Thank you for purchasing the SHARP Scientific Calculator Model EL-501T.

Before starting a calculation, clear the memory by pressing [AC/ON].

• Parentheses can be continuously used up to 15 times unless pending calculations exceed 4.

• When an abnormal condition occurs and all keys are inoperative.

• After replacing the battery
• When using for the first time
• On the sheet with calculation examples is used English notation (with a decimal point).

Thank you for purchasing the SHARP Scientific Calculator Model EL-501T.

Operational Notes
• On the sheet with calculation examples is used English notation (with a decimal point).

• Keep batteries out of the reach of children.

• Keep the calculator away from extreme heat such as on a car dashboard or near a heater.

Note: When the calculation or conversion result is converted, a residual may occur.

Coordinate Conversions
• Before performing a calculation, select the angular unit: 

Rectangular coordinate

Polar coordinate

Modify Function

In this calculator, calculation results are internally obtained in scientific notation with up to 12 digits for the mantissa. However, since calculation results are displayed in the four-line display by the digit selection and the number of decimal places indicated, the internal calculation result may differ from that shown in the display. By using [INV] with the modify function, the internal calculation is made in the display of that the so displayed value can be used without change in subsequent operations.

BINARY, OCTAL, DECIMAL, AND HEXADECIMAL OPERATIONS

Conversions can be performed by the four basic arithmetic operations, calculations with parentheses and memory calculations using binary, octal, decimal, and hexadecimal numbers.

When performing calculations in each system, first set the calculator in the desired mode before entering numbers. It can also perform conversions between numbers expressed in binary, octal, decimal and hexadecimal systems.

Conversion to each system is performed by the following keys:

-33.333333 (B) ➤ 33 333333 (O) ➤ 33 333333 (D) ➤ 33 333333 (H)

Conversion from each system is performed by the following keys:

33 333333 (D) ➤ 33 333333 (O) ➤ 33 333333 (B) ➤ 33.333333 (H)

When performing calculations in each system, the following keys can be used:

- P (decimal point)
- A (a ➤ A ➤ a ➤ )

To specify E (mantissa) and F (function) when using sexagesimal numbers, conversion to seconds and minutes notation. The four basic arithmetic operations and memory calculations can be performed using the sexagesimal system.

- The modify function can be used in continuous calculations due to accumulation of each calculation error.

(This is for y ➤ r, y ➤ m, y ➤ r, etc., where continuous calculations are performed internally.)

Additionally, a calculation error will accumulate and become larger in the vicinity of inflection points and singular points of functions.

Conversion: 100000 ÷ 3 =

Calculation Formulas

- In the statistical calculation formulas, an error will occur when:

- The absolute value of the intermediate result or calculation result is equal to or greater than 1 × 10^10.

- The denominator is zero.

- An attempt is made to take the square root of a negative number.

ERROR AND CALCULATION RANGES

Within the ranges specified, this calculator is accurate to ±1 of the least significant digit of the mantissa. However, a calculation error increases in continuous calculations due to accumulation of each calculation error.

(This is for y ➤ r, y ➤ m, y ➤ r, etc., where continuous calculations are performed internally.)

Additionally, a calculation error will accumulate and become larger in the vicinity of inflection points and singular points of functions.

Conversion: 10 × 3 = 9.999999999 × 10^1 and 0.

If the absolute value of an entry or a final intermediate result of calculation is less than 10^-10, the value is considered to be 0 in calculations and in the display.

Statistical Calculations Formulas

- The statistical calculation formulas, an error will occur when:

- The absolute value of the intermediate result or calculation result is equal to or greater than 1 × 10^10.

- The denominator is zero.

- An attempt is made to take the square root of a negative number.

SCIENTIFIC CALCULATIONS

Before using the calculator, it is important to clear the memory. The following values can be obtained:

- Press [AC/ON] to clear the memory.

- To enter the decimal point:

- To store a value:

- To recall the stored value:

- To clear the memory:

Each calculation result can be used in the following calculation.

- The previous calculation result will not be canceled after entering multiple instructions.

- Time, Decimal and Sexagesimal Calculations

Conversion between decimal and sexagesimal numbers can be performed, and, while using sexagesimal numbers, conversion to seconds and minutes notation. The four basic arithmetic operations and memory calculations can be performed using the sexagesimal system.

Display for sexagesimal is as follows:

When: The calculation or conversion result is converted, a residual may occur.

Coordinate Conversions
• Before performing a calculation, select the angular unit:

Rectangular coordinate

Polar coordinate

Modify Function

In this calculator, calculation results are internally obtained in scientific notation with up to 12 digits for the mantissa. However, since calculation results are displayed in the four-line display by the digit selection and the number of decimal places indicated, the internal calculation result may differ from that shown in the display. By using [INV] with the modify function, the internal calculation is made in the display of that the so displayed value can be used without change in subsequent operations.

BINARY, OCTAL, DECIMAL, AND HEXADECIMAL OPERATIONS

Conversions can be performed by the four basic arithmetic operations, calculations with parentheses and memory calculations using binary, octal, decimal, and hexadecimal numbers.

When performing calculations in each system, first set the calculator in the desired mode before entering numbers. It can also perform conversions between numbers expressed in binary, octal, decimal and hexadecimal systems.

Conversion to each system is performed by the following keys:

- P (decimal point)
- A (a ➤ A ➤ a ➤ )

To specify E (mantissa) and F (function) when using sexagesimal numbers, conversion to seconds and minutes notation. The four basic arithmetic operations and memory calculations can be performed using the sexagesimal system.

- The modify function can be used in continuous calculations due to accumulation of each calculation error.

(This is for y ➤ r, y ➤ m, y ➤ r, etc., where continuous calculations are performed internally.)

Additionally, a calculation error will accumulate and become larger in the vicinity of inflection points and singular points of functions.

Conversion: 100000 ÷ 3 =

Calculation Formulas

- In the statistical calculation formulas, an error will occur when:

- The absolute value of the intermediate result or calculation result is equal to or greater than 1 × 10^10.

- The denominator is zero.

- An attempt is made to take the square root of a negative number.

ERROR AND CALCULATION RANGES

Within the ranges specified, this calculator is accurate to ±1 of the least significant digit of the mantissa. However, a calculation error increases in continuous calculations due to accumulation of each calculation error.

(This is for y ➤ r, y ➤ m, y ➤ r, etc., where continuous calculations are performed internally.)

Additionally, a calculation error will accumulate and become larger in the vicinity of inflection points and singular points of functions.

Conversion: 10 × 3 = 9.999999999 × 10^1 and 0.

If the absolute value of an entry or a final intermediate result of calculation is less than 10^-10, the value is considered to be 0 in calculations and in the display.

Statistical Calculations Formulas

- The statistical calculation formulas, an error will occur when:

- The absolute value of the intermediate result or calculation result is equal to or greater than 1 × 10^10.

- The denominator is zero.

- An attempt is made to take the square root of a negative number.

- Press [AC/ON] to clear the memory.

- To enter the decimal point:

- To store a value:

- To recall the stored value:

- To clear the memory:

Each calculation result can be used in the following calculation.

- The previous calculation result will not be canceled after entering multiple instructions.

- Time, Decimal and Sexagesimal Calculations

Conversion between decimal and sexagesimal numbers can be performed, and, while using sexagesimal numbers, conversion to seconds and minutes notation. The four basic arithmetic operations and memory calculations can be performed using the sexagesimal system.

Display for sexagesimal is as follows:
BATTERY REPLACEMENT

Notes on Battery Replacement
Improper handling of batteries can cause electrolyte leakage or explosion. Be sure to observe the following handling rules:

- Make sure the new battery is the correct type.
- When installing, orient the battery properly as indicated in the calculator.
- The battery is factory-installed before shipment, and may be exhausted before it reaches the service life stated in the specifications.

Notes on erasure of memory contents
When the battery is replaced, the memory contents are erased. Erasure can also occur if the calculator is defective or when it is repaired. Make a note of all important memory contents in case accidental erasure occurs.

When to Replace the Batteries
If the display has poor contrast, the batteries require replacement.

Cautions
- An exhausted battery left in the calculator may leak and damage the calculator.
- Fluid from a leaking battery accidentally entering an eye could result in serious injury. Should this occur, wash with clean water and immediately consult a doctor.
- Should fluid from a leaking battery come in contact with your skin or clothes, immediately wash with clean water.
- If the product is not to be used for some time, to avoid damage to the unit from leaking batteries, remove them and store in a safe place.
- Do not leave exhausted batteries inside the product.
- Keep batteries out of the reach of children.
- Explosion risk may be caused by incorrect handling.
- Do not throw batteries into a fire as they may explode.

Replacement Procedure
1. Turn the power off by pressing \( \text{ON} \).
2. Remove the screws and lift the battery cover to remove. (Fig. 1)
3. Remove the used battery by prying it out with a ball-point pen or other similar pointed device. (Fig. 2)
4. Install one new battery. Make sure the “+” side is facing up.
5. Replace the cover and screws.
6. Press the RESET switch with the tip of a ball-point pen or similar object.

- Make sure that the display appears as shown below. If the display does not appear as shown, remove the battery, reinstall it, and check the display once again.

Automatic Power Off Function
This calculator will turn itself off to save battery power if no key is pressed for approximately 7 minutes.

SPECIFICATIONS
Calculations: Scientific calculations, binary/octal/hexadecimal number calculations, complex number calculations, statistical calculations, etc.
Internal calculations: Mantissas of up to 12-digits
Pending operations: 4 calculations
Power source: 1.5V DC (Alkaline battery (LR44 or equivalent) × 1)
Operating time: Approx. 5,000 hours when continuously displaying 55555 at 25°C (77°F)
Operating temperature: 0°C – 40°C (32°F – 104°F)
Weight: Approx. 68 g (with batteries)
Accessories: Battery × 1 (installed), operation manual and hard case

FOR MORE INFORMATION ABOUT SHARP CALCULATORS VISIT:
http://www.sharp-calculators.com

CALCULATION EXAMPLES

\[
\begin{align*}
\text{[1]} & \quad \text{Cos} \theta & \quad \text{Sin} \theta & \quad \text{Tan} \theta \\
3^\circ & \quad 0.052335 \quad 0.052335 \quad 0.000000 \\
4^\circ & \quad 0.069911 \quad 0.069911 \quad 0.000000 \\
6^\circ & \quad 0.104528 \quad 0.104528 \quad 0.000000
\end{align*}
\]

\[
\begin{align*}
\text{[2]} & \quad \text{E} & \quad \text{E}^2 & \quad \text{E}^3 & \quad \text{E}^4 \\
45^\circ & \quad 1.107149 \quad 1.224647 \quad 1.382182 \quad 1.587401 \\
18^\circ & \quad 0.809017 \quad 0.651769 \quad 0.469473 \quad 0.327766
\end{align*}
\]

\[
\begin{align*}
\text{[3]} & \quad \text{Sin}^2 \theta + \text{Cos}^2 \theta \\
5^\circ & \quad 0.999023 \\
10^\circ & \quad 0.999990 \\
15^\circ & \quad 1.000000 \\
20^\circ & \quad 1.000000
\end{align*}
\]

\[
\begin{align*}
\text{[4]} & \quad \text{Sin} \theta \cdot \text{Cos} \theta \quad \text{Sin} \theta + \text{Cos} \theta \\
\text{Sin} \theta & \quad 0.866025409 \\
\text{Cos} \theta & \quad 0.970106781 \\
\text{Tan} \theta & \quad 90.000000
\end{align*}
\]

\[
\begin{align*}
\text{[5]} & \quad \text{Sin}^{-1} \theta \quad \text{Cos}^{-1} \theta \quad \text{Tan}^{-1} \theta \\
90^\circ & \quad 0 \quad 0 \quad 0 \\
90^\circ & \quad 0 \quad 0 \quad 0 \\
90^\circ & \quad 0 \quad 0 \quad 0
\end{align*}
\]

\[
\begin{align*}
\text{[6]} & \quad \text{E}^2 \quad \text{E}^4 \\
5^\circ & \quad 1.025353648 \\
10^\circ & \quad 1.060723877 \\
15^\circ & \quad 1.099404259
\end{align*}
\]

\[
\begin{align*}
\text{[7]} & \quad \text{Sin} \theta \cdot \text{Cos} \theta \\
5^\circ & \quad 0.258819743 \\
10^\circ & \quad 0.479425538 \\
15^\circ & \quad 0.696286434 \\
20^\circ & \quad 0.841470985
\end{align*}
\]

\[
\begin{align*}
\text{[8]} & \quad \text{E}^2 \quad \text{E}^4 \\
5^\circ & \quad 1.025353648 \\
10^\circ & \quad 1.060723877 \\
15^\circ & \quad 1.099404259
\end{align*}
\]

\[
\begin{align*}
\text{[9]} & \quad \text{Sin} \theta \cdot \text{Cos} \theta \\
5^\circ & \quad 0.258819743 \\
10^\circ & \quad 0.479425538 \\
15^\circ & \quad 0.696286434 \\
20^\circ & \quad 0.841470985
\end{align*}
\]

\[
\begin{align*}
\text{[10]} & \quad \text{M} \cdot \text{X} \\
5^\circ & \quad 0.06 \quad 0.06 \\
10^\circ & \quad 0.12 \quad 0.12 \\
15^\circ & \quad 0.18 \quad 0.18 \\
20^\circ & \quad 0.24 \quad 0.24
\end{align*}
\]

The range of the results of inverse trigonometric functions
\[
\begin{align*}
\text{Sin}^{-1} \theta & \quad 90^\circ \quad 90^\circ \\
\text{Cos}^{-1} \theta & \quad 90^\circ \quad 90^\circ \\
\text{Tan}^{-1} \theta & \quad 90^\circ \quad 90^\circ
\end{align*}
\]

\[
\begin{align*}
\text{Sin}^{-1} \theta & \quad 90^\circ \quad 90^\circ \\
\text{Cos}^{-1} \theta & \quad 90^\circ \quad 90^\circ \\
\text{Tan}^{-1} \theta & \quad 90^\circ \quad 90^\circ
\end{align*}
\]
Attention: Your product is marked with this symbol. It means that used electrical and electronic products should not be mixed with general household waste. There is a separate collection system for these products.

Information on the Disposal of this Equipment and its Batteries

1. In the European Union

Attention: If you want to dispose of this equipment, please do not use the ordinary dust bin!

Used electrical and electronic equipment must be treated separately and in accordance with legislation that requires proper treatment, recovery and recycling of used electrical and electronic equipment. Following the implementation by member states, private households within the EU states may return their used electrical and electronic equipment to designated collection facilities free of charge. In some countries your local retailer may also take back your old product free of charge if you purchase a similar new one.

Please contact your local authority for further details.

If your used electrical or electronic equipment has batteries or accumulators, please dispose of these separately beforehand according to local requirements.

By disposing of this product correctly you will help ensure that the waste undergoes the necessary treatment, recovery and recycling and thus prevent potential negative effects on the environment and human health which could otherwise arise due to inappropriate waste handling.

2. In other Countries outside the EU

If you wish to discard this product, please contact your local authorities and ask for the correct method of disposal.

Manufactured by:
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