



Prince Sultan University
STAT 101
Final Examination
Second Semester 2013/2014, Term 132
Tuesday, 27th May 2014

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Time Allowed: 90 minutes

Maximum points: 40 points

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

ID Number: _____

Section: _____

Important Instructions:

1. You may use CASIO scientific calculator that does not have programming or graphing capabilities.
2. You may NOT borrow a calculator from anyone.
3. You do NOT get special consideration if you forget your calculator.
4. Don't use notes or any notebook.
5. There should be NO talking during the examination.
6. Your exam will be taken immediately without any warning if your mobile is seen or heard.
7. You must show all your work beside the problem. Be organized.
8. You may use the back of the pages for extra space, but be sure to indicate that on the page with the problem.
9. This examination has **14** problems, some with several parts. Make sure that your paper has all these problems.

Problem	Max points	Student's Points
1,2,3,4,5	13	
6,7,8,9	12	
10,11,12,13,14	15	
Total	40	

Q1 (3 points) Consider the two datasets:

Data set A: 5, 10, 12, 12, 14, 14, 15, 25, 37, 40

Data set B: 8, 12, 23, 37, 33, 32, 38, 36, 44, 47

Calculate the coefficient of variation for each data set to determine which one of them is more variable.

Q2 (3 points) Determine the interquartile range for the following data set:

7, 11, 21, 28, 32, 33, 37, 43, 21, 33, 43, 28, 28, 37.

Q3 (2 points) The staff at a small company includes: 4 secretaries, 20 technicians, 4 engineers, 2 executives, and 50 factory workers. If a person is selected at random, what is the probability that he or she is an engineer given that he or she is not a factory worker?

Q4 (2 points) The costs of three models of helicopters are shown here. Find the weighted mean of the costs of the models.

Model	Number Sold	Cost
Sunscraper	12	\$427000
Skycoaster	8	365000
High-flyer	15	725000

Q5 (3 points) If there are 20 typographical errors randomly distributed in a 250-page document, find the probability that there are exactly five errors in a 50-page document.

Q6 (3 points) Construct the probability distribution for the number of heads obtained when tossing six coins. (Hint: Use the binomial formula)

Q7 (3 points) Businesses commonly project revenues under alternative economic scenarios. For a stylized example, inflation could be high or low and unemployment could be high or low. There are four possible scenarios, with the following assumed probabilities:

Scenario	Inflation	Unemployment	Probability
1	High	High	0.16
2	High	Low	0.24
3	Low	High	0.36
4	Low	Low	0.24

- (a) What is the probability of high inflation?
- (b) What is the probability of low inflation and low unemployment?
- (c) What is the probability of high inflation if unemployment is high?

Q8 (3 points) 10 runners compete in a marathon. Prizes will be given to the first 3 winners.
a) how many possible ways are there if the three prizes are different?

b) How many possible ways are there if prizes are the same?

Q9 (3 points) Calculate the mean and the variance for the following probability distribution:
 $P(X) = X$ for $X = 0.2, 0.3, 0.5$

Q10 (3 points) A survey reported that 27% of drivers in one Asian country use their mobile phones while driving. If 250 drivers are selected at random, find the probability that at least 90 drivers use their mobile phone while driving.

Q11 (3 points) The average waiting time for a college student in one private university during registration is 21.5 minutes with a standard deviation of 3.2 minutes. If a student arrives in the university to register, find the probability that he will have to wait between 17 and 25 minutes. Assume the variable is normally distributed.

Q12 (3 points) X is a random variable that follows a normal distribution with a mean equal to 4. Suppose that $P(X \geq 7) = 0.0668$. What is the standard deviation of X ?

Q13 (3 points) Mrs. Smith's reading class can read an average of 175 words per minute with a standard deviation of 20 words per minute. The top 3% of the class is to receive a special award. What is the minimum number of words per minute a student would need to read in order to get the award? Assume the data is normally distributed.

Q14 (3 points) In a study of the life expectancy of people in a certain geographic region, the mean age at death was 72 years, and the standard deviation was 5.3 years. If a sample of 50 people from this region is selected, find the probability that the mean life expectancy will be more than 65 years.