The time (in minutes) spent in the Emergency Room for 50 randomly selected ER patients is given below. The time is measured from the moment a patient enters the ER until the patient is discharged and/or admitted to the hospital (rounded to the nearest minute).

189 **211** 76 236 97 234 249 123 225 202 152 239 105 291 229 **25** 157 275 156 **267** 134 119 151 **109** 214
190 134 145 143 153 198 258 86 202 171 180 109 176 192 71 58 208 87 109 188 **161** 111 **309** 124 121

The following table gives the frequency distribution for the above data set.

Time in ER	Frequency
0-50	1
51-100	6
101-150	13
151-200	14
201-250	11
251-300	4
301-350	1

1. Sketch a histogram above for this population of data. Do you think this population has a normal distribution? Why or why not?

2. If we consider a sample of only 6 values from the data set: 211 25 267 109 161 309

(a). Since the original data has a _____ distribution, we expect the sample to also have a _____ distribution.

(b). Using the same class widths, complete the frequency distribution and sketch a histogram for the sample of 6 values. Does this histogram suggest a normal distribution? Why or why not.

Time in ER	Frequency
0-50	
51-100	
101-150	
151-200	
201-250	
251-300	
301-350	

(c). Since you expected a normal distribution, can you think of a reason why the histogram did not show it?

[Stop here until you learn about Normal Quantile Plots (also called Normal Probability Plots).]

3. For the sample of 6 data values on the previous problem, use your calculator to construct a quantile plot (sketch a copy of the plot). Based on this plot explain why you think the data is normally distributed (as expected).

4. For each of the following sample data sets, use your calculator to construct a quantile plot (sketch a copy of the plot). Determine whether the data appears to be normally distributed and explain your reason.

(a). 3.2 4.5 2.1 5.1 4.2 4.9 5.2 5.8 6.1 6.6 8.0

(b). 1.1 1.2 1.5 2.0 3.6 4.2 4.5 5.1 5.8 5.9

(c). 6.7 8.1 1.1 3.4 8.2 9.6 8.4 8.7

Homework: Section 6.7, p. 315: #1-8(all), 13-16(all) [Use your calculator on 13-16 to construct quantile plots.]