

1. An IT company claims that their newly developed learning platform improves student performance in online tests. According to previous data, 85% of students who used the platform passed their online tests. A batch of 50 students is selected at random who have completed the course using this platform. Let X denote the number of students who passed the test out of 50 students.
 - i. What is the distribution of X ?
 - ii. What is the probability that at least 47 students passed the test?

```
1 #Exercise
2 #Q1
3 #i.
4 #Binomial Distribution
5 #Here, random variable x has binomial distribution with n=50 and p = 0.85
6
7 #ii.
8 #(X>=47) we can write also as (X>46)
9 pbinom(46, 50, 0.85, lower.tail = FALSE)
10
```

9:41 (Top Level) ⬆

Console **Terminal** × **Background Jobs** ×

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```
> #Exercise
> #Q1
> #i.
> #Binomial Distribution
> #Here, random variable x has binomial distribution with n=50 and p = 0.85
>
> #ii.
> #(X>=47) we can write also as (X>46)
> pbinom(46, 50, 0.85, lower.tail = FALSE)
[1] 0.04604658
> |
```

2. A call center receives an average of 12 customer calls per hour.

- i. What is the random variable (X) for the problem?
- ii. What is the distribution of X?
- iii. What is the probability that exactly 15 calls are received in an hour?

```
11
12 #Q2
13 #i.
14 #Number of calls received per hour
15
16 #ii.
17 #Poisson distribution
18 #Here, random variable x has poisson distribution with lambda=12
19
20 #iii.
21 #(X=15)
22 dpois(15, 12)
```

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```
> #Q2
> #i.
> #Number of calls received per hour
>
> #ii.
> #Poisson distribution
> #Here, random variable x has poisson distribution with lambda=12
>
> #iii.
> #(X=15)
> dpois(15, 12)
[1] 0.07239112
> |
```