

6. Binomial(7, 1/4) random variable x .

- i] Compute probability of 2 successes
- ii] Compute probabilities of whole space
- iii] Display probabilities in a table
- iv] Show the shape of the binomial distribution

ans > dbinom(2, 7, 1/4)
[1] 0.3114624

> dbinom(0:7, 7, 1/4)

[1] 1.334839 e-01

[2] 3.114624 e-01

[3] 3.114624 e-01

[4] 1.730347 e-01

[5] 5.767822 e-02

[6] 1.153564 e-02

[7] 1.281738 e-03

[8] 6.103516 e-05

> p = data.frame(0:7, dbinom(0:7, 7, 1/4))
> round(p, 4)

| | x0.7 | dbinom.0.7..7..1.4. |
|---|------|---------------------|
| 1 | 0 | 0.1335 |
| 2 | 1 | 0.3115 |
| 3 | 2 | 0.3115 |
| 4 | 3 | 0.1730 |
| 5 | 4 | 0.0577 |
| 6 | 5 | 0.0115 |
| 7 | 6 | 0.0013 |
| 8 | 7 | 0.0001 |

> plot(0:7, dbinom(0:7, 7, 1/4), type = "o")

8. 10% of the screws produced are defective. Out of 20 screws selected at random, there are

- i] Exactly 2 defective
- ii] At least 2 defectives
- iii] $[1, 3]$ defectives

ans > dbinom(2, 20, 0.10)
[1] 0.2851798

> -dbinom(1, 20, 0.10) + 1
[1] 0.7298297

> sum(dbinom(1:3, 20, 0.10))
[1] 0.74547

3. PD with parameter '2'

- i] How to obtain sequence from 0 to 10
- ii] Calculate $P(0)$ to $P(10)$ when $\lambda = 2$
- iii] $P(x \leq 6)$
- iv] Sum of all possibilities
- v] $P(y > 6)$
- vi] Make a table of first 11 Poisson probabilities and cumulative probabilities when $\mu = 2$
- vii] Plot the probabilities

ans

> 0:10

[1] 0 1 2 3 4 5 6 7 8 9 10

> round(dpois(0:10, 2), 3)

[1] 0.135 0.271 0.271 0.180 0.090

0.036 0.012 0.003 0.001 0.000 0.000