2.4: Standard Deviation Practice Problems

1. The mean height of U.S. women is $\mu = 64.5$ inches, with $\sigma = 2.5$ inches and follows a symmetrical distribution.
A. Generate a 'standard deviation number line" and show all the values out to ± 3 standard deviations of the mean.
B. Approximately what percent of women are between 62 and 69.5 inches?
C. Approximately what percent of women are between 59.5 and 64.5 inches?
D. Approximately what percent of women are between 62 and 72 inches?
E. Approximately what percent of women are between 62 and 67 inches?

2. IQ scores follow a symmetrical distribution with $\mu = 100$ and $\sigma = 15$.
A. Generate a 'standard deviation number line".
B. What percent of IQ scores fall above 100?
C. Between what 2 IQ scores would 95% of the population fall?
D. What percent of IQ scores fall above 70?
E. What would a person's IQ score be if their score was higher than 97.5% of the population?

3. Test scores for a class have a sample mean of 80, with a sample standard deviation of 5 and are skewed right.
A. Should you use the Empirical Rule or Chebychev's Theorem for this situation? Why?
B. Create a 'standard deviation number line' out to 3 deviations of the mean.
C. Make a statement about the percent of scores that fall within 2 standard deviations of the mean.
D. Make a statement about the percent of scores that fall within 3 standard deviations of the mean.

4. The number of wins for each National Football League team in 2006 are listed below. Find the range, mean # of wins, variance and standard deviation. Should you use sample standard deviation or population standard deviation for this data set? How can you tell?

12	10	7	6	13	8	8	4	12	8	8	6
14	9	9	2	10	9	8	5	13	8	6	3
10	8	7	4	9	8	7	5				

5. Give the definition of each of the variables below:

a) $\bar{x}$

b) σ^2

c) s

d) $x - \bar{x}$

e) s^2

f) $x - \mu$

g) n

h) μ

i) N

j) σ

Statistics 2.4 Review #2 Name:

Measures of Variation Hour: Date:

1) The data set represents the mean price of a movie ticket (in U.S. dollars) for a sample of 12 U.S. cities. Find the range of the data set.

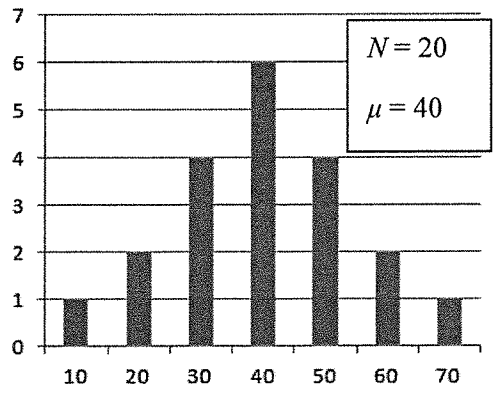
7.82 7.38 6.42 6.76 6.34 7.44 6.15 5.46 7.92 6.58 8.26 7.17

2) The age of each Supreme Court justice as of March 19, 2007 is listed. Find the population mean and standard deviation of the data.

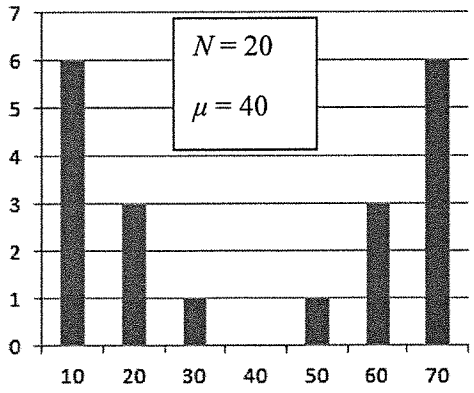
Ages		
52		
86		
71		
70		
67		
58		
74		
68		
56		

3) Which data set has the larger standard deviation? Explain.

(A)



(B)



4) Dormitory room prices (in dollars for one school year) for a sample of 4-year universities are listed. Find the sample mean and the sample standard deviation of the data.

Dormitory Room Price		
2445		
2940		
2399		
1960		
2421		
2940		
2657		
2153		
2430		
2278		
1947		
2383		
2710		
2761		
2377		

5) The mean rate for satellite television from a sample of households was \$49.50 per month, with a standard deviation of \$2.75 per month. Estimate the percent of satellite television rates between \$46.75 and \$52.25. (Assume that the data set has a bell-shaped distribution.)

6) The average IQ of students in a particular calculus class is 110, with a standard deviation of 5. The distribution is roughly bell-shaped. Use the Empirical Rule to find the percentage of students with an IQ above 120.

a) 13.5% b) 11.15% c) 2.5% d) 15.85%