commodore
SR7919D
Scientific Notation Calculator
Your scientific notation calculator is a 19-key, 28 function machine. Once you have become familiar with its keyboard and its versatile display, you will be able to perform a broad range of basic and advanced calculations.

1. The Display

Floating Point Format

\[ -12345678 \]

Sign of number 8 digit number (mantissa)

Scientific Notation

\[ 123.4599 \]

Sign of number 5 digit mantissa Sign of 2 digit exponent exponent

If the size of a result exceeds the 8 digit capacity of the floating point format, the unit will automatically display the result in scientific notation.

2. Use of the \[ 8 \leftrightarrow 5 \] Key

If a number is displayed in scientific notation with a 5 digit mantissa, the full 8 digit mantissa is stored and can be displayed with the key.

1 \[ \div \] 7000 \[ = \] Read 1.4285-04

F \[ \uparrow \] 8 \[ \leftrightarrow \] 5 \[ \text{Read} \] 1.4285714
3. **Upper Case Function Key**

Each key on your machine has an upper case inscription. To release this function, press the **F↑** key. Thus, to enter 6000 in scientific notation we must employ the "Exponent Entry" key as follows:

6 **F↑ EE** 3 Read 6.03 \((6 \times 10^3)\)

Note: After pressing the **F↑**, a signal light will appear at the extreme left of the display. This advises you that your next entry will be an upper case function:

If, at this time, you choose not to proceed with an upper case operation, press the **CF** Clear Function Key (it is the upper case inscription on the Function Key) to cancel it.

4. **The extreme left position on the display is reserved for symbols.**

a) **Sign of mantissa.** Minus sign followed by the mantissa denotes negative number. No signal denotes positive number.

b) **Minus sign without digits following** is the time-out signal to save battery life.
To recall displayed data, press next key in your calculation sequence or \[ \text{Key} \].

c) Error signals:
Positive number error occurs when calculation exceeds capacity or an improper operation is performed:
\[ \begin{align*}
0 & \quad F^{\uparrow} \quad 1/x \\
\Gamma & \quad 0.
\end{align*} \]

Negative number error occurs under same conditions:
\[ \begin{align*}
C & \quad 2 \quad +/- \quad F^{\uparrow} \quad \sqrt{x} \quad F 1.4142136
\end{align*} \]

There are two other positions on the display where symbols may appear.

d) Power On. When your calculator is switched "ON," your display will show \[ \underline{0} \] at the extreme right hand side of the window.

Note: "Power On" clears all registers including the memory.

e) The sign of the mantissa may be changed before, during or after the data is entered by pressing the sign change key \[ +/- \]. The signal will appear at the far left (see Paragraph 4a). However, if the \[ +/- \] key is pressed after
the EE key, the value of the exponent is altered. This symbol appears to the immediate left of the 2 digit exponent field.

5. Logic
Your calculator uses algebraic logic. This simply means that you may enter examples just as you would write them down:

Example
\((2 \times 3 + 5)^3 = ?\)

Press \(\begin{array}{c}2 \ \times \ 3 \ + \ 5 \ \ F \ U \ Y \ X \ \ 3 = \end{array}\)

Read \(1331\).

6. Clear
The YX/C/CE Key is the only three function key on your calculator. If pressed once, it “erases” your last entry, permitting you to correct a mistake without beginning all over again.

e.g., \(4 \times 3 = 12\)

Error

\(\downarrow\)

\(4 \ \times \ 2 \ \ C/CE \ 3 \ = \ 12\)

If pressed twice prior to the completion of an example, or once after
the result key = , the C/CE key clears all registers except Memory. The third application of this key is its upper register function. As shown in paragraph 5, the Yx function raises the base to a power.

7. Memory

**STO** Memory Register Key
The key sequence \( F\uparrow \text{STO} \) commands the calculator to copy the value currently on the display into memory.

**RCL** Recall Memory Key
The key sequence \( F\uparrow \text{RCL} \) copies data stored in the memory on the display. Any data on display prior to recall is lost, while the value stored in memory remains unaltered and may be recalled later on.

To Clear Memory:
Data in memory is automatically replaced by new data stored by the \( F\uparrow \text{STO} \) key sequence. This method is referred to as, "writing over existing data."

The memory register can also be cleared by storing zero:
\[ \text{C} \ F\uparrow \text{STO} \]
Memory Accumulation
Adding both positive and negative values to stored data is accomplished by the key sequence:

\[ F \uparrow \ M \uparrow \]

8. \( x \leftrightarrow y \) Exchange Register Key
This upper register function allows you to exchange the data currently on display with the previous entry or subtotal. It is used for factor reversal and checking previous entries.

9. \( 1/x \) Reciprocal
Computes and displays inverse of a number currently on display.

Enter \[ \begin{array}{c}
25 \\
\end{array} \]
Read \[ \begin{array}{c}
F \uparrow 1/x \\
0.04
\end{array} \]

10. \( \pi \) Pi Key
An upper register function which causes the entry and display of the constant Pi.

11. Examples
A) Use of \( x^2 \) and \( \sqrt{x} \)
Find the hypotenuse of a triangle whose sides measure 3 and 4.

Enter \[ \begin{array}{c}
C \\
3 \\
F \uparrow x^2 \\
+ \\
4
\end{array} \]
Read \[ \begin{array}{c}
F \uparrow x^2 = F \uparrow \sqrt{x} \\
5
\end{array} \]
Sales and Service Centers

Commodore Business Machines, Inc.
390 Reed Street
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Commodore Business Machines, (Canada) Ltd.
946 Warden Avenue
Scarborough, Ontario

CBM Business Machines Limited
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Commodore France SA
Zone Industrielle
Departmentale - M14 06510
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France

Commodore AG Schweiz
Bahnhof Strasse 29-31
CH-5001 AARAU

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B) Use of $2^{17}$

Raise $2^{17} = ?$

$\begin{array}{c}
\text{C} \quad 2 \quad \text{F} \uparrow YX \quad 17 = \quad 131072.
\end{array}$

C) Use of $\pi$ and $8 \leftarrow 5$

Find the circumference of a circle whose radius is 99,999,999 meters.

Formula $C = 2\pi r$

Enter

$\begin{array}{c}
\text{C} \quad 2 \quad \times \quad \text{F} \uparrow \pi \quad \times \quad 99999999 =
\end{array}$

Read

6.2831 08

The true position of the decimal is 8 places to the right. This is accomplished by writing the number and adding zeros:

628310000.

However, you may also see three of the missing digits.

Press $\text{F} \uparrow \quad 8 \leftarrow 5$ Read 6.2831853

(Remember the true position of the decimal. Rewrite: 628318530.)

D. Use of Common Log and Inverse Common Log Functions

$\text{LOG}$

Calculate $10(\log 2.1 + \log 3.2)$
Enter
2.1 **F↑ LOG** + 3.2 **F↑ LOG**
= **F↑ STO** Read 0.8273693
10 **F↑ Y^X F↑ RCL** = 6.7200004
(inverse function)

E. Use of e^x
Calculate the hyperbolic sine of .5
Equation \( \sinh x = \frac{e^x - e^{-x}}{2} \)
Enter
.5 **F↑ e^x** - .5 +/- **F↑ e^x**
\( \div 2 \) = Read 0.5210953

F. Use of Trigonometric Keys

\begin{align*}
\text{arc} & \quad \text{sin} & \quad \text{cos} & \quad \text{tan} \\
\text{Enter} & & & \\
30 \; \text{F↑ sin} & & & 0.5 \\
\text{F↑ arc sin} & & & 30. \\
120 \; \text{F↑ cos} & & & -0.5 \\
\text{F↑ arc cos} & & & 120. \\
45 \; \text{F↑ tan} & & & 1. \\
\text{F↑ arc tan} & & & 45. \\
\end{align*}

12. Operating Accuracy
Functions +, -, \( x \), \( \div \), \( 1/x \), \( x^2 \), \( \sqrt{x} \)
are subject to a roundoff error of 
± one count in the least significant 
eighth digit. Other functions are ac-
curate to ± 2 counts in the eighth 
digit.

13. Error Conditions
An error condition results when an 
improper operation is performed or 
when a result overflows or under-
flows the capacity of the calculator. 
When an error signal occurs (see 
paragraph 4C) press clear key and 
begin again.

Overflow:
Computed result is greater than 
9.9999999 × 10^{99}

Underflow:
Computed result is less than 
1.0 × 10^{-99}

14. Improper Operation

\[
\frac{x}{y} \quad \text{where } Y = 0 \\
y^x \quad \text{where } Y < 0 \\
\sqrt{x} \quad \text{where } X < 0 \\
1/x \quad \text{where } X = 0 \\
\ln X \quad \text{where } X \leq 0 \\
\log X \quad \text{where } X \leq 0 \\
\arcsin x \quad \text{where } X > 1 \\
\arccos x \quad \text{where } X > 1
\]
Disposable Battery Model (D)
Your calculator uses a standard nine-volt battery type 006P available at most drug, department and camera stores.

Experience has proven that batteries packed with machines age considerably. To protect your calculator, we have omitted the battery from the package. Please ask your dealer for a fresh, new power cell. In the event your brand new machine does not function, please check the battery first.

Please note. Machines with disposable batteries will not recharge. See battery replacement details above.

AC Adapter Operation
It is recommended that you unsnap and remove the battery from your machine before inserting the adapter jack.

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APPENDIX

Use proper Commodore/CBM adapter for AC operation
Adapter 640 or 707 North America
Adapter 708 England
Adapter 709 West Germany

APPENDIX

Trouble Shooting
If battery is low calculator will:
a. Display will appear erratic
b. Display will dim
c. Display will fail to accept numbers

If one or all of the above conditions occur, you may check for a low battery condition by entering a series of 8's. If 8's fail to appear, operations should not be continued on battery power. Unit may be operated on AC power.

CAUTION
A strong static discharge will damage your machine.

Shipping Instructions:
A defective machine should be packaged securely and returned to the authorized service center nearest you. See listing of service centers.

Temperature Range

<table>
<thead>
<tr>
<th>Mode</th>
<th>Temperature °C</th>
<th>Temperature °F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operating</td>
<td>0° to 50°</td>
<td>32° to 122°</td>
</tr>
<tr>
<td>Storage</td>
<td>−40° to 55°</td>
<td>−40° to 131°</td>
</tr>
</tbody>
</table>
Guarantee

Your new electronic calculator is guaranteed for both parts and labour for 1 year from date of purchase.

If your calculator proves defective for any reason during this period, Commodore will exchange it for a brand new one.

Please pack your calculator well and send it prepaid to Commodore Service Centre, as listed. Please make sure to ship this with all postage, shipping and insurance charges paid.

Please enclose a copy of your original sales slip or similar proof of purchase when sending in your defective machine.

This guarantee applies only to the original owner. While normally it does not cover damage or malfunctions resulting from fire, accident, neglect, abuse or other causes beyond our control, Commodore will assume responsibility for replacement if your calculator is not damaged beyond identification.

Specifically excepted from this guarantee are any disposable batteries that may have come with the calculator, either supplied by Commodore or by the retailer. In order to record your guarantee, please complete the registration card and mail within 10 days from date of purchase.