

Chapter 13 / **Example 12**

# Using the normal distribution

The weights of cauliflowers purchased by a supermarket from their suppliers are distributed normally with mean 821 g and standard deviation 40 g.

Cauliflowers weighing less than 750 g are classified as small.

- Predict the number of cauliflowers classified as small in a sample of 400 cauliflowers.
- The heaviest 8% of cauliflowers are classified as oversized and re-packaged. Find the range of weights of cauliflowers classified as oversized.

$W \sim N(821, 40^2)$  find  $P(W \leq 750)$ .

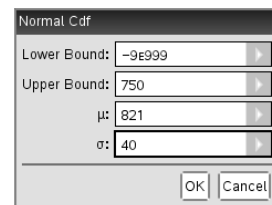
Open a new document and add a Calculator page.

Press **menu** 5:Probability | 5:Distributions | 2:Normal Cdf...

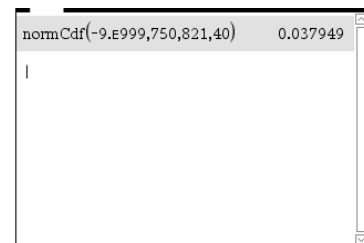
Leave the Lower bound as -9E999, set the Upper Bound to 750,  $\mu$  to 821 and  $\sigma$  to 40.

-9E999 means  $-9 \times 10^{999}$  - a very small number.

Press **enter**.



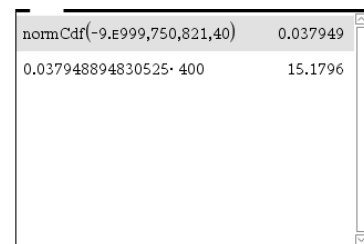
$P(W \leq 750) = 0.0380$ .



The expected number of cauliflowers is

$$400 \times P(W \leq 750) = 15.2.$$

15 cauliflowers are predicted to be classified as small.



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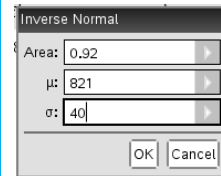
To use the inverse normal function, find  $1 - P(W < w) = 0.08$ ,  
that is  $P(W < w) = 1 - 0.08 = 0.92$ .

Press **menu** 5:Probability | 5:Distributions | 3:Inverse Normal...

Enter the Area 0.92.

Set  $\mu$  to 821 and  $\sigma$  to 40.

Press **enter**.



$w = 877.2$ .

Cauliflowers weighing at least 877 g will be classified as oversized.

normCdf(-9.E999,750,821,40)	0.037949
0.037948894830525- 400	15.1796
invNorm(0.92,821,40)	877.203