■ Coordinate Conversion (Pol(x, y), Rec (r, θ))

- Calculation results are automatically assigned to variables E and F.
- **Example 1:** To convert polar coordinates (r=2, θ=60°) to rectangular coordinates (x, y) (DEG mode)

x [SHIFT] [Rec] 2 [,] 60 [)] [=] → 1.

y [RCL] [F] → 1.732050808

- [RCL] [E], [RCL] [F] swaps displayed value with value in memory.
- **Example 2:** To convert rectangular coordinates (1, $\sqrt{3}$) to polar coordinates (r, θ) (RAD mode)

r [Pol] 1 [,] [√] 3 [)] [=] → 2.

θ [RCL] [F] → 1.047197551

- [RCL] [E], [RCL] [F] swaps displayed value with value in memory.

■ Permutation

- **Example:** To determine how many different 4-digit values can be produced using the numbers 1 through 7
  - Numbers cannot be duplicated within the same 4-digit value (1234 is allowed, but 1123 is not).

7 [SHIFT] [nPr] 4 [=] → 840.

■ Combination

- **Example:** To determine how many different 4-member groups can be organized in a group of 10 individuals

10 [nCr] 4 [=] → 210.
(fx-85W: [SHIFT] [nCr])

Statistical Calculations

■ Standard Deviation (SD Mode)

- Press [MODE] [MODE] [1] (fx-85W) to enter the SD Mode for statistical calculations using standard deviation. For other models, press [MODE] [2].
- Data input always starts with [SHIFT] [Scl] [=] to clear statistical memory.
- Input data is used to calculate values for n, Σx, Σx^2, $\bar{x}$, σ_n and σ_{n-1} which you can recall using the key operations noted nearby.

[RCL] [A]	Σx^2
[RCL] [B]	Σx
[RCL] [C]	n
[SHIFT] [$\bar{x}$]	$\bar{x}$
[SHIFT] [σ_n]	σ_n
[SHIFT] [σ_{n-1}]	σ_{n-1}

- **Example:** To calculate σ_{n-1}, σ_n, $\bar{x}$, n, Σx, and Σx^2 for the following data : 55, 54, 51, 55, 53, 53, 54, 52

Enter SD Mode
fx-85W: [MODE] [MODE] [1]
Other models: [MODE] [2]

[SHIFT] [Scl] [=] (Memory Clear)

55 [DT] 54 [DT] 51 [DT] 55 [DT]
53 [DT] [DT] 54 [DT] 52 [DT] → σ_0 52.

(Sample Standard Deviation σ_{n-1}) [SHIFT] [σ_{n-1}] [=] → 1.407885953

(Population Standard Deviation σ_n) [SHIFT] [σ_n] [=] → 1.316956719

(Arithmetic Mean $\bar{x}$) [SHIFT] [$\bar{x}$] [=] → 58.375

(Number of Data n) [RCL] [C] → 8.

(Sum of Values Σx) [RCL] [B] → 427.

(Sum of Squares of Values Σx^2) [RCL] [A] → 22805.

■ Coordinate Conversion (Pol(x, y), Rec (r, θ))

- Calculation results are automatically assigned to variables E and F.
- **Example 1:** To convert polar coordinates (r=2, θ=60°) to rectangular coordinates (x, y) (DEG mode)

x [SHIFT] [Rec] 2 [,] 60 [)] [=] → 1.

y [RCL] [F] → 1.732050808

- [RCL] [E], [RCL] [F] swaps displayed value with value in memory.
- **Example 2:** To convert rectangular coordinates (1, $\sqrt{3}$) to polar coordinates (r, θ) (RAD mode)

r [Pol] 1 [,] [√] 3 [)] [=] → 2.

θ [RCL] [F] → 1.047197551

- [RCL] [E], [RCL] [F] swaps displayed value with value in memory.

■ Permutation

- **Example:** To determine how many different 4-digit values can be produced using the numbers 1 through 7
  - Numbers cannot be duplicated within the same 4-digit value (1234 is allowed, but 1123 is not).

7 [SHIFT] [nPr] 4 [=] → 840.

■ Combination

- **Example:** To determine how many different 4-member groups can be organized in a group of 10 individuals

10 [nCr] 4 [=] → 210.
(fx-85W: [SHIFT] [nCr])

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Statistical Calculations

■ Standard Deviation (SD Mode)

- Press [MODE] [MODE] [1] (fx-85W) to enter the SD Mode for statistical calculations using standard deviation. For other models, press [MODE] [2].
- Data input always starts with [SHIFT] [Scl] [=] to clear statistical memory.
- Input data is used to calculate values for n, Σx, Σx^2, $\bar{x}$, σ_n and σ_{n-1} which you can recall using the key operations noted nearby.

[RCL] [A]	Σx^2
[RCL] [B]	Σx
[RCL] [C]	n
[SHIFT] [$\bar{x}$]	$\bar{x}$
[SHIFT] [σ_n]	σ_n
[SHIFT] [σ_{n-1}]	σ_{n-1}

- **Example:** To calculate σ_{n-1}, σ_n, $\bar{x}$, n, Σx, and Σx^2 for the following data : 55, 54, 51, 55, 53, 53, 54, 52

Enter SD Mode
fx-85W: [MODE] [MODE] [1]
Other models: [MODE] [2]

[SHIFT] [Scl] [=] (Memory Clear)

55 [DT] 54 [DT] 51 [DT] 55 [DT]
53 [DT] [DT] 54 [DT] 52 [DT] → σ_0 52.

(Sample Standard Deviation σ_{n-1}) [SHIFT] [σ_{n-1}] [=] → 1.407885953

(Population Standard Deviation σ_n) [SHIFT] [σ_n] [=] → 1.316956719

(Arithmetic Mean $\bar{x}$) [SHIFT] [$\bar{x}$] [=] → 53.375

(Number of Data n) [RCL] [C] → 8.

(Sum of Values Σx) [RCL] [B] → 427.

(Sum of Squares of Values Σx^2) [RCL] [A] → 22805.

Data Input Precautions

- [DT] [DT] inputs the same data twice.
- You can also input multiple entries of the same data using [SHIFT] [;]. To input the data 110 ten times, for example, press 110 [SHIFT] [;] 10 [DT].
- The above results can be obtained in any order, and not necessarily that shown above.
- To delete data you have just input, press [SHIFT] [CL].

■ Regression Calculations (REG Mode)

- Press [MODE] [MODE] [2] (fx-85W) to enter the REG mode and then select one of the following regression types. For other models, press [MODE] [3].

  [1]: Linear regression
  [2]: Logarithmic regression
  [3]: Exponential regression
  [▶] [1]: Power regression
  [▶] [2]: Inverse regression
  [▶] [3]: Quadratic regression

- Data input always starts with [SHIFT] [Scl] [=] to clear statistical memory.
- The values produced by a regression calculation depend on the values input, and results can be recalled using the key operations shown in the table below.

[RCL] [A]	Σx^2	[SHIFT] [$x\sigma_{n-1}$]	$x\sigma_{n-1}$
[RCL] [B]	Σx	[SHIFT] [$\bar{y}$]	$\bar{y}$
[RCL] [C]	n	[SHIFT] [$y\sigma_n$]	$y\sigma_n$
[RCL] [D]	Σy^2	[SHIFT] [$y\sigma_{n-1}$]	$y\sigma_{n-1}$
[RCL] [E]	Σy	[SHIFT] [A]	Regression coefficient A
[RCL] [F]	Σxy	[SHIFT] [B]	Regression coefficient B
[RCL] [M]	Σx^3	[SHIFT] [C]	Regression coefficient C
[RCL] [X]	Σx^2y	[SHIFT] [r]	Correlation coefficient r
[RCL] [Y]	Σx^4	[SHIFT] [$\hat{x}$]	$\hat{x}$
[SHIFT] [X]	$\bar{x}$	[SHIFT] [$\hat{y}$]	$\hat{y}$
[SHIFT] [$x\sigma_n$]	$x\sigma_n$		

• Linear Regression

The regression formula for linear regression is: $y = A + Bx$.

• **Example:** Atmospheric Pressure vs. Temperature

Temperature	Atmospheric Pressure
10°C	1003 hPa
15°C	1005 hPa
20°C	1010 hPa
25°C	1011 hPa
30°C	1014 hPa

Perform linear regression to determine the regression formula terms and correlation coefficient for the data nearby. Next, use the regression formula to estimate atmospheric pressure at 18°C and temperature at 1000 hPa.

Enter REG Mode (Linear Regression)

fx-85W: [MODE] [MODE] [2] [1]
Other models: [MODE] [3] [1]
[SHIFT] [Scl] [=] (Memory Clear)

10 [,] 1003 [DT] 15 [,] 1005 [DT]
20 [,] 1010 [DT] 25 [,] 1011 [DT]
30 [,] 1014 [DT] → 30. (REG)

(Regression Coefficient A)	[SHIFT] [A] [=]	997.4
(Regression Coefficient B)	[SHIFT] [B] [=]	0.56
(Correlation Coefficient r)	[SHIFT] [r] [=]	0.982607368
(Atmospheric Pressure at 18°C)	18 [SHIFT] [$\hat{y}$]	1007.48
(Temperature at 1000 hPa)	1000 [SHIFT] [$\hat{x}$]	4.642857143

• Quadratic Regression

- The regression formula for quadratic regression is: $y = A + Bx + Cx^2$.
- Input data using the following key sequence.
  <x-data> [,] <y-data> [DT]

Data Input Precautions

- [DT] [DT] inputs the same data twice.
- You can also input multiple entries of the same data using [SHIFT] [;]. To input the data 110 ten times, for example, press 110 [SHIFT] [;] 10 [DT].
- The above results can be obtained in any order, and not necessarily that shown above.
- To delete data you have just input, press [SHIFT] [CL].

■ Regression Calculations (REG Mode)

- Press [MODE] [MODE] [2] (fx-85W) to enter the REG mode and then select one of the following regression types. For other models, press [MODE] [3].

  [1]: Linear regression
  [2]: Logarithmic regression
  [3]: Exponential regression
  [▶] [1]: Power regression
  [▶] [2]: Inverse regression
  [▶] [3]: Quadratic regression

- Data input always starts with [SHIFT] [Scl] [=] to clear statistical memory.
- The values produced by a regression calculation depend on the values input, and results can be recalled using the key operations shown in the table below.

[RCL] [A]	Σx^2	[SHIFT] [$x\sigma_{n-1}$]	$x\sigma_{n-1}$
[RCL] [B]	Σx	[SHIFT] [$\bar{y}$]	$\bar{y}$
[RCL] [C]	n	[SHIFT] [$y\sigma_n$]	$y\sigma_n$
[RCL] [D]	Σy^2	[SHIFT] [$y\sigma_{n-1}$]	$y\sigma_{n-1}$
[RCL] [E]	Σy	[SHIFT] [A]	Regression coefficient A
[RCL] [F]	Σxy	[SHIFT] [B]	Regression coefficient B
[RCL] [M]	Σx^3	[SHIFT] [C]	Regression coefficient C
[RCL] [X]	Σx^2y	[SHIFT] [r]	Correlation coefficient r
[RCL] [Y]	Σx^4	[SHIFT] [$\hat{x}$]	$\hat{x}$
[SHIFT] [X]	$\bar{x}$	[SHIFT] [$\hat{y}$]	$\hat{y}$
[SHIFT] [$x\sigma_n$]	$x\sigma_n$		

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• Linear Regression

The regression formula for linear regression is: $y = A + Bx$.

• **Example:** Atmospheric Pressure vs. Temperature

Temperature	Atmospheric Pressure
10°C	1003 hPa
15°C	1005 hPa
20°C	1010 hPa
25°C	1011 hPa
30°C	1014 hPa

Perform linear regression to determine the regression formula terms and correlation coefficient for the data nearby. Next, use the regression formula to estimate atmospheric pressure at 18°C and temperature at 1000 hPa.

Enter REG Mode (Linear Regression)

fx-85W: [MODE] [MODE] [2] [1]
Other models: [MODE] [3] [1]
[SHIFT] [Scl] [=] (Memory Clear)

10 [,] 1003 [DT] 15 [,] 1005 [DT]
20 [,] 1010 [DT] 25 [,] 1011 [DT]
30 [,] 1014 [DT] → 30. (REG)

(Regression Coefficient A)	[SHIFT] [A] [=]	997.4
(Regression Coefficient B)	[SHIFT] [B] [=]	0.56
(Correlation Coefficient r)	[SHIFT] [r] [=]	0.982607368
(Atmospheric Pressure at 18°C)	18 [SHIFT] [$\hat{y}$]	1007.48
(Temperature at 1000 hPa)	1000 [SHIFT] [$\hat{x}$]	4.642857143

• Quadratic Regression

- The regression formula for quadratic regression is: $y = A + Bx + Cx^2$.
- Input data using the following key sequence.
  <x-data> [,] <y-data> [DT]

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