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Q4) If two fair dice are thrown, what is the probability of getting

1. A double six
2. A sum of 8 or more dots

Ans) When two fair dice is thrown, The possibilities are as below.

{
(1,1),(1,2),(1,3),(1,4),(1,5),(1,6),
(2,1),(2,2),(2,3),(2,4),(2,5),(2,6),
(3,1),(3,2),(3,3),(3,4),(3,5),(3,6),
(4,1),(4,2),(4,3),(4,4),(4,5),(4,6),
(5,1),(5,2),(5,3),(5,4),(5,5),(5,6),
(6,1),(6,2),(6,3),(6,4),(6,5),(6,6),
}

So, For getting 6 in both dices, The probability is 1/36.
And, For getting sum of 8, It can be (2,6),(3,5),(4,4),(5,3),(6,2) and It is 5/36.

Q1)

Ans)

x.	f
360–369.	2
370-379.	3
380-389.	5
390-399.	7
400-409.	5
410-419.	4
420-429.	3
430-439.	1

Total. 30

mean = Σ f. m/ Σf

Grade.	F.	midpoint	f. m. c. f
360–369.	2.	364.	728
370-379.	3.	374.5.	1122
380-389.	5.	384.5.	1922.5
390-399.	7.	394.5.	2758
400-409.	5.	404.5.	2022
410-419.	4.	414.5.	1658
420-429.	3.	424.5.	1273
430-439.	1.	434.5.	434.5

Mean = Σfm / Σf

= 11918 /30

=397.2

Mode =

L=390 ,f1=7 ,f0=5 ,f2= 5,h=9

Mode = l +(f1-f0/2f1-f0-f2)*h

Mode = 390 + (7-5 /2(7)-5-5)*9

Mode =390+(0.5)*9

Mode = 394.5

Median = L + (n/2-F /f) *c

Median = 400 + (4.6)*9

Median =441.4

Quartiles

Q1 =370-379

Q2= 400-409

Q3=420-429

Q3)

Ans)

1. Variance= $\sigma^2 = \sum (x - \bar{x})^2 / n$

Variance= 94(826.5-196)2/7

Variance = 94(391530)/7

Varaince = 5338260

Standard deviation = √variance

Standard deviation = √5338260

Standard deviation = 2310.4614

Q5)

Let C1,C2,⋯,CMC1,C2,⋯,CM be a partition of the sample space SS, and AA and BB be two events. Suppose we know that

- A and B are conditionally independent given $\mathbf{C_i}$, for all i ∈{1,2,⋯,M}
- B is independent of all $\mathbf{C_i}$**'s.**

Prove that A and B are independent.

Ans)

A and B are conditionally independent

C1 ,C2 CmC1 ,C2 ,Cm be a partition of the sample space. A and b are two events.

A occur seperately and B occur seperatly it is a separate events.

C1 …C2 are partition of the sample space .C are the sample space and A, B are events. Events are separate from samples.

Events are always separate from the sample. Events occur after sample and A and B are independent to each other.

Hence it is proved A and B are independent.

Q5) By multiplying each of the numbers 3,6,2,1,7,5 by 2 and then adding 5, we obtain 11,17,9,7,19,15. What is the relation between the standard deviation and the means of the two sets.

Ans) means = Σ x/n

Mean = 24/6

Mean =4

Mean = 78/6

Mean = 13

- $\sigma^2 = \sum (x - \bar{x})^2 / n$

varance = (78-13)2/6

variance = 4225/6

variance = 704

standard deviation = √variance

standard deviation = √704

standard deviation = 26.53

the standard deviation of the two sets is double of its 2nd set mean.

So the standard deviation is double of the 2nd mean.

And 1st mean is smaller than 2nd mean.