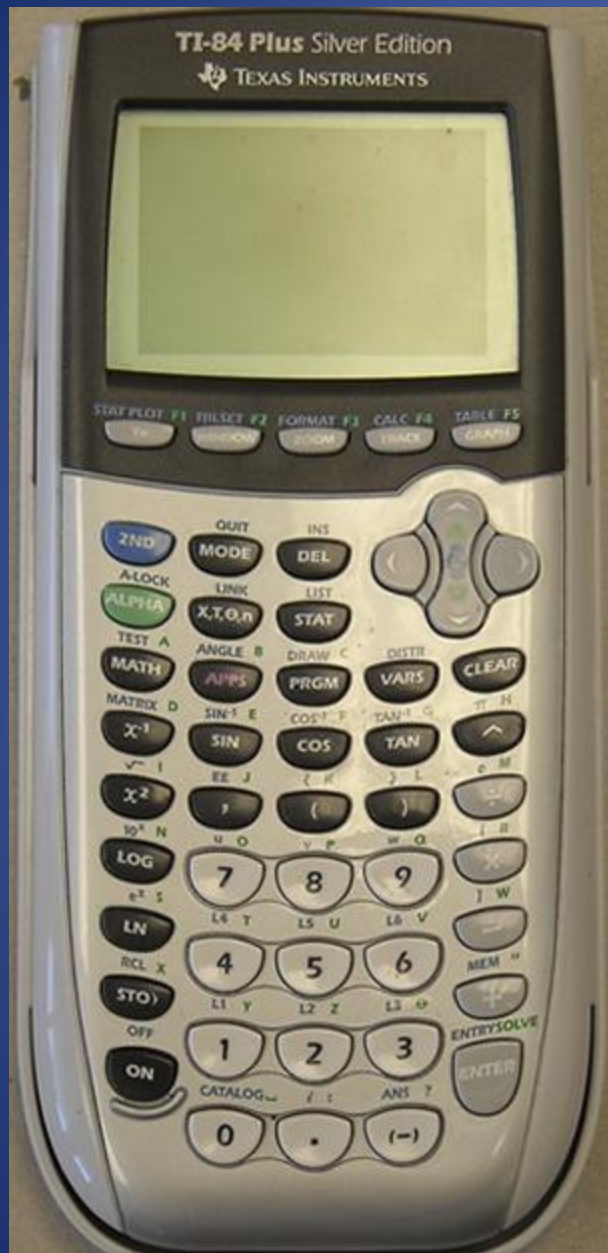# Calculating Normal Curve Percentiles on the TI-84

These instructions will work for the TI-83 and TI-84 families of calculators.

Read the problem carefully:

We have a national examination given to a large group of students and we know the data is normally distributed. The average for the data is 300 with a standard deviation of 50. What is the percentile score of someone who earns 215 on the exam?

Identify the average (300), the standard deviation (50), and the raw score (215).

Draw a picture illustrating the problem.
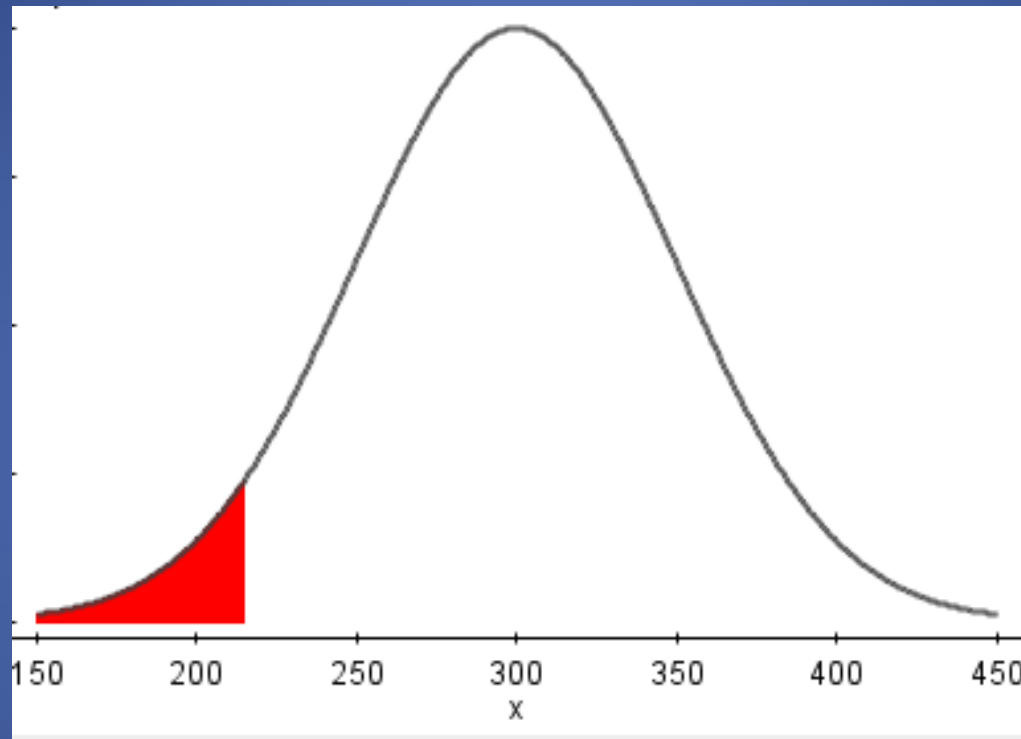
Since percentile is the area to the left of the score, we use the normalcdf function to calculate the area.

Remember to enter the important numbers into the calculator in order. The rule is:

First: Lower boundary = -1000
Second: Upper boundary = 215
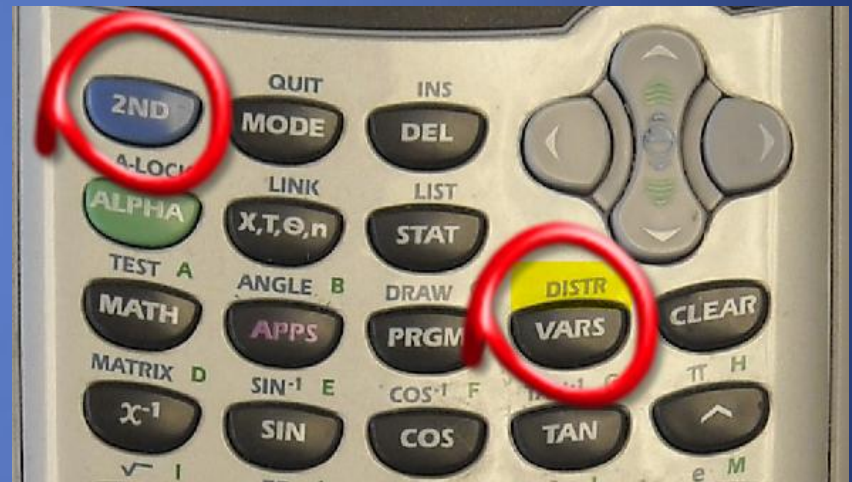Third: Average = 300
Fourth: Standard Deviation = 50
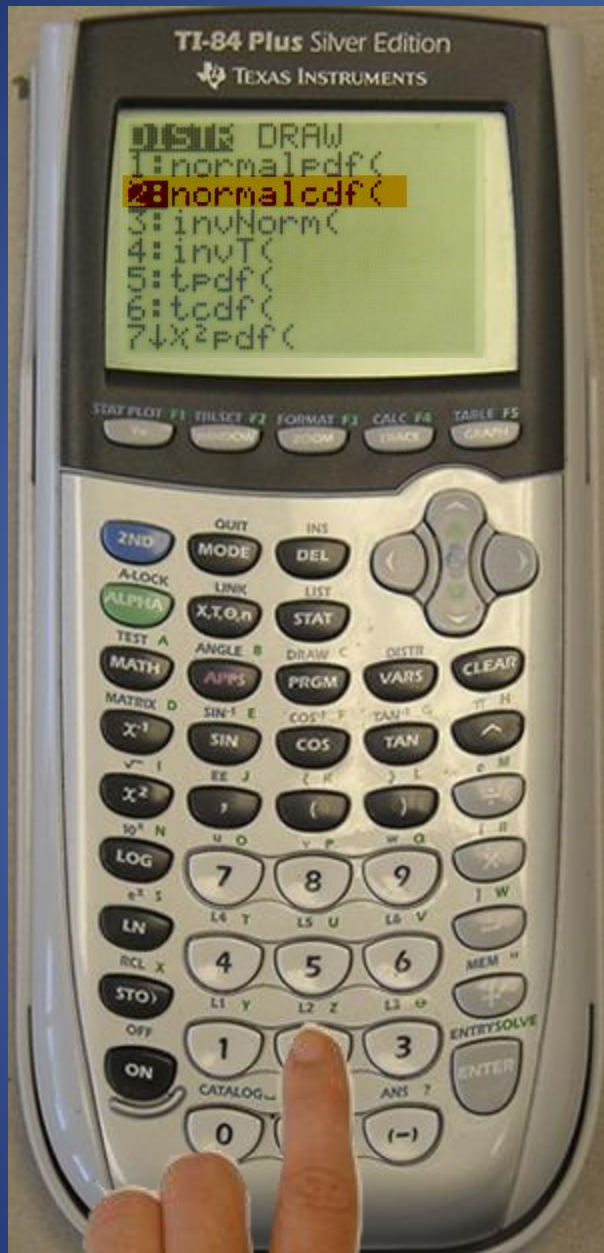
We'll go through this keystroke by keystroke.

Access the normalcdf function on the calculator by pressing 2nd.
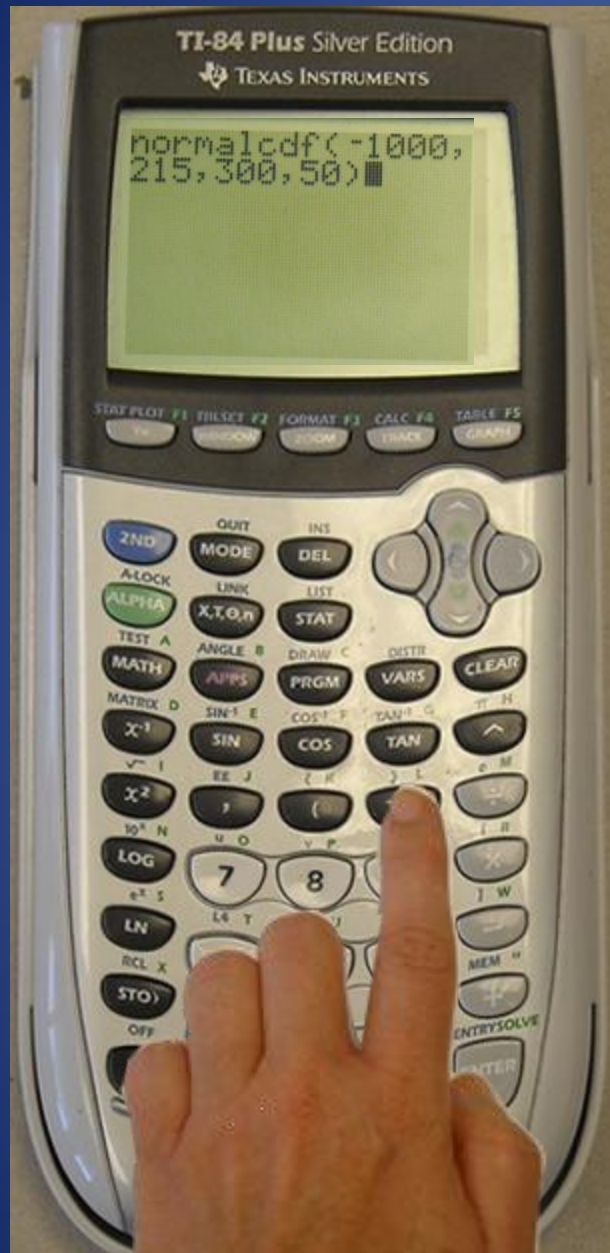
Then press VARS to access the DISTR menu.

IMPORTANT!!
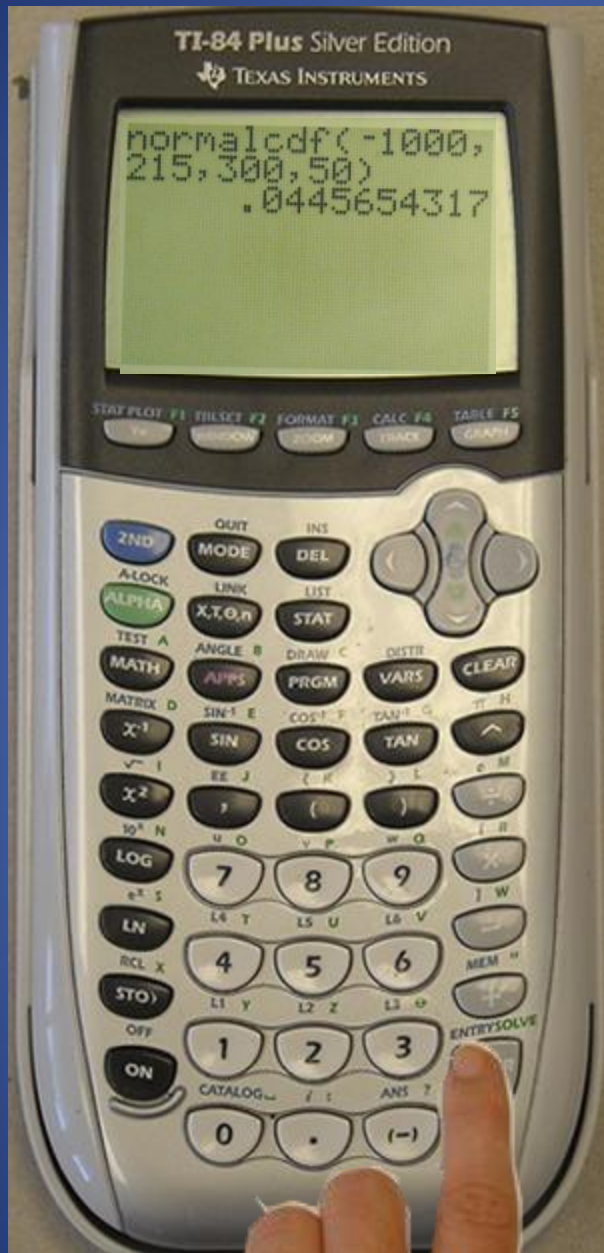You must choose the normalcdf function, not the normalpdf. **Do not ever use normalpdf!!**

Now enter the 4 important numbers in order.

normalcdf(-1000, 215, 300, 50)

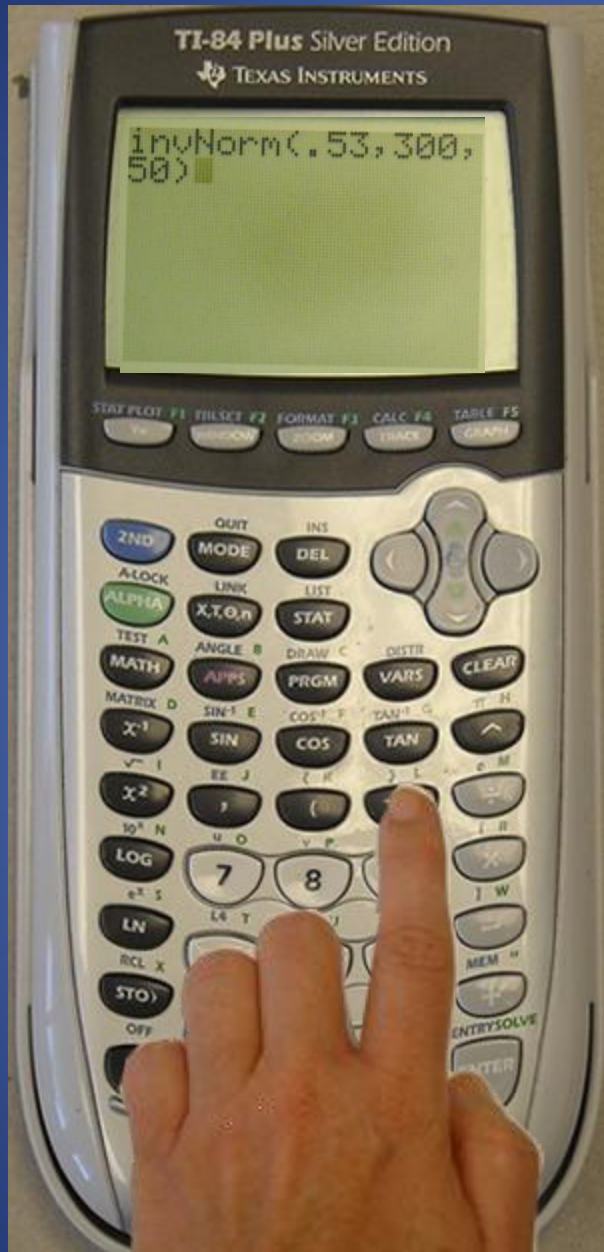Note: Since our lower boundary is negative infinity, we can choose any large negative number for the lower boundary.

Our answer is .045, so we round this to the 4th percentile.

Now, suppose we want to know the raw score for someone who scored at the 53rd percentile.

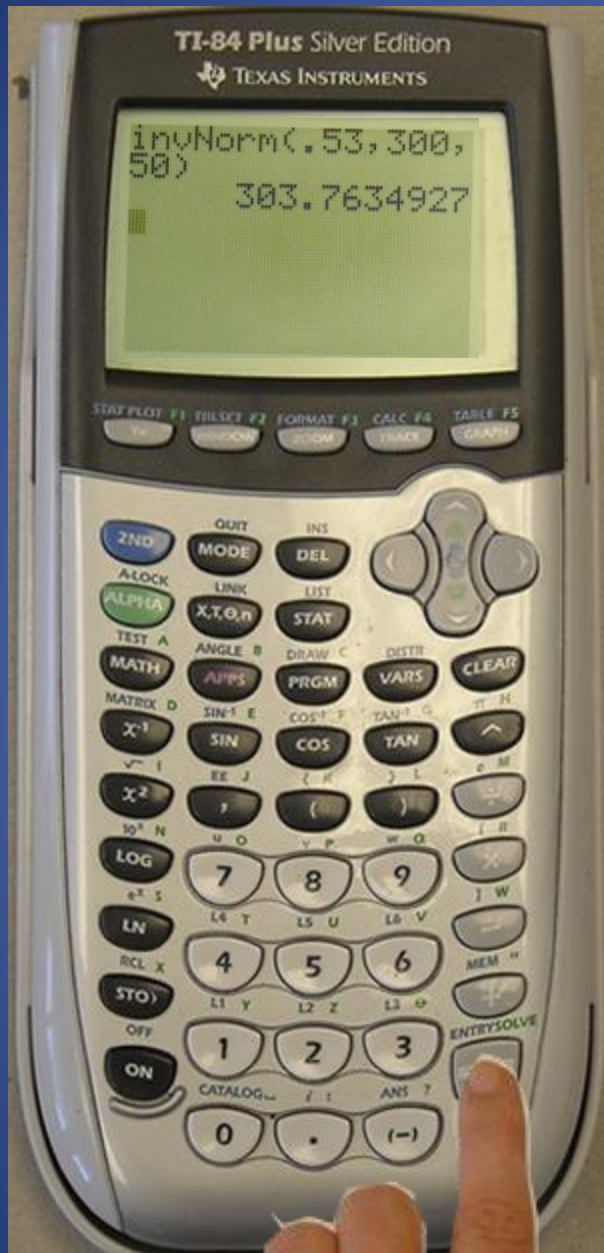For this we use the invNorm function. Access the DISTR menu again and choose option 3:invNorm(

Enter the percentile <u>as a decimal</u>, the average, and the standard deviation in that order.

You must remember to convert the percentile to a decimal or you will get an error.

For this problem, enter invNorm(.53, 300, 50)

We get a result of 303.7. It makes sense to round this to 304.

Someone who scored 304 is at the 53rd percentile.