



TI-36X Solar, English

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TI-36X SOLAR

Scientific Calculator

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Basic Operations

- To turn on the TI-36X Solar, expose the solar panel to light and press **[AC/ON]**. **Note:** Always press **[AC/ON]** to clear the calculator because memory and display may contain incorrect numbers.
- To turn off the TI-36X Solar, cover the solar panel with the slide case.

[2nd] selects the 2nd function of the next key pressed.

[3rd] selects the 3rd function of the next key pressed.

Third function

$\sqrt[3]{x}$

Second function

e^x

Primary function

LN

For example, 8 **[3rd]** **[$\sqrt[3]{x}$]** finds the cube root of 8.

To cancel 2nd or 3rd, press **[2nd]** or **[3rd]** again.

Results

The TI-36X Solar calculates up to 12 digits and can display up to 10 digits plus a minus sign (-9,999,999,999 through 9,999,999,999) and a 2-digit exponent. Results with more than 10 digits display in scientific notation.

Basic Arithmetic

$\boxed{+}$ $\boxed{-}$ $\boxed{\times}$ $\boxed{\div}$ 60 $\boxed{+}$ 5 $\boxed{\times}$ 12 $\boxed{=}$ **120.**

$\boxed{=}$ Completes all pending operations.
With constant, repeats the operation and value.

$\boxed{+/-}$ Changes sign of value just entered.
1 $\boxed{+}$ 8 $\boxed{+/-}$ $\boxed{+}$ 12 $\boxed{=}$ **5.**
In binary, octal, or hexadecimal mode, $\boxed{+/-}$ calculates the 2's complement of the number in the display.

$\boxed{(}$ $\boxed{)}$ Parenthetical expression (up to 15 open for each pending operation).
 $\boxed{=}$ closes all open parentheses.

$\boxed{3rd}$ $\boxed{[\pi]}$ Pi is calculated with 12 digits (3.14159265359), displayed with 10 digits (3.141592654).
2 $\boxed{\times}$ $\boxed{3rd}$ $\boxed{[\pi]}$ $\boxed{=}$ **6.283185307**

Percents

Percentage (5% of 250)

| | |
|-------------------------------------|------|
| 250 \times 5 $\overline{3rd}$ [%] | 0.05 |
| $\overline{=}$ | 12.5 |

Ratio (Ratio of 250 to 5)

| | |
|-----------------------------------|-------|
| 250 \div 5 $\overline{3rd}$ [%] | 0.05 |
| $\overline{=}$ | 5000. |

Add-On (5% add-on of 250)

| | |
|--------------------------------|-------|
| 250 $+$ 5 $\overline{3rd}$ [%] | 12.5 |
| $\overline{=}$ | 262.5 |

Discount (5% discount on 250)

| | |
|--------------------------------|-------|
| 250 $-$ 5 $\overline{3rd}$ [%] | 12.5 |
| $\overline{=}$ | 237.5 |

Fractions

b $\boxed{a \ b/c}$ c Enters a proper or improper fraction, **b/c** (**b** ≤ 6 digits, **c** ≤ 3 digits). When possible, improper fractions are displayed as mixed numbers.

3 $\boxed{a \ b/c}$ 4 3 \downarrow 4
 $\boxed{\times}$ 3 $\boxed{=}$ 2 $_$ 1 \downarrow 4

Single-variable functions display decimal results.

1 $\boxed{a \ b/c}$ 2 $\boxed{x^2}$ 0.25

a $\boxed{a \ b/c}$ b $\boxed{a \ b/c}$ c Enters the mixed fraction **a b/c**. (**a**, **b**, **c** ≤ 3 digits each, with the total digits ≤ 8).

6 $\boxed{a \ b/c}$ 4 $\boxed{a \ b/c}$ 6 6 $_$ 4 \downarrow 6
 $\boxed{=}$ 6 $_$ 2 \downarrow 3

$\boxed{2nd}$ $\boxed{d/c}$ Toggles display between mixed number and improper fraction.

30 $\boxed{a \ b/c}$ 4 30 \downarrow 4
 $\boxed{2nd}$ $\boxed{d/c}$ 7 $_$ 1 \downarrow 2
 $\boxed{2nd}$ $\boxed{d/c}$ 15 \downarrow 2
 $\boxed{2nd}$ $\boxed{d/c}$ 7 $_$ 1 \downarrow 2

$\boxed{3rd}$ $\boxed{F \leftrightarrow D}$ Toggles display between fraction and decimal. **Note:** Due to display size, not all decimal numbers can toggle to fractions.

55 $\boxed{a \ b/c}$ 24 55 \downarrow 24
 $\boxed{3rd}$ $\boxed{F \leftrightarrow D}$ 2.291666667
 $\boxed{3rd}$ $\boxed{F \leftrightarrow D}$ 2 $_$ 7 \downarrow 24

Powers and Roots

| | | |
|---------------|-------------------------------------|-------|
| $\frac{1}{x}$ | 8 $\frac{1}{x}$ + 4 $\frac{1}{x}$ = | 0.375 |
| x^2 | 6 x^2 + 2 = | 38. |
| \sqrt{x} | 256 \sqrt{x} + 4 \sqrt{x} = | 18. |
| $\sqrt[3]{x}$ | 8 $\sqrt[3]{x}$ + 4 = | 6. |
| y^x | 5 y^x 3 = | 125. |
| $\sqrt[x]{y}$ | 8 $\sqrt[x]{y}$ 3 = | 2. |

Logarithmic Functions

| | | |
|------------------|---------------------------------|-------------|
| LOG | 15.32 LOG | 1.185258765 |
| | + 12.45 LOG = | 2.280428117 |
| $\frac{2}{10^x}$ | 2 $\frac{2}{10^x}$ - 10 x^2 = | 0. |
| LN | 15.32 LN | 2.729159164 |
| | + 12.45 LN = | 5.250879787 |
| e^{-x} | .693 e^{-x} | 1.999705661 |
| | + 1 = | 2.999705661 |

($e=2.71828182846$)

Angle Units

2nd [DRG] Cycles angle-unit setting between degrees, radians, and grads without affecting the displayed number.

3rd [DRG▶] Cycles (converts) angle-unit setting between degrees, radians, and grads for display, entry, and calculation.

45 DEG 45

3rd [DRG▶] RAD 0.785398163

3rd [DRG▶] GRAD 50.

3rd [DRG▶] DEG 45.

DMS

Enter DMS (Degrees/Minutes/Seconds) values as **D.MMSSs**, using 0s as necessary:

| | |
|-----------|-----------------------------|
| D | degrees (0–7 digits) |
| . | decimal-point separator |
| MM | minutes (must be 2 digits) |
| SS | seconds (must be 2 digits) |
| s | fractional part of a second |

For example, enter 48°5'3.5" as **48.05035**.

Before using a DMS value in a calculation, you must convert it to decimal with **[2nd] [►DD]**.

| | |
|-----------------------------|---|
| [2nd] [►DD] | Interprets display as DMS and converts it to decimal. |
| 30.09090 [2nd] [►DD] | 30.1525 |

| | |
|-----------------------------|--|
| [3rd] [►DMS] | Temporarily displays current value as DMS. |
| 30.1525 [3rd] [►DMS] | 30°09'09"0 |

Rectangular to Polar

$\boxed{3\text{rd}}$ $\boxed{[R\rightarrow P]}$ converts rectangular coordinates (x,y) to polar coordinates (r,θ) .

Convert rectangular coordinates $(10,8)$ to polar.

| | | |
|--|---------|--------------------|
| $\boxed{AC/ON}$ or $\boxed{2\text{nd}}$ $\boxed{[DRG]}$ (if necessary) | DEG | |
| 10 $\boxed{X\rightarrow Y}$ 8 | DEG | 8 |
| $\boxed{3\text{rd}}$ $\boxed{[R\rightarrow P]}$ (display r) | DEG r | 12.80624847 |
| $\boxed{X\rightarrow Y}$ (display θ) | DEG | 38.65980825 |
| $\boxed{X\rightarrow Y}$ (display r') | DEG r | 12.80624847 |

Polar to Rectangular

$\boxed{2\text{nd}}$ $\boxed{[P\rightarrow R]}$ converts polar coordinates (r,θ) to rectangular coordinates (x,y) .

Convert polar coordinates $(5,30)$ to rectangular.

| | | |
|--|---------|--------------------|
| $\boxed{AC/ON}$ or $\boxed{2\text{nd}}$ $\boxed{[DRG]}$ (if necessary) | DEG | |
| 5 $\boxed{X\rightarrow Y}$ 30 | DEG | 30 |
| $\boxed{2\text{nd}}$ $\boxed{[P\rightarrow R]}$ (display x) | DEG x | 4.330127019 |
| $\boxed{X\rightarrow Y}$ (display y) | DEG | 2.5 |
| $\boxed{X\rightarrow Y}$ (display x) | DEG x | 4.330127019 |

Trigonometric Functions

Before using the trigonometric functions ($\boxed{\text{SIN}}$, $\boxed{\text{COS}}$, $\boxed{\text{TAN}}$, $\boxed{2\text{nd}} \boxed{\text{SIN}^{-1}}$, $\boxed{2\text{nd}} \boxed{\text{COS}^{-1}}$, $\boxed{2\text{nd}} \boxed{\text{TAN}^{-1}}$), select **DEG**, **RAD**, or **GRAD** with $\boxed{2\text{nd}} \boxed{\text{DRG}}$.

| | | |
|--|------------|--------------------|
| $\boxed{2\text{nd}} \boxed{\text{DRG}}$ (if necessary) | DEG | |
| 90 $\boxed{\text{SIN}}$ | DEG | 1. |
| $\boxed{-}$ 30 $\boxed{\text{COS}}$ | DEG | 0.866025404 |
| $\boxed{=}$ | DEG | 0.133974596 |
| <hr/> | | |
| 1 $\boxed{2\text{nd}} \boxed{\text{SIN}^{-1}}$ | DEG | 90. |
| $\boxed{-}$.5 $\boxed{=}$ | DEG | 89.5 |

Note: Before using a DMS (Degree/Minute/Second) value in a calculation, you must convert it to decimal with $\boxed{2\text{nd}} \boxed{\blacktriangleright\text{DD}}$.

Hyperbolic Functions

To access hyperbolic functions, press $\boxed{\text{HYP}}$ and then the function ($\boxed{\text{HYP}} \boxed{\text{SIN}}$, $\boxed{\text{HYP}} \boxed{\text{COS}}$, $\boxed{\text{HYP}} \boxed{\text{TAN}}$, $\boxed{\text{HYP}} \boxed{2\text{nd}} \boxed{\text{SIN}^{-1}}$, $\boxed{\text{HYP}} \boxed{2\text{nd}} \boxed{\text{COS}^{-1}}$, $\boxed{\text{HYP}} \boxed{2\text{nd}} \boxed{\text{TAN}^{-1}}$).

Note: **DEG**, **RAD**, or **GRAD** does not affect hyperbolic calculations.

| | |
|---|--------------------|
| 5 $\boxed{\text{HYP}} \boxed{\text{SIN}}$ | 74.20321058 |
| $\boxed{+}$ 2 $\boxed{=}$ | 76.20321058 |
| <hr/> | |
| 5 $\boxed{\text{HYP}} \boxed{2\text{nd}} \boxed{\text{SIN}^{-1}}$ | 2.312438341 |
| $\boxed{+}$ 2 $\boxed{=}$ | 4.312438341 |

One-Variable Statistics

| | |
|--|--|
| $\boxed{3\text{rd}}$ [STAT 1] | One-variable statistics mode. |
| $\boxed{2\text{nd}}$ [CSR] | Clears all statistical data. |
| $\boxed{\text{AC/ON}}$ | Clears all statistical data, STAT mode, and memory. |
| $\boxed{\Sigma+}$ | Enters data point. |
| $\boxed{2\text{nd}}$ [$\Sigma-$] | Removes data point. |
| $\boxed{2\text{nd}}$ [FRQ] | Adds or removes multiple occurrences of a data point. Enter data point, press $\boxed{2\text{nd}}$ [FRQ], enter frequency (1–99), press $\boxed{\Sigma+}$ to add or $\boxed{2\text{nd}}$ [$\Sigma-$] to remove data points. |
| $\boxed{2\text{nd}}$ [Σx] | Sum. |
| $\boxed{2\text{nd}}$ [Σx^2] | Sum of squares. |
| $\boxed{2\text{nd}}$ [\bar{x}] | Mean. |
| $\boxed{2\text{nd}}$ [σ_{xn}] | Population standard deviation (n weighting). |
| $\boxed{2\text{nd}}$ [σ_{xn-1}] | Sample standard deviation ($n-1$ weighting). |
| $\boxed{2\text{nd}}$ [n] | Number of data points. |

In STAT mode press $\boxed{=}$ to perform basic arithmetic, permutations, combinations, and polar/rectangular conversions.

Find the sum, mean, population standard deviation, and sample standard deviation for the data set: 45, 55, 55, 55, 60, 80. The last data point is erroneously entered as 8, removed with $\boxed{2\text{nd}} \boxed{[\Sigma^-]}$, and then correctly entered as 80.

| | | |
|--|------|-------------|
| $\boxed{3\text{rd}} \boxed{[\text{STAT } 1]}$ | STAT | 0. |
| $\boxed{2\text{nd}} \boxed{[\text{CSR}]}$ | STAT | 0. |
| 45 $\boxed{[\Sigma+]}$ | STAT | 1. |
| 55 $\boxed{2\text{nd}} \boxed{[\text{FRQ}]} 3 \boxed{[\Sigma+]}$ | STAT | 4. |
| 60 $\boxed{[\Sigma+]}$ | STAT | 5. |
| 8 $\boxed{[\Sigma+]}$ | STAT | 6. |
| 8 $\boxed{2\text{nd}} \boxed{[\Sigma^-]}$ | STAT | 5. |
| 80 $\boxed{[\Sigma+]}$ | STAT | 6. |
| $\boxed{2\text{nd}} \boxed{[\Sigma x]}$ (sum) | STAT | 350. |
| $\boxed{2\text{nd}} \boxed{[\bar{x}]}$ (mean) | STAT | 58.33333333 |
| $\boxed{2\text{nd}} \boxed{[\Sigma x^2]}$ (sum of squares) | STAT | 21100. |
| $\boxed{2\text{nd}} \boxed{[\sigma_{xn}]}$ (n weighting) | STAT | 10.67187373 |
| $\boxed{2\text{nd}} \boxed{[\sigma_{xn-1}]}$ ($n-1$ weighting) | STAT | 11.69045194 |

Two-Variable Statistics

| | |
|---|--|
| $\boxed{3\text{rd}}$ [STAT 2] | Two-variable statistics mode. |
| $\boxed{2\text{nd}}$ [CSR] | Clears all statistical data. |
| $\boxed{\text{AC/ON}}$ | Clears all statistical data, STAT mode, and memory. |
| x $\boxed{\text{X}\rightarrow\text{y}}$ y $\boxed{\Sigma+}$ | Enters data point. |
| x $\boxed{\text{X}\rightarrow\text{y}}$ y $\boxed{2\text{nd}}$ $\boxed{\Sigma-}$ | Removes data point. |
| $\boxed{2\text{nd}}$ [FRQ] | Adds or removes multiple occurrences of a data point. Enter data point, press $\boxed{2\text{nd}}$ [FRQ], enter frequency (1–99), press $\boxed{\Sigma+}$ to add or $\boxed{2\text{nd}}$ $\boxed{\Sigma-}$ to remove data points. |
| $\boxed{2\text{nd}}$ $\boxed{\Sigma x}$ or $\boxed{2\text{nd}}$ $\boxed{\Sigma y}$ | Sum. |
| $\boxed{2\text{nd}}$ $\boxed{\Sigma x^2}$ or $\boxed{2\text{nd}}$ $\boxed{\Sigma y^2}$ | Sum of squares. |
| $\boxed{2\text{nd}}$ $\boxed{\bar{x}}$ or $\boxed{2\text{nd}}$ $\boxed{\bar{y}}$ | Mean. |
| $\boxed{2\text{nd}}$ $\boxed{\sigma_{xn}}$ or $\boxed{2\text{nd}}$ $\boxed{\sigma_{yn}}$ | Population standard deviation (n weighting). |
| $\boxed{2\text{nd}}$ $\boxed{\sigma_{xn-1}}$ or $\boxed{2\text{nd}}$ $\boxed{\sigma_{yn-1}}$ | Sample standard deviation ($n-1$ weighting). |
| $\boxed{2\text{nd}}$ [n] | Number of data points. |
| $\boxed{2\text{nd}}$ $\boxed{\Sigma xy}$ | Sum of the xy products. |
| $\boxed{3\text{rd}}$ [COR] | Correlation coefficient. |
| $\boxed{2\text{nd}}$ [ITC] | Intercept. |
| $\boxed{2\text{nd}}$ [SLP] | Slope. |
| $\boxed{2\text{nd}}$ $\boxed{x'}$ | Predicted x value. |
| $\boxed{2\text{nd}}$ $\boxed{y'}$ | Predicted y value. |

For trend-line analysis, enter 1st data point, and then enter just y values with $\Sigma+$. x is automatically incremented by 1.

Linear Regression Example

*Predict y for $x = 9$, given $(4,5)$, $(4,5)$, $(9,9)$, $(2,3)$.
Calculate correlation coefficient, slope, and intercept of the line, mean of x values, and mean of y values.*

| | | |
|--|------|-------------|
| $\boxed{3\text{rd}}$ [STAT 2] | STAT | 0. |
| $\boxed{2\text{nd}}$ [CSR] | STAT | 0. |
| 4 $\boxed{x \rightarrow y}$ 5 $\boxed{2\text{nd}}$ [FRQ] 2 $\boxed{\Sigma+}$ | STAT | 2. |
| 9 $\boxed{x \rightarrow y}$ 9 $\boxed{\Sigma+}$ | STAT | 3. |
| 2 $\boxed{x \rightarrow y}$ 3 $\boxed{\Sigma+}$ | STAT | 4. |
| 9 $\boxed{2\text{nd}}$ [y'] (predict y for $x=9$) | STAT | 9.074766355 |
| $\boxed{3\text{rd}}$ [COR] (correlation coefficient) | STAT | 0.998030525 |
| $\boxed{2\text{nd}}$ [SLP] (slope) | STAT | 0.841121495 |
| $\boxed{2\text{nd}}$ [ITC] (intercept) | STAT | 1.504672897 |
| $\boxed{2\text{nd}}$ [\bar{x}] (mean of x values) | STAT | 4.75 |
| $\boxed{2\text{nd}}$ [\bar{y}] (mean of y values) | STAT | 5.5 |

Probability

A **combination** is an arrangement of objects in which order is not important, as in a hand of cards. $\boxed{3rd}$ $[nC_r]$ calculates the number of possible combinations of n items taken r at a time.

Calculate the number of 5-card poker hands that can be dealt from a deck of 52 cards.

$$52 \boxed{x \rightarrow y} 5 \boxed{3rd} [nC_r] [=] \quad \quad \quad \mathbf{2598960.}$$

A **permutation** is an arrangement of objects in which the order is important, as in a race. $\boxed{2nd}$ $[nP_r]$ calculates the number of possible permutations of n items taken r at a time.

Calculate the number of possible permutations for the 1st-, 2nd-, and 3rd-place finishers (no ties) in an 8-horse race.

$$8 \boxed{x \rightarrow y} 3 \boxed{2nd} [nP_r] [=] \quad \quad \quad \mathbf{336.}$$

A **factorial** is the product of the positive integers from 1 to n . (n must be a positive whole number ≤ 69 .)

Using the digits 1, 3, 7, and 9 only one time each, how many 4-digit numbers can you form?

$$4 \boxed{3rd} [x!] \quad \quad \quad \mathbf{24.}$$

Clearing and Correcting

| | |
|----------------------------------|--|
| AC/ON | Clears display, errors, all pending operations, statistical data, STAT mode and memory. Sets DEG angle units, floating-decimal format. |
| CE/C | Clears value (before pressing operation key), display, errors, all pending operations. Does not affect mode, display format, angle units, memory, or statistical data. CE/C after (,) , y^x , 2nd [$\sqrt[n]{y}$] , × , ÷ , + , or - clears the calculator as if you had pressed CE/C CE/C . |
| CE/C CE/C | Clears display and all pending operations. |
| → | Deletes right-most character in display. |
| 0 [STO] <i>n</i> | Clears memory <i>n</i> . |
| 3rd [FLO] | Clears SCI or ENG notation. |
| 2nd [FIX] . | Clears FIX notation. |
| 2nd [CSR] | Clears all statistical data. |

You can change from y^x , $\sqrt[n]{y}$, \times , \div , $+$, $-$, **AND**, **OR**, **XOR**, or **XNOR** to another operation simply by pressing the intended key if the intended operation has a lower priority.

Physical Constants

| | | |
|----------------------|----------------------------|--|
| c | speed of light | 299,792,458 meters per second |
| g | gravitational acceleration | 9.80665 meters per second ² |
| m_e | electron mass | $9.1093897 \times 10^{-31}$ kilograms |
| e | electron charge | $1.60217733 \times 10^{-19}$ coulombs |
| h | Planck's constant | $6.6260755 \times 10^{-34}$ Joule seconds |
| N_A | Avogadro's number | 6.0221367×10^{23} molecules per mole |
| R | ideal gas constant | 8.31451 Joules per mole °Kelvin |
| G | universal gravitation | 6.67259×10^{-11} Newton meters ² per kilogram ² |

Press $\boxed{3rd}$ [CONST] and then the appropriate constant key.

Calculate 3 times the speed of light:

$3 \times \boxed{3rd}$ [CONST] [C] $\boxed{=}$ **899377374.**

English/Metric Conversions

English/metric conversions are available only in DEC.

| | | |
|-------------------------------|---|--------------------------------------|
| centimeters to inches | <input type="text" value="2nd"/> <input type="text" value="in"/> | $\text{cm} \div 2.54$ |
| inches to centimeters | <input type="text" value="3rd"/> <input type="text" value="cm"/> | $\text{in} \times 2.54$ |
| liters to U.S. liquid gallons | <input type="text" value="2nd"/> <input type="text" value="gal"/> | $\text{l} \div 3.785411784$ |
| U.S. liquid gallons to liters | <input type="text" value="3rd"/> <input type="text" value="l"/> | $\text{gal} \times 3.785411784$ |
| kilograms to pounds mass | <input type="text" value="2nd"/> <input type="text" value="lb"/> | $\text{kg} \div .45359237$ |
| pounds to kilograms | <input type="text" value="3rd"/> <input type="text" value="kg"/> | $\text{lb} \times .45359237$ |
| Celsius to Fahrenheit | <input type="text" value="2nd"/> <input type="text" value="°F"/> | $^{\circ}\text{C} \times 9/5 + 32$ |
| Fahrenheit to Celsius | <input type="text" value="3rd"/> <input type="text" value="°C"/> | $(^{\circ}\text{F} - 32) \times 5/9$ |
| grams to ounces avoirdupois | <input type="text" value="2nd"/> <input type="text" value="oz"/> | $\text{g} \div 28.349523125$ |
| ounces avoirdupois to grams | <input type="text" value="3rd"/> <input type="text" value="g"/> | $\text{oz} \times 28.349523125$ |

Convert 300 grams to ounces.

| | |
|--|--------------------|
| 300 <input type="text" value="2nd"/> <input type="text" value="oz"/> | 10.58218858 |
|--|--------------------|

Constants (Repeated Operations)

A constant contains an operation (+, -, ×, ÷, y^x , $\sqrt[x]{y}$, AND, OR, XOR, or XNOR) and a value. [=] repeats the calculation. [AC/ON], [CE/C] [CE/C], or a pending operation key clears the constant.

Calculate $2 \times \pi$, $4 \times \pi$, and $8 \times \pi$.


| | |
|---------------------|--------------------|
| 2 [×] [3rd] [π] [=] | 6.283185307 |
| 4 [=] | 12.56637061 |
| 8 [=] | 25.13274123 |

Memory

The TI-36X Solar has 3 memories. When a memory contains a number other than 0, **M** displays. To clear a single memory, press 0 **[STO]** 1, 0 **[STO]** 2, or 0 **[STO]** 3. **[AC/ON]** clears all three memories.

| | | | |
|------------------------------------|--|----------|------------|
| [STO] <i>n</i> | Stores displayed value in memory <i>n</i> , replacing current value. | | |
| | 23 [STO] 1 | M | 23. |
| | [+] 2 [=] | M | 25. |
| [RCL] <i>n</i> | Recalls value in memory <i>n</i> . | | |
| | (continued) | | |
| | [RCL] 1 | M | 23. |
| | [+] 3 [=] | M | 26. |
| [2nd] [SUM] <i>n</i> | Adds displayed value to memory <i>n</i> . | | |
| | (continued) | | |
| | 4 [2nd] [SUM] 1 | M | 4. |
| | [RCL] 1 | M | 27. |
| [3rd] [EXC] <i>n</i> | Exchanges displayed and memory values. | | |
| | (continued) | | |
| | 3 [×] 5 [=] | M | 15. |
| | [3rd] [EXC] 1 | M | 27. |
| | [3rd] [EXC] 1 | M | 15. |

Order of Operations

| | |
|-----|--|
| 1st | Expressions inside parentheses. |
| 2nd | Trigonometric, hyperbolic, square, square root, cube root, factorial, reciprocal, angle conversion, combinations, permutations, percent, logarithms, change sign, metric conversions, logical NOT. |
| 3rd | Universal powers and roots. |
| 4th | Multiplication and division. |
| 5th | Addition and subtraction. |
| 6th | Logical AND. |
| 7th | Logical OR, XOR, XNOR. |
| 8th |  completes all operations. |

The TI-36X Solar uses the Algebraic Operating System (AOS™). It stores up to 4 pending operations (1 if STAT is displayed).

Number-System Modes

3rd [DEC] Selects decimal mode.

3rd [BIN] Selects binary (**BIN**) mode and converts the integer portion of the displayed number. You can enter positive binary numbers as large as 111111111 (9 digits). Numbers beyond this are interpreted as negative (2's complement) numbers.

3rd [OCT] Selects octal (**OCT**) mode and converts the integer portion of the displayed number. You can enter positive octal numbers as large as 377777777. Numbers beyond this are interpreted as negative (2's complement) numbers.

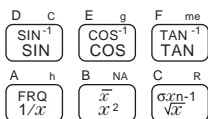
3rd [HEX] Selects hexadecimal (**DEC**) mode and converts the integer portion of the displayed number. You can enter positive hexadecimal numbers as large as 2540BE3FF. Numbers from FDABF41C01 through FFFFFFFF are interpreted as negative (2's complement) numbers.

Note: Hexadecimal numbers between 2540BE3FF and FDABF41C01 are equivalent to decimal values that are outside the range of the calculator and therefore cause an error.

Calculate 16+1 and display in each number mode.

| | | |
|------------------------|------------|--------------|
| 16 + 1 = | | 17. |
| 3rd [BIN] | BIN | 10001 |
| 3rd [OCT] | OCT | 21 |
| 3rd [HEX] | HEX | 11 |
| 3rd [DEC] | | 17. |

To enter the hexadecimal digits A through F, use the keys shown below.



B and D are shown as uppercase letters on the keyboard, but displayed as lowercase **b** and **d**. If you enter ABCD, for example, the display shows **AbCd**.

To display the 2's complement of the number in the display, press $\boxed{+/-}$.

Boolean Logic Operations

You can perform logical AND, OR, XOR, XNOR, and NOT operations in the decimal, binary, octal, and hexadecimal modes.

Except for NOT, these functions compare the corresponding bits of two values. The result is displayed in the current number base.

Note: Although the TI-36X Solar does not display leading zeros for integers, logical operations treat each value as a 10-digit binary number. (A displayed value of 0, for example, is treated as 0000000000BIN, and a displayed value of 1 is treated as 0000000001BIN.) Keep this in mind if you see unexpected results.

| | | | |
|------|--------------|--------------|--------------|
| AND | 0 AND 0 = 0 | 0 AND 1 = 0 | 1 AND 1 = 1 |
| OR | 0 OR 0 = 0 | 0 OR 1 = 1 | 1 OR 1 = 1 |
| XOR | 0 XOR 0 = 0 | 0 XOR 1 = 1 | 1 XOR 1 = 0 |
| XNOR | 0 XNOR 0 = 1 | 0 XNOR 1 = 0 | 1 XNOR 1 = 1 |
| NOT | NOT 0 = 1 | NOT 1 = 0 | |

What is the binary result of 9F_{HEX} XOR 01_{HEX}?

| | | |
|--------------------------------------|-----|----------|
| $\boxed{3rd}$ [HEX] | HEX | 0 |
| 9F $\boxed{3rd}$ [XOR] 1 $\boxed{=}$ | HEX | 9E |
| $\boxed{3rd}$ [BIN] | BIN | 10011110 |

Notation

| | | |
|--------------------------------------|--|--|
| [3rd] [SCI] | Selects scientific notation. 12345 [=] | 12345. [3rd] [SCI] 1.2345 ⁰⁴ |
| [3rd] [ENG] | Selects engineering notation (exponent is a multiple of 3). (continued) [3rd] [ENG] | 12.345 ⁰³ |
| [3rd] [FLO] | Restores standard notation (floating-decimal) format. | |
| [2nd] [FIX] <i>n</i> | Sets decimal places to <i>n</i> (0–9), retaining notation format. (continued) [2nd] [FIX] 2 [=] [2nd] [FIX] 4 [=] | 12.35 ⁰³ 12.3450 ⁰³ |
| [2nd] [FIX] [.] | Removes fixed-decimal setting. | |
| [EE] | Enters exponent. | |

You can enter a value in floating-decimal, fixed-decimal, or scientific notation, regardless of display format. Display format affects only results.

To enter a number in scientific notation:

1. Enter up to 10 digits for base (mantissa). If negative, press **[+/-]** after entering the mantissa.
2. Press **[EE]**.
3. Enter 1 or 2 digit exponent. If negative, press **[+/-]** either before or after entering exponent.

| | |
|---|------------------------|
| 1.2345 [+/-] [EE] [+/-] 65 | -1.2345 ⁻⁶⁵ |
|---|------------------------|

Display Indicators

| | |
|------------------------------|--|
| 2nd | Calculator will access 2nd function (printed on top half of key) of next key pressed. |
| 3rd | Calculator will access 3rd function (printed above key) of next key pressed. |
| M | Value other than 0 in memory. |
| HYP | Calculator will access hyperbolic function of next key pressed. |
| BIN, OCT, or HEX | Calculator is in binary, octal, or hexadecimal number mode. |
| STAT | Calculator is in 1-variable or 2-variable statistics mode. |
| DEG, RAD, or GRAD | Specifies angle-unit setting (degrees, radians, or grads). When you turn on the calculator, angle units are degrees. |
| x | x -coordinate of polar to rectangular conversion. |
| r | r -coordinate of rectangular to polar conversion. |
| () | 1 or more open parentheses. |

Error Conditions

When **Error** appears in the display, the calculator will not accept a keyboard entry until you press $\boxed{\text{CE/C}}$ to clear the error condition. ($\boxed{\text{CE/C}}$ $\boxed{\text{CE/C}}$ clears the condition and all pending operations.)

General errors

- Result larger than $\pm 9.999999999 \times 10^{99}$.
- Division by zero.
- More than 15 open parentheses or 4 pending operations (1 in **STAT**).
- Log, ln, or $1/x$ of 0.
- Log, ln, or \sqrt{x} of $x < 0$.
- Even root of a negative number.
- 0 to the 0th power, or 0th root of any number.
- Rectangular to polar when x or y has an exponent > 63 .
- Tan of $x = 90^\circ, -90^\circ, 270^\circ, -270^\circ, 450^\circ$, etc.
- \sin^{-1} or \cos^{-1} of x where $|x| > 1$.
- \tanh^{-1} of x where $|x| \geq 1$.
- $x!$ where x is not a positive integer ≤ 69 .
- Combinations or permutations when n and r are not positive integers.

Statistical errors

- Data value x such that $|x| \geq 1 \times 1.0E64$.
- Removing the only data value with $\boxed{2\text{nd}}$ $[\Sigma-]$.
- \bar{x} , \bar{y} , σ_{xn} , σ_{yn} , σ_{xn-1} , σ_{yn-1} , correlation, intercept, slope, x' , or y' with no data values or σ_{xn-1} with one data value.
- Correlation, intercept, slope, x' , or y' of a vertical line.
- Correlation or x' of a horizontal line.
- Correlation, slope, intercept, x' , or y' with only one data point.

Number mode errors

- Result outside range for that number mode.
- Selecting BIN, OCT, or HEX when displayed number is outside range for that number mode.

In Case of Difficulty

- If the display is blank, expose the solar panel to adequate light. Press $\boxed{AC/ON}$ and try again.
- Review the operating instructions.

TI Product, Service, and Warranty Information

TI Product and Services Information

For more information about TI products and services, contact TI by e-mail or visit the TI calculator home page on the world-wide web.

e-mail address: **ti-cares@ti.com**

internet address: <http://www.ti.com/calc>

Service and Warranty Information

For information about the length and terms of the warranty or about product service, refer to the warranty statement enclosed with this product or contact your local Texas Instruments retailer/distributor.

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