

(SOLUTIONS)

King Fahd University of Petroleum & Minerals
Department of Mathematical Science
STAT319-Term041

Quiz #1

Section: 5

Name:

ID:

Serial:

Question1 :(5-Points)

The following observations are the daily sales in thousands of super market in S.R.

50, 55, 49, 48, 70, 61, 69, 47, 57, 65, 73, 46, 64, 53, 61, 60, 63, 59, 74

- Construct an ordered stem-and-leaf plot
- Find the median.

(a)	4		6 7 8 9
	5		0 3 5 7 9
	6		0 1 1 3 4 5 9
	7		0 3 4

- (b) $n = 19$ which is odd \Rightarrow the median $\tilde{X} = X_{\left(\frac{n+1}{2}\right)} = X_{(10)} = 60$

Question2 (4-Points)

- a. In a 10-question examination, each question is graded right or wrong. The student gets A grade if he answered at least 8 questions, in how many ways can a student get A grade?

(2-Points)

(a) Number of ways to get A = Answering 8 or 9 or 10

$$= \binom{10}{8} + \binom{9}{10} + \binom{10}{10}$$
$$45 + 10 + 1 = 56$$

- b. How many distinguishable permutations of the letters are possible of the word "SUADIARABIA"? (2-Points)

$$n_1 = 1, n_2 = 1, n_3 = 4, n_5 = 2, n_6 = 1, n_7 = 1$$

- (b) Number of permutations = $\frac{11!}{1! 1! 4! 1! 2! 1! 1!} = 831,600$

Question3 : (6-Points)

A survey of adults was made to determine whether or not they like the taste of a new seasoning. The results are summarized in the following table:

	Like	Dislike	Total
Male	80	40	120
Female	320	160	480
Total	400	200	600

- a. Find the probability that the person like the seasoning or female.(3-Points)

(a)

let L: The person likes the seasoning

F: The person is female

$$\begin{aligned}P(L \cup F) &= P(L) + P(F) - P(L \cap F) \\ &= \frac{400}{600} + \frac{480}{600} - \frac{320}{600} = \frac{560}{600} = \frac{14}{15}\end{aligned}$$

- b. Find the probability that the person is neither male nor dislike the seasoning?
(3-Points)

(b)

Let M: The person is male

D: The person dislikes the seasoning

$$\begin{aligned}P(M \setminus \cap D) &= P(M \cup D)^c \\ &= 1 - P(M \cup D) \\ &= 1 - (P(M) + P(D) - P(M \cap D)) \\ &= 1 - \left(\frac{120}{600} + \frac{200}{600} - \frac{40}{600} \right) = 1 - \frac{7}{15} = \frac{8}{15}\end{aligned}$$