

Using the Casio fx-83GT



Topic	Page Number
Changing an answer to a decimal quickly	1
The start screen	2
Basic buttons	3
Format button	4
Settings : Changing the fraction result	5
The fraction button	6
Using the fraction button	7
Four operations with fractions (add, subtract, multiply, divide)	8
Converting an improper fraction to a mixed number	9
Converting a mixed number to an improper fraction	10
Four operations with mixed numbers (add, subtract, multiply, divide)	11
Converting between fractions and decimals	12
Converting a fraction to a recurring decimal	13
The percentage button	14
Recurring decimals – 1dp method 1	15
Using the recurring decimal button	16
Recurring decimals – 2 dp method 1	17
Recurring decimals – more than 2 dp	18
Powers	19
Powers of negative numbers	20
Products of prime factors	21
HCF (Highest common factor)	22
HCF using products of prime factors	23
LCM (Lowest common multiple)	24
LCM using prime factors	25
Substitution – storing values	26
Solving a quadratic equation using the formula	27
Functions and use $f(x)$	28
Composite functions	29
Plotting a linear graph	30
Plotting a quadratic graph	31
Time – converting a mixed number to hours and minutes	32
Time – converting minutes to hours and minutes	33
Time – converting hours and minutes to hours	34
Time calculations	35
Average speed	36
Using the Ans button	37
Finding one part of a ratio from another (part 1)	38
Finding one part of a ratio from another (part 2)	39
Writing a ratio in the form 1:n	40
Writing a ration in the form n:1	41
Inequalities on a number line (part 1) Where to find them	42
Inequalities on a number line (part 2) Single ended	43
Inequalities on a number line (part 3) Double ended	44
Settings : Digit separator	45
Settings : Changing the angle unit	46

Changing an answer to a decimal quickly

When an answer is not an integer value the calculator will display the answer in its standard setting.

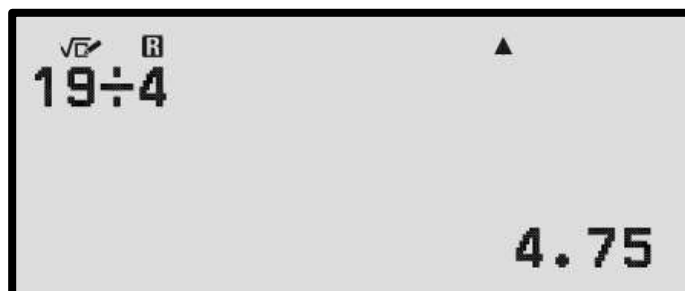


The quickest way to change this answer is....

Press



then execute



If you want the decimal straight away.....

Type 15 ÷ 6

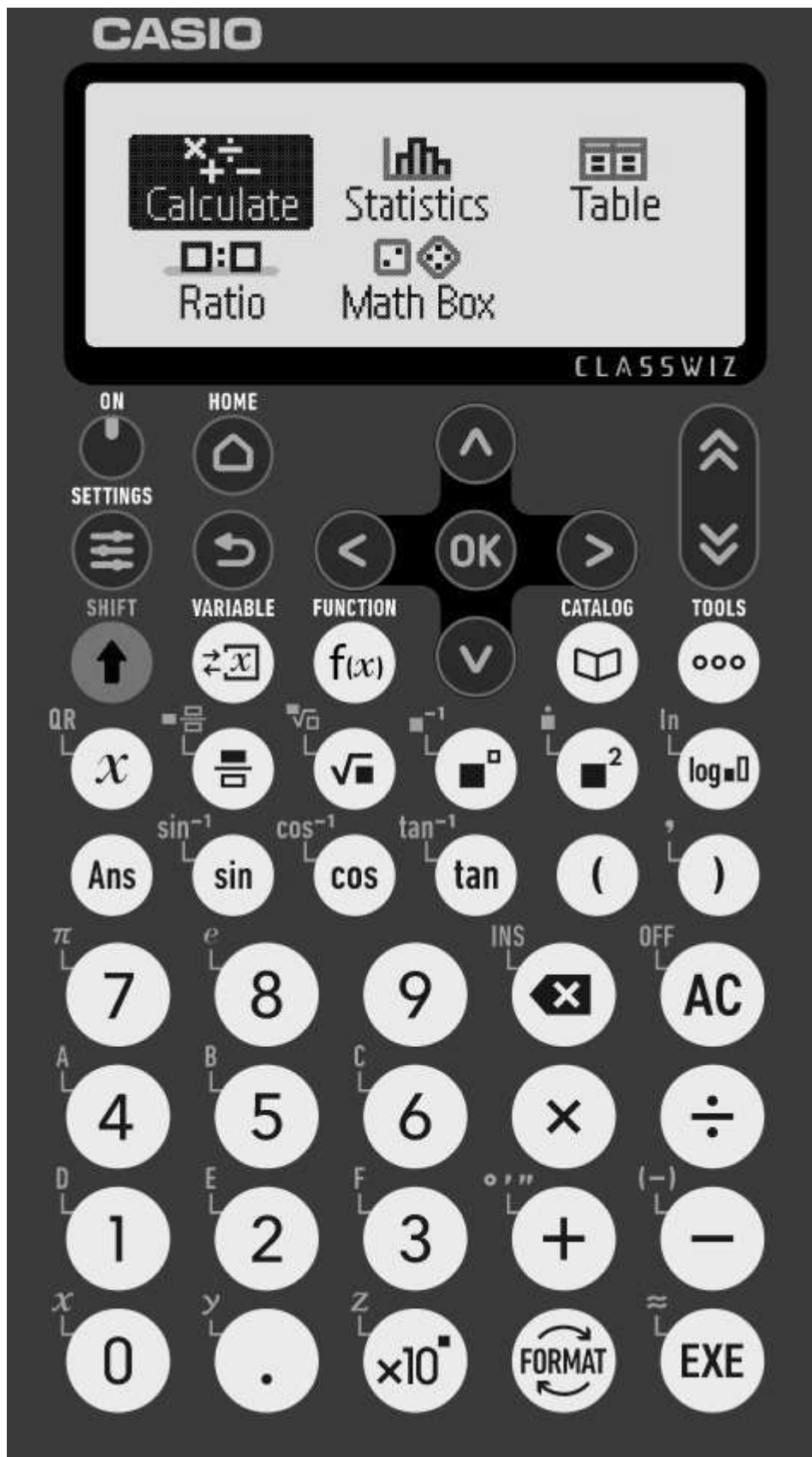
Press



then execute

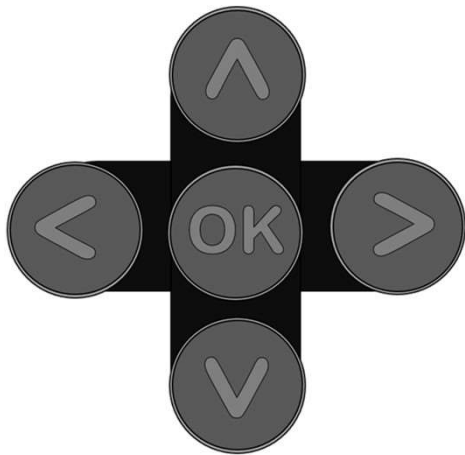


Start Screen



Choose
calculate to
be able to
do
calculations

Basic Buttons

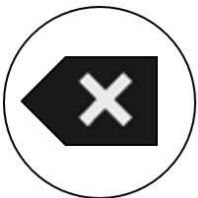
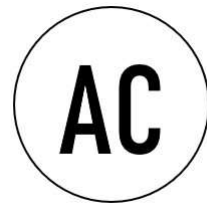


Arrow Keys

Move the cursor
around the
screen

AC Button

Clears the calculator

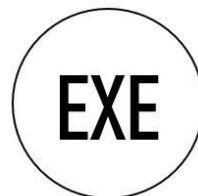


DEL Button (delete)

Deletes characters from the screen

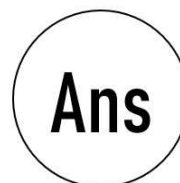
Execute

works out the calculation



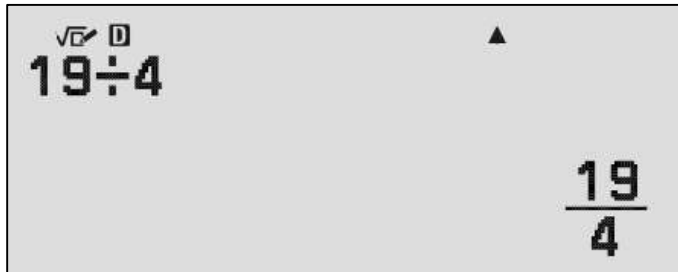
ANS Button

Uses the last answer calculated



Format Button

Changes the format of the answer

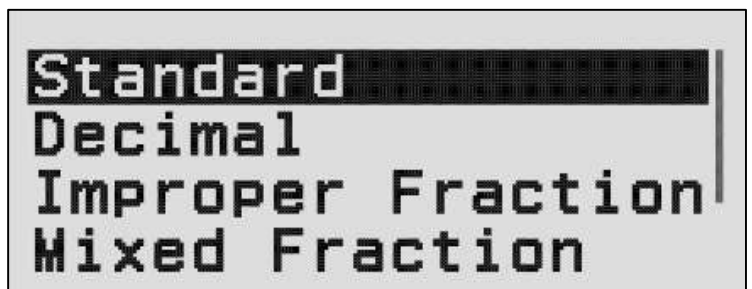


When an answer is not an integer value the calculator will display the answer in its standard setting.

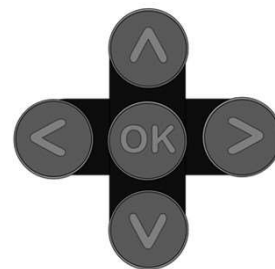


To change this, press the format button.

The next menu shows the format options.



Use the arrow keys followed by ok to chose the format you want.



Standard

Decimal

**Improper
Fraction**

**Mixed
Fraction**

$$\frac{19}{4}$$

4.75

$$\frac{19}{4}$$

$$4\frac{3}{4}$$

Settings



Changing the fraction result

Click settings



Calc Settings
System Settings
Reset
Get Started

Use the right arrow key on Calc Settings

Input/Output
Angle Unit
Number Format
Fraction Result

Use the right arrow key on Fraction Result

Mixed Fraction
 Improper Fraction

Chose mixed fraction or improper fraction

The fraction button



There are 2 ways to input a fraction into your calculator.

1) Press



Then use the arrow keys to help you help you fill in the boxes.



2) Type the value of your numerator.



Now press



Then use the arrow keys to move to the denominator and type that in.

Using the fraction button



Simplifying

Type your fraction into the calculator and press execute.



Using for calculations

Press the fraction button and type in your calculation




Addition



A calculator display showing the addition of two fractions: $\frac{1}{2} + \frac{1}{5}$. The result is $\frac{7}{10}$. The display includes a square root symbol and a degree symbol.

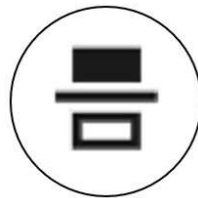
Subtraction



A calculator display showing the subtraction of two fractions: $\frac{1}{2} - \frac{1}{5}$. The result is $\frac{3}{10}$. The display includes a square root symbol and a degree symbol.



Try these



calculations




Multiplication



A calculator display showing the multiplication of two fractions: $\frac{1}{2} \times \frac{1}{5}$. The result is $\frac{1}{10}$. The display includes a square root symbol and a degree symbol.

Division



A calculator display showing the division of two fractions: $\frac{1}{2} \div \frac{1}{5}$. The result is $2\frac{1}{2}$. The display includes a square root symbol and a degree symbol.

Changing an improper fraction to a mixed number

Converting an improper fraction to a mixed number

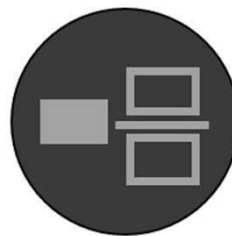


Type your fraction into the calculator and press execute.


Press  and chose mixed fraction from the list.



The Mixed Number button




(Find this symbol above the fraction button)

Press shift  and then the fraction button



Converting a mixed number to an
improper fraction

Press shift  and then the fraction button



Fill the boxes to type in your mixed
number

Press execute

EXE



Addition

$$1\frac{2}{5} + 2\frac{1}{7} = 3\frac{19}{35}$$



Subtraction

$$1\frac{2}{5} - 2\frac{1}{7} = -\frac{26}{35}$$



Try these



calculations



Multiplication

$$1\frac{2}{5} \times 2\frac{1}{7} = 3$$



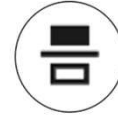
Division

$$1\frac{2}{5} \div 2\frac{1}{7} = \frac{49}{75}$$

Converting between fractions and decimals



Converting a fraction to a decimal



Type your fraction into the calculator and press equals.

Press 

Then chose decimal.



Converting a decimal to a fraction

Type your decimal into the calculator and press execute.



Converting a decimal to a mixed number

Type your decimal into the calculator and press execute.



Press



Then chose mixed fraction.




Converting between fractions and decimals



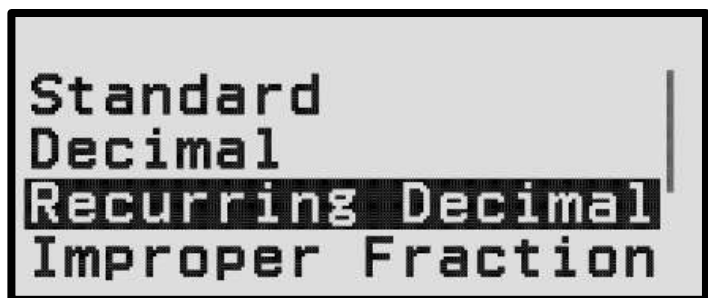
Converting a fraction to a recurring decimal



Type your fraction into the calculator and press execute.

Press 

If your fraction is recurring this will now show in the menu.



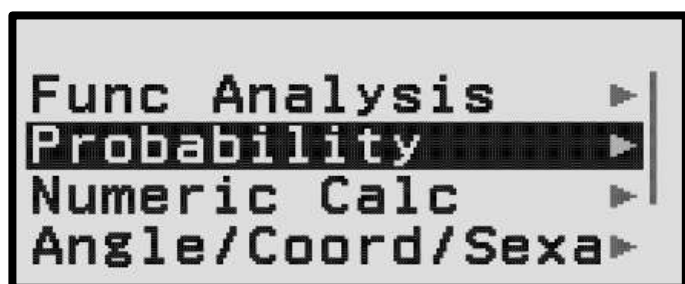
Click ok to get your answer.



The percentage button

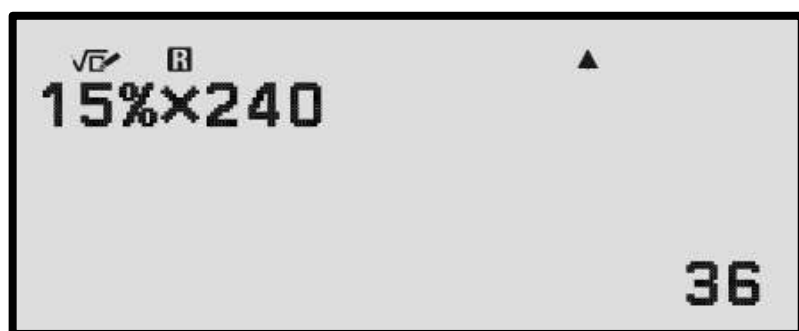
To calculate 15% of 240

Type 15. Press  catalog button



Move down to probability and use the right arrow key to access next menu.

Click ok and this will put the % into your calculation.



You can now complete the calculation.

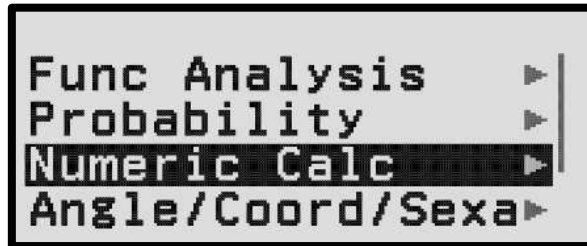


Recurring decimals - 1 dp method 1

Convert $0.\dot{6}$ to a fraction

Type in your number up to the first recurring digit.

Press 



Scroll down to numeric calc and use right button to go to the next menu.

Click ok and the recurring decimal box will appear on the screen



Fill in the rest of the decimal and press execute.



Using the recurring decimal button



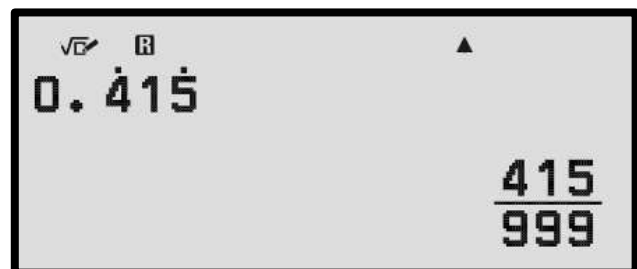
Convert a recurring decimal to a fraction

Type 0 $.$ then press \uparrow \square^2

This brings up the recurring decimal box



Now type the recurring decimals in the box and press execute.

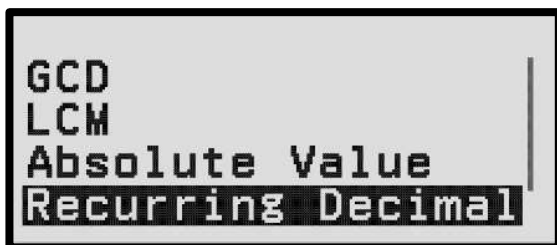
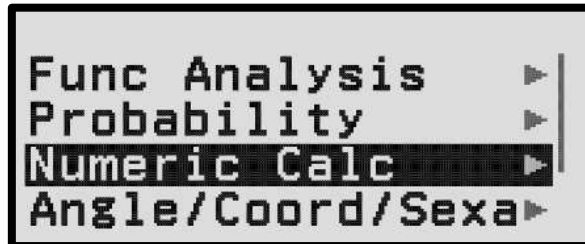


Recurring decimals - 2 dp Method 1

Convert $0.\dot{2}\dot{8}$ to a fraction

Type in your number up to the first recurring digit.

Press 



Scroll down to numeric calc and use right button to go to the next menu.

Click ok and the recurring decimal box will appear on the screen



Fill in the rest of the decimal and press execute.

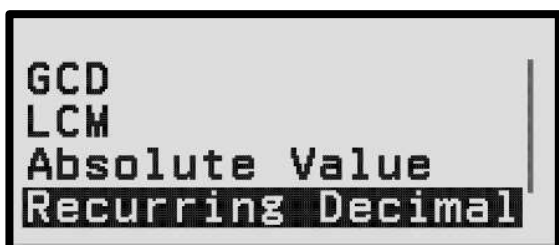
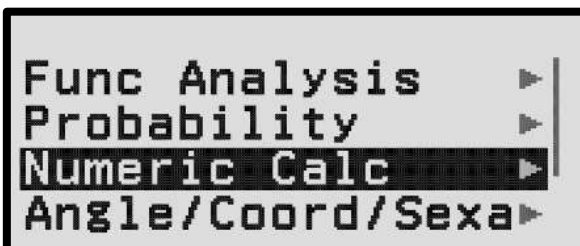


Recurring decimals – More than 2 dp (1)

Convert $0.\dot{4}1\dot{5}$ to a fraction

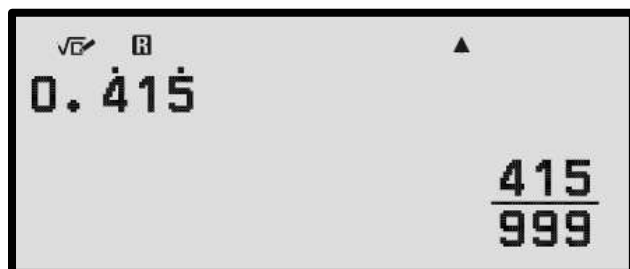
Type in your number up to the first recurring digit.

Press 



Scroll down to numeric calc and use right button to go to the next menu.

Click ok and the recurring decimal box will appear on the screen



Fill in the rest of the decimal and press execute.



Powers



Method 1 - Squared 4^2

Instead of writing 4×4

Type 4

then \square^2



Method 2 - Squared 4^2

Instead of writing 4×4

Type \square^2

then fill in

the box 4

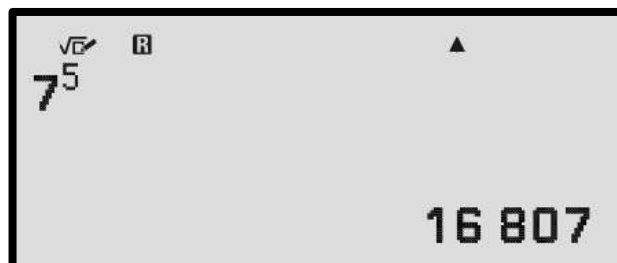


Any Power 7^5

Instead of writing $7 \times 7 \times 7 \times 7 \times 7$

Type 7

press \square^{\square}



then put a 5 in the box






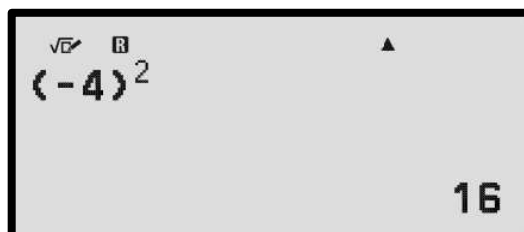
Powers of negative numbers

Method 1 - Squared -4^2

Be careful!

Type ( - 4)

then 

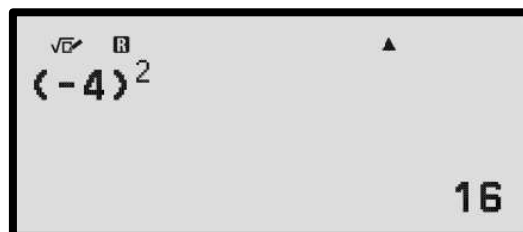


Method 2 - Squared -4^2

Be careful!

Type (- 4)

then 



Any Power -7^5

Type (- 7)

press 

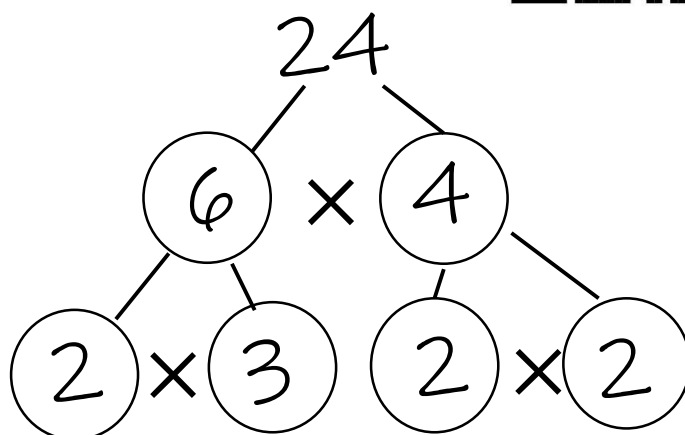
then put a 5 in the box



Products of prime factors



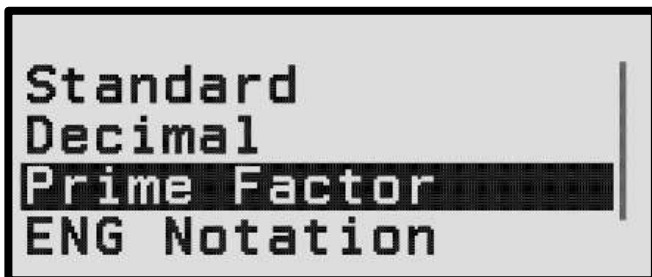
Write 24 as products of prime factors.



Give your answer in index form

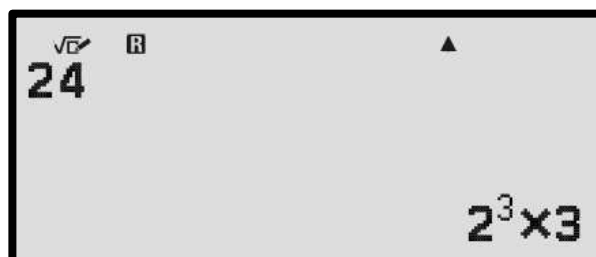
$$= 2 \times 3 \times 2 \times 2$$
$$= 2^3 \times 3$$

Type 24 and **EXE** Press **FORMAT**



The menu now has Prime Factor as an option.

Click ok to get answer.



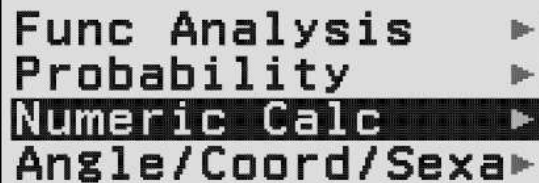
HCF (Highest Common Factor)

This is called GCD - Greatest Common Divisor

Find the HCF of 12 and 20

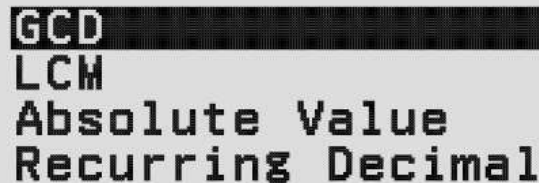
Press 

Choose Numeric Calc



Func Analysis ▶
Probability ▶
Numeric Calc ▶
Angle/Coord/Sexa ▶

The choose GCD






GCD
LCM
Absolute Value
Recurring Decimal

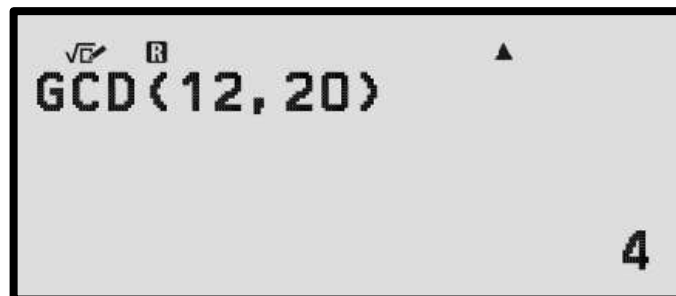


\sqrt{x} $\frac{\square}{\square}$ \square
GCD (

This brings up
GCD(

Type 12, Press   , then type 20 
(To get the comma)

Press 



\sqrt{x} $\frac{\square}{\square}$ \square
GCD (12, 20)
4

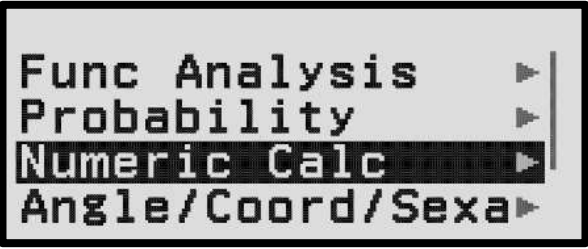
HCF (Using products of prime factors)

This is called GCD - Greatest Common Divisor

Find the HCF of $2^4 \times 3^4$ and $2^3 \times 3^3 \times 5$

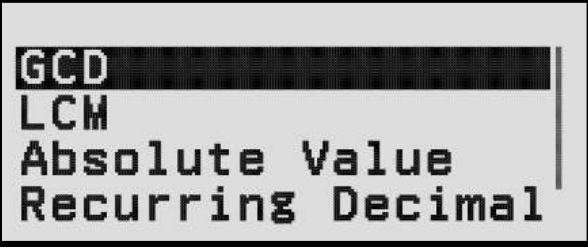
Press 

Choose Numeric Calc



Func Analysis ▶
Probability ▶
Numeric Calc ▶
Angle/Coord/Sexa ▶

The choose GCD





GCD
LCM
Absolute Value
Recurring Decimal



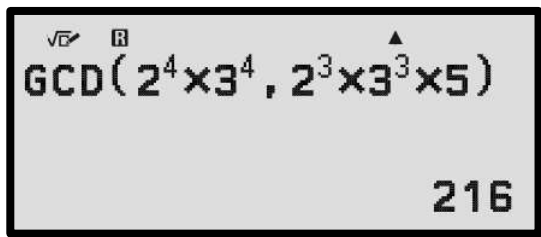
$\sqrt{\vee}$ R
GCD(

This brings up
GCD(



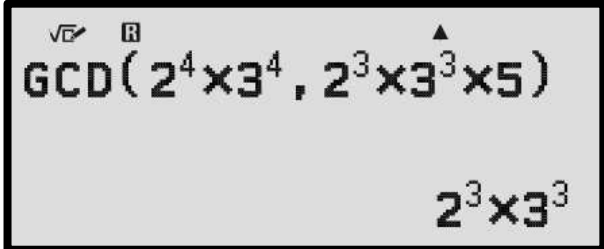
Type $2^4 \times 3^4$, Press  
(To get the comma)

then $2^3 \times 3^3 \times 5$  Press 



$\sqrt{\vee}$ R
GCD($2^4 \times 3^4, 2^3 \times 3^3 \times 5$)
216

(Changed to prime factors)



$\sqrt{\vee}$ R
GCD($2^4 \times 3^4, 2^3 \times 3^3 \times 5$)
 $2^3 \times 3^3$

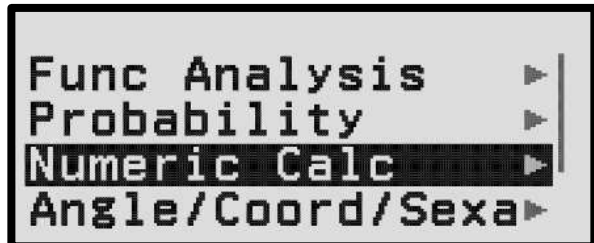
LCM (Lowest Common Multiple)

Find the LCM of 12 and 20

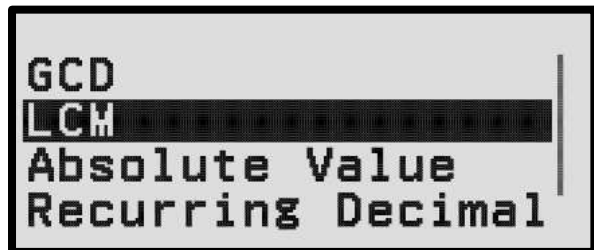
Press



Choose Numeric Calc



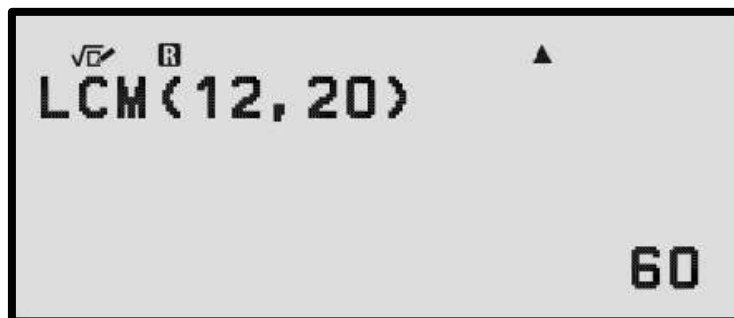
The choose LCM



This brings up
LCM(

Type 12, Press , then type 20
(To get the comma)

Press



LCM (Using prime factors)

Find the LCM of $2^4 \times 3^4$ and $2^3 \times 3^3 \times 5$

Press



Choose Numeric Calc

```
Func Analysis  ▶
Probability    ▶
Numeric Calc   ▶
Angle/Coord/Sex▶
```

The choose LCM



```
GCD
LCM
Absolute Value
Recurring Decimal
```



LCM(

This brings up
LCM(



Type $2^4 \times 3^4$, Press  

(To get the comma)

then $2^3 \times 3^3 \times 5$  Press 



LCM($2^4 \times 3^4$, $2^3 \times 3^3 \times 5$)

6 480


(Changed to prime factors)

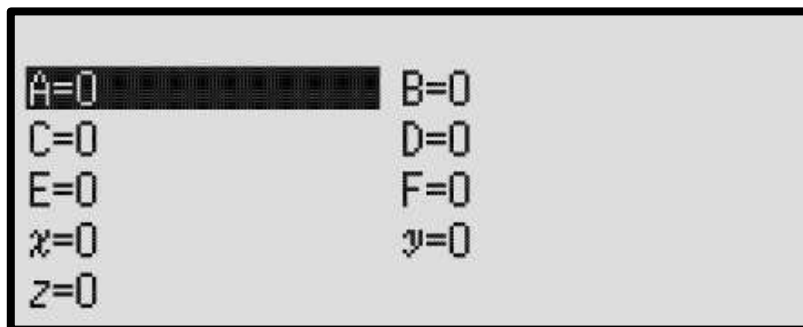



LCM($2^4 \times 3^4$, $2^3 \times 3^3 \times 5$)

$2^4 \times 3^4 \times 5$

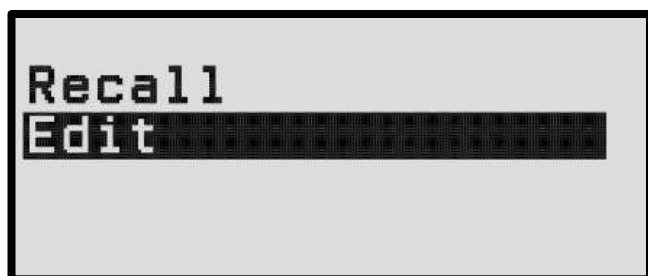
Substitution – Storing values

Press  to bring up this screen and store the value you want each variable to be.



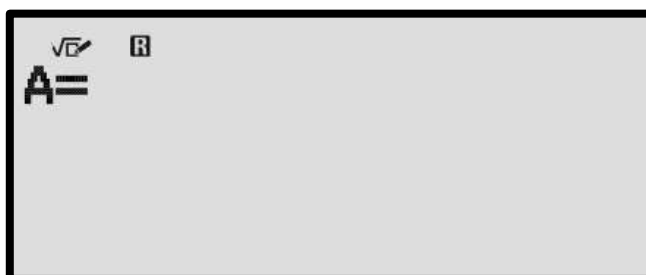
Type in the value you want for the variable and press execute. Even if you press  the values will still be stored.

If the variable already has a value press execute to bring up this screen.



Go down to edit and press ok.

You should now be able to enter a new value.

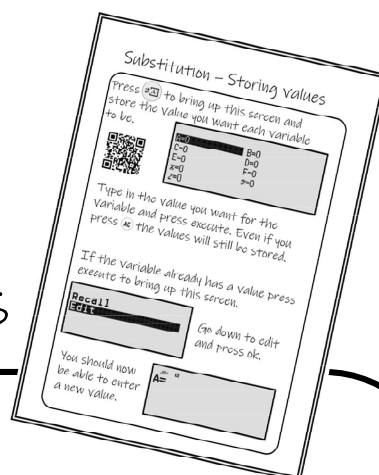


Solving a quadratic equation using the formula



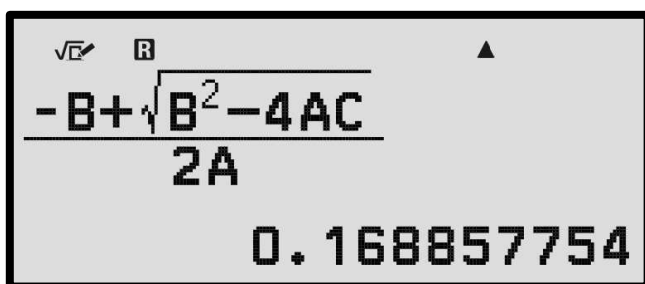
Use the quadratic formula to solve $5x^2 + 11x - 2 = 0$
Give your solutions to 2 decimal places.



Store the values of a , b and c in your calculator
see substitution - storing values




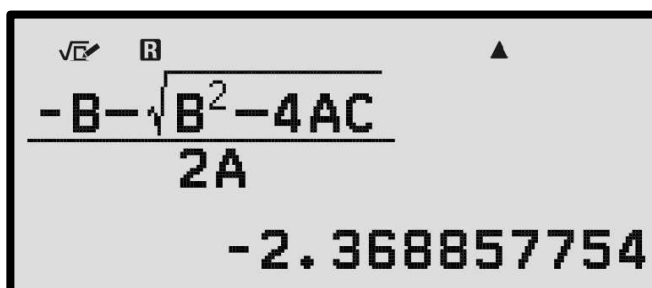
Press 

Fill in the boxes. Remember to press shift to get to the variables.



To quickly change the answer to a decimal press  

Press  to replay and go back and change the + to -



Functions

Define and use $f(x)$

Given $f(x) = 3x + 5$ Work out $f(8)$

Press $f(x)$

Chose define $f(x)$

```
f(x)
g(x)
Define f(x)
Define g(x)
```

```
√  □
f(x)=
```

Press 3 x $+$ 5

```
√  □
f(x)=3x+5
```

Press $f(x)$ EXE

```
f(x)
g(x)
Define f(x)
Define g(x)
```

```
√  □
f(8)
29
```

Press 8 $)$ EXE



Composite Functions

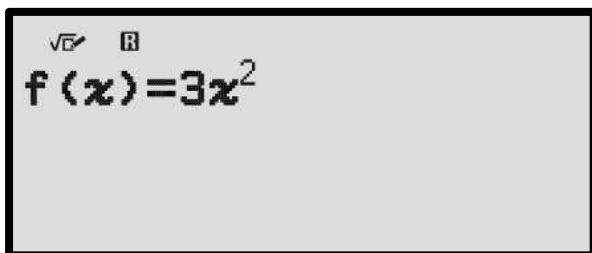
f and g are functions such that

$$f(x) = 3x^2 \quad \text{and} \quad g(x) = \frac{1}{x-2}$$

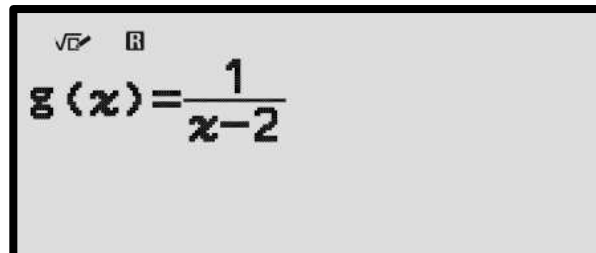
Find $gf(4)$.

Give your answer as a fraction.

Define $f(x)$ and $g(x)$




A calculator screen showing the function definition $f(x) = 3x^2$. The screen includes a square root icon and a fraction icon in the top left corner.



A calculator screen showing the function definition $g(x) = \frac{1}{x-2}$. The screen includes a square root icon and a fraction icon in the top left corner.

Press $f(x)$



A calculator screen showing the start of the function definition $g($. The screen includes a square root icon and a fraction icon in the top left corner.

Chose $g(x)$

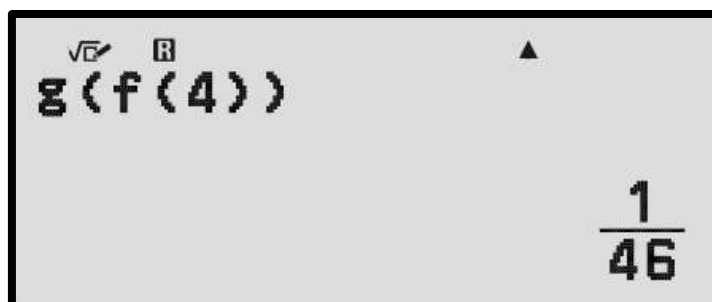
Press $f(x)$



A calculator screen showing the start of the composite function definition $g(f($. The screen includes a square root icon and a fraction icon in the top left corner.

Chose $f(x)$

Press 4 $)$ $)$ EXE



A calculator screen showing the final result of the composite function calculation: $g(f(4)) = \frac{1}{46}$. The screen includes a square root icon and a fraction icon in the top left corner.

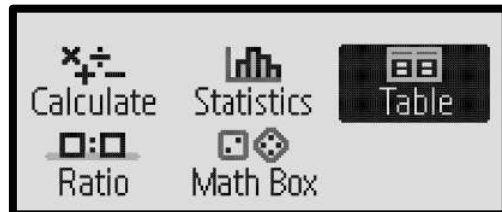


Plotting a Linear Graph

Complete the table of values for $y = 3x + 2$

x	-2	-1	0	1	2
y		-1		5	

1) Chose table from the home menu.



2) Click tools and select table range.

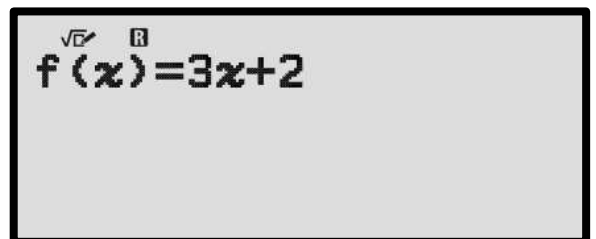
3) Complete the next screen to match your values. Press after each one. Then execute.



4) Click tools and select define f(x)/g(x).



Define the function.



The calculator displays a table of values which you can scroll through.

	x	f(x)
1	-2	-4
2	-1	-1
3	0	2
4	1	5

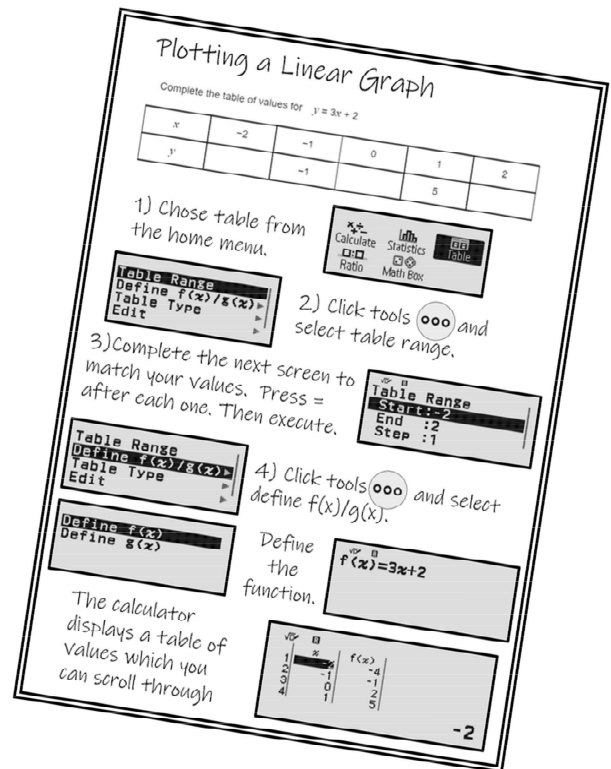
Plotting a Quadratic Graph

Complete the table of values for $y = x^2 - x - 2$

x	-2	-1	0	1	2	3
y			-2	-2		4

1) Setup your table in the same as when setting up a table for a linear graph.

2) Define your function



```
Define f(x)
Define g(x)
```

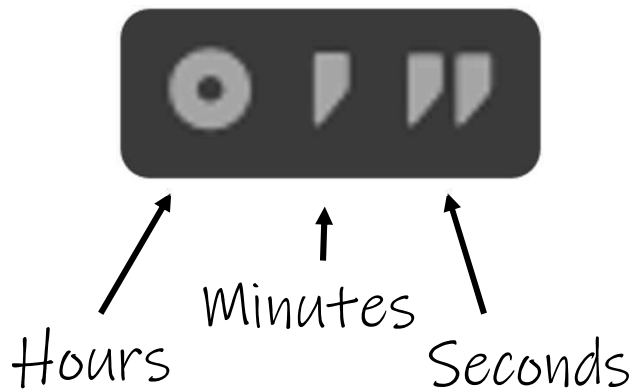
```
√  B
f(x) = x2 - x - 2
```

	x	f(x)
1	-2	4
2	-1	0
3	0	-2
4	1	-2

-2

The calculator displays a table of values which you can scroll through.

Time
Now in blue
on + button



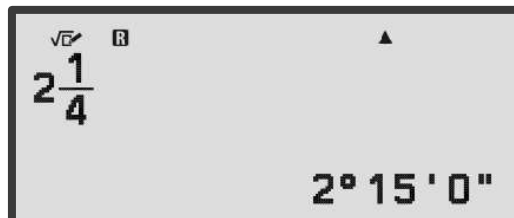
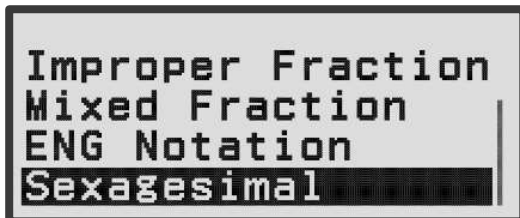
Convert $2\frac{1}{4}$ hours to hours and minutes

Type in mixed number and press **EXE**



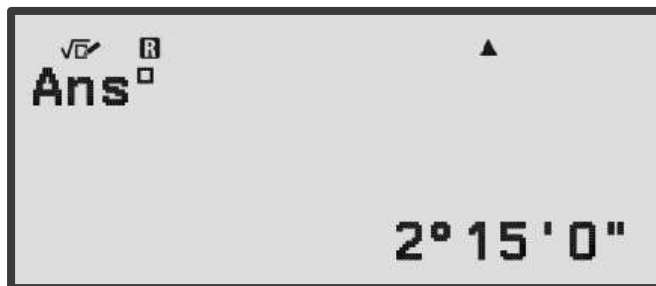
Method 1

Press **FORMAT** and chose sexagesimal.



Method 2

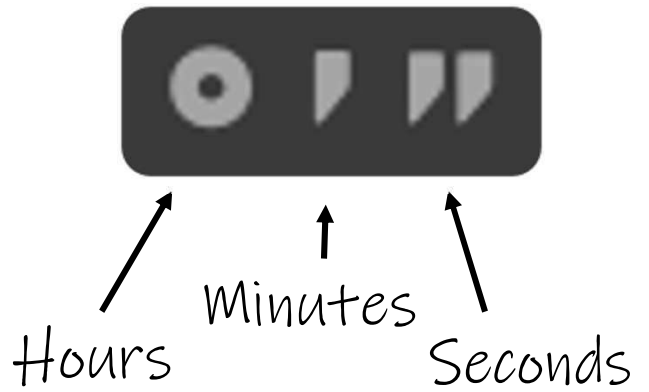
Press **↑** **+**



Both answers read 2 hours, 15 minutes, 0 seconds

Time

Now in blue on + button



Convert 575 minutes to hours and minutes

Type $\textcircled{0}$ $\textcircled{\uparrow}$ $\textcircled{+}$ This represents 0 hours

Type $\textcircled{5}$ $\textcircled{7}$ $\textcircled{5}$ $\textcircled{\uparrow}$ $\textcircled{+}$ This represents 575 minutes

If there are 0 seconds you do not need to put these in.

Press $\textcircled{\text{EXE}}$

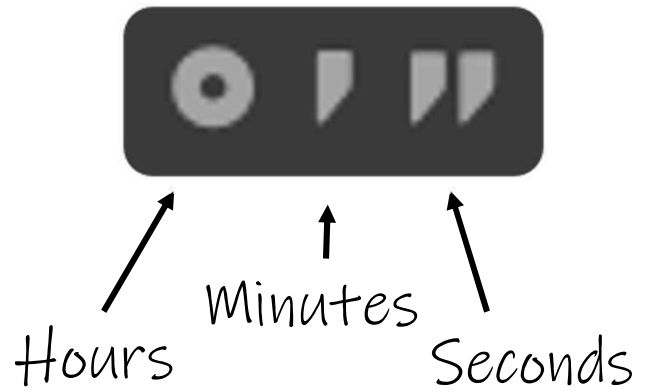


This automatically changes the value to hours and minutes

The answer reads 9 hours, 35 minutes, 0 seconds

Time

Now in blue
on + button



Convert 3 hours 24 minutes to hours

Type $3 \uparrow +$ This represents 3 hours

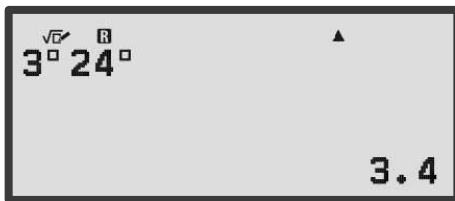
Type $24 \uparrow +$ This represents 24 minutes

If there are 0 seconds you do not need to put these in.

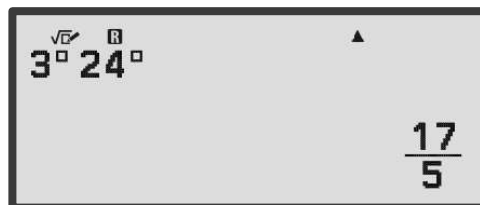
Press EXE



Press FORMAT and chose the format you want

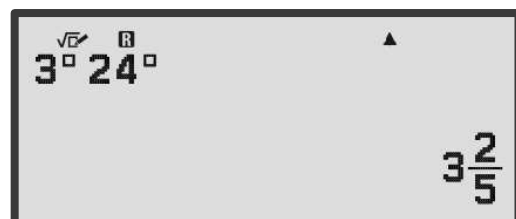


Decimal



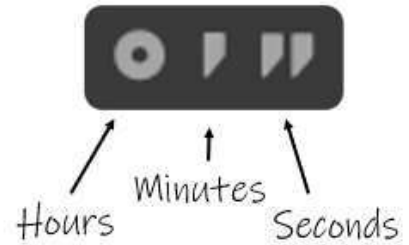
Improper fraction

Mixed number



Time calculations

Here is the bus timetable.



Newcastle	0915	0945	1015
Killingworth	0944	1014	1044
Water park	1018	1048	1118

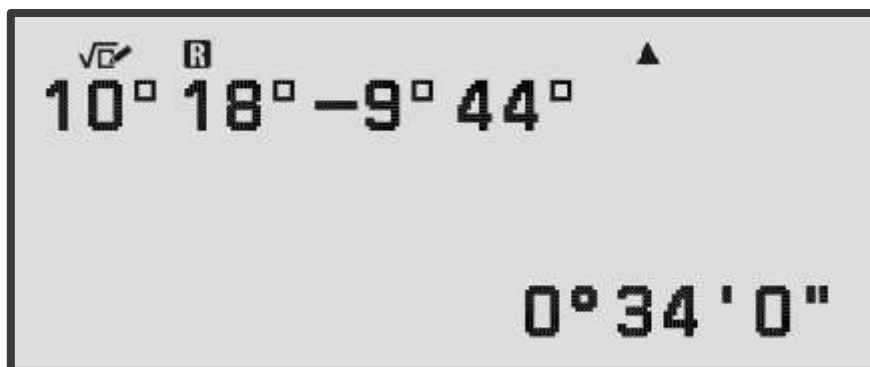
How long does their bus take from Killingworth to the water park?

For 1018 type

10 18 This represents 10 hours and 18 minutes

And you want to subtract the starting time of 0944

9 44



The calculator shows 0 hours, 34 minutes and 0 seconds

Average Speed

The direct route between two airports *A* and *B* is 450 km.

An aircraft leaves *A* at 09.30

It arrives at *B* at 11.00

Work out the average speed of the aircraft.

Assume the aircraft travelled the direct route.

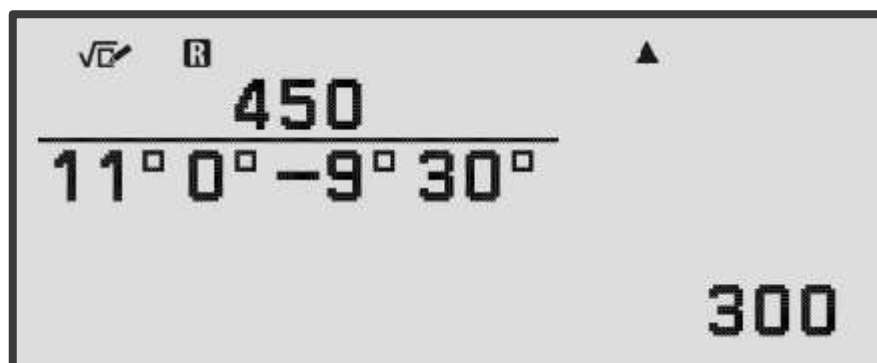
$$\text{speed} = \frac{\text{Distance}}{\text{Time}}$$

1) Press 

2) Fill the distance of 450 in the numerator

3) Fill the denominator with the time calculation

11   0    9   30   



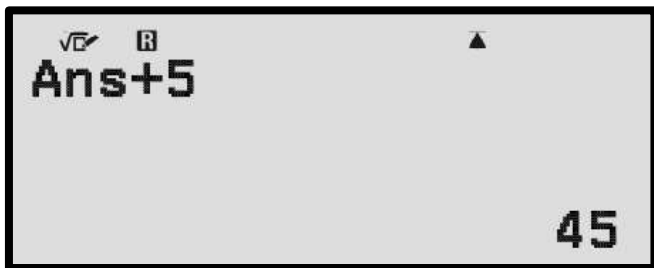
Average speed = 300km/h

Using the ANS button

Ans

Technique 1 - Using the last answer as the first part of your next calculation

1) Work out the answer to the first part of your calculation



DO NOT CLEAR

2) Press the operation for the next calculation.

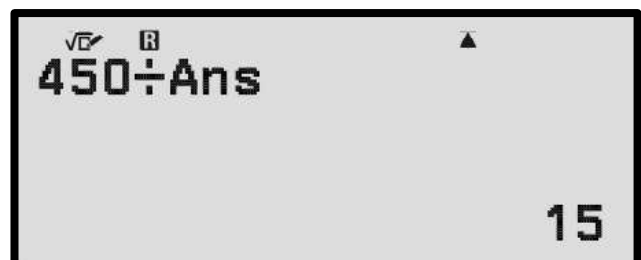
Technique 2 - Using the last answer as the second part of your next calculation

1) Work out the answer to the first part of your calculation

DO NOT CLEAR

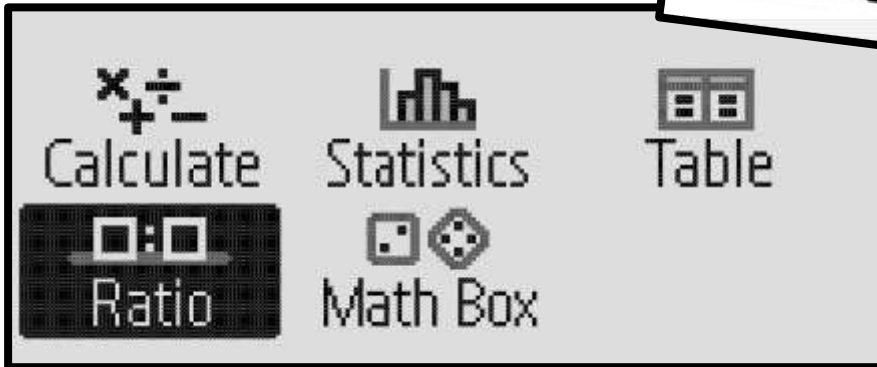
2) Type in the first part of the next calculation

press **Ans** button to use your last answer.



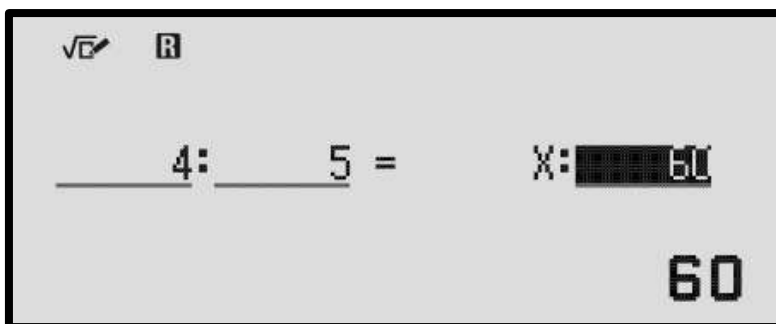
Finding one part of a ratio from another part (1)

A packet of sweets is shared in the ratio 4 : 5. If the larger share is 60 sweets, how much is the smaller share?



Select ratio from the home screen

Select $A:B=X:D$



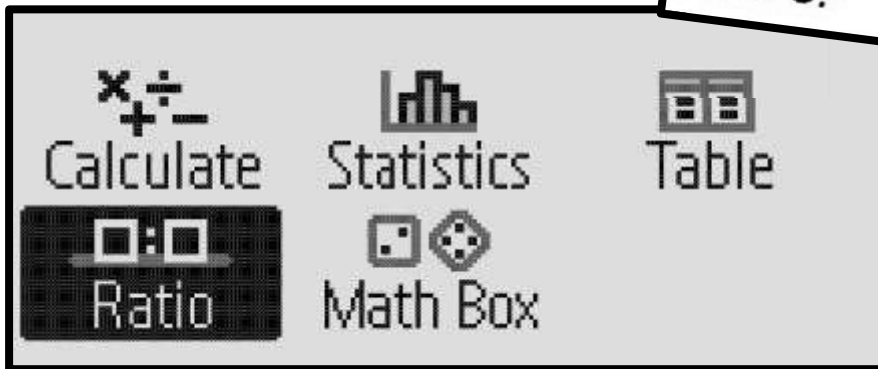
Change the first ratio to 4:5 and the D to 60
Type each number and press **EXE** each time

Press **EXE** again to get the value x.



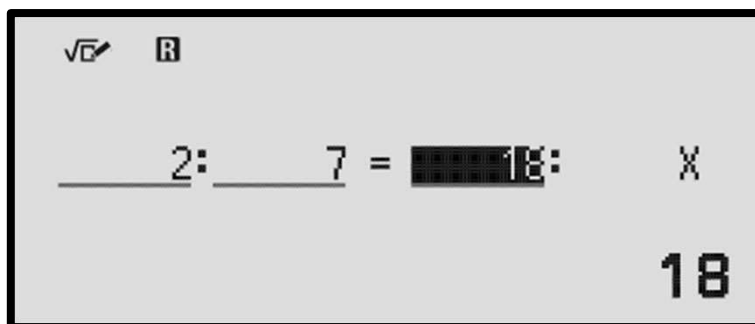
Finding one part of a ratio from another part (2)

A sum of money is shared in the ratio 2 : 7. If the smaller sum of money is £18, how much is the larger share?



Select ratio from the home screen

Select $A:B=C:X$



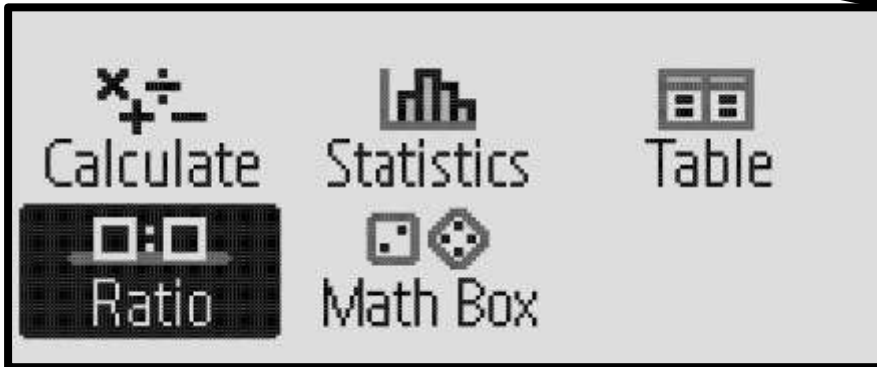
Change the first ratio to 2:7 and the C to 18
Type each number and press **EXE** each time

Press **EXE** again to get the value x.



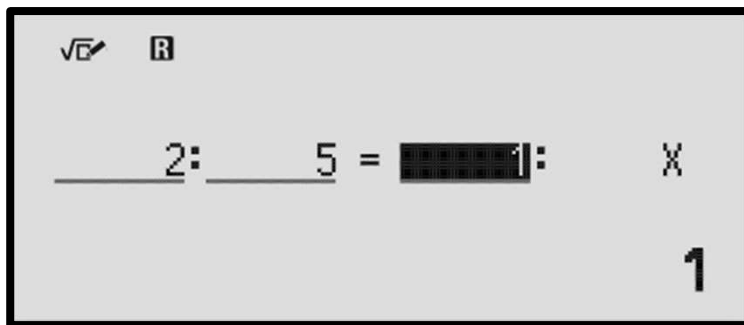
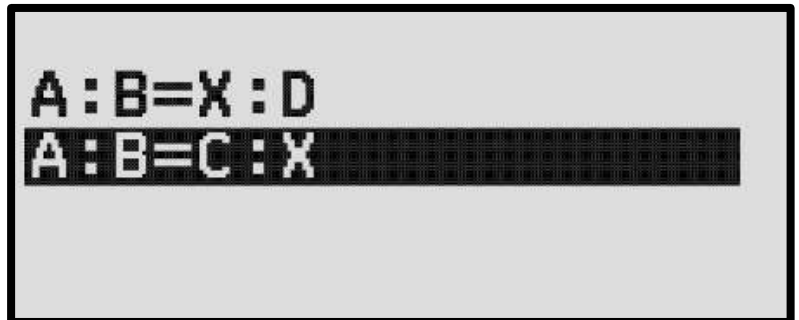
Writing a ratio in the form 1:n

Write the ratio 2:5 in the form 1:n



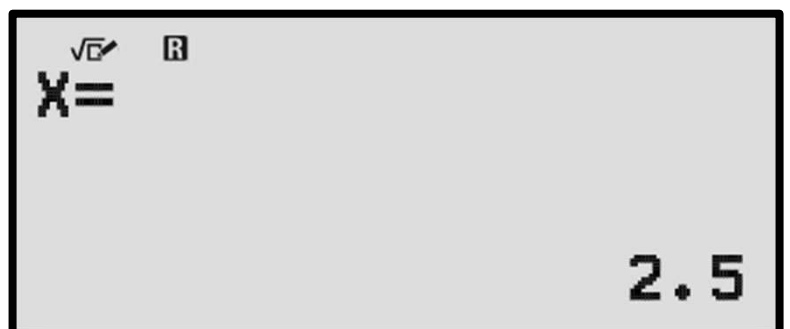
Select ratio from the home screen

Select A:B=C:X



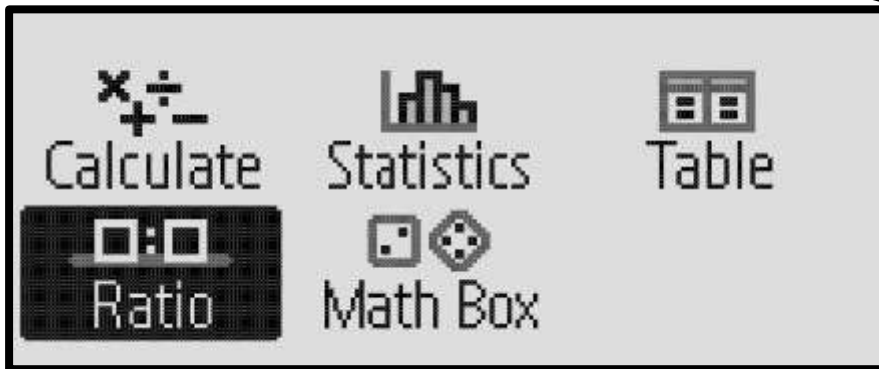
Change the first ratio to 2:5 and the C to 1
Type each number and press **EXE** each time

Press **EXE** again to get the value x.



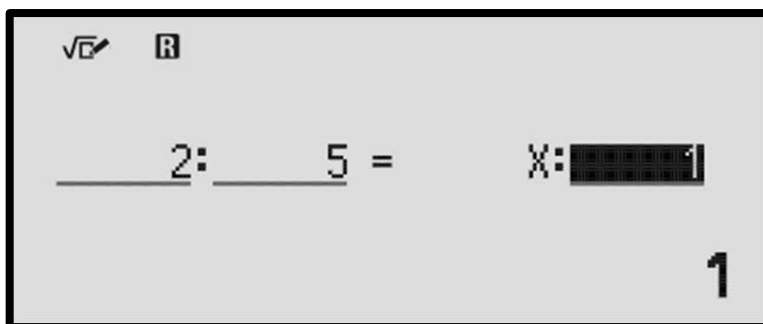
Writing a ratio in the form $n:1$

Write the ratio 2:5 in the form $n:1$



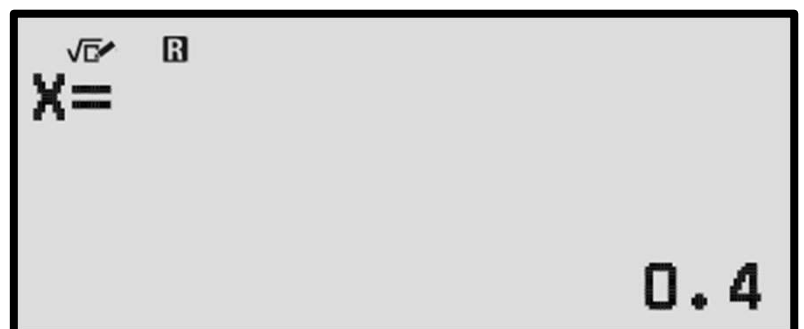
Select ratio from the home screen

Select $A:B=X:D$



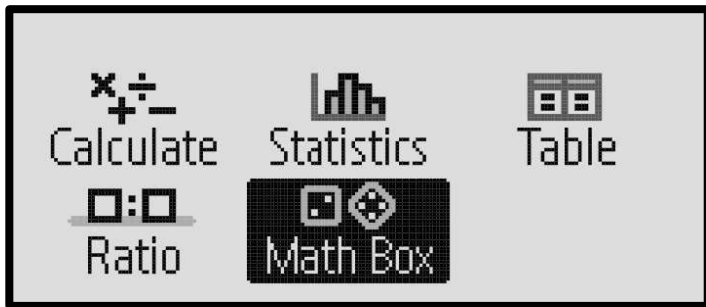
Change the first ratio to 2:5 and the D to 1. Type each number and press **EXE** each time

Press **EXE** again to get the value x.



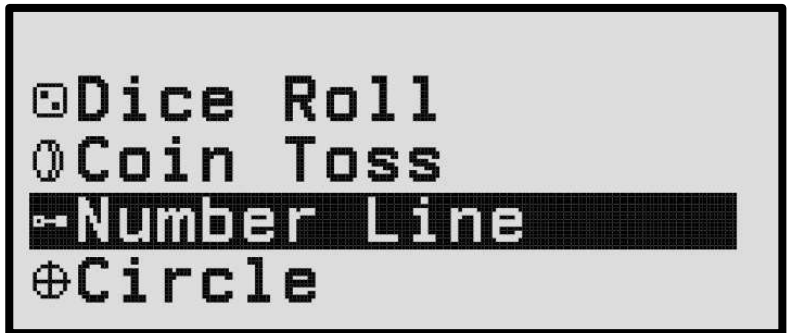
Inequalities on a number line

Part 1: Where to find inequalities on a number line.

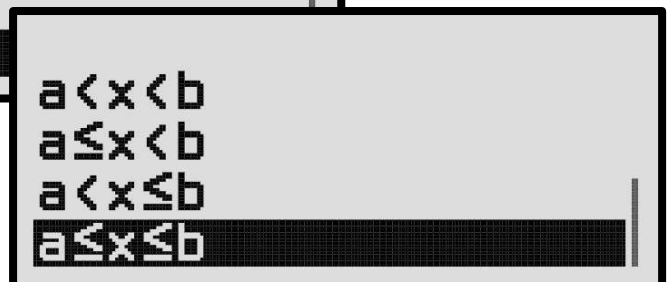


Select math box from the home screen

Select Number Line



This gives you the option to put up to 3 lines on your diagram. Click **EXE** to select A.



Scroll down to find the inequality needed.

Inequalities on a number line

Part 2: Single ended

Example
Draw $x < 4$

```
x < a
x ≤ a
x = a
x > a
```

Choose $x < a$

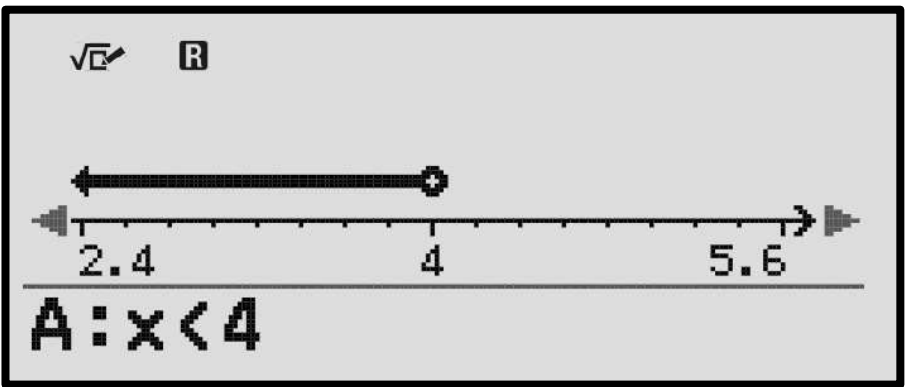
```
√  R
x < a
a : 4
Confirm
```

Type in 4 and press **EXE**

```
√  R
A : x < 4
B :
C :
Execute
```

Press **EXE** again on confirm.

If more lines are needed add them in slot B and C. If no more lines are needed, scroll down to execute.



All single ended inequalities work the same way.

Inequalities on a number line

Part 3: Double ended

Example
Draw
 $2 \leq x \leq 4$

$a < x < b$
 $a \leq x < b$
 $a < x \leq b$
 $a \leq x \leq b$

Choose $a \leq x \leq b$

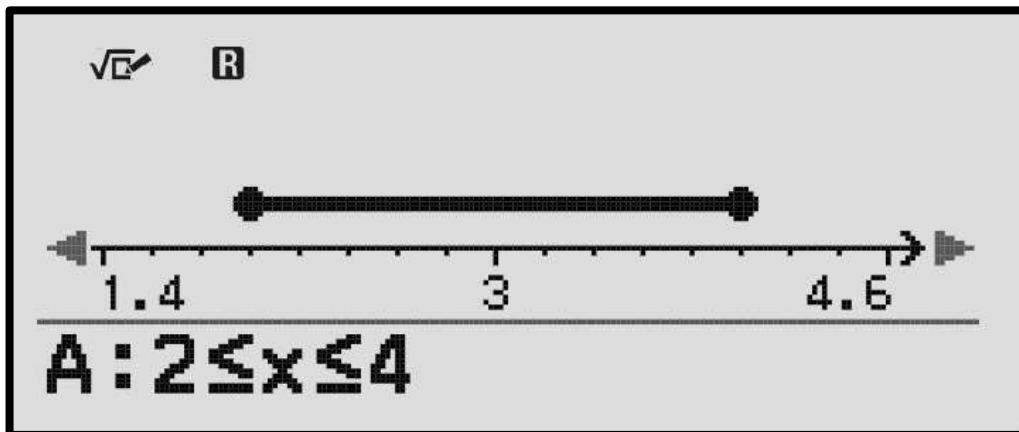
$\sqrt{\checkmark}$ B
 $a \leq x \leq b$
a:
b:
Confirm

Type in 2 and press EXE
Type in 4 and press EXE
Press EXE again on confirm.

If more lines are needed
add them in slot B and C.

If no more lines are
needed, scroll down to
execute.

$\sqrt{\checkmark}$ B
A: $2 \leq x \leq 4$
B:
C:
Execute



All double ended inequalities work the same way.

Settings

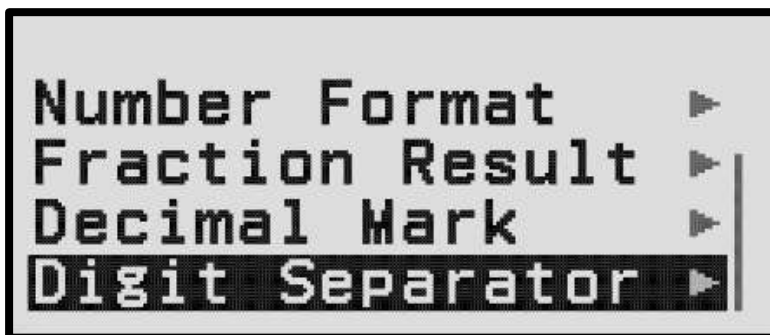


Digit Separator

Click settings



Use the right arrow key on Calc Settings



Scroll down to Digit Separator and then use right arrow key

Chose on or off (notice there are no commas)



Settings



Changing the angle unit

Click settings



```
Calc Settings ▶  
System Settings ▶  
Reset ▶  
Get Started ▶
```

Use the right arrow key on Calc Settings

```
Input/Output ▶  
Angle Unit ▶  
Number Format ▶  
Fraction Result ▶
```

Use the right arrow key on Angle Unit

```
○ Degree  
● Radian  
○ Gradian
```

Chose the angle unit you want