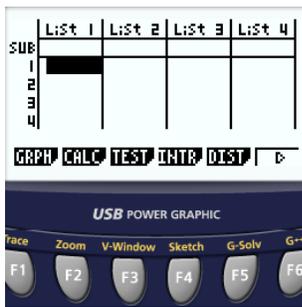


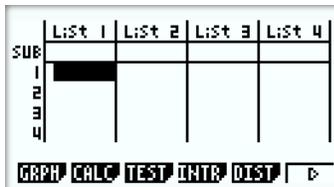
Normal distribution using Casio 9750GII or Casio 9860GII:

1. Given the population mean, $\mu = 32$; and, the population standard deviation, $\sigma = 2.25$, find:
 - a) Probability of $x < 30$.
 - b) Probability of $x > 35$.
 - c) Probability of x greater than 30 and less than 35; that is $P_{(30 < x < 35)}$
 - d) If we choose 56 values of the random variable at random, and the sample mean is $= 33$, considering that the population standard deviation is 2.25, what is the probability that samples of the same size are less than 33?
 - e) What is the x value that is above 99% of all other values of the variable?

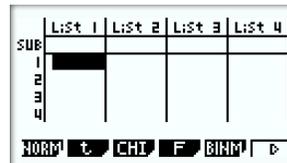
Main screen for STAT:



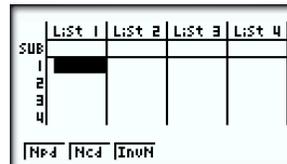
Press F5, DIST



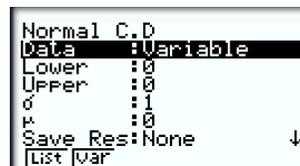
F1, NORM



Then choose F2, Ncd (We will never use Npd):



Ncd look like this: Update Lower, upper, Std Dev, mean and hit EXE.



$\mu = 32, \sigma = 2.25$

- a) Probability of $x < 30$.

```
Normal C.D
Data :Variable
Lower :-1E+99
Upper :30
σ :2.25
μ :32
Save Res:None
|None LIST|
```

Press EXE:

```
Normal C.D
P =0.18703139
z:Low=-4.444E+98
z:UP =-0.8888888
```

$P(x < 30) = 0.1870$ rounded to four decimal places.

- b) Probability of $x > 35$.

```
Normal C.D
Data :Variable
Lower :35
Upper :1E+99
σ :2.25
μ :32
Save Res:None
|None LIST|
```

Press EXE:

```
Normal C.D
P =0.09121121
z:Low=1.33333333
z:UP =4.4444E+98
```

$P(x > 35) = 0.0912$ rounded to four decimal places.

- c) Probability of x greater than 30 and less than 35:

```
Normal C.D
Data :Variable
Lower :30
Upper :35
σ :2.25
μ :32
Save Res:None
|None LIST|
```

Press EXE:

```
Normal C.D
P =0.72175738
z:Low=-0.8888888
z:UP =1.33333333
```

$P_{(30 < x < 35)} = 0.7218$ rounded to four decimal places.

- d) If we choose 56 values of the random variable at random, and the sample mean is $= 33$, considering that the population standard deviation is 2.25, what is the probability that samples of the same size are less than 33?
In this case, we need to divide the standard deviation by the square root of the sample size, 56:

```
Normal C.D
Data :Variable
Lower :-1E+99
Upper :33
σ :2.25+√(56)
μ :32
Save Res:None
```

Press EXE:

```
Normal C.D
P =0.99955936
z:Low=-3.326E+99
z:UP =3.32591768
```

The probability that samples of size 56 are less than 33, is about 0.9996.

- e) What is the x value that is above 99% of all other values of the variable?

Inverse Normal:

	List 1	List 2	List 3	List 4
SUB				
1				
2				
3				
4				

INFD INCL INVN

Choose F3:

```
Inverse Normal
Data :Variable
Tail :Left
Area :0.99
σ :2.25
μ :32
Save Res:None
|None LIST|
```

Press EXE:

```
Inverse Normal
xInv=37.2342827
```

The answer to d) is the variable x value that is above 99% of the population is $x = 37.23$, rounding to two decimal places.