01)

```
> #1)
> n <- 44
> p <- 0.92
>
> cat("X follows a Binomial distribution: Binomial(", n, ",", p, ")\n")
X follows a Binomial distribution: Binomial( 44 , 0.92 )

> #2)
> dbinom(40,44,0.92)
[1] 0.1979776
>
> #3)
> pbinom(35, 44, 0.92, lower.tail = TRUE)
[1] 0.007252274
>
> #4)
> 1-pbinom(37, 44, 0.92,lower.tail = TRUE)
[1] 0.9412233
> pbinom(37,44, 0.92, lower.tail = FALSE)
[1] 0.9412233
> #5)
> pbinom(42, 44, 0.92,lower.tail = TRUE)-pbinom(39, 44, 0.92, lower.tail = TRUE)
[1] 0.6025556
```

02)

```
> #1)
> cat("X = Number of babies born in the hospital in a day\n")
X = Number of babies born in the hospital in a day

> #2)
> lambda <- 5
> cat("X follows a Poisson distribution with parameter λ =", lambda, "\n")
X follows a Poisson distribution with parameter λ = 5

> #3)
> dpois(6,5)
[1] 0.1462228
> #4)
> ppois(6, 5,lower.tail = FALSE)
[1] 0.2378165
```

Exercise

01)

```
> #01)
> #i. What is the distribution of X?
> n <- 50
> p <- 0.85
>
> # Distribution of X
> cat("X follows Binomial distribution: Binomial(", n, ",", p, ")\n")
X follows Binomial distribution: Binomial( 50 , 0.85 )
> #ii. What is the probability that at least 47 students passed the test?
> prob <- 1 - pbinom(46, size = n, prob = p)
> cat("Probability that at least 47 students passed:", prob, "\n")
Probability that at least 47 students passed: 0.04604658
```

---

02)

```
> #i. What is the random variable (X)?
> cat("X = Number of customer calls received in an hour\n")
X = Number of customer calls received in an hour
> #ii. What is the distribution of X?
> lambda <- 12
> cat("X follows a Poisson distribution with parameter λ =", lambda, "\n")
X follows a Poisson distribution with parameter λ = 12
> #iii. Probability that exactly 15 calls are received in an hour
> prob <- dpois(15, lambda = 12)
> cat("Probability that exactly 15 calls are received:", prob, "\n")
Probability that exactly 15 calls are received: 0.07239112
```
