II. Grades of State University graduates are normally distributed with a mean of 3.0 and a standard deviation of .3. Calculate the following being sure to graph each question.

A. What grade point average is required to be in the top 5% of the graduating class?

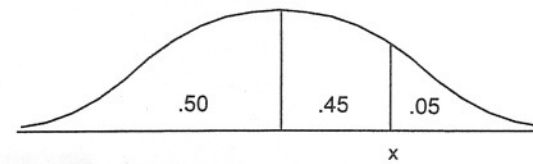
$50\% - 5\% = 45\% \rightarrow Z = 1.65$

$\mu \pm z\sigma$

$3.0 + 1.65(.3)$

$3.0 + .50$

3.50



B. Calculate the interquartile range.

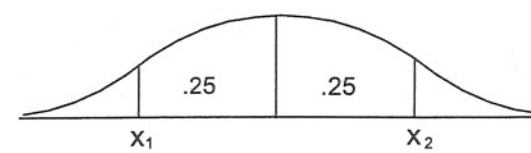
$25\% \rightarrow Z = .67$

$\mu \pm z\sigma$

$3.0 \pm .67(.3)$

$3.0 \pm .20$

$2.80 \leftrightarrow 3.20$



C. An eccentric alumnus left scholarship money for students in the third decile from the bottom of their class. Determine the range for the third decile. Would a student with a 2.8 grade point average qualify for this scholarship?

$30\% \rightarrow Z = .84$

$3.0 - .84(.3)$

$3.0 - .25$

2.75

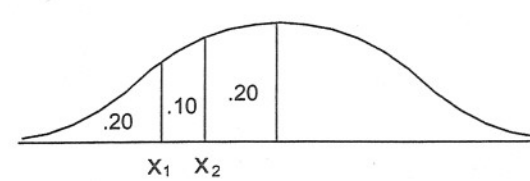
$20\% \rightarrow Z = .52$

$3.0 - .52(.3)$

$3.0 - .16$

2.84

$2.75 \leftrightarrow 2.84$
Yes!



D. What is the median grade point average of this class?

The median is 3.0 because with a normal distribution, the mean and median are equal.