

commodore

presents
its newest and
finest collection
of specialized
calculators ...
with

- More Power
- Greater Versatility
- Higher Quality Standards
- Lower Prices

In short, Commodore
offers the most remarkable
Price/Performance Ratio
in the World

Each calculator represents the most
advanced state of the art; each is
designed for a specific area of
application; each is a
veritable POWERHOUSE.





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The Commodore is a pioneer in offering the consumer **Value** in personal MOS/LSI electronics. The producer of some of the first business and consumer electronic calculators, the Commodore today has one of the very few vertically integrated companies. For over 20 years, the Commodore's high technology, large volume, vertical integration efficiency and no-frills marketing have given the consumer more features and quality for less money. He will never change his policy.



The Specialists from Commodore

Commodore is proud to offer a significant new series of *preprogrammed* calculators, *dedicated to problem-solving needs within specialized fields.*

These calculators
the Statistician — S61
the Navigator — N60
the Mathematician — M55

are capable of performing *all* the computations normally associated with the specific area that each name connotes.

In each instance, the data is entered, then a single keystroke computes in a moment the answers which, in calculators such as Hewlett-Packard's and Texas Instruments' card programmable units, would normally take many minutes . . . and several cards.

And you'll find these Specialists surprisingly, and pleasantly, low-priced.

If you're a professional — or studying to be one — in one of these fields, you'll find the particular calculator indispensable; you'll immediately

Put a Commodore Specialist to Work . . .



(Actual Size)

The Specialist by Commodore The Statistician – S61

Dedicated to All Professionals* Who Must Process Masses of Data

(*and to those who are studying to become professionals)

The Statistician—S61 will make any statistician work better. Professionals will find it upgrades their skills, students will no longer suffer the tedium of extended statistical computations. A joy to work with — and a marvelous learning tool.

Among the unique statistical functions the Commodore S61 is capable of: Linear regression — only data required are the paired points. Then, with single key computation: determine slope, intercept, residual sum of squares, coefficient of correlation, mean of x values, mean of y values, fitted y value to corresponding x, fitted x-line value for corresponding y, standard deviation of y value. Yes, each with just a single keystroke. **And** entry and deletion of paired points do not destroy the data base.

Mean and standard deviations, grouped and ungrouped data on two sets of totally independent data can concurrently be calculated. Then add on or subtract further values without destroying the data base. Compute sample mean, unbiased estimate of standard deviation, standard deviation of a population . . . each with a single keystroke.

One sample and two sample Z and t test statistics — two sample t statistics, both independent and dependent. Chi squared (goodness of fit) statistic — enter observed and expected frequencies for single-key computation. You can remove erroneous data without destroying the data base.

Chi squared distribution — enter degrees of freedom and x value . . . and single key computation. Hypergeometric distribution — enter the four parameters in any order . . . and single-key computation. Single-key computation, too, for • Binomial distribution • Poisson distribution • F distribution • t distribution • Gaussian probability distribution and its inverse • Factorial.

And, just as simply, the Commodore Statistician offers a full array of arithmetic functions including: Permutations and combinations • Gamma function • Trigonometric and inverse trig functions • All logarithmic functions • All standard powers and roots • Parentheses • 1 to 5 digit random number generator • Significant number selection.

And there are 8 fully addressable memories for running up to 8 separate calculations independently and simultaneously.

The display is 14 digits, with 10 digit mantissa and sign and 2 digit exponent and sign. There is a fixed decimal point feature as well as floating decimal.

The Statistician is fully rechargeable; the unit includes permanently installed nickel cadmium batteries and recharger/adapter.

The Ultimate Advanced Mathematical Calculator

Consider the Mathematician — M55 a lifetime investment: so advanced, it has all the features a mathematician will probably ever need.

Over 2,000 pages of tables and applications, never before available in a personal calculator, are now at your fingertips in this preprogrammed marvel.

The array of functions in the Mathematician permits solutions to highly complex problems that can now be solved by keying in one, two, or three basic data inputs and then single key computation: press the processing key for that particular routine.

Normal integration between two points, for example, needs only the data input of the x and y values of those two points. Then press the integration key. And in all linear regression sequences, entry and deletion can be made without destroying the data base.

The Mathematician — M55 can accomplish — with an absolute minimum of keystrokes — Partial differential equations • Series solution of the wave equation . . . and other boundary value problems • Fluid flow calculations • Problems in field theory • Heat transfer and diffusion rate computations • Matrix operations of complex numbers including determinant, inverse and matrix multiplications.

It offers these unique preprogrammed features: • Combinations • Incomplete Gamma and its natural log • Bessel function • Gaussian (Normal) and Poisson distribution • Legendre and Laguerre Polynomials • Quadratic solution • Numerical integration • Error function • Chain with matrix, vector and complex arithmetic • Vector operations, too. Complete linear regression includes the correlation coefficient, residual sum of square and curve fitting. The mean offers both unbiased standard and population standard deviations.

There are six user memories and two levels of parentheses.

And all the functions one would expect from a first-rate personal scientific calculator: including trigonometric, logarithmic and hyperbolic functions.

There are an impressive array of 14 preprogrammed conversions and reciprocals, including seven British/metric and seven special (and, in several cases, unique) conversions: voltage ratio/decibels, kilowatt hours/joules and BTU/joules, decimal/octal, rectangular/spherical and rectangular/polar, degrees/grads and degrees/radian.

The Mathematician — M55 boasts 11 preprogrammed physical constants, many never before available, including Planck's and Boltzmann's constants, universal gravitational and universal gas constants, electron rest mass and electronic charge, velocity of light, permittivity and permeability of free space, Avogadro's number, and Pi.

There are 56 keys and controls and 51 dual functions.

14 digit display with a 10 digit mantissa, 2 exponential digits and 2 signs are all in a bright green digitron display with fixed or floating decimal point and significant digits.

The Mathematician is completely rechargeable too, with nickel cadmium batteries and recharger/adapter included.



(Actual Size)

The Specialist by Commodore The Mathematician – M55



(Actual Size)

The Specialist by Commodore The Navigator – N60

The World's Most Powerful Flight Computer

For the pilot—professional or amateur—The Navigator—N60 by Commodore. It allows concentration on flying while putting every flight computation at the pilot's fingertips. Instantly and accurately. Because all the computations are preprogrammed for single keystroke entry.

Prior to flight, the Navigator—N60 sets up the course by computing the heading (using the wind triangle computation keys), estimating fuel consumption, and computing weight and balance.

In flight, the Navigator—N60 plots the most efficient—and safest—flying course through the use of one VOR and two VORs. It finds position by Rhumbline as well. The versatile wind triangle function in flight gives speed and course corrections, off-course and DME speed corrections. Vector addition and subtraction. And mach number computations, true air speed, true air temperature . . . and British/metric and nautical mile/mile and kilometer conversions.

The Navigator—will determine the time en route, the time of arrival, the fuel consumption rate and express these data in the display in terms of Degrees-Minutes-Seconds, and Hours-Minutes-Seconds.

All these operations are performed with simple-to-learn, clearly labeled, pre-programmed keystrokes.

The Navigator—N60 will determine the time en route, the time of arrival, the fuel consumption rate and express these data in the display in terms of memories, parentheses, eight power keys, including $1/x$, y^x , $\sqrt[x]{y}$, x^2 , \sqrt{x} , π , $x \leftrightarrow y$, $+/-$.

Also trig and inverse trig; degree/radians conversion; common log, and anti log.

Green fluorescent display provides optimal viewing even for night-flying. 14 digits: 10 mantissa, 2 exponent and minus signs.

It's rechargeable; it should operate for upwards of four hours on a single overnight charge on a 110 volt circuit. The nickel-cadmium batteries and recharger adapter are included. And it's short-circuit protected.

All flight computations are preprogrammed, using Commodore's unique single key computation. Enter the data, then press the single appropriate key. And there's your answer. Here are examples of this marvelous single-key ability. In each case, the data input (or inputs) are followed by a **SINGLE KEY COMPUTATION**:

DMS/HMS Display.

Vector Addition and Subtraction.

DME Speed Correction—only 5 data inputs.

Off-course Correction—only 3 data inputs for course and distance.

Mach Number—only 2 data inputs.

True Air Speed, True Air Temperature, Density Altitude—only 3 data inputs.

Solution of Wind Triangle—4 data inputs.

Position by Rhumbline—5 data inputs.

Position by 1 VOR—4 data inputs.

Position by 2 VOR—4 data inputs.

Navigation by Rhumbline—4 data inputs and just single key computation for course and distance between coordinates.

Navigation by 1 VOR—5 inputs.

Navigation by 2 VOR—6 data inputs.

The New Personal, Versatile Programmable Calculator

The PR100 by Commodore may be considered the ultimate general purpose personal calculator. It's key *programmable* — teach it the formula for your problem and it will perform the tedious, repetitious calculation chores without complaint. It's also a *preprogrammed* scientific/statistical calculator with a marvelous array of features.

The Programmable PR100. You can use the PR100 without any prior programming experience. Just determine how you would solve a long (and usually tedious) problem, enter it in the PR100, step-by-step, while the *Load* switch is on, leaving room only for the variables. Then set the PR100 on *Run*, enter the variables and let her rip: Your PR100 will perform the drudgery while you do the thinking. Yet it's versatile enough to perform complex mathematics for the demanding user as well.

The *Run/Stop* key allows the reading and entering of data. The *Go To* key allows branching — like a computer — from one section of program to another. The *Skip* key allows the conditional flow of a program — in one direction or another — based on an intermediate result. Editing is virtually as simple as the algebraic logic used in the PR100: The *Single Step* and *Back Step* keys allow you to examine, entry-by-entry, what has been entered, then go back and amend, insert, or delete any individual entry within the sequence.

Your program — or a number of programs — can be stored at once and remain intact until power is shut off or the program rewritten.

There's power to spare: *10 independent memories*, each with 7 operations — with the ability to perform the same operation on all 10 memories simultaneously.

And you can work any function without affecting the calculation in progress.

There are also *4 levels of parentheses*.

The Preprogrammed PR100. The PR100 is also a powerful slide rule with features and power that would more than justify the cost of the calculator . . . even if it weren't a programmable calculator as well.

There are *78 preprogrammed functions and operations* including scientific and statistical preprogrammed functions:

- Negative and positive summations
- Averages and standard deviations and variance
- Permutations and combinations
- Factorial
- Linear regression, slope and intercept.

The Programmable PR100 also offers trigonometric and inverse trig functions

- Radians, degrees and grad unit calculations
- Hyperbolic functions
- Powers, roots and algebraic functions including $\sqrt[y]{x}$, x^y , \sqrt{x} , x^2 , $1/x$, π , change sign and exchange.

There are seven English/metric conversions and their reciprocals.

The 12 character LED display offers three-mode versatility: Floating or fixed decimal settings, scientific notation, and engineering notation.

It's completely rechargeable, too; including permanent rechargeable nickel cadmium batteries and recharger/AC adapter.



(Actual Size)

The Programmable by Commodore The PR100



(Actual Size)

The Preprogrammed Scientific by Commodore The SR9190R

The Ideal Scientific Preprogrammed Calculator— in the Commodore Tradition of Value

The SR9190R is the new version of the famous Commodore SR4190R, which has been probably the best received advanced student and general purpose scientific in the history of the calculator.

The function list is really quite amazing, with the most comprehensive conversions, statistical and graph plotting facilities. Incorporated are features you would normally expect to require programming (as would be the case with Hewlett-Packard's HP65 or with Texas Instruments' SR52). On the SR9190R these functions are activated by a *single keystroke* in each instance, after entering the data.

Among the features the SR9190R can perform with single keystrokes are:

Poisson, binomial probability and gaussian distribution • Mean and standard deviation • Linear regression analysis • Numerical integration . . . allowing calculation of area beneath a curve • Permutations and combinations . . . with no overflow limitations • Factorial computations and Gamma function.

Complex numbers arithmetic • Hours-Minutes-Seconds mode . . . for time and motion study • Polar/rectangular, rectangular/polar conversions in all quadrants • Percent and Delta percent.

Log and antilog . . . base e and base 10 • Direct and indirect hyperbolic functions • Xth root, Xth power, square root, reciprocal.

11 back-and-forth British/metric conversions.

9 user memories and 3 levels of parentheses are available, but not simultaneously. (If all 3 levels of parentheses are in use, 6 memories are available.)

The SR9190R is extraordinarily versatile . . . almost like having five calculators in one. It's a quite complete business executive calculator; an extraordinarily powerful slide rule; a powerful statistical calculator; an advanced scientific functions calculator; a comprehensive conversions calculator.

Yet, for all its features and its versatility, the SR9190R is extremely easy to use. As one critic said, in commenting on the Commodore logic: "It has Algebraic logic, so nice for us humans."

The bright red LED display has 14 characters: 10 mantissa, 2 exponent, 2 signs. The exponents may be entered by the entry key (or automatically, of course).

The SR9190R is fully rechargeable; the nickel-cadmium batteries and the adapter/recharger are included.

There really is no other calculator available anywhere that can offer so many scientific and statistical preprogrammed functions—so very much power—at so modest a price. It's in the Commodore tradition of value.

Which Commodore Calculator is Just Right for You?

BASIC FUNCTIONS AND POWER KEYS

Common and natural log

Trig and inverse trig

Hyperbolic functions

$\sqrt{\quad}$ Square root

X^2 square

1/x reciprocal

$x \leftrightarrow y$ exchange

+/- change sign

Y^X - y to the power of x

$\sqrt[x]{y}$ - y to the xth root

π Pi

STATISTICAL FUNCTIONS

Distribution: t and F

Chi-square

Hypergeometric

Gaussian (normal)

Gaussian Inverse

Binomial

Poisson

Chi-square (goodness of fit) statistic

Permutation

Combination

Factorial

MEAN AND STANDARD DEVIATION

Biased and unbiased

LINEAR REGRESSION

Slope

Intercept

Residual sum of squares

Curve fitting

Coefficient of correlation

MEMORY (User memories available)

Storage and summation

Exchange memory

SPECIAL FUNCTIONS

Parentheses (levels)

% percent and $\Delta\%$ delta

Random number generator

Gamma or \log_e (gamma)

Incomplete gamma

Hours/degrees-minute-second computation

	S61	M55	N60	PR100	9190
Common and natural log	Yes	Yes	Yes	Yes	Yes
Trig and inverse trig	Yes	Yes	Yes	Yes	Yes
Hyperbolic functions	No	Yes	No	Yes	Yes
$\sqrt{\quad}$ Square root	Yes	Yes	Yes	Yes	Yes
X^2 square	Yes	Yes	Yes	(1)	Yes
1/x reciprocal	Yes	Yes	Yes	Yes	Yes
$x \leftrightarrow y$ exchange	Yes	Yes	Yes	Yes	Yes
+/- change sign	Yes	Yes	Yes	Yes	Yes
Y^X - y to the power of x	Yes	Yes	Yes	Yes	Yes
$\sqrt[x]{y}$ - y to the xth root	Yes	(2)	Yes	Yes	Yes
π Pi	Yes	Yes	No	Yes	Yes
Distribution: t and F	Yes	No	No	No	No
Chi-square	Yes	(3)	No	No	No
Hypergeometric	Yes	No	No	No	No
Gaussian (normal)	Yes	Yes	No	No	Yes
Gaussian Inverse	Yes	No	No	No	No
Binomial	Yes	Yes	No	No	Yes
Poisson	Yes	Yes	No	No	Yes
Chi-square (goodness of fit) statistic	Yes	No	No	No	No
Permutation	Yes	No	No	Yes	Yes
Combination	Yes	Yes	No	Yes	Yes
Factorial	Yes	Yes	No	Yes	Yes
Mean and Standard Deviation	Yes	Yes	No	Yes	Yes
Biased and unbiased	Yes	Yes	No	Yes	No
Linear Regression	Yes	Yes	No	Yes	Yes
Slope	Yes	Yes	No	Yes	Yes
Intercept	Yes	Yes	No	Yes	Yes
Residual sum of squares	Yes	Yes	No	No	No
Curve fitting	Yes	Yes	No	Yes	Yes
Coefficient of correlation	Yes	Yes	No	No	No
Memory (User memories available)	8	6	2	10	9*
Storage and summation	Yes	Yes	Yes	Yes	Yes
Exchange memory	Yes	Yes	No	Yes	Yes
Special Functions					
Parentheses (levels)	1	2	1	4	3*
% percent and $\Delta\%$ delta	No	No	No	Yes	Yes
Random number generator	Yes	Yes	No	No	No
Gamma or \log_e (gamma)	Yes	Yes	No	No	Yes
Incomplete gamma	(4)	Yes	No	No	No
Hours/degrees-minute-second computation	No	No	Yes	Yes	Yes

SPECIAL ARITHMETIC

Matrix
Complex
Vector

PHYSICAL CONSTANTS

Universal gas and gravitational
Planck's and Boltzmann's
Electronic charge and rest mass
Velocity of light
Permittivity and permeability of free space
Avogadro's number

ADVANCED MATH

Quadratic equations
Numerical integration
Error function
Legendre and Laguerre polynomials
Bessel function

NAVIGATION FUNCTIONS

Wind triangle computation
Rhumbline and VOR navigation
Speed and off-course correction
True air speed and temperature computation
Density altitude and mach number
computation

PROGRAMMING FEATURES

Programming steps
Conditional and unconditional branching
Looping
Editing: step, backstep
 Insert, delete
Single step execution

CONVERSIONS

Degree ↔ radian
Degree ↔ grads
Rectangular ↔ polar
Rectangular ↔ spherical
Fahrenheit ↔ centigrade
British ↔ metric (linear, weight, volume)
 number of conversions
Special: Nautical ↔ miles and kilometers
 Joules ↔ Btu
 Joules ↔ kilowatt hour
 Voltage ratio ↔ decibels
 Decimal ↔ octal

S61	M55	N60	PR100	9190
No	Yes	No	No	Yes
No	Yes	No	No	Yes
No	Yes	Yes	No	No
No	Yes	No	No	No
No	Yes	No	No	No
No	Yes	No	No	No
No	Yes	No	No	No
No	Yes	No	No	No
No	Yes	No	No	No
No	Yes	No	No	No
No	Yes	No	No	No
No	Yes	No	No	No
No	Yes	No	No	No
No	No	Yes	No	No
No	No	Yes	No	No
No	No	Yes	No	No
No	No	Yes	No	No
No	No	Yes	No	No
No	No	No	72	No
No	No	No	Yes	No
No	No	No	Yes	No
No	No	No	Yes	No
No	No	No	Yes	No
No	No	No	Yes	No
Yes	Yes	Yes	Yes	Yes
No	No	No	Yes	Yes
Yes	Yes	Yes	Yes	Yes
No	Yes	No	Yes	No
No	Yes	Yes	No	Yes
0	5	2	3	7
No	No	Yes	No	No
No	Yes	No	No	Yes
No	Yes	No	No	No
No	Yes	No	No	No
No	Yes	No	No	No

DISPLAY

(total number of characters)

Mantissa

Exponent entry

Type of display

Scientific notation

Engineering notation

Hours-minute-second mode

Fixed and floating decimal

Significant numbers

POWER SUPPLY

Rechargeable, adapter and ni-cad
batteries included

DIMENSIONS

Width

Length

Height (or thickness)

Weight (without adapter)

of keys and switches

of direct keyboard entries

Algebraic logic

S61	M55	N60	PR100	9190
14	14	14	12	14
10	10	10	8	10
Yes	Yes	Yes	Yes	Yes
Fluo	Fluo	Fluo	LED	LED
Yes	Yes	Yes	Yes	Yes
No	No	No	Yes	No
No	No	Yes	Yes	Yes
Yes	Yes	No	Yes	No
Yes	Yes	No	No	No
Yes	Yes	Yes	Yes	Yes

(1) Use constant

(2) Use Y^X and $1/x$

(3) Use incomplete gamma function

(4) Use chi square distribution

(5) Use gaussian distribution

* If all 3 levels of parentheses are used, 6 user memories remain

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