

## Solutions chapter(1) page 2

**2.4:** (x,y): X:Green , Y: Red

S = Green die x Red die

$$= \{1,2,3,4,5,6\} \times \{1,2,3,4,5,6\}$$

S = {(1,1) ,(1,2),(1,3),(1,4),(1,5),(1,6), (2,1) ,(2,2),(2,3),(2,4),(2,5),(2,6) ,

(3,1) ,(3,2),(3,3),(3,4),(3,5),(3,6),(4,1) ,(4,2),(4,3),(4,4),(4,5),(4,6),

(5,1),(5,2), (5,3), (5,4), (5,5), (5,6), (6,1),(6,2), (6,3), (6,4), (6,5), (6,6)}

**2.8**

(a)  $A = \{(3,6) ,(4,5) ,(4,6) ,(5,4) ,(5,5),(5,6),(6,3), (6,4) ,(6,5),(6,6)\}$

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

(c)  $C = \{(5,1),(5,2), (5,3), (5,4), (5,5), (5,6), (6,1),(6,2), (6,3), (6,4), (6,5), (6,6)\}$

(d)  $A \cap C = \{(5,4) ,(5,5),(5,6),(6,3), (6,4) ,(6,5),(6,6)\}$

(e)  $A \cap B = \emptyset$

(f)  $B \cap C = \{(5,2),(6,2)\}$

---

**2.15**

S={copper ,sodium ,nitrogen ,potassium ,uranium ,oxygen ,zinc},

A={copper ,sodium , zinc}, B={sodium ,nitrogen ,potassium }, C={oxygen}

(a)  $A' = S - A = \{ \text{nitrogen ,potassium ,uranium ,oxygen} \}$

(b)  $A \cup C = \{ \text{copper ,sodium , zinc, oxygen} \},$

(c)  $B' = \{ \text{copper ,uranium ,oxygen ,zinc} \}$

$(A \cap B') \cup C = \{ \text{copper , zinc} \} \cup \{ \text{oxygen} \} = \{ \text{copper , zinc ,oxygen} \}$

(d)  $C' = \{ \text{copper ,sodium ,nitrogen ,potassium ,uranium ,zinc} \},$

$B' \cap C' = \{ \text{copper ,uranium ,zinc} \}$

(e)  $A \cap B \cap C = \emptyset$

(f)  $(A' \cup B') \cap (A' \cap C) = \{ \text{nitrogen ,potassium ,uranium ,oxygen, copper ,zinc} \} \cap \{ \text{oxygen} \}$   
 $= \{ \text{oxygen} \}$

---