TI-30X Plus MathPrint™

Scientific Calculator

Quick Guide

Texas Instruments

TI-30X Plus MathPrint™ Scientific Calculator Quick Guide

About this quick guide

This quick guide introduces some of the main features of the TI-30X Plus MathPrint™. In addition, it provides an overview of display settings, modes and menus, navigation, syntax and tips for efficient and accurate calculation across NSW Stages 4-6 Mathematics.

0 Getting started

All examples in this quick guide assume the default settings as shown on page 3 (modes). The TI-30X Plus MathPrint™ can be reset so that all students start at the same point.

To do this, press 2nd [reset] 2.

0.1 Switching the calculator on and off

Press on to turn the TI-30X Plus MathPrint™ on.

Press 2nd [off] to turn it off.

0.2 Display contrast

To adjust the contrast:

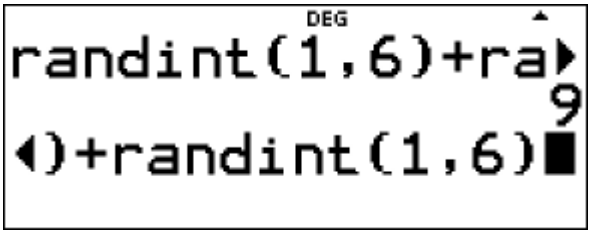
(1) Press and release the 2nd key.

(2) Press [▸] to darken the screen or press [◂] to lighten the screen.

If needed, repeat the above steps to set the desired contrast.

0.3 Home screen

The TI-30X Plus MathPrint™ can display a maximum of 4 lines with a maximum of 16 characters per line.

Keystrokes description: For entries and expressions longer than the visible screen area, scroll left and right (◂ and ▸) to view the entire entry or expression. Depending on space, the answer is displayed either directly to the right of the entry or on the right side of the next line.	

Special indicators and cursors may display on the screen to provide additional information concerning functions or results.

For example:

Indicator	Definition
2ND	2nd function.
SCI, **ENG**	Scientific or engineering notation.
DEG, **RAD**, **GRAD**	Angle mode (degrees, radians or gradians).

0.4 2nd functions

Press [2nd] to activate the secondary function of a given key.

Example

Use the TI-30X Plus MathPrint™ to calculate $\sqrt{25}$.

Keystrokes and solution:	
Press [2nd] [√] and enter 25. Press [enter]. $\sqrt{25}=5$	

0.5 Modes

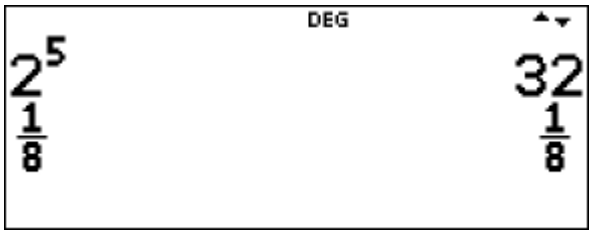
Press [mode] to choose modes.

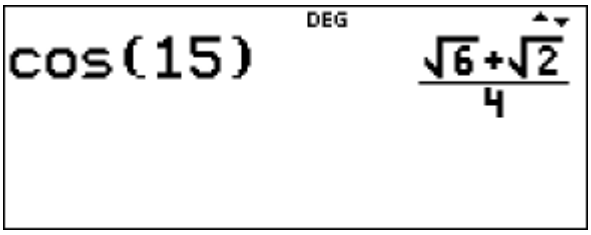
Press ▼ ▲ ◀ ▶ to choose a mode and press [enter] to select it.

Press [clear] or [2nd] [quit] to return to the home screen and perform your calculations using the chosen mode settings.

Default mode settings are highlighted in these two sample screens.

MATHPRINT mode displays most inputs and outputs in textbook format.





0.6 Multi-tap keys

A multi-tap key cycles through multiple functions when you press it. Press the key repeatedly to display the function you wish to enter.

Multi-tap keys include [x^{yzt}_{abcd}], [sin sin⁻¹], [cos cos⁻¹], [tan tan⁻¹], [e^□ 10^□], [ln log], [! nCr nPr] and [π e i].

0.7 Menus

Press ▶ and ▼ to scroll and select a menu item or press the corresponding number next to the item. To return to the previous screen without selecting the item, press [clear]. To exit a menu and return to the home screen, press [2nd] [quit].

Keystrokes description:	
For example, press [math] (key with multiple menus) to access **MATH**, **NUM**, **DMS** or **R◄►P**.	

0.8 Scrolling expressions and history

Press ◀ or ▶ to move the cursor within an expression that you are entering or editing.

Press [2nd] ◀ to move the cursor directly to the beginning of the expression.

Press [2nd] ▶ to move the cursor directly to the end of the expression.

Press ▲ or ▼ to move the cursor through previous entries in the history. Pressing [enter] from an input or output in history will copy and paste that expression back to the cursor position on the edit line.

Press [2nd] ▲ from the denominator of a fraction in the expressions edit to move the cursor to the history. Pressing [enter] from an input or output in the history will paste that expression to the denominator.

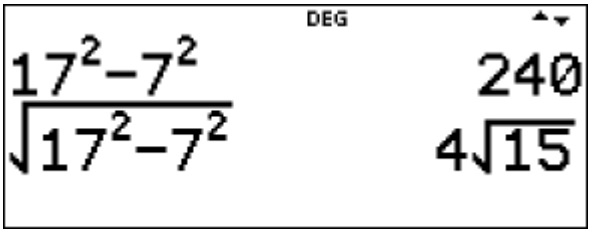
Example

Press [x^2] to calculate the square of a value.

Use the TI-30X Plus MathPrint™ to calculate

(a) $17^2 - 7^2$.

(b) $\sqrt{17^2 - 7^2}$, giving your answer in exact form.

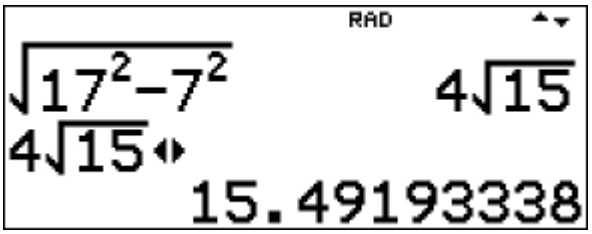
Keystrokes and solution:	
(a) Enter **17** and press [x^2] [−]. Enter **7** and press [x^2] [enter]. $17^2 - 7^2 = 240$ (b) Press [2nd] [√] ▲ ▲ [enter] [enter]. $\sqrt{17^2 - 7^2} = 4\sqrt{15}$	

0.9 Answer toggle

Press [◆▶≈] to toggle the display result (when possible) between fraction and decimal answers, surd and decimal answers and multiples of π and decimal answers.

Example

Use the TI-30X Plus MathPrint™ to calculate $4\sqrt{15}$, giving your answer in decimal form.

Keystrokes and solution:	
Enter $4\sqrt{15}$ (or using the last output from the previous example). Press [◆▶≈] to toggle between exact form and decimal form. $4\sqrt{15} = 15.49...$	

0.10 Last answer

The last entry performed on the home screen is stored to the variable **ans**.

To recall the value of **ans**:

Press [2nd] [answer] (**ans** displays on the screen), or

Press any operation key ([+], [−] etc.) in most edit lines as the first part of an entry.

ans and the operator are both displayed.

Example

Keystrokes description:	
Enter 2 and press [×]. Enter 2 and press [enter]. $2 \times 2 = 4$ Press [×] and enter 2. Press [enter]. $2 \times 2 \times 2 = 8$ Enter 3 and press [2nd] [$\sqrt{\square}$] [2nd] [answer] [enter]. $\sqrt[3]{2 \times 2 \times 2} = 2$	 

0.11 Order of operations

Order of operations hierarchy:

(1st) Expressions inside parentheses.

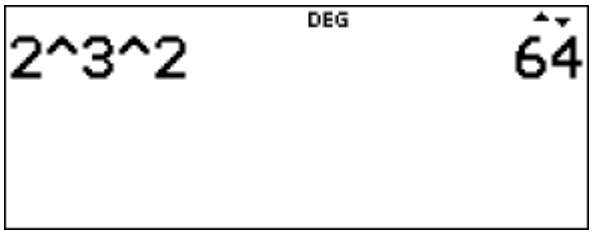
(2nd) Functions that need a closing bracket and precede the argument such as **sin**, **log** and all **R◄►P** menu items.

(3rd) Functions that are entered after the argument, such as $\mathbf{x}^2$ and angle unit modifiers.

(4th) Exponentiation (**^**) and roots.

In MathPrint™ mode, exponentiation using the [$x^{\square}$] key is evaluated from right to left. For example, 2^{3^2} is evaluated as $2^{(3^2)} = 512$.

Note: In Classic mode, exponentiation using the [$x^{\square}$] key is evaluated from left to right. For example, $2 \wedge 3 \wedge 2$ is evaluated as $(2 \wedge 3) \wedge 2 = 64$.



The TI-30X Plus MathPrint™ evaluates expressions entered with [x^2] and [$\frac{1}{\square}$] from left to right in both Classic and MathPrint™ modes.

For example, pressing [2] [x^2] [x^2] is calculated as $\left(2^2\right)^2 = 16$.

(5th) Negation [(−)].

(6th) Fractions.

(7th) Permutations (**nPr**) and combinations (**nCr**).

(8th) Multiplication, implied multiplication, division and angle indicator $\angle$.

(9th) Addition and subtraction.

(10th) Logic operators **and**, **nand**.

(11th) Logic operators **or**, **xor**, **xnor**.

(12th) Conversions such as **►n/d◄►Un/d**, **F◄►D**, **►DMS**.

(13th) [sto→]

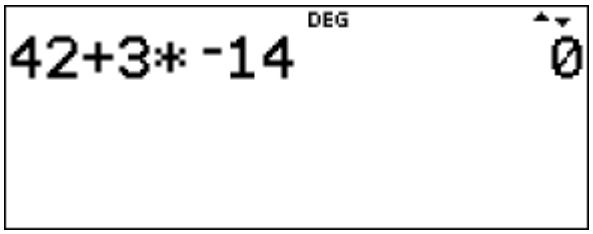
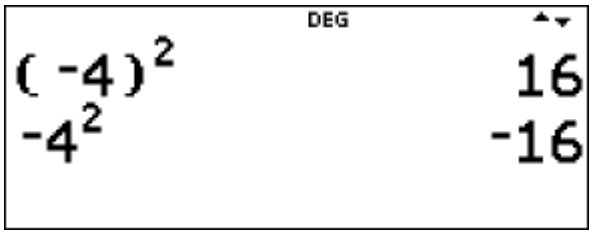
(14th) [enter] evaluates the input expression.

Example

Use the TI-30X Plus MathPrint™ to calculate

(a) $42+3\times-14$.

(b) $(-4)^2$ and -4^2.

Keystrokes and solution:	
(a) × ÷ + −	
Enter **42** and press [+].	
Enter **3** and press [×] [(−)].	
Enter **14** and press [enter].	
$42+3\times-14=0$	
(b) ( ) and −	
Press [(] [(−)] and enter **4**.	
Press [)] [x^2] [enter].	
$(-4)^2=16$	
Press [(−)] and enter **4**.	
Press [x^2] [enter].	
$-4^2=-16$	

0.12 Clearing and correcting

Press [2nd] [quit] to return the cursor to the home screen.

Press [clear] to clear an error message. It also clears characters on an entry line.

Press [delete] to delete the character at the cursor. When the cursor is at the end of an expression, it will backspace and delete.

Press [2nd] [insert] to insert (rather than replace) a character at the cursor.

Press [2nd] [clear var] [1] to clear variables x, y, z, t, a, b, c, d back to their default values of 0.

0.13 Memory and stored variables

The TI-30X Plus MathPrint™ has eight memory variables, x, y, z, t, a, b, c and d.

Press [sto→] to store a variable and press [x^{yzt}_{abcd}] to select the variable to store.

Press [enter] to store the value in the selected variable.

[x^{yzt}_{abcd}] is a multi-tap key that cycles through the variables x, y, z, t, a, b, c and d.

Press [x^{yzt}_{abc}] to recall and use the stored values for these variables. The variable, say y, is inserted into the current entry and the value assigned to y is used to evaluate the expression.

To recall values of variables, press [2nd] [recall] to display a menu of variables and their stored values. Select the variable you wish to recall and press [enter]. The value assigned to the variable is inserted into the current entry and used to evaluate the expression.

Press [2nd] [clear var] and select **1: Yes** to clear all variable values.

Example

Given that $x = 5$ and $y = 12$, use the TI-30X Plus MathPrint™ to find the value of $x^2 + y^2$.

Keystrokes and solution:

Press [2nd] [clear var] [1] to clear variables.

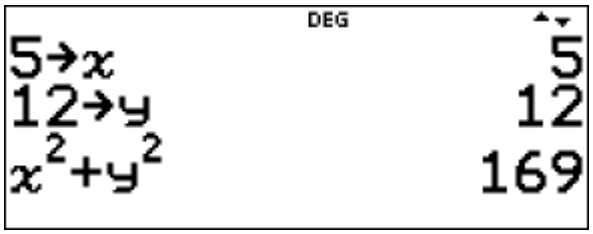
Enter 5 and press [sto→] [x^{yzt}_{abc}] [enter].

Enter 12 and press [sto→] [x^{yzt}_{abcd}] [x^{yzt}_{abcd}] [enter].

Press [2nd] [recall] [1] [x^2] [+] [2nd] [recall] [2] [x^2] [enter].

$$x^2 + y^2 = 169$$

Note: This calculation can also be performed directly.



1 Basic mathematical functions

1.1 Fractions

In MathPrint™ mode, press [▣].

Press [▼] or [▲] to move the cursor between the numerator and denominator.

Fraction results are automatically simplified and the output is in improper fraction form.

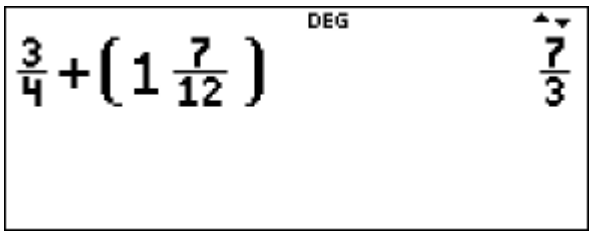
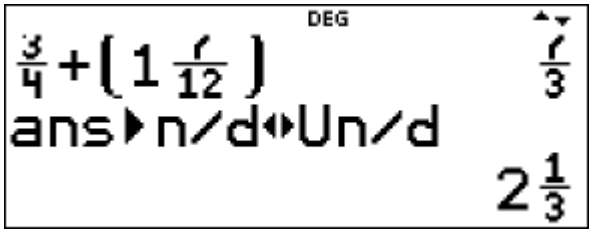
Use the **►n/d◄►Un/d** conversion (press [math] [1]) when a mixed number output is required.

Press [2nd] [□▣] to enter a mixed number. Use the arrow keys to cycle through the unit, numerator and denominator.

Example

Use the TI-30X Plus MathPrint™ to calculate $\frac{3}{4}+1\frac{7}{12}$.

Give your answer as an improper fraction and as a mixed number.

Keystrokes and solution: Press [▫/▫] and enter **3**. Press ▼ and enter **4**. Press ▶ [+] and enter **1**. Press [2nd] [▫/▫] and enter **7**. Press ▼ and enter **12**. Press [enter]. $\frac{3}{4}+1\frac{7}{12}=\frac{7}{3}$ To give the answer as a mixed number: Press [math] [1] [enter]. $\frac{3}{4}+1\frac{7}{12}=2\frac{1}{3}$	 **Note:** Parentheses are added automatically. 

If decimal numbers are used or calculated in a fraction's numerator or denominator, the result will display as a decimal.

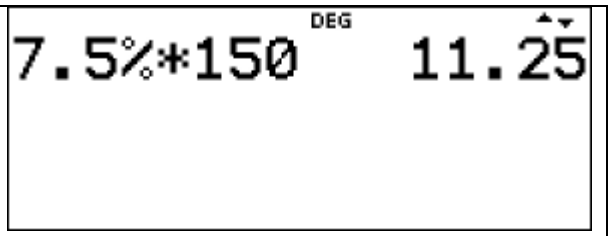
Press [2nd] [f◀▶d] when attempting fraction to decimal conversions.

1.2 Percentages

Press [2nd] [%] after entering the value of the percentage.

Example

Use the TI-30X Plus MathPrint™ to calculate 7.5% of 150.

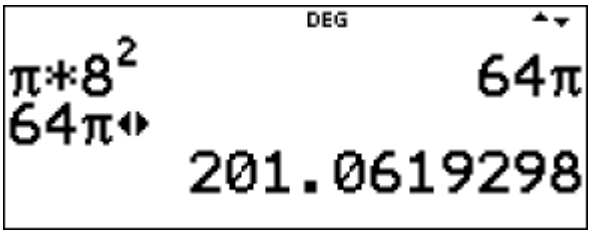
Keystrokes and solution: Enter **7.5** and press [2nd] [%] [×]. Enter **150** and press [enter]. 7.5% of 150 is 11.25	

1.3 Pi (symbol pi)

To access π, press [π] (multi-tap key).

Example

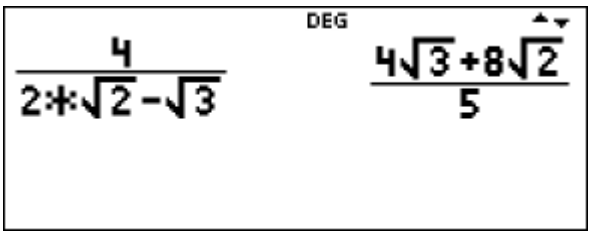
Use the TI-30X Plus MathPrint™ to find the area of a circle whose radius is 8 cm. Give your answer correct to one decimal place.

Keystrokes and solution: Press [π] [×] and enter 8. Press [x^2] [enter]. This gives $A = 64\pi$. Press [◆▶≈] to convert to a decimal. $A = 201.1$ (cm^2) correct to 1 dec. place.	

1.4 Surds

Example

Use the TI-30X Plus MathPrint™ to express $\dfrac{4}{2\sqrt{2}-\sqrt{3}}$ with a rational denominator.

Keystrokes and solution: Press [▫/▫] and enter 4. Press [▼] and enter 2. Press [×] [2nd] [$\sqrt{}$] and enter 2. Press [▶] [−] [2nd] [$\sqrt{}$] and enter 3. Press [enter]. $\dfrac{4}{2\sqrt{2}-\sqrt{3}} = \dfrac{4\sqrt{3}+8\sqrt{2}}{5}$	

2 Function table feature

Press [table] to access the function table.

1: Add/Edit Func

Lets you define the function $f(x)$ or $g(x)$ or both and generates a table of values.

2: f(

Pastes **f(** to the home screen to evaluate the function at a point (for example, $\mathbf{f(5)}$).

3: g(

Pastes **g(** to the home screen to evaluate the function at a point (for example, $\mathbf{g(2)}$).

To set up a function table:

Press [table] [1] to select **Add/Edit Func**. [Press [clear] if required.]

Enter one or two functions as appropriate and press [enter].

Select the **Start**, **Step**, **Auto**, or $x = ?$ options and press [enter].

Press ⊖ and ⊕ to move around the function table feature.

Start: Specifies the starting value for the independent variable, x. It is set to start at 0.

Step: Specifies the step value for the independent variable, x. The step can be positive or negative, but cannot be zero. It is set at 1.

Auto: The TI-30X Plus MathPrint™ automatically generates a series of values for the dependent variable, y, based on the table start and the table step values.

$x = ?$**:** Lets you build a table manually for the dependent variable, y, by allowing entry of specific values for the independent variable, x.

To display a table, highlight **CALC** and press [enter].

In function table view, press [clear] to display and edit the Table Setup wizard as needed.

Example

All people attending a party shook hands with each other as a way of exchanging a greeting. The number of handshakes, N, exchanged between x people at the party is given by $N(x)=\frac{x}{2}(x-1)$ where $x \in \mathbb{Z}^+$.

(a) Use the TI-30X Plus MathPrint™ function feature to find the number of handshakes that would be exchanged between $5,10$ and 50 people respectively.

(b) Given that 136 handshakes were exchanged, use the TI-30X Plus MathPrint™ function feature to determine how many people at the party shook hands.

Keystrokes and solution:

(a)

Press [table] [1] to access the function table.

[If required, press [clear].]

Press [▫] and press [x^{yzt}_{abcd}] to paste x.

Press [▼] and enter 2.

Press [▶] [×] [(] [x^{yzt}_{abcd}] [−] and enter 1.

Press [)] [▼] [▼].

Move the cursor to highlight $x = ?$ and press [enter] (**CALC**) [enter].

Enter 5 and press [enter].

Enter 10 and press [enter].

Enter 50 and press [enter].

With 5 people, there are 10 handshakes.

With 10 people, there are 45 handshakes.

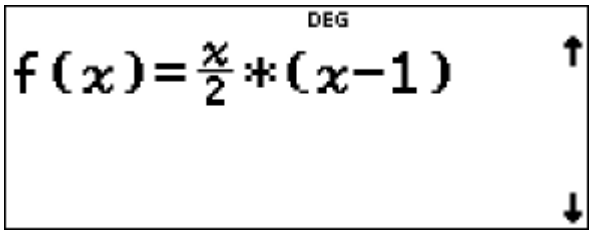
With 50 people, there are 1225 handshakes.

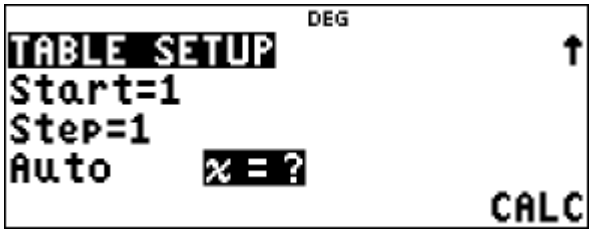
Alternatively, press [2nd] [quit] to go to the home screen.

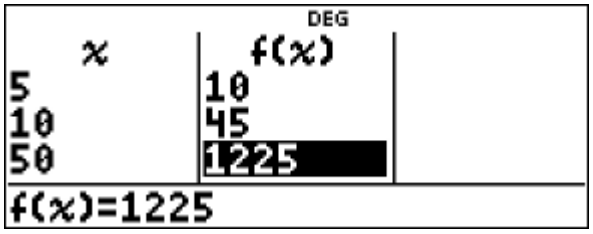
Press [table] [2] and enter 5.

Press [)] [enter]. So $f(5)$ is 10.

Press [▲] to go up and highlight $f(5)$.
Press [enter].







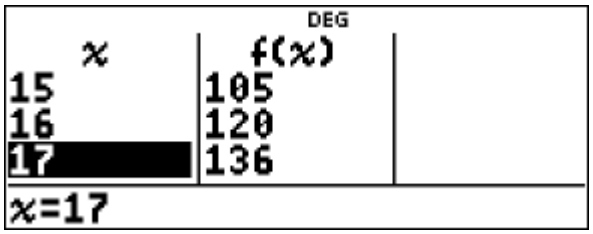
Change $\mathbf{f}(5)$ to $\mathbf{f}(10)$ and press enter.

Repeat to change $\mathbf{f}(10)$ to $\mathbf{f}(50)$.

(b)

From part (a), we conclude that $x > 10$.

By entering values for x, starting with 15, for example, the two screenshots show that 17 people exchanged 136 handshakes.



3 Data editor and list formulas feature

Press data to access the data editor where you can enter data into lists **L1**, **L2** and **L3**. When editing a list, press data to access the **CLR**, **FORMULA** and **OPS** menus.

Use ◀ ▶ ▲ ▼ to highlight a cell in the data editor and then enter a value.

Press:

delete to delete a cell.

enter clear to clear the edit line of a cell.

2nd [quit] to return to the home screen.

2nd ▲ to go to the top of a list.

2nd ▼ to go to the bottom of a list.

4 Stored operations feature

Press 2nd [set op] to store an operation and press 2nd [op] to paste an operation to the home screen. To set an operation and then recall it:

Press 2nd [set op].

Enter any combination of numbers, operations, and/or data values.

Press enter to store the operation.

Press 2nd [op] to recall the stored operation and apply it to the last answer or the current entry.

If you apply 2nd [op] directly to a 2nd [op] result, a $\mathbf{n = 1}$ iteration counter is incremented.

Example

On a particular July day, a weather forecast listed the following predicted maximum temperatures.

Canberra $13°\text{C}$ Sydney $18°\text{C}$ Thredbo $2°\text{C}$

The formula to convert from degrees Celsius to degrees Fahrenheit is given by the function $F(C) = \frac{9}{5}C + 32$.

(a) Convert these temperatures from degrees Celsius to degrees Fahrenheit using the TI-30X Plus MathPrint™

(i) Data editor and list formulas feature.

(ii) Stored operations feature.

(b) If Katoomba is predicted to have a maximum temperature of $9°\text{C}$, use the TI-30X Plus MathPrint™ to convert this temperature to degrees Fahrenheit.

Keystrokes and solution:

(a) (i)

Using the data editor and list formulas feature:

Press [data].

Press [data] [4] to clear all lists.

Enter 13 and press ⊙.

Repeat for 18 and 2.

The three values should now be displayed in **L1**.

Press ⊙ to scroll across to the top of **L2**.

Press [data] ⊙ to highlight **FORMULA** and press [1].

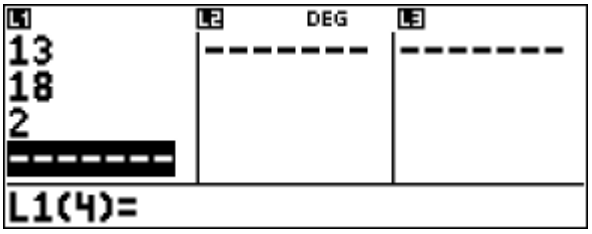
Now we enter the temperature conversion formula to **L2**.

Here we enter $\frac{9}{5}$ using the division key to ensure decimal outputs.

Enter 9 and press [÷].

Enter 5 and press [×].

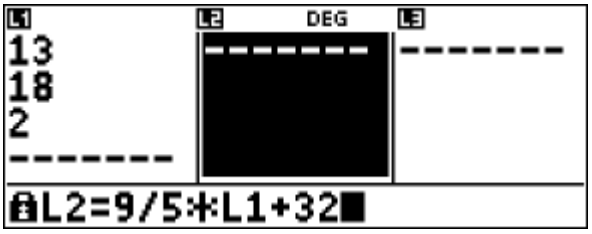
Press [data] [enter] to paste L1 into the author line.



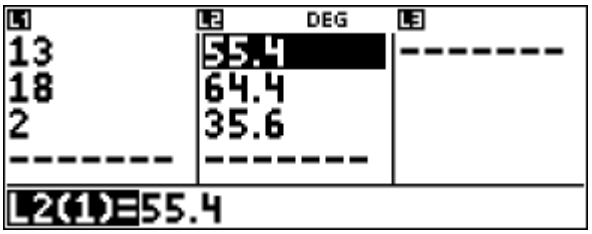
Press [+] and enter **32**.

Press [enter].

L2 should now display the converted temperatures $55.4°\text{F}, 64.4°\text{F}$ and $35.6°\text{F}$.



Note: These temperature conversions could also be performed using the function table feature.

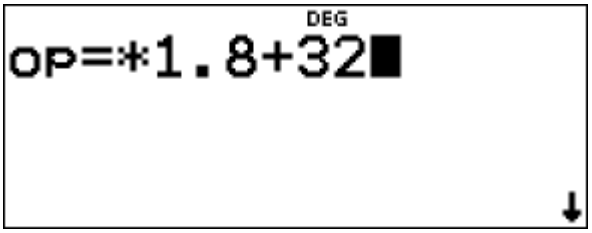


(a) (ii)

Using the stored operations feature:

Press [2nd] [set op].

[If required, press [clear] to clear any previous stored operations.]



Press [×] and enter **1.8**.

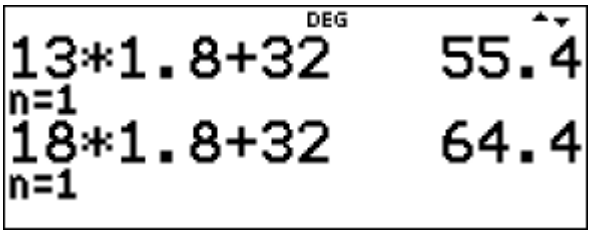
Press [+] and enter **32**.

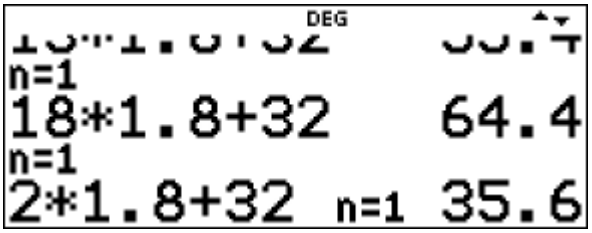
Press [enter].

Enter **13** [2nd] [op].

Enter **18** [2nd] [op].

Enter **2** [2nd] [op].



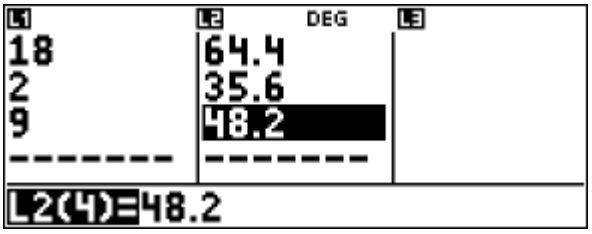


The three converted temperatures are $55.4°\text{F}, 64.4°\text{F}$ and $35.6°\text{F}$.

(b)

Using the data editor and list formulas feature:

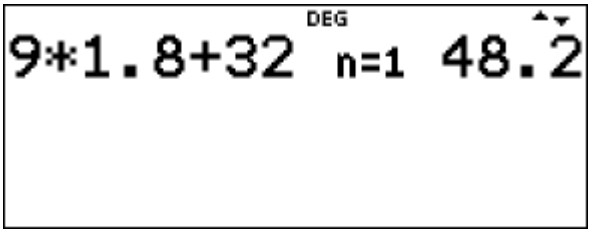
Move to **L1(4)** =, enter **9** and press [enter].



L2 should now display Katoomba's converted temperature of $48.2°\text{F}$.

Using the stored operations feature:

Enter **9** [2nd] [op].



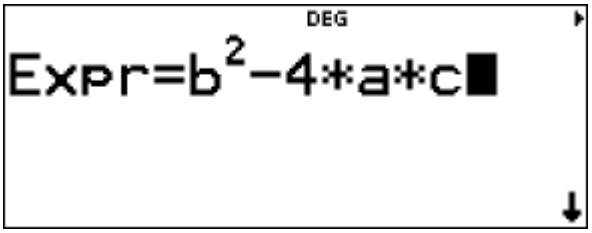
5 Expression evaluation feature

Press [2nd] [expr-eval] to input and calculate an expression. Pressing [2nd] [expr-eval] from a populated home screen expression pastes the content to **Expr** = .

If variables x, y, z, t, a, b, c and d are used in the expression, you will be prompted for values or use the stored values displayed for each prompt. The number stored in the variables will update in TI-30X Plus MathPrint™.

Example

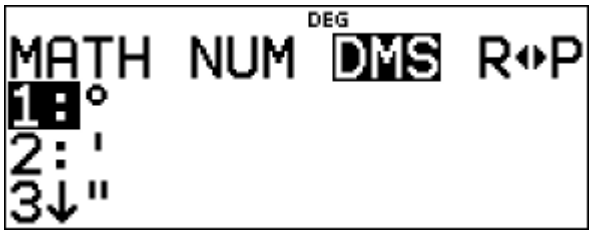
Use the discriminant and the TI-30X Plus MathPrint™ to predict the number and nature of x-intercepts for the graph of $y = 2x^2 + 9x - 5$.

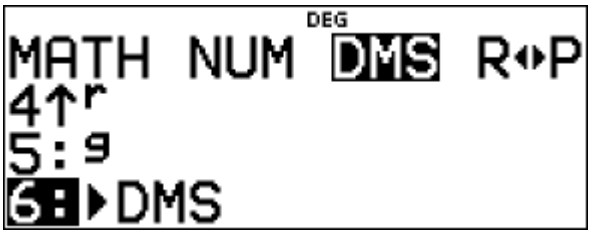
Keystrokes and solution: Press [2nd] [expr-eval]. [If required, press [clear].] [x^{yzt}_{abcd}] is a multi-tap key that cycles through the variables x, y, z, t, a, b, c and d. Continue to press [x^{yzt}_{abcd}] until b appears. Press [x^2] [−] and enter 4. Press [×] and continue to press [x^{yzt}_{abcd}] until a appears. Press [×] and continue to press [x^{yzt}_{abcd}] until c appears. Press [enter] [clear] and enter 9. Press [enter] [clear] and enter 2. Press [enter] [clear] [(−)] and enter 5. Press [enter]. Substituting $a = 2, b = 9$ and $c = -5$ into $b^2 - 4ac$ gives $9^2 - 4(2)(-5) = 121$. The discriminant is 121. Since the discriminant is 11^2, there are two rational x-intercepts, $(x = -5, \frac{1}{2})$.	 

6 Trigonometry

Press [mode] to choose an angle mode from the mode screen. Note that **DEG** is the default.

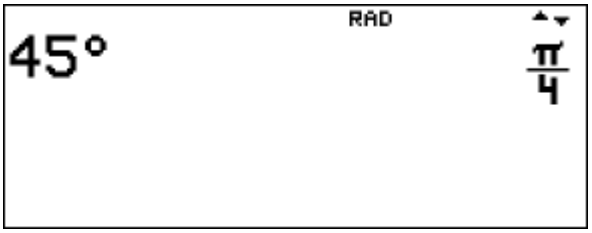
Press [math] ▶ ▶ to display the **DMS** menu.





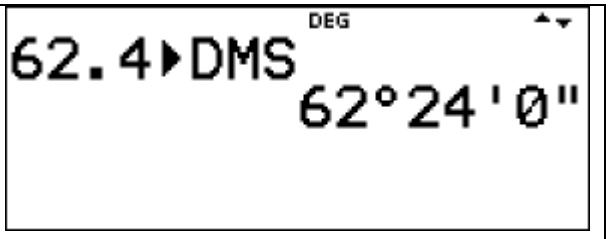
Example

Use the TI-30X Plus MathPrint™ in radian mode to convert $45°$ to radians.

Keystrokes and solution:	
Press [mode] ▶ [enter] to be in radian mode. Enter **45** and press [math] ▶ ▶ [1] [enter]. $45° = \frac{\pi}{4}$	

Example

Use the TI-30X Plus MathPrint™ to convert $62.4°$ to an angle expressed in degrees, minutes and seconds. (Here angle mode is set to **DEG**.)

Keystrokes and solution:	
Enter **62.4** and press [math] ▶ ▶ [6] [enter]. $62.4° = 62°24'$ **Note:** The default calculation mode is decimal degrees.	

Example

The trigonometry keys, [sin sin⁻¹], [cos cos⁻¹] and [tan tan⁻¹], are multi-tap keys.

The angle of depression from a drone flying 100 metres above the water to a buoy at sea is $23°18'$. Find the horizontal distance from the drone to the buoy. Give your answer correct to one decimal place.

Keystrokes and solution:

The angle mode is **DEG**.

$\tan 23°18' = \dfrac{100}{x}$ and so $x = \dfrac{100}{\tan 23°18'}$

Enter **100** and press [□/□].

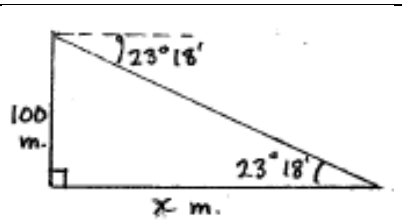
Press [tan tan⁻¹] and enter **23**.

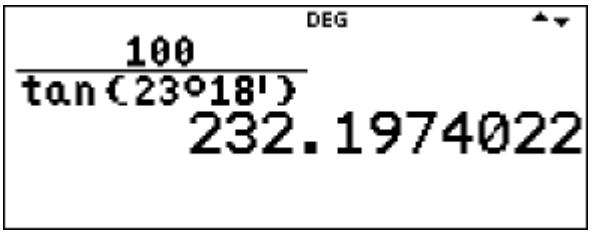
Press [math] ▶ ▶ [1] and enter **18**.

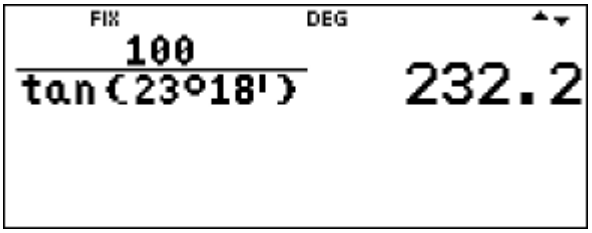
Press [math] ▶ ▶ [2] [)] [enter].

The horizontal distance is 232.2 metres, correct to one decimal place.

Note: Press [mode] ▼ ▼ ▶ ▶ [enter] to set the decimal notation mode to a one decimal place output. **FIX** is displayed as an indicator at the top of the screen.







Example

Use the TI-30X Plus MathPrint™ to convert $35°25'$ to radians. Give your answer

(a) in terms of π.

(b) correct to four decimal places.

Keystrokes and solution:

The angle mode is **RAD**.

[Press [mode] ▶ [enter] to be in radian mode.]

(a)

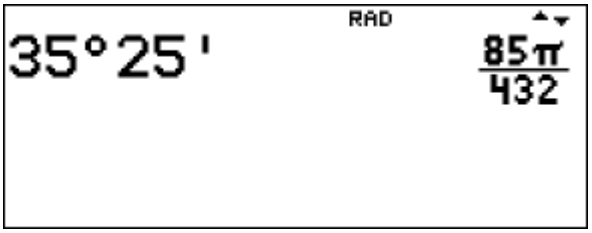
Enter **35** and press [math] ▶ ▶ [1].

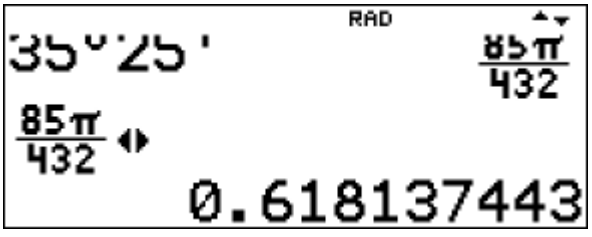
Enter **25** and press [math] ▶ ▶ [2] [enter].

$35°25' = \dfrac{85\pi}{432}$

(b)

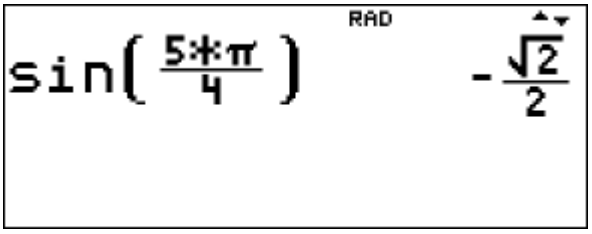
Press [◂▸≈] and so $35°25' = 0.6181$ (4 dp).





Example

Use the TI-30X Plus MathPrint™ to find the exact value of $\sin\frac{5\pi}{4}$.

Keystrokes and solution: The angle mode is **RAD**. Press [sin sin⁻¹] [□/□] and enter 5. Press [×] [π e^i] [▼] and enter 4. Press [▶] [)] [enter]. $\sin\frac{5\pi}{4}=-\frac{\sqrt{2}}{2}$.	

7 Statistics and probability

Press [data] to enter and edit lists (see data editor and list formulas feature).

Press [2nd] [stat-reg/distr] to access the **STAT-REG** menu or the **DISTR** menu.

Example

Two companies, A and B, produce packets of chips which are labelled as having a weight of 50 grams. A random sample of 10 packets is taken from each company. Each packet is weighed and the results, in grams, are as follows.

Company A: $50.0, 50.6, 50.0, 50.4, 49.2, 49.0, 51.4, 50.1, 47.4, 51.9$

Company B: $51.0, 50.9, 51.1, 51.5, 51.3, 50.2, 50.6, 50.0, 50.5, 50.9$

(a) For each company's data, use the TI-30X Plus MathPrint™ to calculate the

(i) mean weight.

(ii) five-number summary.

(iii) interquartile range.

(b) What, if anything, can be concluded about the manufacturing processes of the two companies?

Keystrokes and solution:

Using the data editor and list formulas feature:

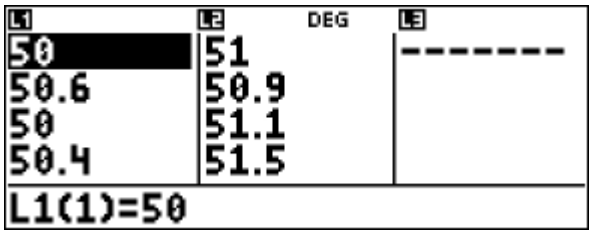
Press [data].

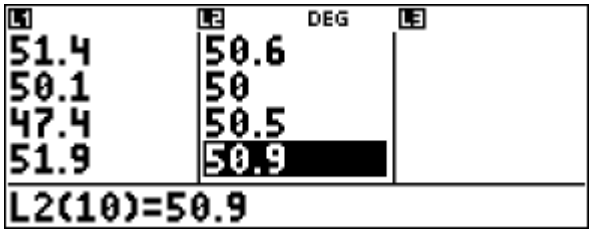
Press [data] [4] to clear all lists.

Enter the Company A data in **L1**. Start by entering **50.0** and pressing ⊙ (or [enter]).

Press ⊙ to scroll across to the top of **L2**.

Enter the Company B data in **L2**. Start by entering **51.0** and pressing ⊙ (or [enter]).

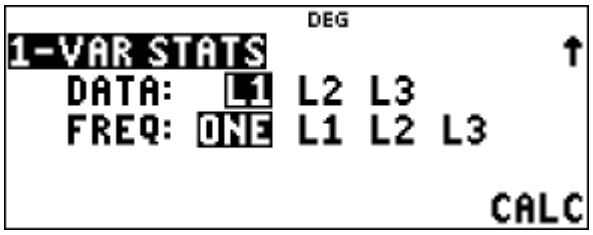




Press [2nd] [stat-reg/distr] to access the statistics menu.

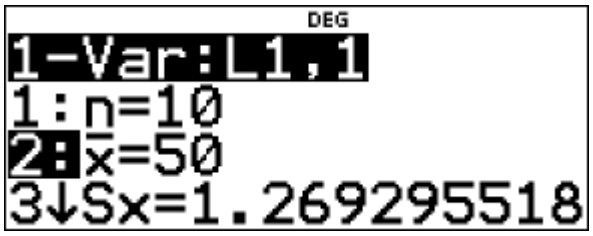
Press [2] to access **1-Var Stats**.

Select **L1** and press ⊙ ⊙ [enter] (**CALC**) to calculate the results for Company A.



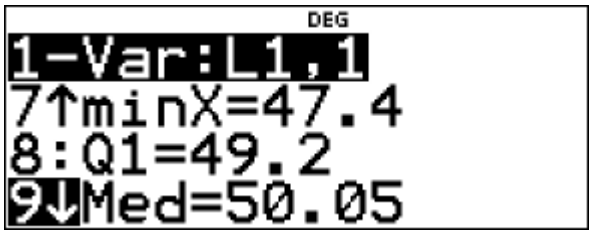
(a) (i) Company A

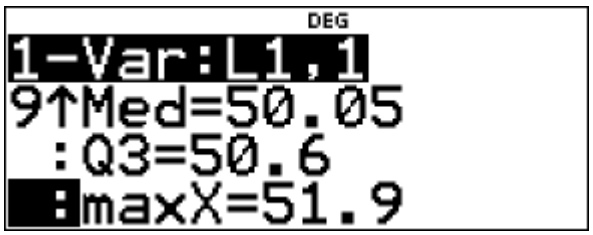
$\bar{x} = 50$ (grams)



(a) (ii) Company A

The five-number summary is $[47.4, 49.2, 50.05, 50.6, 51.9]$.



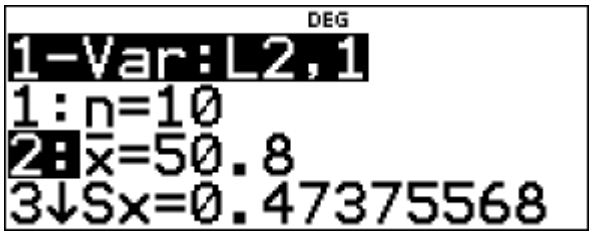


Press 2nd [stat-reg/distr] to access the statistics menu.

Press 2 to access **1-Var Stats**.

Press ▶ enter to select **L2** and press enter.

Press ▼ enter (**CALC**) to calculate the results for Company B.

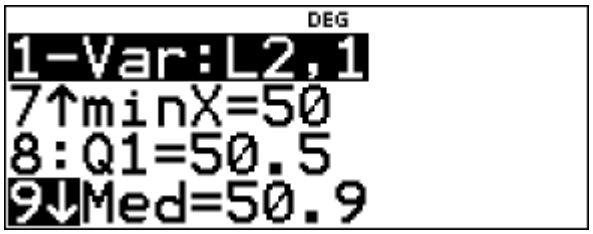


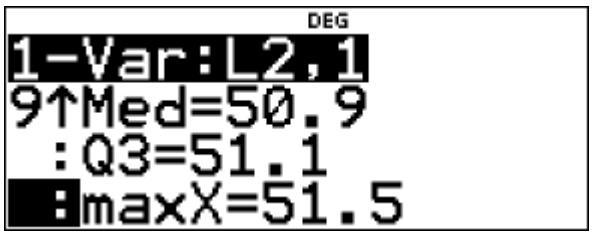
(a) (i) Company B

$\bar{x} = 50.8$ (grams)

(a) (ii) Company B

The five-number summary is $[50, 50.5, 50.9, 51.1, 51.5]$.





Using **StatVars**:

Press 2nd [stat-reg/distr] to return to the statistics menu.

Press 2 to access **1-Var Stats**.

Ensure **L1** is selected and press enter.

Press ▼ ▼ enter to again calculate the results for Company A.

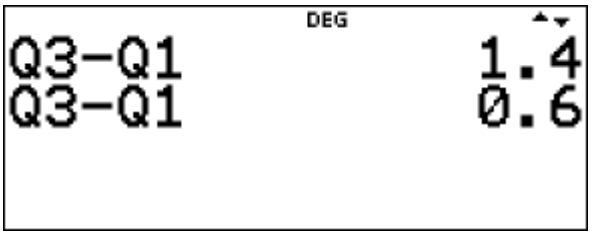
Press ▲ ▲, select $\mathbf{Q3}$ and press enter −.

Press 2nd [stat-reg/distr] 1 to return to **StatVars**.

Press 8 (or scroll up or down until $\mathbf{Q1}$ is selected) and press enter.

The Home screen should show $\mathbf{Q3} - \mathbf{Q1}$.

Press enter.

(a) (iii) Company A $\text{IQR} = Q_3 - Q_1 = 1.4$ (grams) (a) (iii) Company B Repeat the above instructions ensuring that **L2** is selected. $\text{IQR} = Q_3 - Q_1 = 0.6$ (grams) (b) Company A produces packets of chips with a weight centred closer to 50 grams than Company B, but with greater variation (using the IQR) in the weights. Company B produces packets of chips centred slightly greater than 50 grams whereas some of the packets produced by Company A are less than 50 grams.	

Example

The length measurements (correct to the nearest cm) of the femur bone and humerus bone of a particular species of fossil are shown in the following table.

Femur length (x)	60	57	65	39	75
Humerus length (y)	71	64	73	42	85

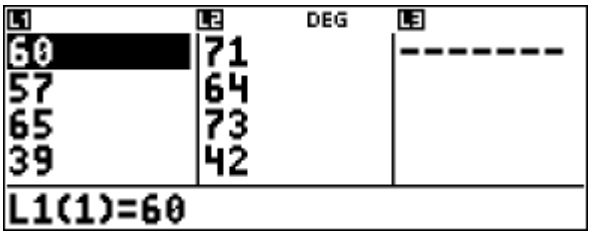
(a) Use the TI-30X Plus MathPrint™ to determine the least-squares regression line. Give your answer in the form $y = ax + b$ where a, b are expressed correct to two decimal places.

(b) Use the least-squares regression line found in part (a) to estimate the length of a humerus bone of this species of fossil whose femur length is 48 cm. Give your answer correct to the nearest centimetre.

Keystrokes and solution: Using the data editor and list formulas feature: Press [data]. Press [data] [4] to clear all lists. Enter the femur bone lengths in **L1**. Start by entering **60** and pressing ⊙ ([enter]).	

Press ⊙ to scroll across to the top of **L2**.

Enter the humerus bone lengths in **L2**. Start by entering 71 and pressing ⊙ (or enter).



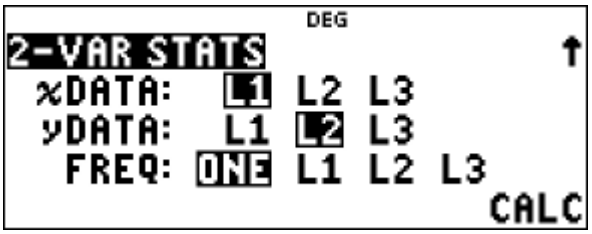
Press 2nd [stat-reg/distr] to access the statistics menu.

METHOD 1:

Press 3 to access **2-Var Stats**.

Select **L1** for x**DATA** and select **L2** for y**DATA**.

Press ⊙ to highlight **CALC** and press enter.

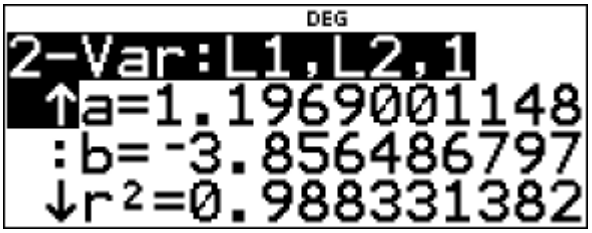


(a)

Scrolling up or down we obtain:

$a = 1.196...$ and $b = -3.856...$

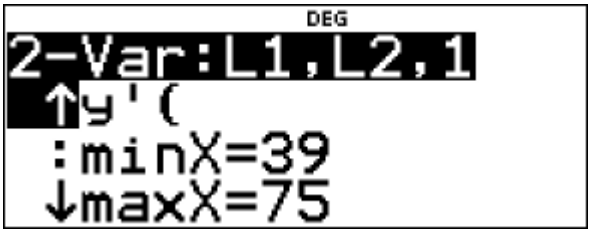
The least-squares regression line is $y = 1.20x - 3.86$ (2 dp).



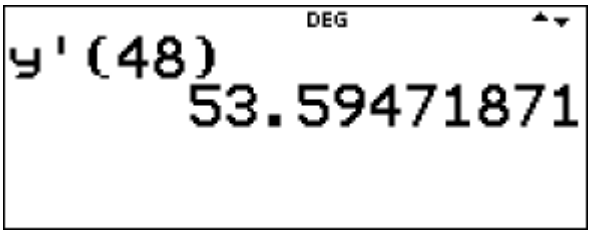
(b)

In **StatVars**, scroll up or down to locate $y'($ and press enter.

Enter 48 and press) enter.



Hence, correct to the nearest centimetre, the humerus bone length is estimated to be 54 cm.



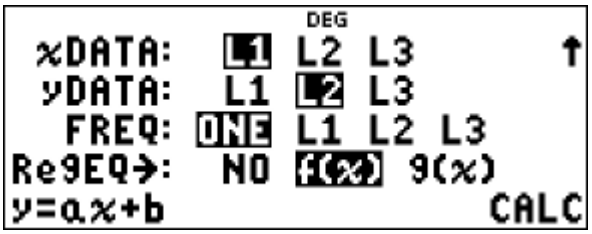
METHOD 2:

Press [2nd] [stat-reg/distr] to access the statistics menu.

Press [4] to access **LinReg *ax+b***.

Select the options as shown at right.

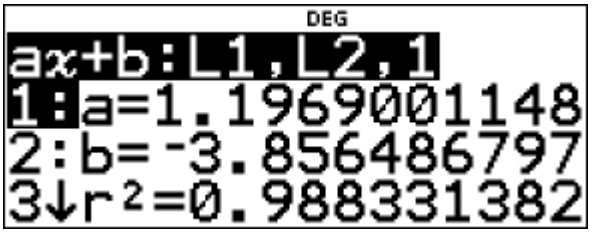
Press ⊙ to highlight **CALC** and press [enter].



(a)

$a = 1.196...$ and $b = -3.856...$

The least-squares regression line is $y = 1.20x - 3.86$ (2 dp).

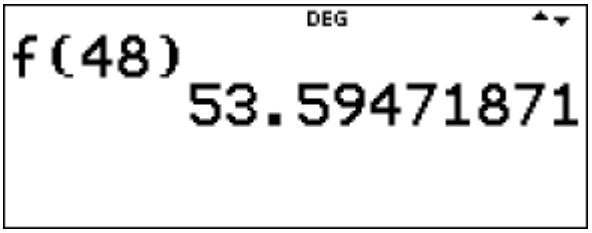


(b)

Press [table] [2] and enter **48**.

Press [)] [enter].

Hence, correct to the nearest centimetre, the humerus bone length is estimated to be 54 cm.



Example

A Mathematics test consists of 10 multiple choice questions each of which has five possible answers. A student makes a random guess at each of the questions.

Use the TI-30X Plus MathPrint™ to find the probability that they guess five correct answers.

Give your answer correct to four decimal places.

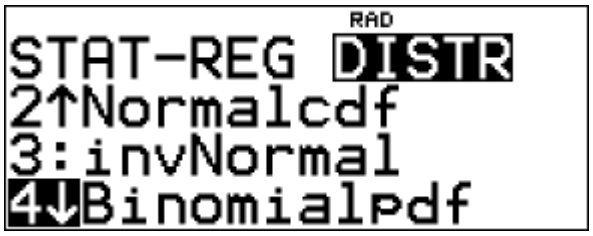
Keystrokes and solution:

Let X represent the number of correct answers and $X \sim \text{Bin}(10, 0.2)$.

We need to find $P(X=5)$.

Press [2nd] [stat-reg/distr] ▶ to access the probability distributions menu.

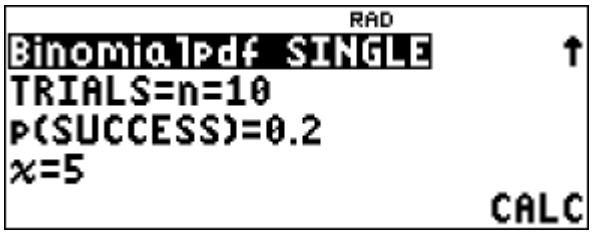
Press [4] (or scroll down) to select **Binomialpdf**.



Select **SINGLE** and press ▼.

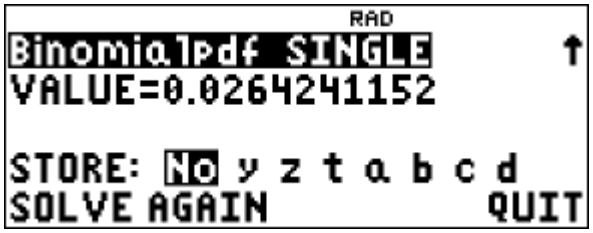
Enter the required values for n, p and x as shown at right.

Press ▼ to highlight **CALC** and press [enter].



So $P(X=5)=0.0264$ (4 dp).

Note: If you need to use **Binomialpdf** again, press ▼ to highlight **SOLVE AGAIN** and press [enter]. Otherwise highlight **QUIT** and press [enter]. If your probability is required in a further calculation, it can be stored to a variable.



Example

If X has a normal distribution with mean $\mu=28$ and standard deviation $\sigma=1.7$, find $P(X\le 32)$. Give your answer correct to four decimal places.

Keystrokes and solution:

$X \sim \mathrm{N}(28, 1.7^2)$

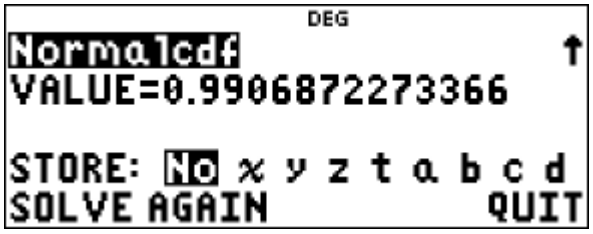
Press [2nd] [stat-reg/distr] ▶ to access the probability distributions menu.

Press [2] to select **Normalcdf**.

Enter the required values for μ and σ.

Ensure that the lower bound is a large negative number, for example **-1E99**, and enter **32** for the upper bound.

Press ▼ to highlight **CALC** and press [enter].



So $P(X \leq 32) = 0.9907$ (4 dp).	