(1) For the following questions, consider a data set that exhibits a normal distribution. Report the answers to the nearest 0.01%.

(a) How much of the data lies below the value corresponding to $Z = 1.2$? $88.49\%$

(b) How much of the data lies between the values corresponding to $Z = 1.2$ and $Z = 1.4$? $3.43\%$

(c) How much of the data lies between the values corresponding to $Z = -1.2$ and $Z = 1.4$? $80.41\%$

(2) For the following questions, consider a data set that exhibits a normal distribution. Report the answers to the nearest 0.01.

(a) What is the $Z$ score for the value that is larger than $35.2\%$ of the data? $Z = -0.38$

(b) What is the $Z$ score for the value that is smaller than $10.2\%$ of the data? $Z = 1.27$

(c) Consider a portion of the data bounded above and below by certain $Z$ scores. If we consider a region bounded below by $Z = 0.4$, what is the $Z$ score of the upper bound if the region contains $17.1\%$ of the data? $Z = 0.94$

(3) Consider a set of 800 of normally distributed data values with a mean of 26 and a standard deviation of 4.0

(a) How many values are larger than 27.00 (report answer to the nearest integer) $# = 321$

(b) How many values are between 23.00 and 28.00? (report answer to the nearest integer) $# = 372$

(c) What is your best estimate for the value of $Q_3$? (report answer to the nearest 0.01) $Q_3 = 28.70$

(4) Imagine that we take a sample from a population of interest. Assume that this sample accurately reflects the mean and standard deviation of the population so you can use the normal distribution and $Z$ scores for the problems below. (If you’ve read ahead in your book or lab manual you know we should really use $t$ scores, don’t worry about this right now, use the $Z$ scores)

For the following questions use the sample values to the right:

Sample data

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(a) Assuming that the population data is normally distributed, what is the value that you expect $67\%$ of the data in the population to be smaller than? (round to nearest 0.01) Val. = 19.91

(b) What is your best estimate for the IQR of the population data? (round to nearest 0.01) IQR = 3.95