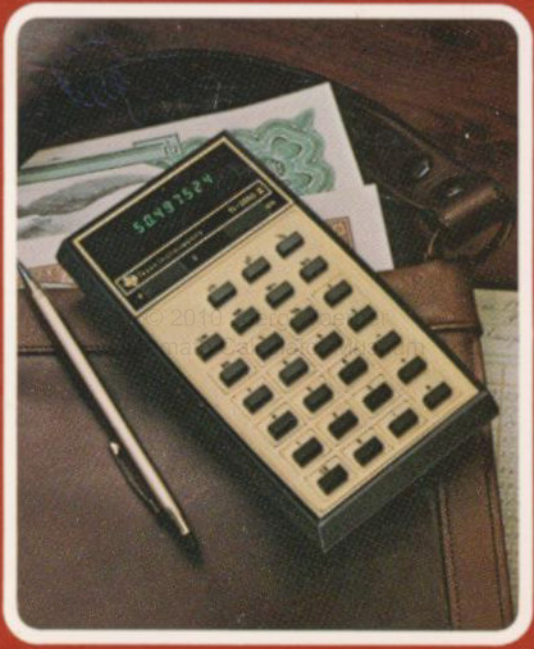
Texas Instruments
electronic calculator
TI-2550-II



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Toll-Free Telephone Assistance

For assistance with your TI-2550-II calculator, call one of the following toll-free numbers:

800-527-4980 (within all contiguous United States except Texas)

800-492-4298 (within Texas)

See Appendix B for further information on service.

NOTICE: A copy of the sales receipt or other proof-of-purchase date is required when the calculator is returned for in-warranty repair.

INTRODUCTION

The TI-2550-II Portable Memory Calculator has been designed and manufactured by Texas Instruments to provide you with a versatile computational tool to help solve mathematical problems in your home or business. The TI-2550-II may be operated as a portable calculator with the rechargable battery pack or it may be operated on standard 115-volt household power with the AC Adapter/Charger. The following features highlight the operating capabilities of the TI-2550-II.

Features

Independent Memory – Calculation results or numbers can be summed to or subtracted from memory and recalled when needed. The memory can also be cleared without clearing the calculator.

Percent Key – Permits easy calculation of percentages, taxes, discounts and other similar problems.

Special Functions – Square, square root and reciprocal keys permit fast solutions to complex problems without affecting a calculation in progress.

Automatic Constant – Repetitive calculations with the same number are easily performed with the four arithmetic functions as the calculator automatically remembers the constant number.

Easy to Operate – Press the keys in the same order as the problem is written.

Fully Portable – Weighs less than 9 ounces and fits neatly in a briefcase or purse.

Long Life – Solid-state components, integrated circuitry and a vacuum fluorescent display provide dependable operation and long life.

Battery Pack – The TI-2550-II comes complete with a *fast-charge* rechargeable battery pack, model BP-2. Under normal use, the battery pack will provide 4 to 6 hours of operation without recharging. About 4 hours of recharging will restore full charge. Spare and replacement battery packs can be purchased directly from a Texas Instruments Consumer Service Facility as listed on the back cover.

AC Adapter/Charger – Battery pack recharge or direct operation from standard voltage outlets is easily accomplished with the AC Adapter/Charger model AC9130A included with the TI-2550-II. The TI-2550-II cannot be overcharged; it can be operated indefinitely with the adapter/charger connected. Please refer to the *Battery Considerations* portion of this manual.

OPERATING INSTRUCTIONS

Switches

On/Off Switch – Located on the right front surface of the calculator beneath the display. Sliding the switch to the right turns the calculator on and sliding it to the left turns the calculator off. The power-on condition is indicated by a number in the display.

Decimal Select Switch – Located on the left front surface of the calculator beneath the display. When the switch is set to F, the calculator displays results with a floating decimal and up to seven digits may be displayed to the right of the decimal point. When the switch is set to 2, the calculator operates with a floating decimal until [=] is pressed which rounds the result to two decimal places.

Keys

[0] - [9] **Keys** – Enters numbers. A maximum of eight digits can be entered to the left of the decimal or a maximum of seven digits can be entered to the right of the decimal.

[•] **Key** – Enters a decimal point. The decimal point automatically appears to the right of an entered number unless positioned elsewhere with the [•] key.

[+] **Key** – Instructs the calculator to add the next entered quantity to the displayed number.

[−] **Key** – Instructs the calculator to subtract the next entered quantity to the displayed number. This key may be used immediately following a [×] or [÷] entry to assign a negative sign to the next number entered from the keyboard. **The [−] key will not change the sign of a number recalled from memory.**

[X] **Key** – Instructs the calculator to multiply the displayed number by the next entered quantity.

[÷] **Key** – Instructs the calculator to divide the displayed number by the next entered quantity.

[=] **Key** – Instructs the calculator to complete the previously entered arithmetic operation and to display the result. When the Decimal Select switch is set to 2, this key will cause the result to be rounded to two decimal places.

IMPORTANT: Repeated pressing of [=] following an arithmetic calculation using [+], [−], [X], or [÷] is not ignored. The last arithmetic key entry and number entry are reused by the calculator to perform an automatic constant calculation.

The four arithmetic keys, [+] [−] [X] [÷], will each perform an equals operation and the calculator will display an intermediate result when used in a chain calculation. Therefore, a *displayed number* called out in the following key descriptions may be an intermediate result or a newly entered number. The *next entered quantity* represents the number displayed immediately before the next arithmetic or equals key is pressed. The *next entered quantity* can be a keyboard entry, a memory recall, or a result of a special function key.

[C] **Key** – Clears the calculator and sets the display to zero. This key does not clear the memory.

[CE] **Key** – Clears the last number entered on the keyboard. Used to change erroneous number entries without affecting previous arithmetic entries or intermediate results.

[%] **Key** – Converts a displayed percent value to the decimal equivalent by automatically moving the decimal point two places to the left. This key can be used with the arithmetic keys to calculate percentages, add-on or discount percentages, or the percentile of one number to another. See *Using the Percent Key* in this manual.

[RV] **Reverse Entry Key** – Reverses the displayed number and the previously entered number or intermediate result each time it is pressed. Used to reverse the numerator and denominator in division or to recall a prior entry or result in addition and subtraction.

[x^2] **Square Key** – Finds the square of the displayed number (that is, multiplies the number displayed by itself).

[$\sqrt{x}$] **Square Root Key** – Finds the square root of the displayed number (that is, finds the number which multiplied by itself, equals the number displayed).

[1/x] **Reciprocal Key** – Finds the reciprocal of the displayed number (that is, divides the displayed number into 1).

[M+] **Key** – Transfers or adds a displayed number to the electronic memory. Note the [M+] key *adds* the displayed number to any number previously stored in the memory rather than replacing the previous number.

[M−] **Key** – Subtracts the displayed number from the number stored in the memory.

[MR] **Key** – Recalls the number in memory to the display. The number shown on the display is also retained by the memory until the [CM] key is depressed.

[CM] **Key** – Clears the calculator memory.

Display

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

Minus Sign – Appears at the left of the displayed number to indicate a negative number.

Decimal Point – Automatically appears to the right of any number entered unless positioned elsewhere by use of [•] key. A zero will precede the decimal for decimal numbers.

Decimal Alignment – In *addition or subtraction* problems the TI-2550-II will display in a result as many decimal places as are contained in the entry with the most decimal places. For example, the result of the problem 1.273 [−] .203 is displayed as 1.070, instead of 1.07. This decimal alignment is maintained until the [C] key is used to reset the decimal to the far right position, another problem with more decimal places is entered, or the Decimal Select switch is set to 2 which rounds the result to two places when [=] is pressed.

Memory In Use Indication – When a number (other than zero) is stored in the memory, the symbol (⌜) will appear at the left of the display. This symbol will be cleared if [CM] is pressed or if the result in memory becomes zero through use of [M+] or [M−].

Overflow/Error Indication – An overflow/error symbol (⌂) will appear at the far left of the display for the following reasons:

1. The result of a calculation has more than eight digits to the left of the decimal.
2. The total in memory has more than eight digits to the left of the decimal.
3. Pressing [1/x] when zero is displayed.
4. Pressing [√x] when a negative number is displayed.

Press [C] to clear a calculation overflow (1) or error (3,4) indication. Press [CM] to clear a memory overflow (2); or press [MR] to recall the number in memory to the display then press [C] to clear display.

When a calculation overflow occurs (1) or [MR] is pressed following a memory overflow (2), the display will show the eight most significant digits of the correct result and the decimal point will appear eight places to the left of its correct position. To determine the correct position of the decimal point move it eight places to the right, adding zeros as required.

Battery Considerations

Low Battery Indication – When the batteries are nearly discharged, the display will appear dim and may flash or show erroneous symbols or numbers before fading away. At this time, the calculator should be connected to the AC9130A Adapter/Charger to recharge the batteries.

WARNING: Avoid leaving the calculator on for several hours after the display appears dim or other symptoms of battery discharge appear, as the batteries may be damaged by excessive discharge in such a way that they can no longer by recharged. If the batteries cannot be fully recharged in the normal period of time, they may be able to be restored to useful operation through a prolonged period of charging (see Appendix B).

IMPORTANT: The calculator will not operate from the adapter/charger unless the battery pack is properly installed.

Calculator Operation – If, during portable operation, the display becomes dim, the calculator should be connected to the adapter/charger and allowed to charge for at least one minute with the switch in the OFF position. The calculator can be operated during the recharge period, following the initial one minute period, by moving the switch to the ON position.

Initial Turn-On – Rechargeable batteries can lose their charge. Therefore, before initially operating the calculator (and after a prolonged period of nonuse), the calculator should be attached to the adapter/charger and the batteries allowed to charge for one minute before setting the switch to ON. The calculator can then be operated while attached to the adapter/charger, if desired. Before portable operation, however, the batteries should be fully charged.

Periodic Recharging – For maximum rechargeable battery life, it is recommended that the calculator be operated as a portable, recharging the batteries when necessary. Nickel-cadmium batteries can lose their storage capability if they are not allowed to occasionally discharge. Therefore, connection of the calculator to the adapter/charger for long periods of time is not recommended; although no damage should be done to the calculator if it is left connected for a short period of time beyond that required to fully recharge the batteries.

Recharge Time – From a discharged condition, the BP-2 battery pack can be recharged in approximately 4 hours if the calculator is not operated during the recharge period. If the calculator is operated during recharging, the time needed for full recharge is approximately 10 hours.

OPERATING EXAMPLES

The following examples show how to operate the TI-2550-II and should be followed to become familiar with how the calculator works.

Before turning the calculator on, charge the batteries for one minute. The calculator can be used while the batteries are charging, but it is recommended that the batteries be charged for 4 hours before portable operation.

Place ON-OFF switch in the ON position, press the [C] key, and a zero should appear in the display. In the following examples, **DEC:F** means to set the decimal select switch to F and **DEC:2** means to set the switch to 2.

Addition and Subtraction

Example: 4.23 + 4 = 8.23

DEC:F	Enter	Press	Display
	4.23	[+]	4.23
	4	[=]	8.23

Example: 6 − 1.854 = 4.146

DEC:F	Enter	Press	Display
	6	[−]	6.
	1.854	[=]	4.146

Example: 12.32 − 7 + 1.6 = 6.92

DEC:F	Enter	Press	Display
	12.321	[−]	12.321
	7.921	[+]	4.400
	1.6	[=]	6.000

The zeros to the right of the decimal demonstrate the decimal-alignment feature of the TI-2550-II. The calculator will continue to display three decimal places in final results of succeeding addition and subtraction problems until [C] is pressed, an entry or intermediate result contains more than three decimal places, or the decimal select switch is set to 2.

Multiplication and Division

Example: 27.2 × 18 = 489.6

DEC:F	Enter	Press	Display
	27.2	[X]	27.2
	18	[=]	489.6

Example: 12 ÷ 5.2 = 2.3076923

DEC:F	Enter	Press	Display
	12	[÷]	12.
	5.2	[=]	2.3076923

Example: (4 × 7.3) ÷ 2 = 14.6

DEC:F	Enter	Press	Display
	4	[X]	4.
	7.3	[÷]	29.2
	2	[=]	14.6

Error Correction

Occasionally, an erroneous numerical entry will be entered or an incorrect function key will be pressed. The error can be corrected without clearing the calculator and starting the problem over again.

If an error is made in a numerical entry, the error can be corrected by immediately pressing the [CE] key and entering the correct number.

Example: 5 + ~~3~~ 8 = 8

DEC:F	Enter	Press	Display	Remarks
	5	[+]	5.	
	4		4.	4 pressed incorrectly
		[CE]	0.	Clear entry
	3	[=]	8.	Enter correct number and complete calculation

In general, if an arithmetic function key other than the desired one is pressed, the error can be corrected by immediately pressing the correct function key. However, if the error made is pressing either the [×] or [÷] key instead of the [−] key, the error must be corrected by immediately entering 1, then pressing the [−] key, since the [−] key assigns a negative sign to the second number in multiplication and division problems. See *Calculations With Positive and Negative Numbers*.

Example: 5 ~~+~~ × 3 = 15

DEC:F	Enter	Press	Display	Remarks
	5	[+]	5.	[+] Pressed in error
		[×]	5.	Correct key pressed
	3	[=]	15.	

Example: 3 ~~×~~ − 2 = 1

DEC:F	Enter	Press	Display	Remarks
	3	[÷]	3.	[−] Pressed in error,
	1	[−]	3.	see Note
	2	[=]	1.	

NOTE: Notice that a 1 must be entered before pressing [−] if [×] or [÷] is pressed in error as described above.

Multiplication and Division by a Constant

The automatic constant feature of the TI-2550-II allows multiplication or division of a series of numbers by one number. A number entered before the [×] key in multiplication and after the [÷] key in division becomes the constant. The constant is erased by pressing the [C] key.

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

DEC:F	Enter	Press	Display
	4	[×]	4.
	5	[=]	20.
	6	[=]	24.
	7	[=]	28.

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

DEC:F	Enter	Press	Display
	12	[÷]	12.
	2	[=]	6.
	20	[=]	10.
	44	[=]	22.

Addition and Subtraction of a Constant

A number entered after the [+] key becomes a constant add number and a number entered after the [−] key becomes a constant subtract number.

Example: $5 + 3 = 8$, $9 + 3 = 12$, $91 + 3 = 94$

DEC:F	Enter	Press	Display
	5	[+]	5.
	3	[=]	8.
	9	[=]	12.
	91	[=]	94.

Example: $8 - 6 = 2$, $25 - 6 = 19$, $3 - 6 = -3$

DEC:F	Enter	Press	Display
	8	[-]	8.
	6	[=]	2.
	25	[=]	19.
	3	[=]	-3.

Calculations With Positive and Negative Numbers

When performing multiplication or division, a negative value is assigned to a number by pressing the [-] key before entering the number.

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

DEC:F	Enter	Press	Display
		[C] [-]	0.
	125	[+]	-125.
	5	[+]	-25.
	3	[×] [-]	-0.
	4	[=]	88.

Note that when the first number of a calculation is a negative number, the previous problem must be cleared manually by pressing the [C] key.

NOTE: The [-] key cannot be used to change the sign of a quantity being recalled from memory. To multiply or divide a quantity in the display by the negative of a quantity stored in memory, use the following key sequence.

[×]
or [MR] [×] [-] 1 [=]
[÷]

Performing Mixed Calculations

The TI-2550-II can do mixed calculations. Just press the keys in the same order as the problem is written.

Example: 12 × 13 ÷ 14 + 15 − 16 = 10.142857

DEC:F	Enter	Press	Display
	12	[X]	12.
	13	[÷]	156.
	14	[+]	11.142857
	15	[−]	26.142857
	16	[=]	10.142857

Using the Percent Key

It's easy to find percentages with the percent key. The following examples show how.

Example: 6% of $1,250.00 = $75.00

DEC:2	Enter	Press	Display
	1250	[X]	1250.
	6	[%]	75.

Note that the correct answer appears after the [%] key is pressed. The equals key is not used to complete this problem since the automatic-constant feature would cause incorrect results.

If you desire a percentage result to be rounded to two places when the decimal select switch is set to 2, it is necessary to multiply by one before pressing the equals key.

Example: 33.25% of $27.75 = $9.23

DEC:2	Enter	Press	Display
	27.75	[X]	27.75
	33.25	[%] [X]	9.226875
	1	[=]	9.23

Example: $578.50 equals what percent of $1500?

DEC:2	Enter	Press	Display
	578.5	[÷]	578.5
	1500	[%] [X]	38.566666
	1	[=]	38.57

Example: $65.00 plus 5% tax

DEC:2	Enter	Press	Display	Remarks
	65	[+]	65.	
	5	[%]	3.25	Amount of tax
		[=]	68.25	Total

Example: $85.00 less 7% discount

DEC:2	Enter	Press	Display	Remarks
	85	[−]	85.	
	7	[%]	−5.95	Amt. of discount
		[=]	79.05	Total

Example: $125.00 less 15% discount plus 4% tax.

DEC:2	Enter	Press	Display	Remarks
	125	[−]	125.	
	15	[%]	−18.75	Amt. of discount
		[=] [+]	106.25	Discounted price
	4	[%]	4.25	Amount of tax
		[=]	110.50	Total

Example:

	19.95	
	+12.95	
	32.90	
−10%	− 3.29	
	29.61	Subtotal
	+16.00	
	− 7.95	
	37.66	
−5%	− 1.883	
	35.777	Grand Total

DEC:F	Enter	Press	Display
	19.95	[+]	19.95
	12.95	[−]	32.90
	10	[%]	−3.29
		[=] [+]	29.61
	16	[−]	45.61
	7.95	[−]	37.66
	5	[%]	−1.883
		[=]	35.777

Using the Memory

Storing and Recalling Numbers

Example: $2 \times 3 = 6$

DEC:F	Enter	Press		Display	Memory
		C CM		0.	0
	2	×		2.	0
	3	=		6.	0
		M+		6.	6
		C		0.	6
		MR		6.	6
		CM		6.	0
		M−		6.	−6
		MR		−6.	−6
		C CM		0.	0

Example: $\frac{(2 \times 3) + (3 \times 5) + (6 \times 5)}{3} = 17$

DEC:F	Enter	Press		Display	Memory
		C CM		0.	0
	2	×		2.	0
	3	= M+		6.	6
	3	×		3.	6
	5	= M+		15.	21
	6	×		6.	21
	5	= M+		30.	51
		MR ÷		51.	51
	3	=		17.	51

Group and Grand Totals

Calculate the amount to be added/subtracted in memory using the [+], [−], [×] or [÷] keys and the [=] key; then depress [M+] to add to memory or [M−] to subtract from memory.

Example:

	5	4
	+6	+2
	+7	+9
	18	− 15 = 3

DEC:F	Enter	Press	Display	Memory
		[C] [CM]	0.	0
	5	[+]	5.	0
	6	[+]	11.	0
	7	[=]	18.	0
		[M+]	18.	18
	4	[+]	4.	18
	2	[+]	6.	18
	9	[=]	15.	18
		[M−]	15.	3
		[MR]	3.	3

Complex Calculations

Sum of Products

Example:

4 ×	$11.99	=	$47.96
6 ×	2.97	=	17.82
12 ×	0.98	=	11.76
		Total =	$77.54

DEC:2	Enter	Press	Display	Memory
		C CM	0.	0
	4	X	4.	0
	11.99	= M+	47.96	47.96
	6	X	6.	47.96
	2.97	= M+	17.82	65.78
	12	X	12.	65.78
	.98	= M+	11.76	77.54
		MR	77.54	77.54

Sum of Quotients

Example: $\frac{\$1.98}{4} + \frac{\$2.27}{2} + \frac{\$4.98}{8} = \$2.25$

DEC:F	Enter	Press	Display	Memory
		C CM	0.	0
	1.98	÷	1.98	0
	4	= M+	0.495	0.495
	2.27	÷	2.27	0.495
	2	= M+	1.135	1.63
	4.98	÷	4.98	1.63
	8	= M+	0.6225	2.2525
DEC:2			0.6225	2.2525
		C MR =	2.25	2.2525

Product of Sums

Example: $(2 + 3) \times (4 + 5) = 45$

DEC:F	Enter	Press	Display	Memory
		[C] [CM]	0.	0
	2	[+]	2.	0
	3	[=] [M+]	5.	5
	4	[+]	4.	5
	5	[×]	9.	5
		[MR] [=]	45.	5

Reciprocals

Example: $1/6 = 0.1666666$

DEC:F	Enter	Press	Display
	6	[1/x]	0.1666666

Example: $1/(3.1 + 4.3) = 0.1351351$

DEC:F	Enter	Press	Display
	3.1	[+]	3.1
	4.3	[=] [1/x]	0.1351351

Example: $\dfrac{1}{\frac{1}{3} + \frac{1}{4} + \frac{1}{5}} = 1.2765957$

DEC:F	Enter	Press	Display
	3	[1/x] [+]	0.3333333
	4	[1/x] [+]	0.5833333
	5	[1/x] [+]	0.7833333
		[1/x]	1.2765958

The error in the right-most digit is caused by accumulative round-off error which occurs when using special function keys repetitively.

Using the [RV] Key

Division by a Sum

Example: $\frac{1500}{15 + 25 + 35} = 20$

DEC:F	Enter	Press	Display
	15	[+]	15.
	25	[+]	40.
	35	[÷]	75.
	1500	[RV]	75.
		[=]	20.

Product/Quotient of Sums

Example: $\frac{(7 + 5) \times (6 + 4)}{(2 + 1)} = 40$

DEC:F	Enter	Press	Display	Memory
		[C] [CM]	0.	0
	7	[+]	7.	0
	5	[=] [M+]	12.	12
	6	[+]	6.	12
	4	[×]	10.	12
		[MR]	12.	12
		[=] [CM] [M+]	120.	120
	2	[+]	2.	120
	1	[÷] [MR]	120.	120
		[RV] [=]	40.	120

The reverse entry key is also useful when it is necessary to exchange the contents of the display with the memory.

Example: Exchange the number 25 stored in memory with the number 36 in the display.

DEC:F	Press	Display	Memory
	(Result of previous entries)	36.	25.
	RV MR CM RV M+ RV	25.	36.

The above exchange sequence should only be used when the displayed number is a final result obtained with the equals key.

Squares and Square Roots

Squares

Example: $(4.2)^2 = 17.64$

DEC:F	Enter	Press	Display
	4.2	x^2	17.64

Example: $\left(\frac{4 \times 3}{2}\right)^2 = 36$

DEC:F	Enter	Press	Display
	4	×	4.
	3	÷	12.
	2	= x^2	36.

Square Roots

Example: $\sqrt{37} = 6.0827625$

DEC:F	Enter	Press	Display
	37	$\sqrt{x}$	6.0827625

Example: $\sqrt{\frac{5 \times 4}{2}} = 3.1622776$

DEC:F	Enter	Press	Display
	5	[X]	5.
	4	[÷]	20.
	2	[=] [√x]	3.1622776

Example: $\sqrt{3^2 + 4^2} = 5$

DEC:F	Enter	Press	Display
	3	[x²] [+]	9.
	4	[x²] [=]	25.
		[√x]	5.

Powers and Roots

Raising Numbers to a Power

Because the TI-2550-II has an [x²] key, you can easily calculate any power which is a multiple of two (fourth, eighth, sixteenth, etc. power).

To Calculate	Enter	Press
N^4	N	[x²] [x²]
N^8	N	[x²] [x²] [x²]
N^{16}	N	[x²] [x²] [x²] [x²]

To calculate other integer powers, enter the number, press the [X] key, and then press the [=] key one less time than the power.

Example: $5^6 = 15625$

DEC:F	Enter	Press	Display
	5	[X] [=] [=] [=] [=] [=]	15625.

An alternate method is to use the [x^2] key to obtain the nearest multiple of two power that is less than the power desired, then press the [=] key as many times as necessary to make up the difference.

Example: $5^6 = 15625$

DEC:F	Enter	Press	Display	Remarks
	5	[X] [x^2] [x^2]	625.	5^4 displayed
		[=] [=]	15625.	

Example: $2^{12} = 4096$

DEC:F	Enter	Press	Display	Remarks
	2	[X] [x^2] [x^2] [x^2]	256.	2^8 displayed
		[=] [=] [=] [=]	4096.	

To raise a number to a negative power, you can raise the number to the positive power and then invert.

Example: $4^{-3} = \frac{1}{4^3} = 0.015625$

DEC:F	Enter	Press	Display
	4	[X] [=] [=] [1/x]	0.015625

Finding Roots of a Number

Similar to the square key, the square-root key may be used directly to solve roots which are a multiple of two.

To Calculate	Enter	Press
$\sqrt[4]{N}$	N	[$\sqrt{x}$] [$\sqrt{x}$]
$\sqrt[8]{N}$	N	[$\sqrt{x}$] [$\sqrt{x}$] [$\sqrt{x}$]
$\sqrt[16]{N}$	N	[$\sqrt{x}$] [$\sqrt{x}$] [$\sqrt{x}$] [$\sqrt{x}$]

Finding a root which is not a multiple of two with your calculator requires repetitive use of a special key sequence. The key sequence is different for each root and becomes more complex as the root value increases. Solving the third (cube) root of numbers is a common requirement and is accomplished as follows:

1. Completely clear the calculator by pressing [C] [CM].
2. Enter the number to which the cube root is desired and store it in memory by pressing [M+].
3. Estimate the cube root of the number as close as you can and enter it into the display.
4. Repeat the key sequence [X] [MR] [=] [√x] [√x] until the number displayed at the end of a sequence is exactly the same as the number displayed at the end of the previous sequence.
5. Root calculations performed as indicated in steps 1 through 4 will provide roots accurate to seven significant digits. You may cube the result at the end of any key sequence by pressing [X] [=] [=] to check accuracy and restore the last root value solved to the display by pressing [1] [=].

Example: $\sqrt[3]{75} = 4.2172633$

DEC:F

Enter	Press	Display	Remarks
	[C] [CM]	0.	
75	[M+]	75.	
4	[×] [=] [=]	64.	See note 1.
4	[×] [MR] [=] [√x] [√x]	4.1617914	1st Trial
	[×] [MR] [=] [√x] [√x]	4.2032515	2nd Trial
	[×] [MR] [=] [√x] [√x]	4.213681	3rd Trial
	[×] [MR] [=] [√x] [√x]	4.2162924	4th Trial
	[×] [MR] [=] [√x] [√x]	4.2169455	5th Trial
	[×] [MR] [=] [√x] [√x]	4.2171088	6th Trial
	[×] [MR] [=] [√x] [√x]	4.2171496	7th Trial
	[×] [MR] [=] [√x] [√x]	4.2171598	8th Trial
	[×] [MR] [=] [√x] [√x]	4.2171623	9th Trial
	[×] [MR] [=] [√x] [√x]	4.217163	10th Trial
	[×] [MR] [=] [√x] [√x]	4.2171631	11th Trial
	[×] [MR] [=] [√x] [√x]	4.2171632	12th Trial
	[×] [MR] [=] [√x] [√x]	4.2171632	See note 2.
	[×] [=] [=]	74.999991	Check accuracy
1	[=]	4.2171632	Restore root value.

Note 1: The key sequence [×] [=] [=] cubes the estimated cube root of 75 to show that it is a reasonable estimate; $4^3 = 64$.

Note 2: Notice the result in the 13th trial is the same as the 12th trial which indicates the final result (root) has been obtained.

The solution to the cube-root example is accurate to seven significant digits as shown. However, if only four digits of accuracy are required, the solution could have been stopped with the 6th or 7th trial.

Do not be overly concerned about estimating the root value. Almost any number could be used for the estimate, though fewer trials are required when the estimate is close to the actual root.

Another method for finding roots, which is more versatile but less accurate, is an approximation technique related to logarithms. If you repeatedly take the square root of any number, the value will approach unity with a remainder that is proportional to the logarithm of the original number. By dividing the remainder value by the root value desired and reversing the sequence with the square key, a $\sqrt[x]{y}$ problem may be solved to within 0.05% when the values of x and y are both between 1 and 10 or 10 and 100. Other values may be used if less accuracy is tolerable. A unique feature of this method is that the root value is not restricted to an integer value. The optimum number of times to press [$\sqrt{x}$] is eleven, as shown in the following examples.

Example: $\sqrt[5.5]{8} = 1.4594801$

DEC:F	Enter	Press	Display
	8	[$\sqrt{x}$] (11 times)	1.0010158
		[−]	1.0010158
	1	[÷]	0.0010158
	5.5	[+]	0.0001846
	1	[=]	1.0001846
		[x^2] (11 times)	1.4592806

The calculated result is within 0.014% of the correct result 1.4594801.

Example: $\sqrt[23]{65} = 1.199008$

DEC:F	Enter	Press	Display
	65	$\sqrt{x}$ (11 times)	1.0020403
		−	1.0020403
	1	÷	0.0020403
	23	+	0.0000887
	1	=	1.0000887
		x^2 (11 times)	1.19915

The calculated result is within 0.012% of the correct result 1.199008.

A y^x problem may be solved using a similar method if the remainder value is multiplied by the power (x). However, the accuracy is less than that for roots.

Example: $6^{3.2} = 309.08932$

DEC:F	Enter	Press	Display
	6	$\sqrt{x}$ (11 times)	1.0008752
		−	1.0008752
	1	×	0.0008752
	3.2	+	0.0028006
	1	=	1.0028006
		x^2 (11 times)	307.20698

The calculated result is within 0.61% of the correct result 309.08932.

APPENDIX A
CONVERSION FACTORS

English to Metric Conversions

To Find	Multiply	By
microns	mils	**25.4**
centimeters	inches	**2.54**
meters	feet	**0.3048**
meters	yards	**0.9144**
kilometers	miles	**1.609344**
grams	ounces	28.3495231
kilograms	pounds	**0.45359237**
liters	gallons	3.78541178
milliliters (cc)	fl. ounces	29.5735296
sq. centimeters	sq. inches	**6.4516**
sq. meters	sq. feet	**0.09290304**
sq. meters	sq. yards	**0.83612736**
milliliters (cc)	cu. inches	**16.387064**
cu. meters	cu. feet	0.028316847
cu. meters	cu. yards	0.764554858

Boldface numbers are exact; others are given to nine significant figures.

Temperature Conversions

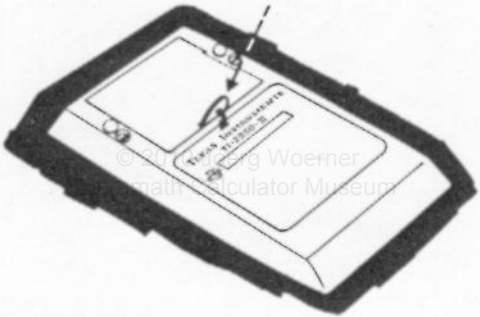
$$°F = \frac{9}{5}(°C) + 32$$

$$°C = \frac{5}{9}(°F - 32)$$

APPENDIX B
SERVICE INFORMATION

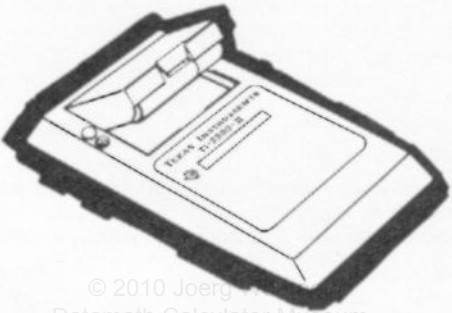
Battery Pack Replacement

The battery pack can be quickly and simply removed from the calculator. Hold the calculator with the keys facing down. Place a small coin (penny, dime) in the slot in the bottom of the calculator. A slight prying motion with the coin will pop the slotted end of the pack out of the calculator. The pack can then be removed entirely from the calculator.



The exposed metal contacts on the battery pack are the battery terminals. Care should always be taken to prevent any metal object from coming into contact with the terminals thereby shorting the batteries.

To reinsert the battery pack, place the rounded part of the pack into the pack opening so that the small step on the end of the pack fits under the edge of the calculator bottom. The slotted end of the pack will then be next to the instruction label. A small amount of pressure on the battery pack will snap it properly into position.



Spare and replacement battery packs can be purchased directly from a Texas Instruments Consumer Service Facility or exchange center as listed on the back cover.

In Case of Difficulty

1. Check to be sure the power switch is in the ON position. If no digits appear in the display, press the [c] key. If a number is displayed, but key entries or [c] key do not affect the display, switch the calculator OFF and ON.

2. If no display appears or if the display appears dim, place the calculator on charge, making sure the charger is plugged into a working 115 Vac/60 Hz outlet. Before operating your calculator while charging, switch the calculator to OFF and charge for one minute. For maximum portable use, allow the calculator to charge fully (four hours when off; ten hours when on) before using without the adapter/charger.

CAUTION: Use of other than the AC Adapter/Charger AC9130A may apply improper voltage to your TI-2550-II calculator and will cause damage.

3. If the calculator has been left on for several hours after Low Battery Indication (Example: accidently left on overnight), charge the calculator with the power switch OFF for 16 hours before portable use. Or, charge for one hour with the power switch OFF before using calculator with the adapter/charger connected.

4. Review the operating instruction to be certain calculations have been performed in the manner described in this book. Improper key sequences may result in incorrect calculations.

If none of the above procedures corrects the difficulty, return the calculator and charger PREPAID and INSURED to the applicable SERVICE FACILITY listed on the back cover.

NOTE: The P.O. box number listed for the Lubbock Service Facility is for United States parcel post shipments only. If you desire to use another carrier, please call the Consumer Relations Department for the proper shipping address.

For your protection, the calculator must be sent insured; Texas Instruments cannot assume any responsibility for loss of or damage to uninsured shipments. **A copy of the sales receipt or other proof-of-purchase date MUST be enclosed with the calculator to establish the warranty status of the unit** (please do not send the original document). If proof-of-purchase date is not enclosed, service rates in effect at time of return will be charged. Please include information on the difficulty experienced with the calculator, as well as return address information including name, address, city, state and zip code. The shipment should be carefully packaged and adequately protected against shock and rough handling.

Calculator Exchange Centers

If your calculator requires service, instead of returning the unit to a service facility for repair, you may elect to exchange the calculator for a factory-rebuilt calculator of the SAME MODEL at one of the many exchange centers which have been established across the United States. Please call the Consumer Relations Department for further details and the location of the nearest exchange center.

If You Have Questions or Need Assistance

If you have questions or need assistance with your calculator, write the Consumer Relations Department at:

Texas Instruments Incorporated
P.O. Box 22283
Dallas, Texas 75222

or call Consumer Relations at 800-527-4980 (toll-free within all contiguous United States except Texas) or 800-492-4298 (toll-free within Texas). If outside contiguous United States call **214-238-5461.** (We regret that we cannot accept collect calls at this number.)

IMPORTANT: In addition to retaining your sales receipt or other proof-of-purchase date documentation, please record the following information. Any correspondence concerning the calculator must mention the model, serial number, and date-of-purchase.

TI-2550-II		
Model No.	**Serial No.**	**Purchase Date**

IMPORTANT

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

Texas Instruments reserves the right to make changes in materials and specifications without notice.

ONE-YEAR LIMITED WARRANTY

This electronic calculator from Texas Instruments is warranted to the original purchaser for a period of one (1) year from the original purchase date – under normal use and service – against defective materials or workmanship. **ANY IMPLIED WARRANTIES ARE ALSO LIMITED IN DURATION TO THE ONE-YEAR PERIOD FROM THE ORIGINAL PURCHASE DATE.**

This warranty is void if: (1) the calculator has been damaged by accident or unreasonable use, neglect, improper service or other causes not arising out of defects in material or workmanship, (2) the serial number has been altered or defaced.

TEXAS INSTRUMENTS SHALL NOT BE LIABLE FOR LOSS OF USE OF THE CALCULATOR OR OTHER INCIDENTAL OR CONSEQUENTIAL COSTS, EXPENSES OR DAMAGES INCURRED BY THE PURCHASER.

During the above one-year period, defective parts will be repaired, adjusted and/or replaced (at Manufacturer's option) without charge to the purchaser when the calculator is returned, prepaid and insured, with proof-of-purchase date, to a Texas Instruments Consumer Service Facility listed below. **UNITS RETURNED WITHOUT PROOF-OF-PURCHASE DATE WILL BE REPAIRED AT THE SERVICE RATES IN EFFECT AT THE TIME OF RETURN.**

IMPORTANT: Before returning your calculator for repair, carefully review service and mailing instructions in your Owner's Manual.

Texas Instruments Consumer Service Facilities

Texas Instruments Service Facility
P. O. Box 2500
Lubbock, Texas 79408

Texas Instruments Service Facility
41 Shelley Road
Richmond Hill, Ontario, Canada

Consumers in California and Oregon may contact the following Texas Instruments offices for additional assistance or information:

Texas Instruments Consumer Service
78 Town and Country
Orange, California 92668
(714) 547-2556

Texas Instruments Consumer Service
10700 Southwest Beaverton Highway
Park Plaza West, Suite 111
Beaverton, Oregon 97005
(503) 643-6758

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