

Formula Card for Chapters Five and Six

For Problems Dealing With the Normal Distribution (they say normally distributed in the directions...)

There are three cases

1. Directions say: Find the probability of randomly selecting a ...
 - Draw the bell curve, label the mean, and standard deviation
 - Put a Z number line and an X number line at the bottom of the curve
 - Shade the desired area that you are looking for
 - Convert your x – score into a z-score using $Z = \frac{X - \mu}{\sigma}$
 - Look your z-score up on the table from the book (that is the area from your z-score to the mean on the curve)
 - If necessary perform the arithmetic needed to get your desired area
2. Directions say: Find the probability of randomly selecting n ...that have an average ...
 - Draw the bell curve, label the mean, and standard deviation **do not forget that for this problem the stan. dev. becomes $\sigma_{\bar{X}} = \frac{\sigma}{\sqrt{n}}$
 - Put a Z number line and an \bar{X} number line at the bottom of the curve
 - Shade the desired area that you are looking for
 - Convert your \bar{X} – score into a z-score using $Z = \frac{\bar{X} - \mu}{\sigma_{\bar{X}}}$
 - Look your z-score up on the table from the book (that is the area from your z-score to the mean on the curve)
 - If necessary perform the arithmetic needed to get your desired area
3. Directions say: Find the score (height, weight, ...) that separates the bottom...
 - Draw the bell curve, label the mean, and standard deviation **Do not forget that for this problem we will be putting an area associated with a given percentile (using the normal table in reverse)
 - Put a Z number line and an X number line at the bottom of the curve
 - Look up the necessary area to get your z – score on the Z table (watch your sign on the z-score)
 - Convert your z– score into an X-score using $X = Z\sigma + \mu$

Confidence Interval

Steps to Create a Confidence Interval for the mean (Large Sample)

1. List all given sample data from the problem including sample size and C-level
2. Find $z_{\alpha/2}$
3. Calculate the margin of error, $E = z_{\alpha/2} \left(\frac{\sigma}{\sqrt{n}} \right)$
4. Calculate $[\bar{x} - E, \bar{x} + E]$

Steps to Create a Confidence Interval for the mean (Small Sample)

1. List all given sample data from the problem including sample size and C-level
2. Find $t_{\alpha/2}$
3. Calculate the margin of error, $E = t_{\alpha/2} \left(\frac{s}{\sqrt{n}} \right)$
4. Calculate $[\bar{x} - E, \bar{x} + E]$