for error correction.

LAST X



## Convert polar to rectangular coordinates or vice versa. Vector calculations are simple too!

Simply press this key to convert to polar coordinates, or press the Gold Key and then this key to convert to rectangular coordinates. Vector calculations are simple on the HP-45. To add or subtract vector components, you may combine the polar-rectangular function with the accumulation function "Σ+."



## Metric/U.S. unit constants are pre-programmed in for immediate conversion

You can quickly convert U.S. units to metric units, or convert metric units to U.S. units, for rapid calculation of problems involving length, weight or volume. And you get 10-digit accuracy!

## SCI

FIX

## Two display modes offer versatility

Unless programmed otherwise, the HP-45 automatically rounds off the display to two decimal places. But by pressing "FIX," then any digit key from 0 to 9, you can specify the number of decimal places shown on the display (example below). The full accuracy is always maintained internally. The fixed decimal display automatically overflows to full scientific display and underflows to zero.



Fix 4

By pressing the Gold Key, then "SCI," you can manually change the display to scientific notation (example below), which is useful when working with very large or very small numbers. You can specify the number of significant digits displayed after the decimal point (from 0 to 9) in either mode.



Scientific Notation 4



## Trigonometric functions may be performed in any of 3 selectable angular modes, with instant conversion to or from degrees, minutes, seconds

You can perform trig operations in degrees, radians or grads (European system) simply by pressing the Gold Key, then the appropriate mode key. All trig functions calculate decimal angles in whichever angular mode is specified.

In a similar way, you can instantly convert from an angle in any angular mode to degrees/minutes/seconds (e.g.,  $45.89^\circ = 45^\circ 53' 24''$ ) with the answer automatically rounded to the nearest second. Or you can convert from degrees/minutes/seconds to the equivalent decimal angle.



# Try it for 15 days

See for yourself how much time and effort the HP-45 Advanced Scientific Pocket Calculator can save you ... how it can free you for more creative applications of your training, experience and interests.

Simply fill in and send back the enclosed 15-Day Trial Card. When your HP-45 arrives, test it out—at your desk, at a meeting, in a plane, out on a job site

—anywhere. (It operates on rechargeable batteries or AC.)

If you decide to keep it, several purchase arrangements are available, as described on the 15-Day Trial Card. Or you may return it for full credit.

Don't decide *now* whether or not you'd like to own an HP-45. Try it first. Mail back the card *today*.

## Test its capabilities

Beyond the basic four functions (+-X÷), the HP-45 is pre-programmed to ...

### Perform trigonometric functions:

- Sine
- Arc sine
- Cosine
- Arc cosine
- Tangent
- Arc tangent

### Perform logarithmic functions:

- Common logarithm
- Natural logarithm
- Common antilogarithm
- Natural antilogarithm

### And perform:

- Serial calculations
- Mixed serial calculations
- Chain calculations
- Mixed chain calculations

### Calculate:

- The square root of the number displayed
- The square of the number displayed
- The reciprocal of the number displayed
- The raising of any positive number to any power
- The factorial of positive integers
- Percentage and percent differences
- The sum of the squares
- The mean of entries made with the "Σ+" key
- The standard deviation of entries made with the "Σ+" key

### Automatically convert:

- The decimal angle (in any of the angular modes) in the display to degrees/minutes/seconds
- The degrees/minutes/seconds angle in the display to a decimal angle
- Polar coordinates to rectangular coordinates

- Rectangular coordinates to polar coordinates
- Centimeters to inches
- Inches to centimeters
- Kilograms to pounds
- Pounds to kilograms
- Liters to gallons
- Gallons to liters

### And the HP-45 will also:

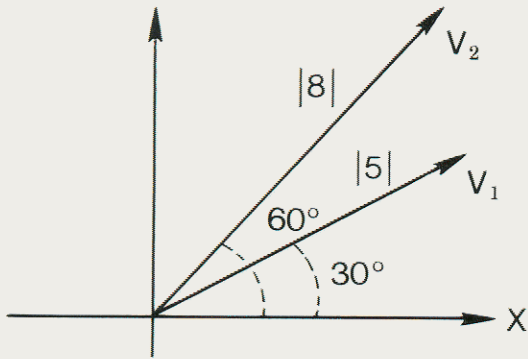
- Simultaneously accumulate two sets of entries for statistical and vector calculations
- Allow for deletion of erroneous entries
- Recall the last argument of a calculation for error correction
- Display the constant  $\pi$  at the touch of a key
- Permit selective data storage and retrieval in up to 9 registers
- Permit selective round-off (0 to 9 places in fixed or scientific mode)
- Operate in any of three trigonometric modes—degrees, radians or grads
- Perform register arithmetic
- Perform vector arithmetic



And the HP-45's keyboard is finger-spaced to prevent double-keying.



# Solve complex problems quickly



## For example . . .

To find the resulting magnitude and angle representing the sum of the two vectors,  $V_1$  and  $V_2$  at left,

simply press these keys . . .

## To calculate first vector . . .

1. Enter first angle
2. Enter first magnitude
3. Convert to rectangular
4. Accumulate x and y components

## To calculate second vector . . .

1. Enter second angle
2. Enter second magnitude
3. Convert to rectangular
4. Accumulate x and y components

## To obtain magnitude of resulting vector . . .

1. Recall sums of x and y components
2. Convert to polar

Magnitude:

## To obtain angle of resulting vector . . .

Exchange x and y

Angle:

## For additional accuracy . . .

Specify the number of digits

To obtain:

No matter what kind of mathematical problems you have to solve, the HP-45 will solve them faster, more easily and more accurately than any other scientific pocket calculator!



# All you do is press the keys

## It's as easy to use as an adding machine

$\Delta\%$

**%**

Calculate percentage problems by simply pressing “%” after entering the percent value. There’s no need to convert percents to their decimal equivalent! Press the Gold Key, then “ $\Delta\%$ ” to instantly compute the percent difference between two numbers. You can also quickly calculate the net amount, by pressing “+” or “-” after figuring the percentage.

$y^x$

$10^x$

**$1/x$**

**$e^x$**

Raise a positive number (an integer or a decimal) to any power by simply entering the number, then pressing the Gold Key and “ $y^x$ ”. You can extend the answer up to nine decimal places.

Pressing the “ $e^x$ ” key (natural antilog) raises  $e$  (2.718...) to the power of the value displayed. Pressing the Gold Key, then the key for “ $10^x$ ” (common antilog) raises 10 to the power of the value displayed.

log

**ln**

For the natural log, press “ln”; it takes the log of the value displayed in base  $e$  (2.718...). For the common log, press the Gold Key, then the key for “log”; it takes the log of the value displayed in base 10.

$\sqrt{x}$

**$x^2$**

To find the square root of a number, key in the number, then press the Gold Key, then the key for “ $\sqrt{x}$ ”. The “ $x$ ” in the symbol represents the currently displayed value, so you can calculate its square root without re-entering the number. To square a number currently displayed, just press “ $x^2$ ”.

$y^x$

**$1/x$**

To calculate reciprocals, key in the number, then press “ $1/x$ ”. The “ $x$ ” in the symbol represents the currently displayed value, so you can calculate the reciprocal of a value in a previous calculation without re-entering the number.

LAST  $x$

**0**

When a function is performed, the last input argument of the calculation is automatically stored in the “LAST X” register. By pressing the Gold Key, then the key for “LAST X”, you can recall the argument to correct an error or perform another operation using the same numbers.

RAD

**CHS**

You are able to key in negative numbers by first entering a positive number, then pressing the “CHange Sign” key. Or you can change the sign of any number already displayed by pressing this key.

GRD

**EEX**

The “Enter EXponent” key lets you key in numbers having exponents—either positive or negative. You may also save time in certain calculations by keying in exact powers of 10.



5.424942499-12

The HP-45 features an easy-to-see light-emitting diode display, in bright red. All digits appear as continuous—not broken—solid lines.

$n!$

$x, s$

$\rightarrow$  D.MS

D.MS  $\rightarrow$

**$x \rightarrow y$**

**R  $\downarrow$**

**STO**

**RCL**

DEG

**ENTER  $\uparrow$**

These data control keys let you load and manipulate data. You can load constant values, so you can use the numbers repeatedly; store numbers for deferred calculations; display numbers previously saved; reverse the order of the numbers saved.

### If you work with numbers, you can't afford to be without it!



The Quick Reference Guide, supplied with each HP-45, enables anyone to master it quickly. The Guide provides key-by-key directions for the most commonly-used functions.

### Try the HP-45 for 15 days! Send back the card today.



# There's a printing model, too!

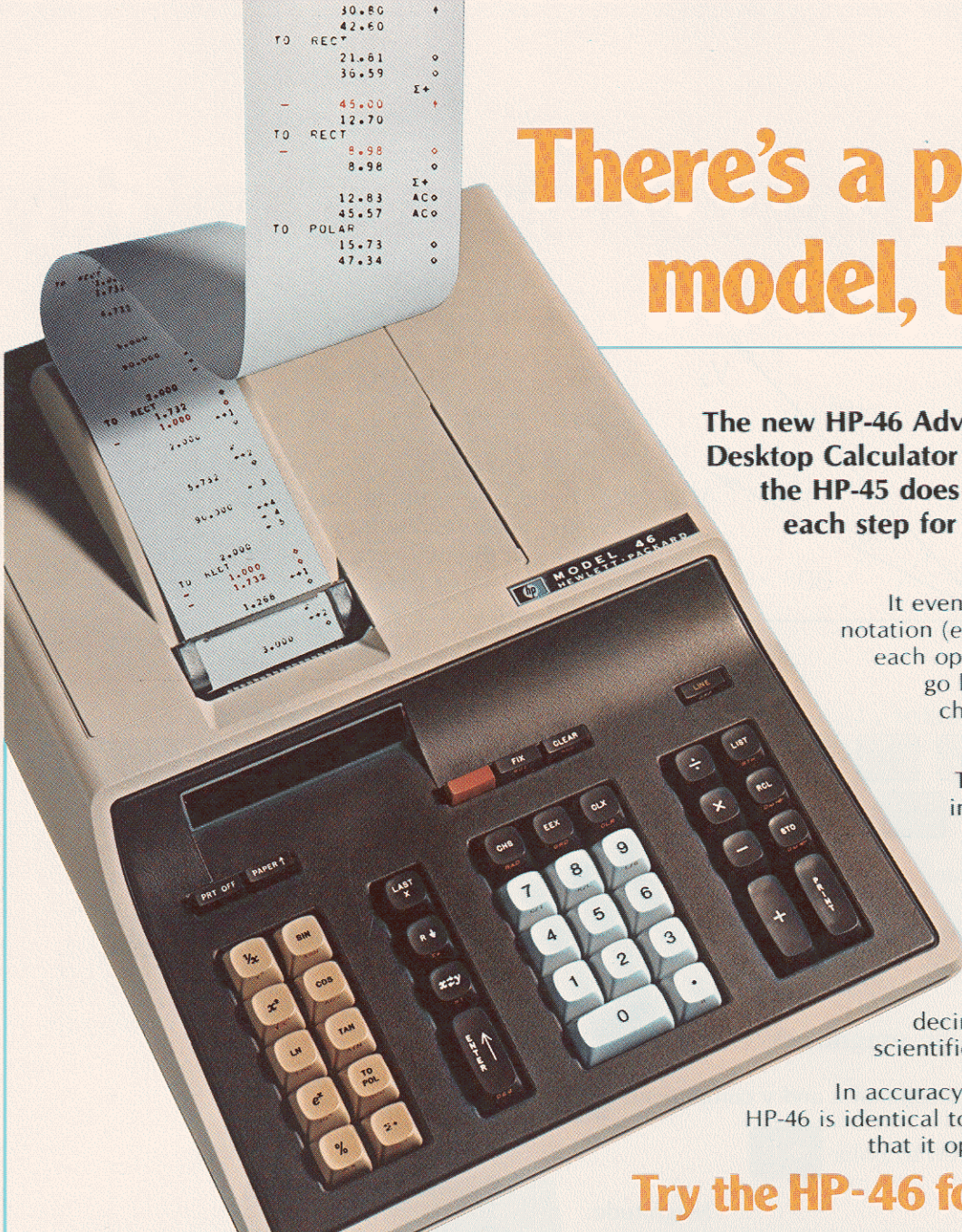
The new HP-46 Advanced Scientific Desktop Calculator does everything the HP-45 does—and prints out each step for your permanent records!

It even prints a functional notation (e.g., TO POLAR) for each operation, so you can go back at any time to check your figures or reasoning!

The HP-46 performs internal calculations using scientific notation, while the printout may be rounded off to any fixed number of places (0 to 9) after the decimal point, in either scientific or fixed notation.

In accuracy and functions, the HP-46 is identical to the HP-45, except that it operates on AC only.

## Try the HP-46 for 15 days.



The modern, low-profile design of the HP-46 saves space in the lab or office.



The optional light-emitting-diode (LED) display allows continuing verification and aids in editing during long problems. It may be used with the printout or without it (saving paper).

Or consider the basic model, the HP-35 Scientific Pocket Calculator, if your work does not require the advanced features of the HP-45 or HP-46.

Now available at a reduced price, the HP-35—the industry standard—offers a broad range of trigonometric, logarithmic, arithmetic and data manipulation capabilities.

Since its introduction in 1972, it has become the indispensable tool of thousands of scientists and engineers.

For complete information on its functions and features, see the back cover of this brochure.

## Try the HP-35 for 15 days.





# HP-35

Scientific  
Pocket Calculator

\$295\*

# HP-45

Advanced Scientific  
Pocket Calculator

\$395\*



### Each pocket calculator comes complete with:

- Battery pack that under normal use provides 3 to 5 hours of operation
- 115/230 V AC adapter/recharger that lets you operate the calculator on AC while the battery pack is recharging
- Soft leather carrying case
- Safety travel case that holds calculator in leather case, adapter/recharger, Handbook and Guide
- Illustrated Owner's Handbook
- Self-adhesive owner's name tags. The HP-45 also comes with a Quick Reference Guide.

**Optional accessories:** Security cradle • Hard leather field carrying case • Spare battery holder with battery pack. (Details sent with calculator.)

### FUNCTIONS OF THE HP-35 AND HP-45

#### Pre-programmed Functions:

Trigonometric:  $\sin X$  •  $\arcsin X$  •  $\cos X$  •  $\arccos X$  •  $\tan X$  •  $\arctan X$   
Logarithmic:  $\log_{10} X$  •  $\log_e X$  •  $e^X$   
Also:  $Y^X$  (or  $X^Y$ ) •  $\sqrt{X}$  •  $1/X$  •  $\pi$

#### Other Functions:

Addition, Subtraction, Multiplication or Division in Serial, Mixed Serial, Chain or Mixed Chain Calculations

#### Additional Functions of the HP-45 Only:

$10^X$  •  $X^2$  •  $n!$  •  $\%$  •  $\Delta\%$  • Decimal Angle Conversion to Degrees/Minutes/Seconds or Radians or Grads • Polar Coordinate Conversion • Statistical Accumulation with Mean and Standard Deviation Calculation • U.S./Metric Conversion of Length, Weight and Volume Units • Register Arithmetic • Vector Arithmetic

### FEATURES OF THE HP-35 AND HP-45

- Display: Up to 10 significant digits plus 2-digit exponent and appropriate signs
- Dynamic range:  $10^{-99}$  to  $10^{99}$
- Single keystroke functions
- Four-register operational stack
- Constant storage memory register
- Automatic decimal point positioning
- Overflow-underflow provision
- Indicators for improper operations and low battery condition
- Operate on rechargeable batteries or AC
- Solid state electronics
- Light-emitting diode (LED) display
- Tactile feedback keyboard
- Compact, contoured case

#### Additional Features of the HP-45 Only:

- Selective storage stack with nine additional, addressable memory registers
- "LAST X" register
- Selective round-off; range: 0-9 decimal places
- Two display modes: fixed point and scientific

### SPECIFICATIONS OF THE HP-35 AND HP-45

**POWER:** AC: 115 or 230 V,  $\pm 10\%$ , 50 to 60 Hz, 5 watts.  
Battery: 500 mw derived from nickel-cadmium rechargeable battery pack.

**WEIGHT:** Calculator: 9 oz. Recharger: 5 oz.  
Shipping Weight: 2 lbs. (approx.).

**DIMENSIONS:** Length: 5.8 in. Width: 3.2 in. Height: 0.7 to 1.3 in.  
**OPERATING TEMPERATURE RANGE:** 32° F. to 122° F. (0° C to 50° C).

### WARRANTY for the HP-35, HP-45 or HP-46

Each Hewlett-Packard calculator is warranted against defects in materials and workmanship for one (1) year from the date of delivery. Hewlett-Packard will repair or replace components which prove to be defective during the warranty period providing the defective units are returned to Hewlett-Packard. No other warranty is expressed or implied. Hewlett-Packard is not liable for consequential damage. Service will be available directly from Hewlett-Packard.

# HP-46

Advanced Scientific  
Desktop Calculator

\$695\* (Optional LED  
display: \$95\*)



### Each HP-46 desktop calculator comes complete with:

- Sturdy carrying case
- Dust cover
- Power cord
- Paper tape
- Ribbon
- Illustrated handbook
- Spare fuses
- (Paper tape, ribbon and fuses are replaceable at most office supply stores.)

### FUNCTIONS OF THE HP-46

#### Pre-programmed Functions:

Trigonometric:  $\sin X$  •  $\arcsin X$  •  $\cos X$  •  $\arccos X$  •  $\tan X$  •  $\arctan X$

Logarithmic:  $\log_{10} X$  •  $\log_e X$  •  $e^X$  •  $10^X$

Also:  $Y^X$  •  $\sqrt{X}$  •  $1/X$  •  $\pi$  •  $X^2$  •  $n!$  •  $\%$  •  $\Delta\%$  • Decimal Angle Conversion to Degrees/Minutes/Seconds or Radians or Grads • Polar Coordinate Conversion • Statistical Accumulation with Mean and Standard Deviation Calculation • U.S./Metric Conversion of Length, Weight and Volume Units

#### Other Functions:

Addition, Subtraction, Multiplication or Division in Serial, Mixed Serial, Chain or Mixed Chain Calculations • Register Arithmetic • Vector Arithmetic

### FEATURES OF THE HP-46

These are identical to those of the HP-45, except that the HP-46 provides a printed tape for your records, and the LED display is available as an option. With the LED display added, the HP-46 may be used in any of three ways: printout only, LED only, or both printout and LED.

### SPECIFICATIONS OF THE HP-46

- 115/230 V AC Line Operation.
- Large-scale integrated circuits (LSI).
- Compact, contoured case.
- Weight: 13 lb.
- Depth: 15.5 in.
- Width: 10.9 in.
- Height: 5.5 in.

### OPTIONAL LED DISPLAY

When ordered with HP-46: \$95\*

\*Domestic U.S.A. prices only. There are no shipping charges on the pocket calculators. Desktop calculators are F.O.B. Loveland, Colo.

HEWLETT  PACKARD

Sales, service and support in 172 centers in 65 countries  
Advanced Products Division  
10900 Wolfe Road, P.O. Box 3400  
Cupertino, California 95014