**Problem Statement 1:**

The marks awarded for an assignment set for a Year 8 class of 20 students were as

follows:

6 7 5 7 7 8 7 6 9 7 4 10 6 8 8 9 5 6 4 8

**ANS**:

sum of all numbers = 137

N = 20

**Mean** = sum of all/n

137/20= 6.85

**Median** = 4 4 5 5 6 6 6 6 7 7 7 7 7 8 8 8 8 9 9 10

7 is at n+1/2 position.

Median=7

**Mode**=

|  |  |
| --- | --- |
| 5 | 2 |
| 6 | 4 |
| 7 | 5 |
| 8 | 4 |
| 9 | 2 |
| 10 | 1 |

7 is most frequent number

Mode=7

**Standard Deviation=** sqrt( sig(x-X)^2/n)

Sig(x-X)^2 = 50.55

Standard deviation = 1.63

**Problem Statement 2:**

The number of calls from motorists per day for roadside service was recorded for a

particular month:

28, 122, 217, 130, 120, 86, 80, 90, 140, 120, 70, 40, 145, 113, 90, 68, 174, 194, 170,

100, 75, 104, 97, 75,

123, 100, 75, 104, 97, 75, 123, 100, 89, 120, 109

**ANS:**

**Mean = 107.51**

**Median = 100**

**Mode = 75**

**Standard Deviation = 39.33**

**Problem Statement 3:**

**The number of times I go to the gym in weekdays, are given below along with its**

**associated probability:**

**x = 0, 1, 2, 3, 4, 5**

**f(x) = 0.09, 0.15, 0.40, 0.25, 0.10, 0.01**

**Calculate the mean no. of workouts in a week. Also evaluate the variance involved in**

**it.**

**ANS:**

|  |  |  |
| --- | --- | --- |
| 0 | 0.09 | 0 |
| 1 | 0.15 | 0.15 |
| 2 | 0.4 | 0.8 |
| 3 | 0.25 | 0.75 |
| 4 | 0.1 | 0.4 |
| 5 | 0.01 | 0.05 |
|  |  | 2.15 |
|  |  | 0.43 |

Mean=0.43

Variance =

|  |  |
| --- | --- |
| 0 | 0.1849 |
| 0.15 | 0.0784 |
| 0.8 | 0.1369 |
| 0.75 | 0.1024 |
| 0.4 | 0.0009 |
| 0.05 | 0.1444 |
|  | 0.6479 |
|  | 0.12958 |

Variance=0.129

**Problem Statement 5:**

**A company manufactures LED bulbs with a faulty rate of 30%. If I randomly select 6**

**chosen LEDs, what is the probability of having 2 faulty LEDs in my sample?**

**Calculate the average value of this process. Also evaluate the standard deviation**

**associated with it.**

**ANS:**

P=0.3, Q=0.7

N=6,n=2

=6C2 (0.3)^2\*(0.7)4

=0.314

**Problem Statement 6:**

Gaurav and Barakha are both preparing for entrance exams. Gaurav attempts to

solve 8 questions per day with a correction rate of 75%, while Barakha averages

around 12 questions per day with a correction rate of 45%. What is the probability

that each of them will solve 5 questions correctly? What happens in cases of 4 and 6

correct solutions? What do you infer from it? What are the two main governing

factors affecting their ability to solve questions correctly? Give a pictorial

representation of the same to validate your answer.

**ANS:**

N=8 x=5 p=0.75 q-0.25

N=12 x=5 p=0.45 q-0.55

P(X=x)=Ncn p^x q^n-x

For Gaurav applying above formula

=0.207

For barakha applying above formula

=0.22

Probability that each of them will solve 5 questions correctly

=0.43

**Problem Statement 7:**

**Customers arrive at a rate of 72 per hour to my shop. What is the probability of k**

**customers arriving in 4 minutes? a) 5 customers, b) not more than 3 customers, c)**

**more than 3 customers. Give a pictorial representation of the same to validate your**

**answer.**

Using formula (lambda^x)\*(e^-lambda)/x!

1. 0.142 propability that 5 customers will arrive in 5 minutes
2. 0.74
3. 0.31

**Problem Statement 8:**

**I work as a data analyst in Aeon Learning Pvt. Ltd. After analyzing data, I make**

**reports, where I have the efficiency of entering 77 words per minute with 6 errors per**

**hour. What is the probability that I will commit 2 errors in a 455-word financial report?**

**What happens when the no. of words increases/decreases (in case of 1000 words,**

**255 words)?**

**How is the λ affected?**

**How does it influence the PMF?**

**Give a pictorial representation of the same to validate your answer.**

**Answer:**

Its in poison distribution form so formulae is (e^-u)\*u^x/x!

For 1 error person is typing 770 words

Propability of 2 errors in 445 words

U= 1/770\*445

X=2

Applying formulae the propability is 0.096

9.96% chances to get 2 errors in 445 words

23.4% chances to get 2 errors in 10000 words

3.8% chances to get 2 errors in 255 words