Algebra II   Name _____
Statistics 5

1. The table below shows the percent of people living below the poverty line in the 26 states east of the Mississippi.

State	Percent	State	Percent	State	Percent	State	Percent
Alabama	16.9	Kentucky	17.3	New Jersey	8.6	Tennessee	15.9
Connecticut	7.9	Maine	12.0	New York	13.7	Vermont	10.1
Delaware	10.5	Maryland	8.3	North Carolina	14.3	Virginia	9.9
Florida	12.1	Massachusetts	9.9	Ohio	13.1	West Virginia	16.9
Georgia	14.3	Michigan	14.0	Pennsylvania	11.6	Wisconsin	10.8
Illinois	11.9	Mississippi	20.6	Rhode Island	12.0		
Indiana	12.3	New Hampshire	7.1	South Carolina	15.0		

a. Make a stemplot of these data
b. Find the mean, median and mode.
c. Find the variance and standard deviation.
d. Find the five number summary.
e. Find the range and IQR.
f. Are there any outliers? How do you know?
g. Sketch a boxplot.
h. What percentile is the West Virginia?

2. Use the 68-95-99.7 Rule for Normal distribution to answer the following.
 A truck load is loaded with cartons of eggs that weigh an average of 2 pounds each with a standard deviation of 0.1 pounds. A histogram of these weights looks very much like a Normal distribution.

a. What percent of cartons weigh less than 2.1 pounds?
b. What percent of cartons weigh less than 1.8 pounds?
c. What percent of cartons weigh more than 1.9 pounds?
d. What percent of cartons weigh between 1.9 and 2.2 pounds?
e. Describe the weight of the heaviest .15% of all cartons.

3. The Virginia Cooperative Extension reports that the mean weight of yearling Angus steers is 1152 pounds. Suppose that the standard deviation is 84 pounds.   How many standard deviations from the mean would a steer weighing 1000 pounds be?

4. John Beale of Stanford, CA, recorded the speeds of cars driving past his house, where the speed limit is 20mph. The mean of 100 readings was 23.84 mph, with a standard deviation of 3.56 mph. How many standard deviations from the mean would a car going the speed limit be?

5. Suppose your Statistics professor reports test grades as z-scores, and you got a score of 2.20 on an exam. Write a sentence explaining what that means.

For 6 - 9, sketch the Normal curve and shade appropriately.

6.   In a study investigating the effect of car speed on accident severity, the vehicle speed at impact was recorded for 5,00 fatal accidents. For these accidents, the mean speed was 42 mph and the standard deviation was 15 mph. A histogram revealed that the vehicle speed distribution was approximately Normal.

a. What percentage of vehicle speeds were between 28 and 55 mph?
b. What percentage of vehicle speeds were faster than 50 mph?
c. What was the speed of the bottom 5% of accidents?

7. The mean number of text messages sent per month by customers of a cell phone service provider is 1,650 and the standard deviation is 750. A histogram showed that the distribution was approximately Normal.

a. What percent of customers sent more than 2000 text messages in one month?
b. How many text messages would a customer have to send to be in the 85th percentile?
c. I only send about 80 text messages a month, what is my percentile?

8. An article stated that for full term babies their mean weight is 7.7 pounds and the standard deviation is 1.32 pounds. Birth weight is normally distributed.

a. What is the probability that the birth weight of a randomly selected full term baby is more than 8 lbs?
b. What is the probability that the birth weight of a randomly selected full term baby is between 6 and 8 pounds?
c. What is the probability that the birth weight of a randomly selected full term baby is less than 4.5 pounds?
d. How would you characterize the most extreme 0.1% of all full term baby birth weights?

9. A pizza company advertises that it puts 0.5 pound of real mozzarella cheese on its medium sized pizzas. In fact, the amount to cheese on a randomly selected medium pizza is normally distributed with a mean of 0.5 pound and a standard deviation of 0.025 pound.

a.   What is the probability that the amount of cheese on a medium pizza is between 0.533 and 0.545 pound?
b. What is the probability that the amount of cheese on a medium pizza exceeds the mean value by more than 2 standard deviations?