

$$\textcircled{1} P(E) = 0,08 \quad n = 10.$$

$$P(X > 3) = 1 - [P(X=0) + P(X=1) + P(X=2)] = 1 - \left[\binom{10}{0} \cdot 0,92^{10} + \binom{10}{1} \cdot 0,08 \cdot 0,92^9 + \binom{10}{2} \cdot 0,08^2 \cdot 0,92^8 \right] = 1 - (0,92^{10} + 10 \cdot 0,08 \cdot 0,92^9 + 45 \cdot 0,08^2 \cdot 0,92^8) = 0,040 \approx 4\%$$

$$b) P(X=3) = \binom{10}{3} \cdot 0,08^3 \cdot 0,92^7 = 0,03 = 3\%$$

$$c) n = 100 \quad p = 0,08$$

$$\text{media} = np = 100 \cdot 0,08 = 8$$

$$4. \quad \boxed{n=9} \quad \boxed{p=0,45}$$

$$X \sim B(9, 0,45)$$

$$\mu = 9 \cdot 0,45 = 4,05$$

$$\sigma = \sqrt{9 \cdot 0,45 \cdot 0,55} = 1,49$$

$$P(X \leq 2) = P(X=0) + P(X=1) + P(X=2)$$

$$= \binom{9}{0} 0,55^9 + \binom{9}{1} \cdot 0,45 \cdot 0,55^8 +$$

$$+ \binom{9}{2} \cdot 0,45^2 \cdot 0,55^7 =$$

$$= 0,55^9 + 9 \cdot 0,45 \cdot 0,55^8 + 36 \cdot 0,45^2 \cdot 0,55^7$$

$$= 0,1495 = 14,95\% \quad \text{Le sukira}$$

an punto.

$$X \sim N(\mu, 10)$$

$$P(X < 130) = 0,6915$$

$$a) P\left(\frac{X - \mu}{10} < \frac{130 - \mu}{10}\right) = 0,6915$$

$$P\left(Z < \frac{130 - \mu}{10}\right) = 0,6915$$

$$\frac{130 - \mu}{10} = 0,5 \quad 130 - \mu = 5$$

$$\mu = 130 - 5 = 125 \text{ km.}$$

$$b) P(X < 120) = P\left(\frac{X - 125}{10} < \frac{120 - 125}{10}\right)$$

$$= P(Z < -0,5) = 1 - P(Z < 0,5)$$

$$= 1 - 0,6915 = 0,3085 = 30,85\%$$

$$c) P(120 < X < 150) =$$

$$= P\left(\frac{120 - 125}{10} < Z < \frac{150 - 125}{10}\right) =$$

$$= P(-0,5 < Z < 2,5) =$$

$$P(Z < 2,5) - P(Z < -0,5) =$$

$$= 0,9938 - 0,3085 = 0,6853$$

6. $X \sim N(\mu, \sigma)$

$P\{X \sim N(2,8, \sigma)$

$$P(X > 3) = 0,2005$$

$$P\left(Z > \frac{3-2,8}{\sigma}\right) = 0,2005$$

$$P\left(Z > \frac{0,2}{\sigma}\right) = 0,2005$$

$$1 - P\left(Z \leq \frac{0,2}{\sigma}\right) = 0,2005$$

$$P\left(Z \leq \frac{0,2}{\sigma}\right) = 0,7995$$

$$0,84 = \frac{0,2}{\sigma}, \quad \sigma = \frac{0,2}{0,84} = 0,239$$

$$P(X < 2,9) = P\left(\frac{X-2,8}{0,239} < \frac{2,9-2,8}{0,239}\right) =$$

$$P(Z < 0,42) = 0,6628$$

$$z \quad p = 0,4 \quad n = 9$$

$$X \sim B(9, 0,4)$$

$$b) \quad \mu = 9 \cdot 0,4 = 3,6$$

$$\sigma = \sqrt{9 \cdot 0,4 \cdot 0,6} = 1,46$$

$$\begin{aligned} c) \quad P(X > 5) &= 1 - [P(X=0) + P(X=1) \\ &+ P(X=2) + P(X=3) + P(X=4)] = \\ &= 1 - \left[0,4^9 + \binom{9}{1} 0,4^8 \cdot 0,6 + \binom{9}{2} 0,4^7 \cdot 0,6^2 + \right. \\ &\quad \left. + \binom{9}{3} 0,4^6 \cdot 0,6^3 + \binom{9}{4} 0,4^5 \cdot 0,6^4 \right] = \\ &= 0,7334 = 0,7334 \end{aligned}$$

$$8. \quad X \sim N(10, 0,1)$$

$$P(9,8 < X < 10,4)$$

$$P\left(\frac{9,8-10}{0,1} < z < \frac{10,4-10}{0,1}\right)$$

$$P(-2 < z < 4) = P(z < 4) - P(z < -2)$$

$$= P(z < 4) - (1 - P(z < 2)) \\ = 0,98413 + 0,97725 - 1 = 0,96138$$

$$a) 1 - 0,8125 = 0,1875$$

$$b) n = 1500$$

$$\mu = 1500 \cdot 0,1875 = 273 \text{ def.}$$