Normal CDF Instructions for TI 83 and 84.

Case 1. Using z scores. The mean is zero, the standard deviation is one; we don't need to specify those values.

Example: Find the probability that a z-score is between -1.5 and 2. That is, find \( P(-1.5 \leq z \leq 2) \).

Press 2nd VARS [DISTR]. Scroll down to 2: normalcdf( Press ENTER.

```
DISTR DRAW
1: normalPdf(
2: normalcdf(
3: invNorm(
4: invT( 
5: tPdf( 
6: tCdf( 
7: x²Pdf(
```

Enter -1.5,2) and press ENTER; to get the answer .91044.
The syntax is normalcdf(lower z, upper z).

```
    normalcdf(-1.5,2)
   .9104427093
```

Case 2. Using not standardized scores.

Probability of less than a specific value. Not z scores? We need to specify mean and standard deviation:

a) Example: Adult IQs are normally distributed with \( \mu = 100 \) and \( \sigma = 15 \). Find the probability that a randomly selected IQ is less than 112. That is, find \( P(x < 112) \).

Again, press 2nd VARS [DISTR]. Scroll down to 2: normalcdf( Press ENTER.

Input -9999,112,100,15) and press ENTER to get the answer .7881.
The syntax is normalcdf(lower, upper, \( \mu \), \( \sigma \)).

```
    normalcdf(-9999, 112,100,15)
   .7881446663
```

Calculator reads from left to right (real number line). That’s why whenever we look for less than a specific value it reads form –infinity (-99999) to the given value.
Whenever we look for probability of greater than a given value, it reads from the value to positive infinity. See the following example:

b) Find the probability that a randomly selected IQ is greater than 122. That is, find \( P(x \geq 122) \).

Start over, press 2nd VARS [DISTR]. Scroll down to 2: normalcdf. Press ENTER.

Input 122,9999,100,15) and press ENTER to get the answer .0712.
The syntax is normalcdf(lower, upper, \( \mu \), \( \sigma \)).

\[
\text{normalcdf}(122,9999,100,15) = .0712334139
\]

In this case 9999 represents “positive infinity”. TI manual suggests E99, which is equivalent to positive infinity.

c) Now, the case in between two specific values. We don’t need infinity as an upper or lower limit in this case.

Example: Find the probability that a randomly selected IQ is between 112 and 122.

That is, find \( P(112 \leq x \leq 122) \).

Press 2nd VARS [DISTR]. Scroll down to 2: normalcdf. Press ENTER.

Input 112,122,100,15) and press ENTER to get the answer .1406.
The syntax is normalcdf(lower, upper, \( \mu \), \( \sigma \)).

\[
\text{normalcdf}(112,122,100,15) = .1406219197
\]

For a TI 84, once you choose normalcdf, you get this screen:

```
normalcdf
lower: 
upper: 
\( \mu \):
\( \sigma \): 
```

So you don’t need to remember the syntax: lower, upper, mean, standard deviation. Just input your values and press enter.