Homework 9.4: Normal Calculations Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Math 3

1. A Bakery makes loaves of rye bread that have an average weight of 28 ounces and a standard deviation of 0.8 ounce. The distribution of weights is normal.
   1. Draw a normal curve with the horizontal axis labeled
   2. About 95 percent of the loaves will have weights that lie within what interval?
   3. What percent of the loaves will weigh more than 28.8 ounces?
   4. What will the top 16% weigh above?
   5. What is the weight of the 84th percentile (at or below 84%)?
2. The Chapin Social Insight Test evaluates how accurately the subject appraises other people. The scores are approximately normally distributed with a mean of 25 and a standard deviation of 5.
   1. If a randomly selected student has a score of 40, then how many standard deviations away from the mean is that student’s score.
   2. Determine the standardized value (z-score) of the score 30?
   3. What percent score over a 30?
   4. What percent score between a 20 and 30?
3. Find the proportions of observations from a standard normal distribution that satisfies each of these statements. In all cases, sketch a standard normal curve and shade the area under the curve
   1. Z >1.78
   2. Z < 2.34
   3. -1.48 < Z < 0.79
4. A pharmaceutical company manufactures capsules that contain an average of 507 grams of vitamin C. The standard deviation is 3 grams. The distribution of vitamin C is considered to be normal amongst the capsules.
   1. What percent of the capsules will have above 512 grams?
   2. What percent of the capsules will have less than 500 grams?
   3. What percent will have more than 600 grams?
   4. What percent will have between 505 and 515 grams?
   5. At least 96 percent of the capsules will contain what amount of vitamin C?
5. The GRE is an examination used to predict performance in graduate school. The range of scores is 200 to 900 with a mean of 544 and standard deviation of 103. The scores are assumed to have a normal distribution.
   1. What percent of students scores above 500?
   2. What percent of students score below 700?
   3. What percent of students score between 500 and 700?
   4. How high of a score does a student need to be in the top 10%?
   5. What minimum score would a student need in order to score better than 77% of those taking the test?
6. Women’s heights are normally distributed with a mean of 64.5 and a standard deviation 2.5
   1. Draw a normal curve
   2. What % are over 65 inches?
   3. What % are under 5 feet?
   4. What % are over 6 feet?
   5. How tall are the top 10%?