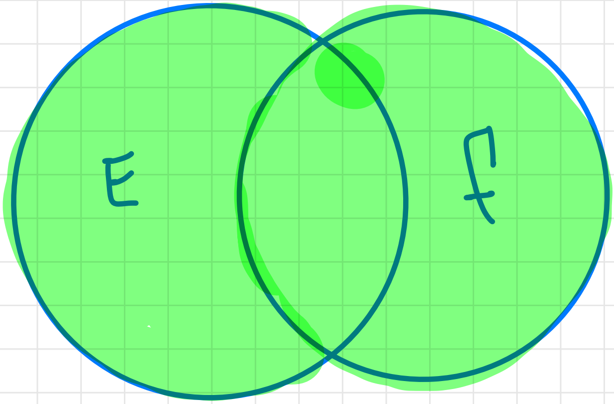
1

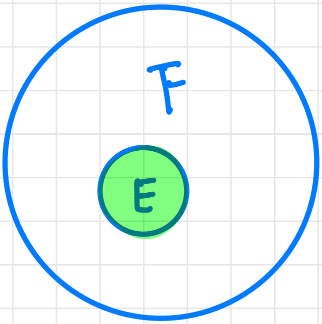


Daniel Chong

a)

$(P \cup f) = \frac{1}{2} + \frac{1}{3} = \frac{3+2}{6} = \boxed{\frac{5}{6}}$

b)



Smallest will be

$e = \boxed{1/2}$

c) $P(E \cup F) = P(E) + P(F) - P(E \cap F)$

$\frac{1}{2} + \frac{1}{3} - \frac{1}{12} = \frac{6+4-1}{12}$

$= 9/12$

$\boxed{= 3/4}$

2)

a) (a, b, c) (a, c, b)

(b, a, c) (b, c, a)

(c, a, b) (c, b, a)

b) 1/6 because are 6 possible schedules, so you have 1 probability to have one of each.

c) 4/6

3) A = Allison B = Betty C = Chelsea.

(A, B, C) (A, C, B)

(B, C, A) (B, A, C)

(C, A, B) (C, B, A)

4) $\frac{1}{8} + \frac{2}{8} + \frac{5}{8} = \frac{8}{8}$ of winning

so 0% chance of not winning.

5) a)

$$P(A) = \left\{ \begin{matrix} (4,4) & (2,6) \\ (3,5) & (6,2) \\ (5,3) & (4,4) \end{matrix} \right\} 6/36 = \boxed{1/6}$$

$$P(B) = \left\{ \begin{matrix} (3,1) & (3,4) \\ (3,2) & (3,5) \\ (3,3) & (3,6) \end{matrix} \right\}$$

b) $P(A \cap B) = (3,5) = \boxed{1/36}$

c) $P(B|A) = \dfrac{1/36}{1/6} =$

$$\frac{1}{36} \cdot \frac{6}{1} = \boxed{\frac{1}{6}}$$

6) a) $\left.\begin{array}{l} 2 = G \\ 2 = F \\ 1 = C \end{array}\right\}$ Team $\qquad \left.\begin{array}{l} 5 = G \\ 3 = F \\ 4 = C \end{array}\right\}$ available

$$\binom{5}{2}\cdot\binom{3}{2}\cdot\binom{4}{1} + \binom{5}{1}\cdot\binom{3}{2}\binom{4}{1} + \binom{5}{2}\cdot\binom{3}{1}\binom{4}{1}$$

$$\frac{5!}{2!(5-2)!} = \frac{5\cdot\cancel{4}^{2}\,\cancel{3!}}{\cancel{2!}\,\cancel{3!}} = 10$$

$$\frac{3!}{2!(3-2)!} = \frac{3\cdot\cancel{2!}}{\cancel{2!}\,1!} = 3$$

$$\frac{4!}{1!(4-1)!} = \frac{4\cdot\cancel{3!}}{1!\,\cancel{3!}} = 4$$

$$\frac{5!}{1!(5-1)!} = \frac{5\cdot\cancel{4!}}{1!\,\cancel{4!}} = 5$$

$$\frac{3!}{1!(3-1)!} = \frac{3\cdot\cancel{2!}}{1!\,\cancel{2!}} = 3$$

① $10 \cdot 3 \cdot 4 = 120$

$5 \cdot 3 \cdot 4 = 60$

$10 \cdot 3 \cdot 4 = 120$

$120 + 60 + 120 = \underline{\underline{300}}$

b) $\left.\begin{matrix} 2 = G \\ 2 = F \\ 1 = C \end{matrix}\right\}$ A Team $\qquad \left.\begin{matrix} 3 = G \\ 5 = F \\ 3 = C \\ 2 = X \end{matrix}\right\}$ Roster

$$\frac{13!}{5!\,(13-5)!}$$

$$\frac{13\cdot \overset{3}{\cancel{12}}\cdot 11\cdot \overset{2}{\cancel{10}}\cdot \overset{3}{\cancel{9}}\cdot \cancel{8!}}{\cancel{5}\cdot \underset{2}{\cancel{4}}\cdot \cancel{3}\cdot \cancel{2}\cdot 1\ \cancel{8!}}$$

$$\frac{13\cdot 3\cdot 11\cdot 2\cdot 3}{2} = \underline{\underline{1287}}$$

$$\overset{3}{\binom{3}{2}}\cdot\overset{10}{\binom{5}{2}}\cdot\overset{3}{\binom{3}{1}}+\overset{1}{\binom{3}{0}}\cdot\overset{10}{\binom{5}{2}}\cdot\overset{3}{\binom{3}{1}}+\overset{3}{\binom{3}{2}}\overset{1}{\binom{5}{0}}\overset{3}{\binom{3}{1}}+$$

$$\overset{3}{\binom{3}{1}}\overset{5}{\binom{5}{1}}\overset{3}{\binom{3}{1}}+\overset{3}{\binom{3}{2}}\overset{5}{\binom{5}{1}}\overset{3}{\binom{3}{1}}+\overset{3}{\binom{3}{1}}\overset{10}{\binom{5}{2}}\overset{3}{\binom{3}{1}}+$$

✓ $\dfrac{3!}{2!\,(3-2)!} = \dfrac{3\cdot\cancel{2!}}{\cancel{2!}\,1!} = 3 \qquad \dfrac{3!}{1!\,(3-1)!} = \dfrac{3\cdot\cancel{2!}}{\cancel{2!}} = 3$

$$\frac{5!}{2!\,(5-2)!}$$

$$\frac{5\cdot\overset{2}{\cancel{4}}\cdot\cancel{3!}}{\cancel{2\cdot 1}\ \cancel{3!}} = 10$$

$$\frac{3!}{0!\,(3-0)!}$$

$$\frac{\cancel{3!}}{0!\ \cancel{3!}} = \frac{1}{1} = 1$$

$90 + 30 + 9 + 45 + 45$

$90 + 45 + 90$

$\boxed{0.345}$

$$\frac{3!}{1!\,(3-1)!}$$

$$\frac{3\cdot\cancel{2!}}{\cancel{2!}} = 3$$

$$\frac{5!}{2!\,(5-2)!}$$

$$\frac{5\cdot\overset{2}{\cancel{4}}\cdot\cancel{3!}}{\cancel{2!}\ \cancel{3!}} = 10$$