

Texas Instruments[™] electronic calculator TI-2510



Texas Instruments

electronic calculator

TI-2510

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DESCRIPTION

The TI-2510 Electronic Calculator is designed for use by anyone requiring a versatile, accurate, and portable computing instrument. The TI-2510 is capable of solving standard arithmetic problems, as well as some types of advanced problems. The convenient size and easy to use keyboard also make the TI-2510 suitable for desk-top use.

Features

Fully Portable — Weighs less than 10 ounces and fits neatly in a pocket, briefcase or purse.

Versatile — Performs addition, subtraction, multiplication and division including credit balance, chain and mixed calculations, and utilization of a stored constant for multiplication or division. Full-floating point decimal.

Easy to Operate — Just touch the numbers and functions as you would write them on paper. Automatic clearing — no need to touch clear key between problems.

Long Life — Solid-state components, integrated circuits, and a display using light emitting diodes, provide dependable operation and long life.

Disposable Batteries — The TI-2510 operates from 4 size "AA" alkaline batteries (non-rechargeable), providing approximately 15 hours of normal use.

AC Adapter — Model AC9120 available as an optional accessory for use in conjunction with disposable batteries.

OPERATING FUNCTIONS

On/Off and Chain/Constant Switches

On Switch — Located on left side of calculator. Turns calculator OFF and ON.

Chain/Constant Switch — Located on keyboard. Selects CHAIN mode for normal calculations or CONSTANT mode for convenient multiplication or division by a constant.

Keyboard Description

[0] – [9] Keys — Enters NUMBERS (limit 8 digits).

[.] Key — Enters a DECIMAL point.

[+] Key — Instructs the calculator to ADD the previous number or result to the following number.

[-] Key — Instructs the calculator to SUBTRACT the following number from the previous number or result — or assigns a NEGATIVE sign to the following number.

[x] Key — Instructs the calculator to MULTIPLY the previous number or result by the following number.

[÷] Key — Instructs the calculator to DIVIDE the previous number or result by the following number.

[=] Key — Instructs the calculator to complete the previously entered operations to provide the desired calculation result.

[C] Key — Clears (erases) information in calculator and display and sets calculator to zero for start of new problem.

[CE] Key — Corrects an erroneous entry by clearing the last number entered manually on the keyboard. The **[CE]** key clears the sign as well as the quantity of the last number entered.

DISPLAY

- 122320.82

Entry Overflow

E 828524.72

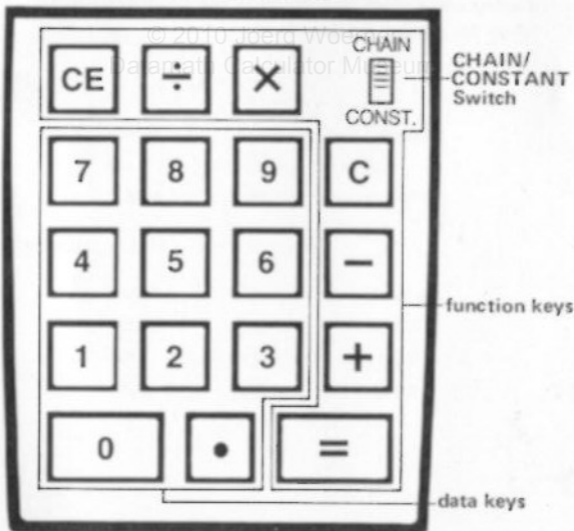
(if negative)

Calculation Overflow

o 724122.32

(if negative)

KEYBOARD



Display Description

Power On Indication — The presence of digits in the display is indication that power is on.

Minus Sign — Appears on left side of display to indicate negative numbers.

Decimal Point — Automatically appears to the right of any number entered unless positioned in another sequence by use of \square KEY. A zero will precede the decimal for fractional numbers.

Overflow — \cup appears on display to indicate a result with more than eight digits before the decimal point. \square indicates entry overflow condition.

Battery Considerations

Low Battery Indication — When the batteries are low the display will appear dim. Replace the alkaline batteries when the display appears dim.

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OPERATING EXAMPLES

Place switch in ON position, depress C , and a zero will appear on the display. If the display appears dim, the batteries are low. If there is no signal on the display the batteries are completely discharged. Replace the alkaline batteries when the display appears dim.

The TI-2510 calculator automatically clears itself between most calculations. Any prior calculation result is cleared if a number key is pressed without having had a basic function key other than = pressed once beforehand.

Addition and Subtraction

Example: $4.23 + 4 = 8.23$

Enter	Press	Display
4.23	+	4.23
4	=	8.23

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Example: $6 - 1.854 = 4.146$

Enter	Press	Display
6	-	6.
1.854	=	4.146

Example: $12.32 - 7 + 1.6 = 6.92$

Enter	Press	Display
12.32	-	12.32
7	+	5.32
1.6	=	6.92

Multiplication and Division

Example: $27.2 \times 18 = 489.6$

Enter	Press	Display
27.2	\times	27.2
18	$=$	489.6

Example: $12 \div 5.2 = 2.3076923$

Enter	Press	Display
12	\div	12.
5.2	$=$	2.3076923

Example: $(4 \times 7.3) \div 2 = 14.6$

Enter	Press	Display
4	\times	4.
7.3	\div	29.2
2	$=$	14.6

Multiplication and Division by a Constant

For most uses of your calculator, the chain/constant switch will be in the CHAIN position. With the switch in the CONSTANT position, a series of numbers can be multiplied or divided by a constant number. A number entered after a \times or \div function and directly before the $=$ key is retained as a constant multiplier or divisor. This constant is erased by subsequent entry of another constant or by pressing the C key.

Example: $5 \times 4 = 20$, $6 \times 4 = 24$, $7 \times 4 = 28$

Enter	Press	Display
5	\times	5.
4	$=$	20.
6	$=$	24.
7	$=$	28.

Example: $12 \div 2 = 6$, $20 \div 2 = 10$, $44 \div 2 = 22$

Enter	Press	Display
12	\div	12.
2	$=$	6.
20	$=$	10.
44	$=$	22.

Calculations With Positive and Negative Numbers

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When performing multiplication or division (either chain or constant mode), a negative value is assigned to a number by pressing the $-$ key before entering the number.

Example: $\left(\frac{-125}{5} + 3\right) \times (-4) = 88$

Enter	Press	Display
	C $-$	
125	\div	-125.
5	\div	-25.
3	\times $-$	-22.
4	$=$	88.

NOTE: When the first number of a calculation is a negative number, the previous problem must be cleared manually by pressing the C key (the = is a function key and will not automatically clear the calculator).

Additional Applications

The TI-2510 can be used for a number of more technical applications.

Squaring a Number

The square of a number (multiplying a number by itself) can be obtained in either chain or constant mode by depressing the = key after the x key.

Example: $25^2 = 625$

Enter	Press	Display
25	x =	625.

Raising Numbers to a Power

Raising numbers to a power — when the exponent is a whole number — is accomplished by putting the chain constant switch in the CONSTANT position.

Example: $3^4 = 3 \times 3 \times 3 \times 3 = 81$

Enter	Press	Display
3	x = = =	81.

Note: The = key is pressed one less time than the power. In this case, the power is 4, so the = key is pressed 3 times.

Reciprocals

The reciprocal of the number displayed (the result of dividing the number into one) is easily found. Move the chain constant switch to the CONSTANT position, press the $\frac{1}{x}$ key and then press the $=$ key twice.

Example: $\frac{1}{5} = 0.2$

Enter	Press	Display
5	$\frac{1}{x}$ $=$ $=$	0.2

Example: $\frac{1}{.0625} = 16$

Enter	Press	Display
.0625	$\frac{1}{x}$ $=$ $=$	16.

Square Roots

The TI-2510 can be used to find the square root of a given number (that is, the number which multiplied by itself equals the given number). The square root is calculated using an iterative process

$$\sqrt{N} = 1/2 \left(\frac{N}{A_1} + A_1 \right) \approx A_2 \approx 1/2 \left(\frac{N}{A_2} + A_2 \right) = A_3$$

where A_1 is an initial approximation, A_2 is the calculated second approximation, and A_3 is the answer.

If the initial approximation is off more than two trials may have to be done to get the correct answer.

Example: $\sqrt{26} = 5.099019$

Choose 5 as an initial approximation since $\sqrt{25} = 5$

Enter	Press	Display	Remarks
26	$\frac{\oplus}{\square}$	26.	
5	$\frac{\oplus}{\square}$	5.2	
5	$\frac{\oplus}{\square}$	10.2	
2	$\frac{\equiv}{\square}$	5.1	2nd Approximation
26	$\frac{\oplus}{\square}$	26.	
5.1	$\frac{\oplus}{\square}$	5.0980392	
5.1	$\frac{\oplus}{\square}$	10.198039	Re-enter 2nd Approximation
2	$\frac{\equiv}{\square}$	5.0990195	Answer
	$\frac{\times}{\square}$ $\frac{\equiv}{\square}$	25.999999	Square Answer to Check

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Overflow and Round Off Conditions

Entry Overflow

The calculator will accept any number up to eight digits. If an entry exceeds eight digits, the error signal E will be displayed. If the entry is negative, the minus sign will be displayed along with the error signal (E). The error signal can be removed by pressing the C key.

Calculation Overflow

If a calculation result is more than eight digits before the decimal, the signal U will be displayed with the answer. To determine the correct answer, mentally move the decimal eight digits to the right.

Example: $13,635 \times 10,000 = 136,350,000$

Enter	Press	Display
13635	\times	13635.
10000	$=$	\circlearrowleft 1.3635000

If the calculation result is negative and has more than eight digits before the decimal, the signal \circlearrowleft will be displayed with the answer.

Example: $-13635 \times 10000 = -136,350,000$

Enter	Press	Display
	$\text{C} \text{ } -$	
13635	\times	-13635.
10000	$=$	\circlearrowleft 1.3635000

After a calculation overflow, the calculator must be cleared with C key before additional operations can be performed.

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Calculation Round Off

Excess digits to the *right* of the decimal in a calculation result (only eight digits can be displayed) are dropped, *not* rounded.

Example: $148623 \div 11 = 13511.1818$

Enter	Press	Display
148623	\div	148623.
11	$=$	13511.181

In Case of Difficulty

1. Check to be sure ON-OFF switch is in the ON position. Presence of digits in the display indicates power is on.
2. If display appears dim, the alkaline batteries should be replaced.
3. Review operating instructions to be certain calculations are performed correctly.

If none of these corrects the difficulty, return unit for repair to your nearest Texas Instruments Consumer Service Facility. Please include information on your difficulty as well as return information of name, address, city, state and zip code.

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CAUTION: Use of other than the optional AC9120 AC Adapter may apply improper voltage to your calculator and cause damage.

For Additional Information

For additional information concerning your calculator, write the Consumer Relations Department at:

Texas Instruments Incorporated
P.O. Box 5012, M/S 10
Dallas, Texas 75222

or call Henry M. Meltzer, Consumer Relations Manager at (214) 238-2741. (We regret that we cannot accept collect calls.)

Warranty Registration

Owner's Copy

To protect your warranty, complete and mail the attached Warranty Registration Card within 10 days of purchase or receipt as a gift. Also record the serial number of your calculator below. Any correspondence concerning your calculator must include both model and serial number.

TI-2510

Model No.

Serial No.

Purchase Date

IMPORTANT

THE WARRANTY IS VOID IF THE SERIAL NUMBER HAS BEEN ALTERED OR DEFACED.

TEXAS INSTRUMENTS INCORPORATED
P.O. BOX 5012, M/S 10
DALLAS, TEXAS 75222

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PLACE
STAMP
HERE

- 1 Mr.
 2 Miss
 3 Mrs.

Warranty Registration Card

Mail within 10 days to protect your warranty



TI-2510

Owner's First Name _____ Initial _____ Last Name _____ Model No. _____ Serial No. _____ Purchase Date _____

Owner's Mailing Address _____ City _____ State _____ Zip _____

Please help us in planning other useful products by providing the following information:

Was Your TI Calculator a Gift?

- 1 Yes 2 No

Your Occupation (Check One)

- 1 Engineer/Scientist
 2 Salesman
 3 Accountant
 4 Farmer/Rancher
 5 Student
 6 Educator
 7 Homemaker
 8 Doctor/Lawyer
 9 Banker/Financier
 10 Other (Specify) _____

Your Approximate Age

- 1 Under 18
 2 18-24
 3 25-34
 4 35-54
 5 55 and over

Where the Calculator Will be Used

- (Check One)
 1 Home
 2 Occupation
 3 Both

Where Purchased?

- 1 Department Store
 2 Office Equipment Dealer
 3 Mail Order
 4 Other (Specify) _____

Your Approximate

Yearly Family Income

- 1 Under \$5000
 2 \$5,000 to \$10,000
 3 \$10,000 to \$15,000
 4 Over \$15,000

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ONE YEAR WARRANTY

The TI-2510 electronic calculator from Texas Instruments is warranted to the original purchaser for a period of one year from the original purchase date — under normal use and service against defective materials or workmanship.

Defective parts will be repaired, adjusted and/or replaced at no charge when the calculator is returned/ prepaid to a Texas Instruments Consumer Service Facility listed below.

The warranty is void if the calculator has been visibly damaged by accident or misuse, if the serial number has been altered or defaced, or if the calculator has been serviced or modified by any person other than a Texas Instruments Consumer Service Facility.

This warranty contains the entire obligation of Texas Instruments Incorporated and no other warranties expressed, implied, or statutory are given.

The warranty is void unless the attached Warranty Registration Card has been properly completed and mailed to Texas Instruments Incorporated within 10 days of purchase.

Texas Instruments Consumer Services Facilities

Texas Instruments Service Facility
P.O. Box 5012, M/S 10
Dallas, Texas 75222

Texas Instruments Service Facility
4333 Transworld Road — Suite 328
Schiller Park, Illinois 60176

Texas Instruments Service Facility
1245 Westfield Avenue
Clark, New Jersey 07066

Texas Instruments Service Facility
78 Town and Country
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Texas Instruments Service Facility
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