

## Series 10 at a Glance

HP-10C

- Description:     -79-step programmable scientific  
                  -Standard programming  
                  -Standard math and stat functions
- Positioning:     -Programmable Scientific  
                  -HP's lowest-priced scientific programmable  
                                ever
- Target Markets: -Technical Students  
                  -Engineers (ME's and CE's) seeking HP quality  
                                and reliability without more advanced  
                                features
- Price:
- Competition:    -TI-55-II  
                  -Sharp EL-5101  
                  -TI-57  
                  -Casio FX-3600

## HP-11C

- Description:     -203-step Advanced Programmable Scientific  
                  -Advanced Programming  
                  -Advanced Stat Functions  
                  -Additional Math Functions over HP-10C
- Positioning:     -Advanced Programmable Scientific  
                  -Excellent price/performance ratio  
                  -Unique Product between high and low ends of  
                                  programmable scientific market
- Target Markets: -Engineering Fields (especially Electrical,  
                                  Chemical and Aerospace engineers)  
                  -Scientists (hard sciences)  
                  -Students in corresponding fields
- Price:
- Competition:     -Sharp EL-5100  
                  -Sharp EL-512

## HP-15C

- Description:     -448-step advanced programmable scientific with special functions  
                  -Advanced matrix operations  
                  -Complex number arithmetic  
                  -Root finding (Solve)  
                  -Integration  
                  -Advanced programming
- Positioning:     -Advanced programmable scientific with special functions  
                  -More built-in math and stat functions than any other calculator in the world
- Target Markets: -Technical professionals (particularly EE's, hard scientists, mathematicians)  
                  -Faculty members, researchers and advanced students in corresponding fields
- Price:
- Competition:    -TI-58C  
                  -Casio FX-602P

## HP-16C

Description:     -203-step programmable designed for computer  
                      science and digital electronics  
                      -Major base conversions  
                      -Boolean algebra  
                      -Bit manipulation  
                      -Up to 64-bit word size  
                      -Advanced programming

Positioning:     -"The Computer Scientist"  
                      -"The" tool for computer science and digital  
                              electronics

Price:

Target Markets: -Software engineers  
                      -Logic circuit designers  
                      -CS and EE specialists

Competition:     -TI LCD Programmer

## HP-12C

- Description:     -99-step advanced programmable financial  
                  -Net present value  
                  -Cash flow analysis (up to 20 grouped cash flows)  
                  -Amortization  
                  -Standard programming
- Positioning:     -HP's most powerful financial programmable ever  
                  -More built-in financial capabilities than any  
                                other handheld calculator
- Target Markets: -Finance and other business professionals,  
                                real estate practitioners, bankers and  
                                investment analysts, corporate managers  
                  -Business students
- Price:
- Competition:     -TI-MBA  
                  -TI - Professional Business Analyst  
                  -Sharp EL-5102

## Series 10 in Depth

Series 10 is the professional calculator series in Hewlett-Packard's line of personal computing products. Comprised of HP's entry-level computing products, Series 10 calculators are designed for individual professionals and students needing pocket-sized computing power. Series 10 calculators feature powerful built-in keystroke functions and programming capabilities. Series 10 is a stand-alone package and does not offer I/O or alpha capabilities.

The design and quality of Series 10 products build upon HP's calculator experience that began in 1972, the year HP introduced the world's first "electronic slide rule", the HP-35. Today, Series 10 includes a range of powerful, slim-line programmable calculators. Meeting the needs of a variety of professional computation markets, Series 10 includes five very capable machines: three scientific models, one designed specifically for computer science and digital electronics and one financial model.

Here is a summary of the models in Series 10:

### SCIENTIFIC PROGRAMMABLES

- |        |   |
|--------|---|
| HP-10C | -HP'S lowest-priced scientific programmable ever  |
| HP-11C | -Advanced programmable scientific<br>-Excellent price/performance ratio   |
| HP-15C | -Advanced programmable scientific with special functions<br>-More pre-programmed functions than any calculator in the world |

### THE COMPUTER SCIENTIST

- |        |   |
|--------|---|
| HP-16C | - "The" tool for computer science and digital electronics<br>- In a class by itself |
|--------|---|

### FINANCIAL PROGRAMMABLE

- |        |  |
|--------|--|
| HP-12C | -HP's most powerful handheld financial programmable ever |
|--------|--|

All Series 10 models feature RPN logic, the hallmark of HP calculators, and Continuous Memory. And reflecting HP's most advanced calculator design, Series 10 models come with horizontal keyboard formats, ten-digit LCD displays, diagnostic self-tests, automatic shut-off, and long-life disposable batteries.

With their powerful preprogrammed functions, Series 10 calculators rival the capabilities of many computers found in the market today. And Series 10 power fits conveniently in your shirt pocket.

Each calculator comes boxed complete with the following:

- Black vinyl case
- Owner's handbook
- Padded anti-static bag
- Registration Card
- Service Card

Now let's take a closer look at each of the models.

#### THE HP-10C PROGRAMMABLE SCIENTIFIC -

The HP-10C is Hewlett-Packard's entry-level programmable scientific calculator. The HP-10C provides a unique mix of mathematics and statistics functions, conversions and programming capabilities. Here are the major features of the HP-10C:

##### Math Functions

- Arithmetic operations
- Exponents
- Reciprocals
- Logarithms
- Trig functions
- Storage register arithmetic
- Up to 10 data registers

##### Statistics Functions

- Mean (1- or 2-variables)
- Standard deviation (1- or 2-variables)
- Summations
- Linear regression
- Correlation coefficient
- Factorial

##### Programming Capabilities

- Up to 79 program steps
- Automatic memory allocation
- Program scrolling
- Conditional branching
- Simple branching
- Pause

##### Conversions

- Rectangular to polar
- Decimal angle to angle in  
hr/min/sec
- Degrees to radians

In short, the HP-10C combines standard scientific functions with exceptional programming capabilities. Conditional branching alone sets the HP-10C apart from its competition. By adding an attractive price, the HP-10C is the leader in its market.

## THE HP-11C ADVANCED PROGRAMMABLE SCIENTIFIC -

The HP-11C offers a combination of built-in functions and programming capabilities that sets it apart from the rest of the market. The addition of several powerful functions and programming features place the HP-11C in a market above the HP-10C. With over 200 program steps and advanced programming capabilities, the HP-11C offers features usually found on calculators in the high end of the price spectrum. In short, the HP-11C offers a price/performance alternative between the low-end HP-10C and the high-end HP-15C.

The HP-11C has the same capabilities as the HP-10C with the following added features:

### Math Functions

- Hyperbolics
- Round
- Percent change
- Absolute value
- Permutations
- Combinations

### Statistics Functions

- Gamma function
- Random number generator

### Programming Capabilities

- Up to 203 program steps
- Insert/delete
- 8 conditional tests
- Up to 15 program labels
- User mode

## THE HP-15C ADVANCED PROGRAMMABLE SCIENTIFIC WITH SPECIAL FUNCTIONS -

The HP-15C picks up where the HP-11C leaves off. It offers a variety of powerful math functions that have not been found in one calculator before. The HP-15C special features include matrix operations, complex arithmetic, root finding, integration, and even more advanced programming than the HP-11C.

The HP-15C's matrix operations and other special functions exceed the capabilities of many portable and handheld computers.

The HP-15C approaches the limit of what can be done without I/O. It successfully fills the market niche between the HP-11C and the HP-41 handheld computer. Here's a summary of the special features of the HP-15C:

### Special Features

- Root finding (Solve)
- Integration
- Matrices and complex matrices
- Complex number arithmetic

### Programming Capabilities

- Up to 448 program steps
- Up to 67 registers
- Up to 25 program labels
- 12 conditional tests
- 7 levels of subroutines



The HP-15C performs the following matrix operations:

- |                 |                         |
|-----------------|-------------------------|
| -Determinants   | -Transpositions         |
| -Inversions     | -Norms and residuals    |
| -Linear systems | -Complex linear systems |

And of course, the HP-15C easily performs matrix addition, subtraction, and multiplication. An indication of its capabilities? The HP-15C can invert an 8 by 8 matrix in 85 seconds and solve a 7 by 7 linear system in 22 seconds.

Table 1 compares the three scientific programmable models in Series 10.

## VOYAGER SCIENTIFIC PROGRAMMABLES

<u>Model</u>	<u>HP-10C</u>	<u>HP-11C</u>	<u>HP-15C</u>
List Price			
Display	LCD	LCD	LCD
Number of Digits	10/7+2	10/7+2	10/7+2
Order Logic	RPN	RPN	RPN
Register Arithmetic			
Continuous Memory			
LASTX			
Error Messages			
Auto Shut-Off			
SCI, ENG Notation			
Trig Functions			
Logs			
Exponentials, 1/x			
+, -, *, ÷, %, $\pi$			
%			
$R \rightleftarrows P$			
Select, Convert DEG, RAD, GRAD			
Int/Frac			
%			
Basic Stats ( $\bar{x}$ , s)			
LR, $y^2$			
n! Factorial			
Number of Registers (max)	10	21	67
Number of Steps (max)	79	203	448
Merged Keystrokes			
GTO, Conditional Branching			
Pause			
Flags (number of)		2	10
Subroutines (number of)		4	7
Soft Keys (labels)			
Insert/Delete			
ISE/DSE			
Backspace ( $\leftarrow$ )			
ABS			
$\Delta\%$			
Hyperbolics			
Permutations, Combinations			
Random Number Generator			
Round			
User Mode			
Solve			
Integrate			
Matrices			
Complex Number Arithmetic			
Complex Matrices			

## THE HP-16C "THE COMPUTER SCIENTIST" -

The HP-16C is the first Hewlett-Packard calculator engineered for specific vertical markets. It is designed to be "the" calculator for computer scientists, programming specialists, and digital electronics designers.

The HP-16C has the most powerful combination of base conversion, bit manipulation, word size and programming capabilities in the marketplace. Here are the significant features of the HP-16C:

### Arithmetic Functions

- Arithmetic operations
- Reciprocals
- Absolute value
- Double precision /, \*
- Boolean algebra
  - AND
  - OR
  - XOR
  - NOT

### Bit Manipulation Functions

- Up to 64 bit capability
- Exact integer arithmetic
- Left, right justify
- Masking
- Word size specification
- One's, two's complement and unsigned mode
- Status and memory keys
- Self-check
- Bit testing, setting, checksum and clearing
- Bit shifting and rotating
- Scrolling by digit or window

### Base Conversions

- Major base conversions
  - hexadecimal
  - decimal
  - octal
  - binary
- Integer and floating point modes

### Programming Capabilities

- Up to 203 program lines
- Up to 101 registers
- Label addressing
- Looping and 8 conditional tests
- Insert/delete
- Program review
- 4 levels of subroutines

With these features, this special product virtually eliminates all competition. The HP-16C is in a class by itself.

## THE HP-12C ADVANCED PROGRAMMABLE FINANCIAL -

As the only financial model in Series 10, the HP-12C brings together the most advanced financial functions found in a number of different machines. The HP-12C calculates net present value, amortization, cash flow, bond yield and price, and depreciation, to name just a few features.

Statistical functions common to the business world, programming capabilities and special easy-to-use features all come standard on the HP-12C. The end result is an unprecedented combination of power and friendliness. Here is a summary of the significant features found in the HP-12C:

### Financial and Business Features

- Solves for number of periods (n), Compound interest (i), Present value (PV), Payment (PMT), and Future value (FV)
- Amortization (accumulated interest/remaining balance)
- Net present value (NPV)
- Internal rate of return (IRR)
- Bond yield and price
- Depreciation (straight-line, declining-balance, sum-of-years'-digits)
- Odd-days' interest
- Simple interest
- Percent
- Percent change
- Percent of total
- Calendar functions
- Beginning of period/end of period selection
- Financial registers: 5

### Statistics Features

- Mean (1- or 2-variable)
- Standard deviation (1- or 2-variable)
- Summation
- Linear estimation
- Correlation coefficient
- Factorial

### General Features

- Arithmetic operations
- Reciprocals
- Exponents
- Change sign
- Integer/fraction functions
- Storage register arithmetic
- Display modes: standard or scientific notation

## Programming Capabilities

- Up to 99 program steps
- Program review
- Unconditional branching
- 2 conditional tests
- Pause

The friendliness of the HP-12C cannot be over-emphasized. The HP-12C is designed with five "top row keys" that allow the first-time calculator user or the financial expert to solve amortization and cash flow problems in just a matter of minutes.

## Series 10 Common Features & Software

Series 10 offers special hardware features common to all models that put HP calculators above the competition. The ease and convenience of RPN logic, automatic overflow and underflow into scientific notation, two modes for display separators (thousands separated by commas in the U.S. and by decimals in Europe), award winning manuals and status annunciators insure that Series 10 technology is unsurpassed in the marketplace.

But Series 10 does not stop with the hardware. Series 10 provides "solutions". A growing list of special handbooks extend the capabilities of Series 10 calculators. Written by HP engineers or by industry specialists, these handbooks focus the power of Series 10 calculators on the needs of specific markets.

The following handbooks are now available for Series 10 calculators:

### Scientific Handbooks

- HP-11C Solutions Handbook
- HP-15C Advanced Functions Manual

### Financial/Business Handbooks

- HP-12C Training Guide
- HP-12C Solutions Book
- HP-12C Real Estate Applications Handbook

This combination of powerful hardware plus supporting software handbooks reflects Series 10's commitment to providing total solutions. And total solutions means greater market appeal for the power and convenience of Series 10 products.

## The Marketplace

Series 10 offers a wide range of solutions for the handheld programmable market. Answering a variety of needs from those of the student to those of the senior business executive, Series 10 provides the right combination of power and portability.

Series 10 products are the likely candidates for calculator upgrading by current calculator owners. Adding to this an increasingly technical marketplace and competitive Series 10 prices, the sales picture for Series 10 is bright.

### The Scientific Programmables

The Series 10 scientific models target the technical professional and student markets, long the traditional markets for HP personal computing products. The HP-10C, HP-11C and the HP-15C segment these markets and provide a product mix unparalleled in the marketplace.

The HP-10C is directed primarily at the technical student marketplace. Over 40% of the programmable calculator market are college students. Together with the increasingly technical sophistication of high school subjects, the total student market is growing for the HP-10C. At the same time, the HP-10C serves as the lead alternative for technical professionals who demand quality and reliability but who do not need the power (or do not want to pay the price) of more advanced models.

While the HP-10C emphasizes the student market, the HP-11C features a price/performance combination that focuses it more toward the professional. All engineering specialties (particularly EE, CE and aerospace) and the hard sciences find the HP-11C suitable for their computational needs.

The excellent price/performance ratio also attracts the price-sensitive student, who requires greater computing power but at a relatively low price.

As the top-of-the-line scientific model in Series 10, the HP-15C is directed at those professions requiring considerable math power. All engineering fields (particularly, electrical engineers), mathematicians, and others involved in advanced research and education (namely, physicists, chemists and medical researchers) need the power of the HP-15C.

Graduate level students in these same fields routinely use the capabilities found in the HP-15C. In general, any person using matrices, complex arithmetic, root finding or integration to solve problems is a good candidate for the HP-15C.

With the HP-15C approaching the power and capabilities of handheld computers, it serves as a lower priced alternative to handheld computers. If the user does not require I/O or alpha functionality, the HP-15C can provide the greatest customer value.

Table 2 summarizes the market picture for the Series 10 scientific programmables.

Series 10 scientific programmables meet a spectrum of needs from those of the high school student to those of the professional engineer. Here's a graphic summary of the Series 10 technical marketplace:

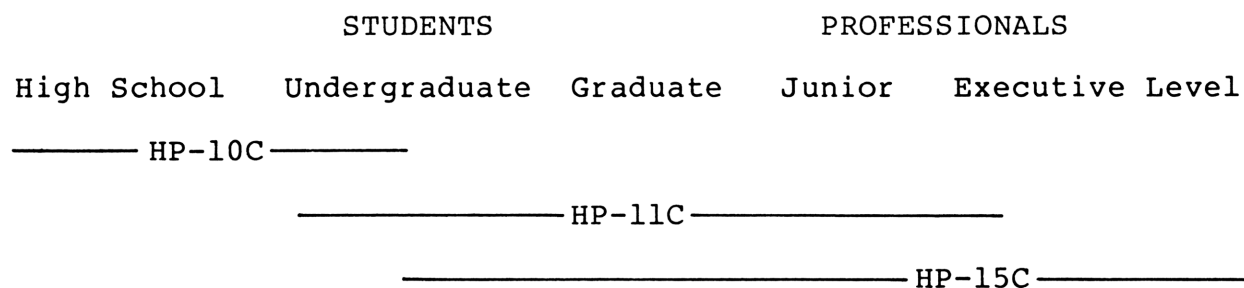


Table 2

	HP-10C	HP-11C	HP-15C
Primary Markets:	<ul style="list-style-type: none"> <li>-Technical students</li> <li>-Mechanical engineering</li> <li>-Civil engineering</li> <li>-Health and Earth Sciences</li> <li>-Professionals seeking affordable quality and reliability without the power of more advanced machines</li> </ul>	<ul style="list-style-type: none"> <li>-All engineering fields (largely electrical, chemical and aerospace) and the hard sciences</li> <li>-Undergraduate and graduate students in corresponding fields</li> </ul>	<ul style="list-style-type: none"> <li>-Technical professionals</li> <li>-Professional engineers (particularly electrical engineering)</li> <li>-Hard scientists</li> <li>-Mathematicians</li> <li>-Faculty members in corresponding fields</li> <li>-Technical graduate students</li> </ul>
Secondary Markets:	<ul style="list-style-type: none"> <li>-High school students</li> </ul>	<ul style="list-style-type: none"> <li>-Technical management</li> <li>-Technical sales and marketing</li> </ul>	<ul style="list-style-type: none"> <li>-HHC customers not needing I/O or alpha</li> </ul>
Customer Profile:	<ul style="list-style-type: none"> <li>-Has technical and scientific interests</li> <li>-Likely to be a first time programmable calculator buyer</li> <li>-16-22 age bracket for students</li> <li>-20-30 age bracket for professionals</li> <li>-Very price sensitive and value conscious</li> </ul>	<ul style="list-style-type: none"> <li>-Seeks considerable programming power in a calculator</li> <li>-Has already owned at least one programmable calculator</li> <li>-Value conscious</li> <li>-Fairly price sensitive</li> <li>-20-40 age bracket</li> </ul>	<ul style="list-style-type: none"> <li>-Has already owned at least one programmable</li> <li>-Likely to own more than one calculator at the same time</li> <li>-Interest in HHC's and compatible with computers</li> <li>-Prefers to own most capable equipment</li> </ul>
Features Attractive to Target Markets:	<ul style="list-style-type: none"> <li>-Standard scientific functions</li> <li>-79 program steps (equivalent to approx. 102 lines in algebraic calculators)</li> <li>-Conditional branching</li> </ul>	<ul style="list-style-type: none"> <li>-Advanced programming capabilities</li> <li>-User Mode</li> <li>-Expanded statistics functions</li> </ul>	<ul style="list-style-type: none"> <li>-Unrivaled math power</li> <li>-Matrix operations</li> <li>-Root finding</li> <li>-Integration</li> <li>-Complex number arithmetic</li> <li>-More pre-programmed scientific functions than any other calculator ever</li> <li>-Most advanced programming capabilities</li> </ul>



## The HP-16C Target Market

The HP-16C is targeted at very specific, well defined markets. Electronics industries, software houses, telecommunications firms, process control applications (including petroleum chemical and other industrial processes) and computer hobbyists together form a sizeable market for the HP-16C.

The HP-16C is likely to be purchased with company funds often times in quantity. As such, the purchase decision for the HP-16C is not likely to be influenced by price.

## Market Summary for the HP-16C

Primary Markets:	<ul style="list-style-type: none"> <li>-Software engineers and computer scientists (particularly those involved with machine language and other lower level languages)</li> <li>-Logic circuit designers</li> </ul>
Secondary Markets:	<ul style="list-style-type: none"> <li>-CS and EE students</li> <li>-Control applications engineers</li> <li>-Computer hobbyists</li> </ul>
Customer Profile:	<ul style="list-style-type: none"> <li>-Needs the capabilities that only the HP-16C can provide</li> <li>-Price insensitive</li> <li>-Background in computer science or electrical engineering</li> </ul>
Features Attractive to Target Markets:	<ul style="list-style-type: none"> <li>-Variable word length (up to 64 bits)</li> <li>-Binary base conversions</li> <li>-Unsurpassed bit manipulation features</li> <li>-Programming functions</li> </ul>

The HP-16C is in a class by itself. Software engineers and logic designers will understand and appreciate the significant contribution that the HP-16C makes to their professions. Once they are made aware of the HP-16C and its full capabilities, they will buy it!

## The HP-12C Target Markets

The HP-12C is directed at financial and other business professionals who require both calculating power and shirt-pocket portability. The audience for the HP-12C includes an array of business specialists:

- Bankers and financial/investment analysts
- Real estate professionals
- Corporate managers
- Small businessmen
- Accountants

The HP-12C is purchased for both company and personal use. A high incidence of company purchases results in a relatively low price sensitivity among its users.

Without regard to its powerful functionality, the HP-12C is often times perceived as a status symbol. Notably, a significant number of corporate managers and senior executives purchase the HP-12C.

## Market Summary for the HP-12C

- |                    |  |
|--------------------|--|
| Primary Markets:   | <ul style="list-style-type: none"> <li>-Real estate professionals</li> <li>-Bankers and finance/investment analysts</li> <li>-Corporate managers and senior executives</li> <li>-Sales and marketing professionals</li> </ul>              |
| Secondary Markets: | <ul style="list-style-type: none"> <li>-Accountants</li> <li>-Insurance professionals</li> <li>-Business students</li> <li>-Leasing analysts</li> <li>-Management consultants</li> </ul>   |
| Customer Profile:  | <ul style="list-style-type: none"> <li>-Business professionals</li> <li>-Likely to have previously owned a programmable calculator</li> <li>-Relatively price insensitive</li> <li>-Uses HP-12C for business and personal needs</li> </ul> |

Features Attractive  
to Target Markets:

- Cash flow analysis (up to 20 grouped cash flows)
- Net present value and internal rate of return
- Amortization
- Depreciation schedules
- Bond calculations
- Calendar functions

The HP-12C is the top financial calculator in the market. Powerful built-in functions, programmability, and ease-of-use make the HP-12C attractive to both advanced and first time programmable users.

## The Competition

Three companies provide the primary competition for Series 10 calculators: Texas Instruments, Sharp and Casio. TI competes in every market targeted by Series 10. Sharp and Casio direct their product offerings largely toward the scientific and technical markets.

### The HP-10C Competitive Summary

The most serious competition for the HP-10C comes from the TI-55-II. This product offers comparable functions at a particularly good price (\$50). The TI-55-II comes in a thin-line, vertical format design with a tilt-top display.

The TI-55-II is severely disadvantaged in terms of programming capabilities, display features and the number of memory registers when compared with the HP-10C. Also automatic memory allocation, direct and conditional branching and merged keycodes, all standard on the HP-10C, are not available on the TI-55-II. In display features, the HP-10C has 10 digits and the TI machine only 8 digits. And for memory registers, the HP-10C offers 10 memory registers and the TI machine again only 8.

Less serious competition comes from two Sharp calculators, the Casio FX-3600 and the TI-57. These products are considerably less capable than the HP-10C and are offered at a range of lower prices. Table 3 summarizes the competitive picture for the HP-10C.

### The HP-11C Competitive Summary

With numerous built-in functions, advanced programmability and a \$100 price, the HP-11C offers a unique price/performance combination that isolates it from much of the competition. The only direct competition for the HP-11C is the Sharp EL-5100. This machine has an impressive 24 character, LCD dot matrix, alphanumeric display. But the Sharp machine has a very abbreviated function set, primitive programming and only 80 program steps.

Other products vie with the HP-11C for the same customer. But these machines are located in the upper end of the scientific programmable spectrum. They compete more directly with the HP-15C and are discussed in the HP-15C Competitive Summary.

Table 4 summarizes the competitive picture for both the HP-11C and HP-15C.