Prince Sultan University
Mathematics Department

STAT 101

First Examination

First Semester 2015/2016, Term 151

Sunday, October 18, 2015

Time Allowed:90 minutes

Student Name: _____

Student ID #: _____ Section#:

Time:

Teacher's Name: Dr. Eric Benson, Dr. Mohammed Kaouache

Important Instructions:

1. You may use a scientific calculator that does not have programming or graphing capabilities.
2. You may NOT borrow a calculator from anyone.
3. You may NOT use notes or any textbook.
4. There should be NO talking during the examination.
5. Your exam will be taken immediately if your mobile phone is seen or heard
6. Looking around or making an attempt to cheat will result in your exam being cancelled
7. This examination has 10 problems, some with several parts. Make sure your paper has all these problems.

Problems	Max points	Student's Points
1	20	
2	10	
3	15	
4	15	
5	20	
Total	**80**	**/80**

Q1-20pts) A landscaping company provides yard care services for customers. The company owner tracked the time his employees spent at a sample of customer locations. The following sample data, in minutes, were recorded

19, 30, 0, 12, 9, 38, 17, 2, 1, 5, 13, 43, 15, 2, 23, 45, 34, 51, 22, 6

1) Compute
   a. The 30^{th} percentile (**3pts**)

   b. The mean (**2pts**)

   c. The range (**2pts**)

   d. The mode (**2pts**)

1) Draw a boxplot of these measures. (**8 pts**)

2) Are there any outliers ? If yes identify them.(**3 pts**)

Q2- 10pts) The sales manager for a TV station affiliate in a certain city recently surveyed 20 advertisers and asked each one to rate the service of the station on the scale of 1–Very Good, 2–Good, 3–Fair, 4–Poor, and 5–Very Poor:

1, 2 , 2, 3, 5, 1, 4, 4, 2, 2, 3, 1, 2 , 2, 3, 5, 1, 4, 4, 2

a. Construct a frequency table for Rating (**5 pts**).

b. Draw a bar plot of these data(**5 pts**).

Q3- 15pts) A parking garage monitors the time, in seconds, it takes customers to exit the parking structure from the time they get in their car until they are on the streets. A sample of 10 exits was recently taken and is shown below.

79, 68, 76 ,71 , 84, 71, 75, 79, 72, 75

Compute :

a. the range (**2pts**)

b. the variance (**8pts**)

c. the standard deviation (**2pts**)

d. the coefficient of variation. (**3pts**)

Q4- 15pts)

Consider the set of sample data below.

10 ,7 , 8 , 6 ,12 , 9 ,10 ,10 , 9 ,10 , 9 ,11, 7, 12, 9, 12, 11, 11, 12, 15

1) Compute
   a. the mean (**3pts**)

2) Given that the standard deviation is equal to 2.13:

   a. Using Tchebysheff's theorem, determine the range of values that should include at least 80% of the data. (**6pts**)

   b. Assume a bell-shaped distribution and use the empirical rule to find the percentage of values between 12.13 and 7.87 (**6pts**)

Q5- 20pts)

Consider the following sample:

26, 36, 43, 43, 44, 46, 51, 55, 56, 62, 66, 72, 74, 75, 77 , 81, 81, 82, 82, 83, 85, 88, 91, 92, 94, 94, 96, 98, 99, 99

1. Given that these data has a mean of 72 and a standard deviation of 21, assume the data are bell-shaped and **use the empirical rule** to find the percentage of data values that are
   a. $\leq$ 30 (**4pts**)

   b. $\leq$ 52 (**4pts**)

   c. $\leq$ 93 (**4pts**)

2. Now **count the data values** and find values and find the percentage of data values that are
   a. $\leq$ 30 (**2pts**)

   b. $\leq$ 52 (**2pts**)

   c. $\leq$ 93 (**2pts**)

3. Is it reasonable to assume that the distribution of these data is bell-shaped? (**2pts**)