Yaşar University
Department of Mathematics
MATH2240 (Probability and Statistics for Engineers)
Quiz Exam-2, 16.08.2021

1. (15) For the data given below:

23	30	20	27	44	26	35	20	29	29
25	15	18	27	19	22	12	26	34	15
27	35	26	43	35	14	24	12	23	31
40	35	38	57	22	42	24	21	27	33

a) Construct the following table

Class Limits	Class Boundaries	Frequency	Cumulative Frequency	Cumulative Relative Frequency
10-17				
18-25				
26-33				
34-41				
42-49				
50-58				

b) Draw the histogram and the Frequency curve for the grouped data.
c) Draw the OGIVE curve.

2. (10) A coin is tossed 4 times. Find the probability of getting,

a) At least 1 head.
b) Draw the probability distribution of heads.

3. (15) Three machines A, B and C produce respectively 10%, 30% and 60% of the total number of items of a factory. The percentages of defective output of these machines are 3%, 4% and 5%.

a) If an item is selected at random, find the probability that the item is defective.
b) If an item is selected at random and is found to be defective, find the probability that the item was produced by machine B. (Use tree diagram to solve the question)

4. (15) A random sample of 200 adults are classified below by sex and their level of education attained.

Education	Male	Female
Elementary	38	45
Secondary	28	50
College	22	17

If a person is picked at random from this group, find the probability that

a) the person is a male, given that the person has a secondary education;

b) the person does not have a college degree, given that the person is a female.

5. (10) If the probability is 0.30 that a child exposed to a certain contagious disease will catch it, what is the probability that the eighth child exposed to the disease will be the third to catch it?

6. (10) It is known that 2.3 % of the items from a production line are defective. If a random sample of 100 items is taken from this production line, use Poisson approximation to estimate the probability that the sample contains:

a) At most 3 defective items,

b) at least 2 defective items

7. (5) A coin is tossed 500 times. Find,

a) Average number of heads.
b) Find the variance of heads.

8. (5) Two dice are rolled, Find the probability of getting a sum of 9 if it is known that the sum of the spots on the dice was less than 10.

9. (15) The mean commuting time between a person's home and office is 24 minutes. The standard deviation is 2 minutes. Assume the variable is normally distributed.

a. Find the probability that it takes a person between 24 and 28 minutes to get to work
b. Find the probability that it takes a person more than 28 minutes to get to work