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?

```
3  n = 50
4  p = 0.85
5
```

ii. What is the probability that at least 47 students passed the test?

```
7  prob_atleast_47 <- 1 - pbinom(46,50,0.85)
8  prob_atleast_47
```

```
> prob_atleast_47 <- 1 - pbinom(46,50,0.85)
> prob_atleast_47
[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?

Answer: X = Number of calls per hour

ii. What is the distribution of X?

Answer: Poisson (Lamda = 12)

iii. What is the probability that exactly 15 calls are received in an hour?

```
10  dpois(15,12)
11
```

```
> dpois(15,12)
[1] 0.07239112
>
```