**Chapter 2.2 – Normal calculations**

*Quick Summary*

* Review of Normal distributions
  + The **Normal distributions** are described by a special family of bell-shaped, symmetric density curves called **normal curves**.
    - The population mean μ and population standard deviation σ completely specify a normal distribution. The notation is as follows: N(μ , σ).
    - The mean μ is the center of the curve and the standard deviation σ is measured as the distance from μ on either side.
  + All Normal distributions obey the **68-95-99.7 rule**, which describes what percent of observations lie within one, two and three standard deviations from the mean.
  + All Normal distributions are the same when measurements are standardized. If *x* follows a Normal distribution with mean μ and standard deviation σ, we can standardize using the following z-score: .
    - The variable *z* has the **standard Normal distribution** with mean 0 and standard deviation 1.
    - **Table A** in the back of the book gives percentiles for the standard Normal curve.
* 4-Step Process for Normal distribution calculations
  + STATE: Express the problem in terms of the observed variable *x.*
    - Let x = \_\_\_.
    - The distribution of x is normal with mean \_\_ and standard deviation \_\_\_.
    - We want to know the proportion of values where x is (greater than/less than) \_\_\_\_.
  + PLAN: Draw a picture of the distribution and shade the area of interest under the curve. Standardize the distribution using the z-score and find the area under the curve using Table A.
  + DO: Make the graph and perform calculations.
  + CONCLUDE: Put your answer back in the problem context.