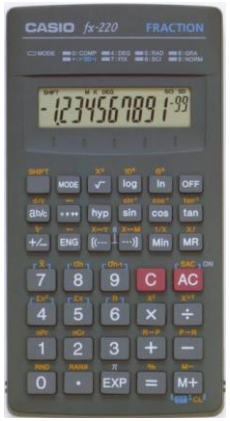
Below, there are some examples for using the most common types of calculators for DMS (Degree-Minute-Seconds) calculations and transforming between rectangular and polar coordinates.

1. Casio fx-220



■ Degree, Minute, Second (Sexagesimal) Calculations

The following is the input format for a sexagesimal value: {degrees} ⟦°'"⟧ {minutes} ⟦°'"⟧ {seconds} ⟦°'"⟧.

Note: You must always input something for the degrees and minutes, even if they are zero.

2°20′30″ + 39′30″ = 3°00′00″

2 ⟦°'"⟧ 20 ⟦°'"⟧ 30 ⟦°'"⟧ ⟦+⟧ 0 ⟦°'"⟧ 39 ⟦°'"⟧ 30 ⟦°'"⟧ ⟦=⟧ **3°0°0.**

Convert 2°15′18″ to its decimal equivalent.

2 ⟦°'"⟧ 15 ⟦°'"⟧ 18 ⟦°'"⟧ ⟦=⟧ **2°15°18.**

(Converts sexagesimal to decimal.) ⟦°'"⟧ **2.255**

(Converts decimal to sexagesimal.) ⟦SHIFT⟧ ⟦°'"⟧(←) **2°15°18.**

Polar/Rectangular conversions

From rectangular to polar (3, 4) → (r, Θ)

3 [$R \rightarrow P$] 4 [=] **5**

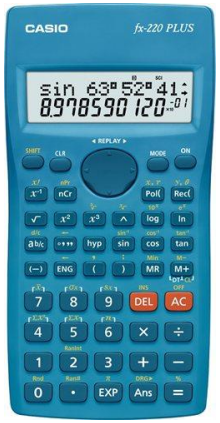
Press [$X \rightarrow Y$] to switch between distance and angle **53.1301…**

From polar to rectangular (8, 52.24°) → (x, y)

8 [$P \rightarrow R$] 52.24 [=] **4.8988…**

Press [$X \rightarrow Y$] to switch between X and Y coordinates **6.3246…**

2. Casio fx-220 PLUS



■ Degree, Minute, Second (Sexagesimal) Calculations

The following is the input format for a sexagesimal value: {degrees} [°'"] {minutes} [°'"] {seconds} [°'"].

Note: You must always input something for the degrees and minutes, even if they are zero.

2°20′30″ + 39′30″ = 3°00′00″

2 [°'"] 20 [°'"] 30 [°'"] [+] 0 [°'"] 39 [°'"] 30 [°'"] [=] **3°0°0.**

Convert 2°15′18″ to its decimal equivalent.

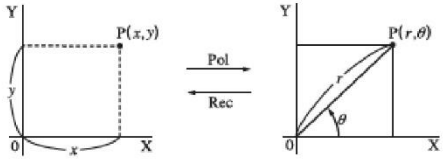
2 [°'"] 15 [°'"] 18 [°'"] [=] **2°15°18.**

(Converts sexagesimal to decimal.) [°'"] **2.255**

(Converts decimal to sexagesimal.) [SHIFT] [°'"] (←) **2°15°18.**

Pol, Rec : Pol converts rectangular coordinates to polar coordinates, while Rec converts polar coordinates to rectangular coordinates. See 8.

Pol$(x, y) = (r, \theta)$ Rec$(r, \theta) = (x, y)$



Rectangular Coordinates (Rec) **Polar Coordinates (Pol)**

Specify the angle unit before performing calculations. Calculation result θ is displayed in the range of $-180° < \theta \leqq 180°$.

8 To convert rectangular coordinates $(\sqrt{2}, \sqrt{2})$ to polar coordinates **Deg**

fx-82MS/85MS/300MS/350MS:

[Pol(] [√] 2 [,] [√] 2 [)] [=] r=**2.**

[RCL] [tan] (F) θ=**45.**

- Press [RCL] [cos] (E) to display the value of r, or [RCL] [tan] (F) to display the value of θ.

fx-82SX PLUS/220 PLUS:

[Pol(] [√] 2 [(] (,) [√] 2 [)] [=] r=**2.**

[SHIFT] [Rec(] (y,θ) [=] θ=**45.**

- Press [SHIFT] [Pol(] (x,r) [=] to display the value of r, or [SHIFT] [Rec(] (y,θ) [=] to display the value of θ.

To convert polar coordinates $(\sqrt{2}, 45°)$ to rectangular coordinates **Deg**

fx-82MS/85MS/300MS/350MS:

[SHIFT] [Pol(] (Rec( ) [√] 2 [,] 45 [=] x=**1.**

[RCL] [tan] (F) y=**1.**

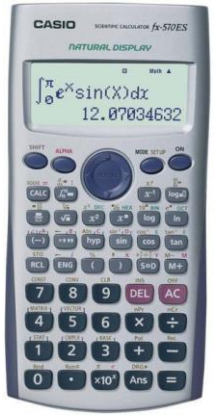
- Press [RCL] [cos] (E) to display the value of x, or [RCL] [tan] (F) to display the value of y.

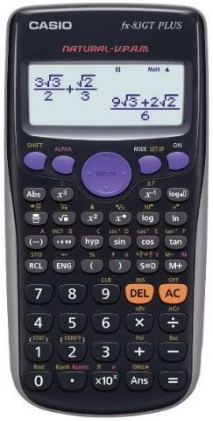
fx-82SX PLUS/220 PLUS: [Rec(] [√] 2 [(] (,) 45 [=] x=**1.**

[SHIFT] [Rec(] (y,θ) [=] y=**1.**

- Press [SHIFT] [Pol(] (x,r) [=] to display the value of x, or [SHIFT] [Rec(] (y,θ) [=] to display the value of y.

3. Casio fx-570ES / fx-83GT / fx-83GT PLUS / fx-82ES

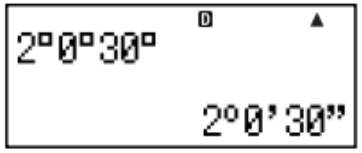




DMS calculations

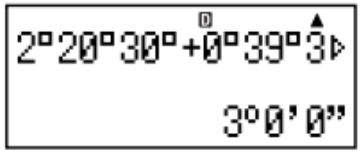
#011 LINE

[2] [°’’’] [0] [°’’’] [3] [0] [°’’’] [=]



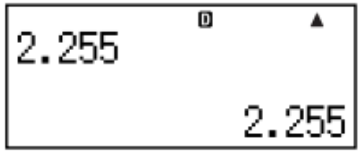
#012 LINE

[2] [°’’’] [2] [0] [°’’’] [3] [0] [°’’’] [+]
[0] [°’’’] [3] [9] [°’’’] [3] [0] [°’’’] [=]

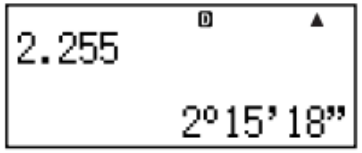


#013 LINE

[2] [.] [2] [5] [5] [=]



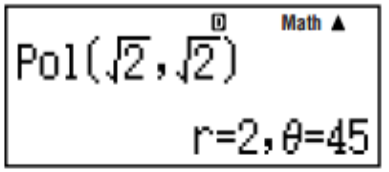
[°’’’]



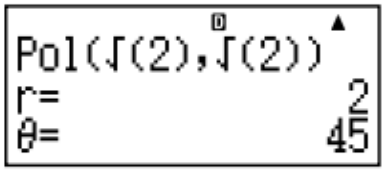
Polar/Rectangular conversion

#036 Deg $(X, Y) = (\sqrt{2}, \sqrt{2}) \rightarrow (r, \theta)$

MATH [SHIFT] [+] (Pol) [√] [2] [▶]
[SHIFT] [)] (,) [√] [2] [▶] [)] [=]

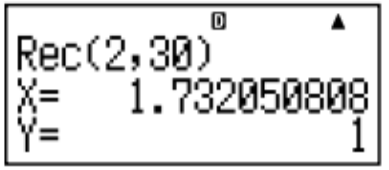


LINE [SHIFT] [+] (Pol) [√] [2] [)]
[SHIFT] [)] (,) [√] [2] [)] [)] [=]



#037 LINE Deg $(r, \theta) = (2, 30) \rightarrow (X, Y)$

[SHIFT] [−] (Rec) [2] [SHIFT] [)] (,)
[3] [0] [)] [=]

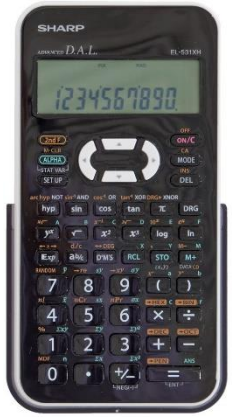


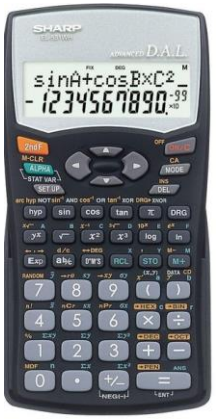
To be able to use the values of r and Θ, recall them from the memory of the calculator. r is saved in variable X and Θ is saved in variable Y.

- r: $RCL\ X$
- Θ: $RCL\ Y$

When converting from polar to rectangular, the X and Y values are saved in the X and Y variables.

4. SHARP EL-531WH / EL-W535X (and many more)





DMS calculations

【10】 D°M'S ↔DEG

12°39'18.05" → [10]	ON/C 12 D°M'S 39 D°M'S 18.05 2ndF ↔DEG	***12.65501389***
123.678 → [60]	123.678 2ndF ↔DEG	***123°40'40.8"***
1234°56'12" + 0°0'34.567" = [60]	1234 D°M'S 56 D°M'S 12 + 0 D°M'S 0 D°M'S 34.567 =	***1234°56'47"***

Polar/Rectangular conversion

【11】 →rθ →xy , ←,→

$\begin{pmatrix} x = 6 \\ y = 4 \end{pmatrix} \rightarrow \begin{pmatrix} r = \\ \theta = [°] \end{pmatrix}$	ON/C 6 2ndF , 4 2ndF →rθ [r] 2ndF ←,→ [θ] 2ndF ←,→ [r]	***7.211102551*** ***33.69006753*** ***7.211102551***
$\begin{pmatrix} r = 14 \\ \theta = 36[°] \end{pmatrix} \rightarrow \begin{pmatrix} x = \\ y = \end{pmatrix}$	14 2ndF , 36 2ndF →xy [x] 2ndF ←,→ [y] 2ndF ←,→ [x]	***11.32623792*** ***8.228993532*** ***11.32623792***