data • •

S T Q Q S S D

1) a) $p(II|S) = \frac{p(II|S)\,p(S|II)}{p(S)} = \frac{(0,35)(0,01)}{(0,40)(0,02)+(0,35)(0,01)+(0,25)(0,03)}$

$= \frac{0,0035}{0,019} = 0,184 = 18,4\%$

b) I) 40% 2%
II) 35% 1%
III) 25% 3%

$p(S) = p(0,40)\,p(0,02) + p(0,35)\,p(0,01) + p(0,25)\,p(0,03)$
$p(S) = 0,008 + 0,0035 + 0,0075$
$p(S) = 0,019$

$p(I|S) = \frac{p(I)\,p(S|I)}{p(S)}$

$p(I|S) = \frac{(0,40)(0,02)}{(0,40)(0,02)+(0,35)(0,01)+(0,25)(0,03)}$

$p(I|S) = \frac{0,008}{0,019} = 0,421 = 42,1\%$

$p(III|S) = \frac{(0,25)(0,03)}{(0,40)(0,02)+(0,35)(0,01)+(0,25)(0,03)}$

$p(III|S) = \frac{0,0075}{0,019} = 0,394 = 32,4\%$

$C_{n,x} = \frac{n!}{x!(n-x)!}$

2) a) $p = 20\% = 0,20$ $\quad P(x) = C_{n,x} \cdot (p)^x \cdot (q)^{n-x}$

$n = 16$

$x = 0$

$P(x) = 1 \cdot 0,20^0 \cdot (1-0,20)^{16}$

$P(x) = 1 \cdot 1 \cdot (0,8^{16})$

$P(x) = 1 \cdot 1 \cdot 0,0281479$

$P(x) = 0,0281 \times 100$

$P(x) = 2,81\%$

$C_{n,x} = \frac{n!}{x!(n-x)!} = 1$

2) b) $p = 20\% = 0,20$ $\quad P(x \leq x) = 16 \cdot 0,20^1 \cdot (1-0,20)^{15}$

$n = 16$

$x = 1$

$P(x \leq x) = 16 \cdot 0,2 \cdot 0,8^{15}$

$P(x \leq x) = 16 \cdot 0,2 \cdot 0,0351843$

$P(x \leq x) = 0,1125 \times 100$

$P(x \leq x) = 11,25\%$

$C_{n,x} = \frac{n!}{x!(n-x)!} = 16$

$P(x \leq x) = 2,81\% + 11,25\%$

$P(x \leq x) = 14,06$

3)a) p: 5% : 0,05
h: 6

$P(x=k) = \binom{n}{k} \cdot p^k \cdot (1-p)^{n-k}$

$P(x \geq 1) = P(x=1) + P(x=2) + P(x=3) + P(x=4) + P(x=5) + P(x=6)$

$\binom{6}{1} \cdot 0,05^1 \cdot 0,95^5 + \binom{6}{2} \cdot 0,05^2 \cdot 0,95^4 + \binom{6}{3} \cdot 0,05^3 \cdot 0,95^3 + \binom{6}{4} \cdot 0,05^4 \cdot 0,95^2 + \binom{6}{5} \cdot 0,05^5 \cdot 0,95^1 + \binom{6}{6} \cdot 0,05^6 \cdot 0,95^0$

$\binom{6}{1} = 6$ $\quad \binom{6}{2} = 15$ $\quad \binom{6}{3} = 20$ $\quad \binom{6}{4} = 15$ $\quad \binom{6}{5} = 6$ $\quad \binom{6}{6} = 1$

$= 0,2649 = 26,49\%$

b) p: 5% : 0,05
h: 6
x: 0

$P(\leq x) = 1 \cdot 0,05^0 \cdot (1-0,05)^6$
$P(\leq x) = 1 \cdot 1 \cdot 0,7350$
$P(\leq x) = 73,50\%$

p: 5% : 0,05
n: 6
x: 1

$P(\leq x) = 6 \cdot 0,05^1 \cdot (1-0,05)^5$
$P(\leq x) = 6 \cdot 0,05 \cdot 0,7737$
$P(\leq x) = 23,21\%$

p: 5% : 0,05
n: 6
x: 2

$P(\leq x) = 15 \cdot 0,05^2 \cdot (1-0,05)^4$
$P(\leq x) = 15 \cdot 0,0025 \cdot 0,8145$
$P(\leq x) = 3,05\%$

$P(\leq x) = 73,50\% + 23,21\% + 3,05\%$
$P(\leq x) = 99,76\%$

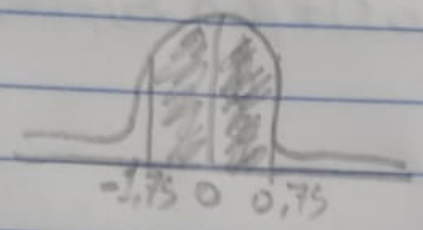
a)

5) $\mu = 45$

$\sigma = 12$

$Z = \frac{x - \mu}{\sigma}$

$P\left(\frac{24-45}{12} < Z < \frac{54-45}{12}\right) =$



$P(-1,75 < Z < 0,75) =$

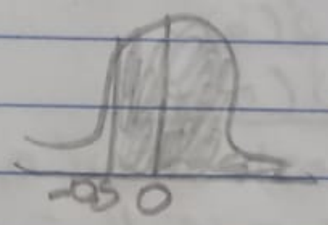
$p(0,4599 + 0,2734) = 0,7333$ ou

73,33%

b) $P(Z > 39)$

$p(Z > \frac{39-45}{12})$

$p(Z > -0,5)$



$p = 0,1915 + 0,5 = 0,6915$ ou 69,15%.

4) $\mu = 5.000,00$

$\sigma = 750,00$

$P\left(\frac{4250-5000}{750} < Z < \frac{5750-5000}{750}\right)$

$p(-1 < Z < 1)$

$p(0,3413 + 0,3413) = 0,6826$ ou

$p = 68,26\%$

b) $p(Z = 5500)$

$p(z = \frac{5500-5000}{750}$

$p(z = 0,66 = 0,2454$ ou 24,54%.