1

$m(\overline{I \cup F}) = \boxed{3}$

$m(I \cup F) = 28 - 3 = 25$

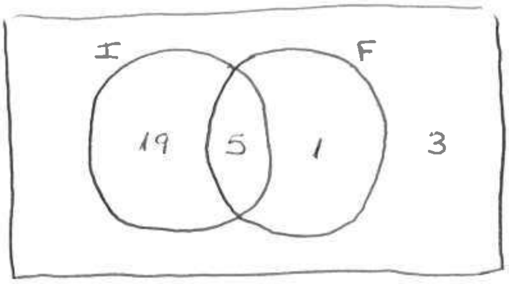
$m(I \cup F) = m(I) + m(F) - m(I \cap F)$

$25 \quad = \quad 24 + 6 \quad - m(I \cap F)$

$m(I \cap F) = \boxed{5}$

$m(I \cap \overline{F}) = 24 - 5 = \boxed{19}$

$m(F \cap \overline{I}) = 6 - 5 = \boxed{1}$



	I	$\overline{I}$	
F	5	1	6
$\overline{F}$	19	3	22
	24	4	28

b) $P(I \cap F) = \boxed{\dfrac{5}{28}}$

c) $P\big((I \cap \overline{F}) \cup (F \cap \overline{I})\big) = \dfrac{19+1}{28} = \dfrac{20}{28} = \boxed{\dfrac{5}{7}}$

d) $P(F/I) = \dfrac{P(F \cap I)}{P(I)} = \dfrac{5/28}{24/28} = \boxed{\dfrac{5}{24}}$

2

a) $P(A \cup B) = P(A) + P(B) - P(A \cap B)$

$\dfrac{6}{11} = \dfrac{3}{11} + \dfrac{4}{11} - P(A \cap B) \Rightarrow \boxed{P(A \cap B) = \dfrac{1}{11}}$

b) A, B independientes $\Rightarrow P(A \cap B) = P(A) \cdot P(B) = \dfrac{3}{11} \cdot \dfrac{4}{11} = \boxed{\dfrac{12}{121}}$

3

a) $P(A \cup B) = P(A) + P(B) - P(A \cap B) = \dfrac{1}{2} + \dfrac{1}{3} - \dfrac{1}{4} = \boxed{\dfrac{7}{12}}$

$P(A \cap \overline{B}) = P(A) - P(A \cap B) = \dfrac{1}{2} - \dfrac{1}{4} = \boxed{\dfrac{1}{4}}$

$P(\overline{A} \cap \overline{B}) = P(\overline{A \cup B}) = 1 - \dfrac{7}{12} = \boxed{\dfrac{5}{12}}$

	A	$\overline{A}$	
B	1/4	1/12	1/3
$\overline{B}$	1/4	5/12	2/3
	1/2	1/2	1

b) $P(A \cap B) = 1/4$

$P(A) \cdot P(B) = \dfrac{1}{2} \cdot \dfrac{1}{3} = 1/6$

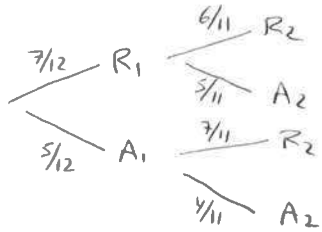
$P(A \cap B) \neq P(A) \cdot P(B) \longrightarrow$ $\boxed{A, B \text{ no son independientes}}$

$P(A \cap B) = 1/4 \neq 0 \Rightarrow \boxed{A, B \text{ no son incompatibles}}$

4

R = "tener color Rojo"

A = " " " Amarillo"



$P(\text{distinto color}) = P\big((R_1 \cap A_2) \cup (A_1 \cap R_2)\big) =$

$= \dfrac{7}{12} \cdot \dfrac{5}{11} + \dfrac{5}{12} \cdot \dfrac{7}{11} = \dfrac{70}{132} = \boxed{\dfrac{35}{66}}$

5

E = "hablar ESPAÑOL como primera lengua"

I = $\overline{E}$ = " " INGLÉS " " "

G = " ser de GIBRALTAR"

	E	I	
G	12	3	15
$\overline{G}$		3	
	15	6	21

a) $m(G) = m(E \cap G) + m(I \cap G) = 12 + 3 = 15$

$P(E/G) = \dfrac{12}{15} = \dfrac{4}{5} = \boxed{0'8}$

b) $m(\overline{G} \cap I) = m(I) - m(G \cap I) = 6 - 3 = 3$

$m(\overline{G}/I) = \dfrac{3}{6} = \boxed{0'5}$

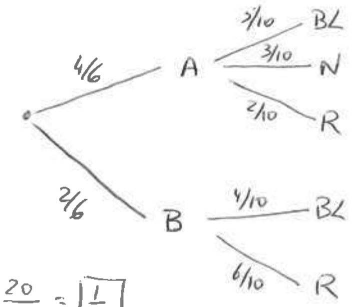
⑥ A = "resultar cara A en el dedo"

$B = \overline{A}$ = " " " B " " "

BL = "sacar bola BLANCA"

N = " " " NEGRA"

R = " " " ROJA"



a) $P(A \cap BL) = P(A) \cdot P(BL/A) = \frac{4}{6} \cdot \frac{5}{10} = \frac{20}{60} = \boxed{\frac{1}{3}}$

b) $P(BL/A) = \frac{5}{10} = \boxed{0'5}$

c) $P(BL) = P(A) \cdot P(BL/A) + P(B) \cdot P(BL/B) = \frac{4}{6} \cdot \frac{5}{10} + \frac{2}{6} \cdot \frac{4}{10} = \frac{28}{60} = \boxed{\frac{7}{15}}$

⑦ E1 = "ser de 1º de ESO"

E2 = " " " 2º de ESO"

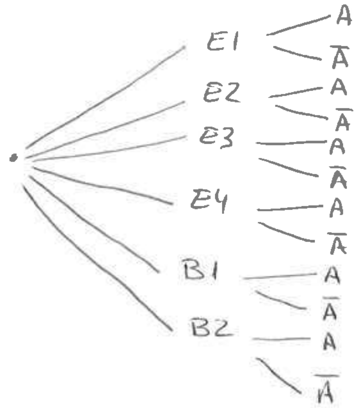
E3 = " " " 3º de ESO"

E4 = " " " 4º de ESO"

B1 = " " " 1º de Bachillerato"

B2 = " " " 2º " "

A = "Aprobar"



$P(B2) = 100\% - 20\% - 20\% - 18\% - 16\% - 15\% = 11\%$

a) $P(A) = P(E1) \cdot P(A/E1) + \dots + P(B2) \cdot P(A/B2) =$

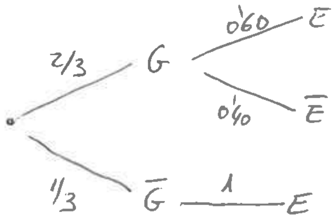
$= 0'2 \cdot 0'7 + 0'2 \cdot 0'6 + 0'18 \cdot 0'50 + 0'16 \cdot 0'40 + 0'15 \cdot 0'50 + 0'11 \cdot 0'40 = \boxed{0'533}$

b) $P(B1/A) = \frac{P(B1 \cap A)}{P(A)} = \frac{0'15 \cdot 0'50}{0'533} = \boxed{0'1407}$

⑧ G = "ir en autobús GRANDE"

$\overline{G}$ = " " " " pequeño"

E = "saber ESQUIAR"

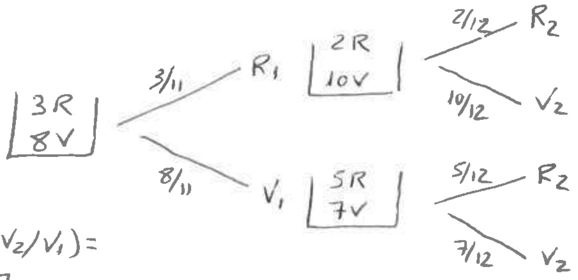


a) $P(E) = P(G) \cdot P(E/G) + P(\overline{G}) \cdot P(E/\overline{G}) = \frac{2}{3} \cdot 0'60 + \frac{1}{3} \cdot 1 = \boxed{\frac{11}{15}}$

b) $P(\overline{G}/E) = \frac{P(\overline{G} \cap E)}{P(E)} = \frac{\frac{1}{3} \cdot 1}{\frac{11}{15}} = \boxed{\frac{5}{11}}$

⑨ R = "sacar bola ROJA"

V = "sacar bola VERDE"



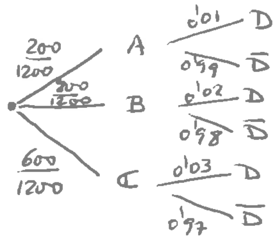
a) $P(V_2) = P(R_1) \cdot P(V_2/R_1) + P(V_1) \cdot P(V_2/V_1) =$

$= \frac{3}{11} \cdot \frac{10}{12} + \frac{8}{11} \cdot \frac{7}{12} = \boxed{\frac{43}{66}}$

b) $P(\text{mismo color}) = P[(R_1 \cap R_2) \cup (V_1 \cap V_2)] = P(R_1) \cdot P(R_2/R_1) + P(V_1) \cdot P(V_2/V_1) =$

$= \frac{3}{11} \cdot \frac{2}{12} + \frac{8}{11} \cdot \frac{7}{12} = \boxed{\frac{31}{66}}$

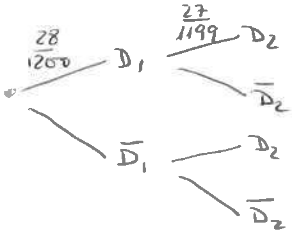
(10) A = "tornillo fabricado por la máquina A"
B = " " " " " " B"
C = " " " " " " C"
D = " " defectuoso"



a) $P(D) = P(A)\cdot P(D/A) + P(B)\cdot P(D/B) + P(C)\cdot P(D/C) =$

$= \frac{200}{1200}\cdot 0'01 + \frac{400}{1200}\cdot 0'02 + \frac{600}{1200}\cdot 0'03 = \frac{28}{1200} = \boxed{0'02\widehat{3}}$

b) $P(D_1 \cap D_2) = P(D_1)\cdot P(D_2/D_1) = \frac{28}{1200}\cdot\frac{27}{1199} = \boxed{0'00053}$



c) $P(B/D) = \frac{P(B\cap D)}{P(D)} = \frac{\frac{400}{1200}\cdot 0'02}{\frac{28}{1200}} = \boxed{\frac{2}{7}}$

(11) N = "coche de color NEGRO"
D = "coche de motor DIESEL"

	N	$\bar{N}$	
D			6
$\bar{D}$	8		44
	10		50

a) $n(\bar{D}) = 50 - n(D) = 50 - 6 = 44$

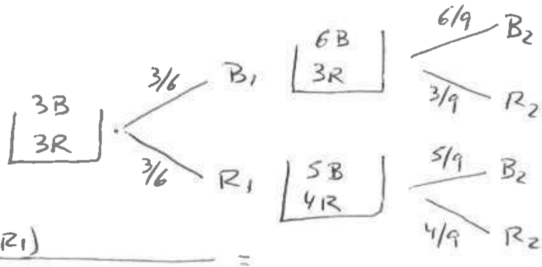
$n(\bar{N}\cap\bar{D}) = n(\bar{D}) - n(N\cap\bar{D}) = 44 - 8 = 36$

$P(\bar{N}\cap\bar{D}) = \frac{36}{50} = \boxed{0'72}$

b) $P(\bar{D}/N) = \frac{8}{10} = \boxed{0'8}$

c) $P(\bar{D}) = \frac{44}{50} = 0'88$
$P(\bar{D}/N) = 0'8$
Al ser distinta, D, N $\boxed{\text{son dependientes}}$.

(12) B = "bola color BLANCO"
R = " " " ROJO"



$P(R_1/R_2) = \frac{P(R_1\cap R_2)}{P(R_2)} = \frac{P(R_1)\cdot P(R_2/R_1)}{P(R_1)\cdot P(R_2/R_1) + P(R_2)\cdot P(R_2/R_1)} =$

$= \frac{\frac{3}{6}\cdot\frac{3}{9}}{\frac{3}{6}\cdot\frac{3}{9} + \frac{3}{6}\cdot\frac{4}{9}} = \boxed{\frac{3}{7}}$

(13) (+) = "declaración positiva"

(−) = " " negativa"

E = " " con ERRORES aritméticos"

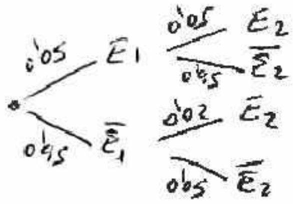
P(+) = 40%

P(E/+) = 10%

$P(E/+) = \frac{P(E\cap +)}{P(+)}$; $0'10 = \frac{P(E\cap +)}{0'40} \Rightarrow P(E\cap +) = 0'04 = 4\%$

P(E) = 5%

	E	$\bar{E}$	
+	4	36	40
−			
	5		100



a) P(dos declaraciones con errores) = $P(E_1 \cap E_2) = 0'05 \cdot 0'05 = \boxed{0'0025}$

b) $P(+/E) = \frac{4}{5} = 0'8 = \boxed{80\%}$

c) $P(\bar{E}\cap +) = P(+) - P(E\cap +) = 40\% - 4\% = \boxed{36\%}$

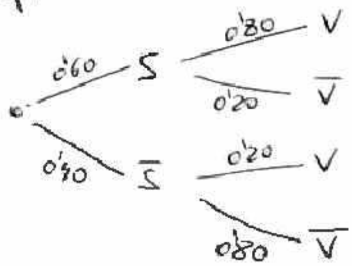
(14) S = "SATISFECHO con la situación económica"

V = "tener VIVIENDA propia"

P(S) = 60%

P(V/S) = 80%

$P(V/\bar{S}) = 20\%$



a) $P(V) = P(S)\cdot P(V/S) + P(\bar{S})\cdot P(V/\bar{S}) = 0'60 \cdot 0'80 + 0'40 \cdot 0'20 = \boxed{0'56}$

b) $P(S/V) = \frac{P(S\cap V)}{P(V)} = \frac{0'60 \cdot 0'80}{0'56} = \boxed{\frac{6}{7}}$

c) $P(S/\bar{V}) = \frac{P(S\cap \bar{V})}{P(\bar{V})} = \frac{0'60 \cdot 0'20}{1 - 0'56} = \boxed{\frac{3}{11}}$

(15) B(6 ; 0'60)

X = 'nº de mujeres'

$P[X=4] = \binom{6}{4} 0'6^4 \cdot 0'4^2 = \boxed{0'31104}$

$P[X=2] + P[X=1] + P[X=0] = \binom{6}{2} 0'6^2 \cdot 0'4^4 + \binom{6}{1} 0'6 \cdot 0'4^5 + 0'4^6 = \boxed{0'1792}$