



COLEGIO ALMA'S
bilingual school

APPELLIDOS Y NOMBRE: Corrección Recuperación
CURSO: 2° Bachillerato N° 1° Evaluación
FECHA: 10-01-2018 ASIGNATURA: Matemáticas
U.S.S.2.

1) $X \sim N(7, 3)$

a) $P(X < 5) = P\left(Z \leq \frac{5-7}{\sqrt{3}}\right) = P(Z \leq -0.67) = 1 - P(Z \leq 0.67) = 1 - 0.7486 = \boxed{0.2514}$

b) $P(9 \leq X \leq 15) = P\left(\frac{9-7}{\sqrt{3}} \leq Z \leq \frac{15-7}{\sqrt{3}}\right) = P(0.67 \leq Z \leq 2.67) = P(Z \leq 2.67) - P(Z \leq 0.67) = 0.9962 - 0.7486 = \boxed{0.2476}$

c) $n = 1000$

$P(X > 8) = P\left(Z > \frac{8-7}{\sqrt{3}}\right) = P(Z > 0.33) = 1 - P(Z \leq 0.33) = 1 - 0.6293 = \boxed{0.3707}$

2) $n = 100$
 $\bar{x} = 18.7$
 $\alpha = 0.1 \rightarrow z_{\alpha/2} = 1.645$
 $\sigma = 0.8$

$\left[18.7 - 1.645 \frac{0.8}{\sqrt{100}}, 18.7 + 1.645 \frac{0.8}{\sqrt{100}}\right]$

$\boxed{[18.57, 18.83]}$

$1000 \cdot 0.3707 = 370.7$

entre 370 y 371 enfermos

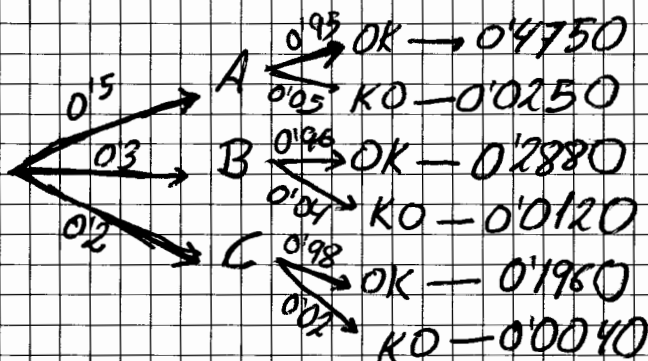
3) $X \sim N(176, 12)$

$P(170 \leq X \leq 190) = P\left(\frac{170-176}{\sqrt{12}} \leq Z \leq \frac{190-176}{\sqrt{12}}\right) = P(-0.55 \leq Z \leq 1.17) = P(Z \leq 1.17) + P(Z \leq 0.55) - 1 = 0.8790 + 0.6915 - 1 = \boxed{0.5705}$

4) Legenda:

A = máquina A
B = " B
C = " C

OK = correctamente fabricados



a) $P(KO) = P(A)P(KO|A) + P(B)P(KO|B) + P(C)P(KO|C) = 0.0250 + 0.0120 + 0.0040 = \boxed{0.0410}$

b) $P(C|KO) = \frac{P(C)P(KO|C)}{P(KO)} = \frac{0.0040}{0.0410} = \boxed{0.0976}$



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5) $p = \frac{5}{100} = 0.05$
 $n = 600$
 $X \sim B_i(600, 0.05)$ $\xrightarrow{n=600 \gg 30}$ $X \sim N(30, 5.34)$
 $np = 600 \cdot 0.05 = 30.5$
 $nq = 600 \cdot 0.95 = 570.5$

a) $P(X < 25) = P(Z \leq \frac{25-30}{5.34}) = P(Z \leq -0.94) = 1 - P(Z \leq 0.94) = 1 - 0.8264 = \boxed{0.1736}$

b) $nq = 600 \cdot 0.95 = \boxed{570 \text{ relojes}}$

6) $n = 50$
 $\bar{X} = 6.5$
 $\sigma = 1.2$
 a) $\alpha = 0.05 \rightarrow Z_{\alpha/2} = 1.96$ $[\frac{6.5 - 1.96 \cdot \frac{1.2}{\sqrt{50}}, 6.5 + 1.96 \cdot \frac{1.2}{\sqrt{50}}]$
 $\boxed{[6.17, 6.83]}$

b) $[6.4, 6.9] \rightarrow EMC = 0.4 = Z_{\alpha/2} \cdot \frac{1.2}{\sqrt{50}} \rightarrow Z_{\alpha/2} = 2.36$
 $1 - \frac{\alpha}{2} = 0.9909 \rightarrow \alpha = 2 \cdot 2 \cdot 0.9909 = \boxed{0.0182}$

7) $p = 0.30$
 $n = 100$
 $X \sim B_i(100, 0.3)$ $\xrightarrow{n=100 \gg 30}$ $X \sim N(30, 4.58)$
 $np = 30.5$
 $nq = 70.5$

$P(X \geq 25) = P(Z \geq \frac{25-30}{4.58}) = P(Z \geq -1.09) = P(Z \leq 1.09) = \boxed{0.8621}$

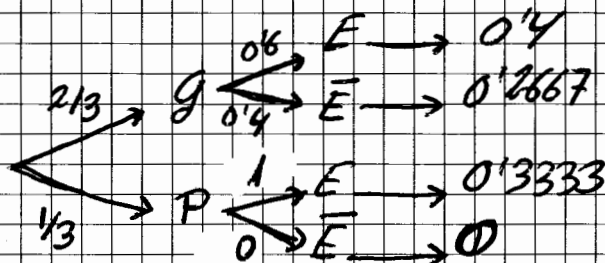
8) $\sigma = 6$
 $\alpha = 0.05 \rightarrow Z_{\alpha/2} = 1.96$
 $EMC = 1$
 $n \geq \left(\frac{1.96 \cdot 6}{1}\right)^2 = 138.2976 \rightarrow \boxed{n \geq 139}$

9) leyendo

G = guagua grande

P = " pequeña

E = saber esquiar



a) $P(E) = P(G)P(E/G) + P(P)P(E/P) = 0.4 + 0.3333 = \boxed{0.7333}$



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$$b) P(G|E) = \frac{P(G)P(E|G)}{E} = \frac{0'4}{0'7333} = \boxed{0'5455}$$

$$\textcircled{110} \left. \begin{array}{l} p=0'92 \\ n=110 \end{array} \right\} X \sim Bi(110, 0'92) \xrightarrow{np=107'30} X \sim N(107'30, 2'85)$$
$$np = 107'30$$
$$nq = 2'70$$

$$a) P(X > 90) = P\left(Z \geq \frac{90 - 107'30}{2'85}\right) = P(Z \geq -3'93) = P(Z \leq 3'93) = \boxed{1}$$

$$b) P(95 \leq X \leq 105) = P\left(\frac{95 - 107'30}{2'85} \leq Z \leq \frac{105 - 107'30}{2'85}\right) = P(-2'18 \leq Z \leq 1'33)$$
$$= P(Z \leq 1'33) - P(Z \leq -2'18) = 0'9082 - 0'0118 = \boxed{0'8964}$$