

TUT-1

① $A = \{n: n \in \mathbb{N} \text{ and } n = 3k + 5 \text{ for some } k \in \mathbb{A}, 23 \in \mathbb{A}\}$

for $23 \in \mathbb{A}$

$$3k + 5 = 23$$

$$3k = 18$$

$$k = 6$$

as $k \in \mathbb{N}$

② (i) $x < 10$ $2^x - 1$ is odd

$$x = 1, 2, 3, 4, 5, 6, 7, 8, 9, 10$$

$$\therefore A = \{1, 2, 3, 4, 5, 6, 7, 8, 9\}$$

(ii) $x^2 + 7x - 8 = 0$

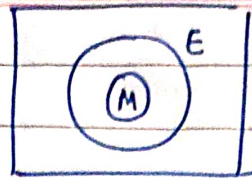
$$x^2 + 8x - x - 8 = 0$$

$$x(x+8) - 1(x+8) = 0$$

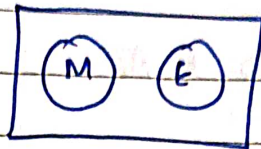
$$x = 1, -8$$

$$B = \{-8, 1\}$$

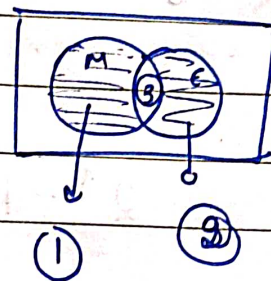
⑦ $E = \text{English}$
 $M = \text{Maths}$
 $U = \text{all students}$



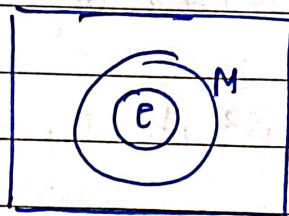
(ii) No Both Math & English



(iii) Math ^① English ^②, Eng ^③ Math, ^④ Math



(iv)



⑧ $B = \{1, 2, 3, 4, 5\}$ $C = \{3, 4, 5, 6, 7, 8\}$

$U = \{1, 2, 3, 4, 5, 6, 7, 8, 9\}$

① $B \cup C = \{1, 2, 3, 4, 5, 6, 7, 8\}$

② $B \cap C = \{3, 4, 5\}$

③ $C' = \{1, 2, 9\}$

④ $B - C = \{1, 2\}$

9) $(H \cap F) \cup W.$

10) $A = \{1, 2, 4, 3\}$ $B = \{3, 5, 6, 8\}$
 $U = \{1, 2, 3, 4, 5, 6, 7, 8\}$

(1) $(A \cup B)^c = A^c \cap B^c$

$\Rightarrow (A \cup B) = \{1, 2, 3, 4, 5, 6, 8\}$

$\{A \cup B\}^c = \{7\}$

$\Rightarrow A^c = \{5, 6, 7, 8\}$

$\Rightarrow B^c = \{1, 2, 4, 7\}$

$A^c \cap B^c = \{7\} = (A \cup B)^c.$

11) $55 = A \cup B \cup C = A, B, C.$

$A = 28, 30 = B, C = 24$

$A \cap B = 8, 16 = B \cap C, 5 = A \cap C.$

$A \cap B \cap C = ?$

$55 = 28 + 30 + 24 - 8 - 16 - 5 + Q.$

$Q = 2$

(12) →

$$\underline{120}$$

even no: = 60

120 24
7 120
8
Date
Page

$$P = 60, \quad C = 24, \quad M = 17$$

$$\underline{P \cap C \cap M = 1}$$

$$P \cap C = 12$$

$$P \cap M = 8$$

$$14, 28, 42, 56, 70, 84, 98, 112$$

$$C \cap M = 3$$

$$A \cup B \cup C = 60 + 24 + 17 - 12 - 8 - 3 + 1$$
$$= 79$$

$$\underline{120 - 79 = 41}$$

(13) →

$$40 \rightarrow T$$

$$14 \rightarrow E, \quad 29 \rightarrow C$$

$$E \cap C = 5$$

(a)

$$14 + 29 - 5$$

$$A \cup B \Rightarrow 38$$

$$(A \cup B)^c = 40 - 38 = 2$$

(b)

$$\underline{A \cup B = 38}$$

$$\frac{9}{38} \Rightarrow \frac{24}{40}$$

