1.6 (a) $S = \{bb, bw, wb\}$.

(b) $S = \{bb, bw, wb, ww\}$.

1.7 Let $N(A)$ be the number of times A occurs.

Let $N(B)$ " A doesn't occur.

Since we know $N(A) + N(B) = n$.

$$f_A(n) + f_B(n) = \frac{N(A)}{n} + \frac{N(B)}{n} = \frac{N(A)+N(B)}{n} = 1$$

$\therefore f_B(n) = 1 - f_A(n)$.

2.1 (a) $S = \{1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12\}$.

(b) $A = \{1, 2, 3, 4\}$. $B = \{2, 3, 4, 5, 6, 7, 8\}$,

$D = \{1, 3, 5, 7, 9, 11\}$.

(c) $A \cap B \cap D = \{3\}$. $A^c \cap B = \{5, 6, 7, 8\}$.

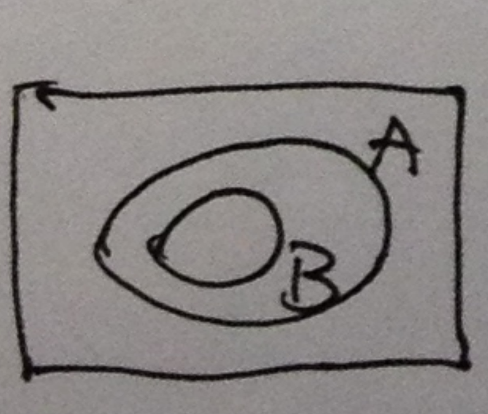
$A \cup (B \cap D^c) = \{1, 2, 3, 4, 6, 8\}$. $(A \cup B) \cap D^c = \{2, 4, 6, 8\}$.

2.2 (a) $S = \{(1,1), (1,2), (1,3), \cdots (2,1), \cdots (6,6)\}$, with $6 \times 6 = 36$ possible outcomes in the sample space.

(b) $A = \{N_1 \geq N_2\} = \{(1,1), (2,1), (2,2), (3,1), (3,2), (3,3), (4,1), (4,2), (4,3), (4,4), (5,1), \ldots (5,5), (6,1), (6,2), \ldots (6,6)\}$.

(c) $B = \{N_1 = 6\} = \{(6,1), (6,2), (6,3), (6,4), (6,5), (6,6)\}$.

(d)



We can see $B \subset A$.

$\therefore$ B implies A.

(e) $A \cap B^c = \{6 > N_1 \geq N_2\} = \{$ outcomes which 1st toss is not 6 and the 1st toss is greater or equals to 2nd toss. $\}$

(f) $A \cap C = \{(3,1), (4,2), (5,3), (6,4)\}$.