Solutions Test 2 (B)

Q # 1. 

(1) \( A \cup (B \cap C) = \{0, 5, 7, 10, 12, 14\} \)

(2) \( \left( A \cup (B \cap C) \right)^c = \{1, 3, 6, 8, 9, 10\} \)

Q # 2. 

(i) \( 61 = 720 \)  
(ii) \( 240 \)

Q # 3. 

(a) 38  
(b) 23  
(c) 44

Q # 4. 

(a) \( C(5, 2) \times C(3, 1) = 30 \)  
(b) \( C(8, 3) = 56 \)

Q # 5. 

(a) \( 5 \times 4 \times 3 = 60 \)  
(b) \( \frac{5!}{2! \times 3!} = 10 \)

Q # 6. 

8 out come

- TTT, TTF, TFT, TFF, FTT, FFT, FFF, FFT

Q # 7. 

(a) 2  
(b) 2

Q # 8. 

\( \{ (a, k), (b, k), (b1, b), (b2, b), (a, y) \mid 4, b1, b2, (a, b), (y, b), (bl, b) \} \)

- bl = black,  b = blue,  y = yellow

Q # 9. 

(a) \( C(7, 3) \)  
(b) \( C(4, 2) \times C(3, 1) + C(4, 1) \times C(3, 1) + C(3, 3) = 31 \)

(Bonus) 

(1) \( 3 \times 5 \times 4 = 60 \)  
\( \frac{1}{2} + \frac{1}{5} = \frac{7}{10} \)

(3) \( p(\text{visits friends in Raleigh co-locally and in Cary co-locally}) = \frac{2! \times 3! \times 3!}{6!} = \frac{1}{10} \)