

## Answer on Question #76564 – Math – Statistics and Probability

### Question

Suppose that, for a certain mathematics class, the scores are normally distributed with a mean of 75 and a standard deviation of 6. The teacher wishes to give A's to the top 5% of the students and F's to the bottom 5%. The next 15% in either direction will be given B's and D's, with the other students receiving C's.

What is the cumulative distribution?

### Solution

The z-scores associated with the given probability values can be determined from the standard normal table or calculated using the technology (function NORM.S.INV() of MS Excel).

A z-score is converted into data score as follows.

$$X = \mu + Z\sigma$$

The results are summarized in the table.

Grade	Percentage to the left	Minimum z-score	Minimum score
A	95%	1.645	84.9
B	80%	0.842	80.0
C	20%	-0.842	70.0
D	5%	-1.645	65.1
F	< 5%	< -1.645	< 65.1