Prince Sultan University
STAT 101
Midterm Examination
Summer Semester 2007/2008, Term 073
Monday, 21 July 2008
Dr. Aiman Mukheimer

Time Allowed: 100 minutes

Name: _____ _____ _____
(First) (Middle) (Last)

ID Number: _____

Serial No.: _____

Important Instructions*:*

- You may use CASIO scientific calculator that does not have programming or graphing capabilities.
- You may **NOT borrow** a calculator from anyone.
- There should be **NO talking** during the examination.
- Your exam will be taken **immediately** without any warning if your mobile is seen or heard
- You must show all your work beside the problem. Be organized.
- You may use the back of the pages for extra space, but be sure to indicate that on the page with the problem.
- This examination has **10** problems, some with several parts. Make sure that your paper has all these problems

Problems	Max points	Student's Points
1,2,3	26	
4	12	
5,6	20	
7,8	12	
9	16	
10	14	
Total	100	

Q1. (8 points) The total marks for 20 students in STAT 101 section is as follows:

41.4	90	77.1	38.6	95.7	72.9	84.3	81.4	94.3	81.4
41.4	54.3	82.9	45.7	52.9	31.4	15.7	55.7	78.6	61.4

a. Use the scientific calculator to find the average, and the variance of the students.

b. What percentage of the students, their grades are not F (Grade F issued if the total mark is less than 60)?

Q2. (10 points) The prices of five different brands (in Riyals) of cheese per 1 kilogram are as follows: 25 19 22 20 15

ii) Find the 70^{th} percentile.

iii) Find the sample standard deviation using the computing formula.

Q3. (8 points) The number of days that homes stay on the market before they sell in Riyadh is mound shaped with a mean equal to 56 days. Further, 95% of all homes are on the market between 40 and 72 days.

a. Based on the above information, what is the standard deviation for the number of days that houses stay on the market in Riyadh?

b. Find the range number of days for which about 68% of houses stay on the market in Riyadh before they sold.(Find the minimum and the maximum number of days where 68% of houses before the sold).

Q4. (12 points) Suppose you are told that the mean and variance of a sample of n=596 observations were 75 and 25 respectively. You know nothing else about the shape of the distribution for these data.

a. What can you say about the proportion of observations between 60 and 90?

b. What can you say about the proportion of observations are between 68 and 82?

c. What can you say about the proportion of observations are smaller than 63?

d. If we assume the distribution is in fact mound-shaped. What percentage of observations are greater than 90?

Q5. (14 points) The following data reflect the number of televisions in a sample of 16 households.

3	1	1	2	4	3	2	2
2	0	1	2	3	2	4	5

a. Find the median of the number of televisions.

b. Find the variance of the number of televisions.

c. Find the lower and the upper quartiles for the number of televisions.

d. Compare the range and the standard deviation, the range is approximately how many standard deviations?

Q6. (6 points) The following data represent the number of calla came to maintenance center between 10:00 am to 11:00 am for 20 days:

13	24	24	28	32	52	40	44	53	11
20	32	40	51	40	38	16	39	34	32

a. Construct a stem and leaf plot to describe the data.

b. Describe the shape of the distribution of the number of calls received.

Q7. (9 points) If the age distribution of customers at a major retail chain is thought to be mound shaped with mean equal to 43 years and a variance equal to 49 years.

a. Find the percentage of customers between the ages of 29 and 50 years.

b. Find the percentage of customers their ages more than 29 years.

c. What is the 16^{th} percentile?

Q8. (3 points) Identify any percentiles that can be determined from following information:

- 26% of all U.S. adults between the ages of 18 and 24 own five or more pairs of wearable sneakers.

Q9. (16 points) Investors are becoming more and more concerned about securities fraud, especially involving initial public offerings (IPOs).[4] During a 6-year period, the number of federal securities-fraud class action suits has continued to increase:

Year	1996	1997	1998	1999	2000	2001
Suits	110	178	236	205	211	282

a. Plot the data using a Scatterplots. How would you describe the relationship between year and number of class action suits?

b. Find the correlation between years the number of Suites.

c. Find the best fitting line relating the number of class action suits to the year being measured.

Q10. (14 points) The top 20 movies and their gross revenues (in millions of dollars) from Labor Day weekend (August 31-September 3, 2001) are shown below:

Movie	Weekend Gross	Movie	Weekend Gross
Jeepers Creepers	$15.8	*Planet of the Apes*	$3.8
Rush Hour 2	11.7	*Jurassic Park III*	2.3
American Pie 2	11.0	*John Carpenter's Ghosts of Mars*	2.1
The Others	10.2	*The Curse of the Jade Scorpion*	2.0
Rat Race	9.2	*The Deep End*	1.8
The Princess Diaries	7.6	*Legally Blonde*	1.7
O	6.9	*America's Sweethearts*	1.3
Jay and Silent Bob Strike Back	6.5	*American Outlaws*	1.3
Summer Catch	4.9	*Bubble Boy*	1.3
Captain Corelli's Mandolin	3.9	*Pearl Harbor*	1.2

a. Calculate the *z*-score for the largest and smallest observations. Which movie is an outlier.

b. Draw a box plot to describe the data