Statistiques: Série 9
Corrigé

Exercice 1. On a

$$P(I) = \frac{60}{120} = \frac{1}{2},\ P(E) = \frac{50}{120} = \frac{5}{12} \text{ et } P(I \cap E) = \frac{20}{120} = \frac{1}{6}.$$

Donc

$$P(I \cup E) = P(I) + P(E) - P(I \cap E) = \frac{60}{120} + \frac{50}{120} - \frac{20}{120} = \frac{90}{120} = \frac{3}{4}.$$

Enfin, on a

$$P({}^cI \cup {}^c E) = 1 - P(I \cup E) = 1 - \frac{3}{4} = \frac{1}{4}.$$

Exercice 2. On peut dénombrer les sommes possible que l'on peut obtenir en jetant deux dés dans le tableau suivant :

	1	2	3	4	5	6
1	2	3	4	5	6	7
2	3	4	5	6	7	8
3	4	5	6	7	8	9
4	5	6	7	8	9	10
5	6	7	8	9	10	11
6	7	8	9	10	11	12

a)

- $P(A) = \frac{18}{36} = \frac{1}{2}$.
- $P(B) = \frac{11}{36}$.
- $P(C) = \frac{4}{36} = \frac{1}{9}$.

b)

- $P(A \cap B) = \frac{6}{36} = \frac{1}{6}$.
- $P(A \cap C) = \frac{4}{36} = \frac{1}{9}$.
- $P(B \cap C) = \frac{2}{36} = \frac{1}{18}$.
- $P(A \cap {}^c B) = \frac{12}{36} = \frac{1}{3}$
- $P(A \cap B \cap C) = \frac{2}{36} = \frac{1}{18}$
- $P(A \cup B) = \frac{18}{36} + \frac{11}{36} - \frac{6}{36} = \frac{23}{36}$.

— $P(A \cup C) = \dfrac{18}{36} + \dfrac{4}{36} - \dfrac{4}{36} = \dfrac{18}{36} = \dfrac{1}{2}$.
— $P(B \cup C) = \dfrac{11}{36} + \dfrac{4}{36} - \dfrac{2}{36} = \dfrac{13}{36}$.

Exercice 3. $P(G \cup B) = P(G) + P(B) - P(G \cap B) = \dfrac{8}{24} + \dfrac{10}{24} - \dfrac{4}{24} = \dfrac{14}{24} = \dfrac{7}{12}$.

Exercice 4. Considérons l'événement

$$A = \text{"Obtenir au ,mois un as"}.$$

On a $P(A) = 1 - P({}^cA) = 1 - \dfrac{C_{32}^9}{C_{36}^9} \cong 70,206\%$.

Exercice 5.

a) $p = \dfrac{C_6^4}{C_{15}^4} \cong 1,099\%$.

b) $p = \dfrac{C_9^2 \cdot C_6^2}{C_{15}^4} \cong 39,56\%$.

c) $p = \dfrac{C_5^4}{C_{15}^4} \cong 0,366\%$.

d) $p = \dfrac{C_2^4 \cdot C_2^4}{C_{15}^4} \cong 2,637\%$.

Exercice 6. On a

$$P(F) = 45\%, , P(D) = 60\% \text{ et } P(F \cap d) = 30\%.$$

Donc

$$P(F \cup B) = P(F) + P(D) - P(F \cap D) = 45\% + 60\% - 30\% = 75\%.$$

Ainsi,

$$P({}^cF \cap^c D) = 1 - P(F \cap D) = 1 - 75\% = 25\%.$$