#1

Name _____ Practice with the Empirical Rule

Lengths of pregnancies are normally distributed with a mean of 268 days and a standard deviation of 15 days. Use the Empirical Rule to determine the percentage of women whose pregnancies are . . .

1. Between 253 and 298

2. Between 238 and 283

3. Less than 238

4. More than 283

5. At least 283

6. Less than 223 or more than 313

SAT verbal scores are normally distributed with a mean of 450 and a standard deviation of 120. Us the Empirical Rule to determine the percentage of scores between . . .

7. 210 and 570

8. Below 330

9. above 330

10. Below 330 or above 690

11. A manufacturer of automobile batteries claims that the average length of life for its grade A battery is 60 months. However, the guarantee on this brand is for just 36 months. Suppose the standard deviation of the life length is known to be 10 months, and the frequency distribution of the life-length data is known to be mound-shaped.

    a) Approximately what percentage of the manufacturer's grade A batteries will last more than 50 months, assuming the manufacturer's claim is true?

    b) Approximately what percentage of the manufacturer's batteries will last less than 40 months, assuming the manufacturer's claim is true?

    c) Suppose your battery lasts 37 months. What could you infer about the manufacturer's claim?

12. Given a data set with a largest value of 760 and a smallest value of 135, what would you estimate the standard deviation to be? Explain the logic behind the procedure you used to estimate the standard deviation.

The following data are the ages at which a sample of 35 American mothers first gave birth:

20	28	33	23	21	18	24	20	32	16	27	21	17	22
19	40	19	24	24	24	17	31	28	26	18	23	20	18
14	16	21	16	20	20	18							

a) Create a stemplot using the following stems:

1
2
3
4

b) Write a few sentences describing the distributions of these ages.

c) Based on the distribution of ages, would you expect the empirical rule to hold in this case? Explain.

d) Use your calculator to determine the mean and standard deviation of these mother's ages. Report their values.

e) Determine what proportion of the 35 ages falls within one standard deviation of the mean. How closely does this proportion match what the empirical rule would predict?

f) Determine what proportion of the 35 ages falls within two standard deviations of the mean. How closely does this proportion match what the empirical rule would predict?

g) Remove the outlier from the analysis, answer these questions again, and comment on how your answers change.