

Probability Formative assessment

Link type comprehension

Question 1

Twenty four people had a blood test and the results are shown below.

A, B, B, AB, AB, B, O, O, AB, O, B, A
 AB, A, O, O, AB, B, O, A, AB, O, B, A

(a) Construct a frequency distribution for the data.

(b) If a person is selected randomly from the group of twenty four people, what is the probability that his/her blood type is not O?

Solution

(a)

class	frequency
A	5
B	6
AB	6
O	7

(b)

$$1 - (7/24) = 17/24 = 0.71 \text{ (rounded to 2 decimal places)}$$

True or False statement

Question 2

Over the past 100 working days, the number of defective bulbs produced by a machine is given in the following table:

No of Defective parts	0	1	2	3
Days	20	40	12	28

- The probability that tomorrow output will be defect free is .2
- The probability that tomorrow output will have at least 1 defect is .8
- The probability that tomorrow output will have more than 2 defect is .30
- The probability that tomorrow output will have 3 defects is .28

Solution

a) True $P=20/100=.2$

- b) True , $P=(40+12+28)/100=.8$
 c) False , $P=28/100=.28$
 d) True. $P=28/100=.28$

Multiple choice Questions

Question 3

The probability of the events lies between

- a) $-1 \leq p \leq 1$
 b) $0 \leq p \leq 1$
 c) $-1 \leq p \leq 0$
 d) $-1 < p \leq 1$

Solution (b)

Question 4

Twelve bags of wheat flour, each marked 5 kg, actually contained the following weights of flour (in kg):

4.97 5.05 5.08 5.03 5.00 5.06 5.08 4.98 5.04 5.07 5.00 5.12

Find the probability that any of these bags chosen at random contains more than 5 kg of flour

- a) $1/12$
 b) $7/12$
 c) $3/4$
 d) None of these

Solution (b)

No of bags having weight more than 5 kg=7

Total =12

So $p=7/12$

Question 5

A company selected 4000 households at random and surveyed them to find out a relationship between income level and the number of mobile sets in a home. The information so obtained is listed in the following table:

Monthly income	No of Mobile sets			
	0	1	2	Above 2
< 10000	20	80	10	0
10000 - 14999	10	240	60	0
15000 - 19999	0	380	120	30
20000 - 24999	0	520	370	80
25000 and above	0	1100	760	220

Find the probability of a household earning Rs 10000 – Rs 14999 per year and having exactly one mobile set

- a) .06
- b) .08
- c) .04
- d) None of these

Solution (a)

Around 240 household are there satisfying the condition
So $p=240/4000=.06$

Question 6

In the above question, Find the probability of a household earning more than 25000 per year and having exactly 2 mobile set

- a) .2
- b) .19
- c) .12
- d) .3

Solution (b)

Around 760 household are there satisfying the condition
So $p=760/4000=.19$

Question 7

In the above question, find the probability of a household earning more than 25000 per year and having 2 or more mobile set

- a) .245
- b) .3
- c) .1
- d) None of these

Solution (a)

Around 980 household are there satisfying the condition
So $p=980/4000=.245$

Question 8

In the above question, Find the probability of a household having no mobile set at all?

- a) $3/400$
- b) $1/400$
- c) $1/200$
- d) None of these

Solution (a)

Around 30 household are there satisfying the condition

So $p=30/4000=3/4000$

Question 9

In the above question, Find the probability of a household having 3 mobile set and having income less than 10000

- a) .1
- b) 0
- c) .24
- d) None of these

Solution (b)

As no household exists like that, So probability is 0