

$$\begin{aligned}
 1a) P(3 \leq X \leq 6) &= P(X=3) + P(X=4) + P(X=5) + P(X=6) \\
 &= \binom{15}{3} (0.25)^3 (0.75)^{12} + \binom{15}{4} (0.25)^4 (0.75)^{11} + \binom{15}{5} (0.25)^5 (0.75)^{10} + \binom{15}{6} (0.25)^6 (0.75)^9 \\
 &= 0.7073 //
 \end{aligned}$$

$$\begin{aligned}
 b) P(X \leq 3) &= P(X=0) + P(X=1) + P(X=2) + P(X=3) \\
 &= \binom{15}{0} (0.25)^0 (0.75)^{15} + \binom{15}{1} (0.25)^1 (0.75)^{14} + \binom{15}{2} (0.25)^2 (0.75)^{13} + \binom{15}{3} (0.25)^3 (0.75)^{12} \\
 &= 0.4613 //
 \end{aligned}$$

$$\begin{aligned}
 c) P(X > 5) &= 1 - P(X \leq 5) \\
 &= 1 - (P(X=0) + P(X=1) + P(X=2) + P(X=3) + P(X=4) + P(X=5)) \\
 &= 1 - 0.8516 \\
 &= 0.1484 //
 \end{aligned}$$

a.) 4 dokter dan 2 perawat

$$\begin{aligned}
 C(10,4) \times C(5,2) &= \frac{10!}{4!(10-4)!} \times \frac{5!}{2!(5-2)!} \\
 &= 2100
 \end{aligned}$$

5 dokter dan 2 perawat

$$\begin{aligned}
 C(10,5) \times C(5,2) &= \frac{10!}{5!(10-5)!} \times \frac{5!}{2!(5-2)!} \\
 &= 2520
 \end{aligned}$$

6 dokter dan 1 perawat

$$\begin{aligned}
 C(10,6) \times C(5,1) &= \frac{10!}{6!(10-6)!} \times \frac{5!}{1!(5-1)!} \\
 &= 1050
 \end{aligned}$$

7 dokter dan 0 perawat

$$\begin{aligned}
 C(10,7) \times C(5,0) &= \frac{10!}{7!(10-7)!} \times 1 \\
 &= 120
 \end{aligned}$$

$$\begin{aligned}
 C(15,7) &= \frac{15!}{7!(15-7)!} \\
 &= 6435
 \end{aligned}$$

$$P = \frac{2100 + 2520 + 1050 + 120}{6435} = 0.9 //$$

b.) 3 dokter dan 4 perawat

$$\begin{aligned}
 C(10,3) \times C(5,4) &= \frac{10!}{3!(10-3)!} \times \frac{5!}{4!(5-4)!} \\
 &= 600
 \end{aligned}$$

$$P = \frac{600 + 2100 + 2520}{6435} = 0.81 //$$

$$c.) P = 1 - \frac{120}{6435} = 0.98 //$$

3.) 5 spade

$$C(13,5) = \frac{13!}{5!(13-5)!} = 1287$$

2 Heart

$$C(13,2) = \frac{13!}{2!(13-2)!} = 78$$

3 Diamond

$$C(13,3) = \frac{13!}{3!(13-3)!} = 286$$

3 Club

$$C(13,3) = 286$$

$$P = \frac{1287 \times 78 \times 286 \times 286}{C(52,13)} = 0.0125 //$$

$$\begin{aligned}
 1a.) P(X=7) &= \binom{6}{2} \left(\frac{1}{6}\right)^2 \times \left(\frac{5}{6}\right)^4 \\
 &= 15 \times \frac{1}{216} \times \frac{625}{1296} \\
 &= 0.0235 //
 \end{aligned}$$

$$\begin{aligned}
 b.) P(X=4) &= \left(\frac{5}{6}\right)^3 \times \frac{1}{6} \\
 &= \frac{125}{216} \times \frac{1}{6} \\
 &= 0.0965 //
 \end{aligned}$$

2372095

Joshua Christian Benedict

PR Case 06

Statistika (A)

Hal 02

28 Maret 2025

$$5a) P(X=5) = \frac{e^{-3} 3^5}{5!}$$

$$= \frac{0.0498 \times 243}{120}$$

$$= 0.1008 //$$

$$b.) P(X=0) = \frac{e^{-3} 3^0}{0!}$$

$$= 0.0498$$

$$P(X=1) = \frac{e^{-3} 3^1}{1!}$$

$$= 0.1494$$

$$P(X=2) = \frac{e^{-3} 3^2}{2!}$$

$$= 0.2240$$

$$P(X < 3) = 0.0498 + 0.1494 + 0.2240 = 0.4232 //$$

$$c.) P(X \geq 1) = 1 - P(X=0)$$

$$= 1 - 0.0498$$

$$= 0.9502 //$$

$$d.) P(X=0) = 0.0498 //$$