

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