

EX 1.2

1)

Given $A = \{1, 2, 3, 7\}$ and $B = \{3, 0, -1, 7\}$ which of the following Relation A to B

$$(i) R_1 = \{(2, 1), (7, 1)\}$$

$2, 7 \in A$ But $1 \notin B$ so, it is not relation.

$$(ii) R_2 = \{(-1, 1)\}$$

$-1 \notin A$ $1 \notin B$ so, it is not relation.

$$(iii) R_3 = \{(2, -1), (7, 7), (1, 3)\}$$

$2, 7, 3 \in A$ $-1, 7, 3 \in B$ so, it is relation.

$$(iv) R_4 = \{(7, -1), (0, 3), (3, 3), (0, 7)\}$$

$7, 0, 3 \in B$ But $0 \notin A$ so, it is not a relation.

2)

Given $A = \{1, 2, 3, 4, \dots, 45\}$

R is defined " u is square of v "

$$A \times A = \{(1, 1), (2, 2), \dots, (45, 45)\}$$

$R \rightarrow$ is square of

$$R = \{(1, 1), (2, 4), (3, 9), (4, 16), (5, 25), (6, 36)\}$$

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

$$\text{Range} = \{1, 4, 9, 16, 25, 36\}$$

3)

Given

$$x = \{0, 1, 2, 3, 4, 5\}$$

$$y = x + 3$$

then Put $x = 0$

$$y = 0 + 3 = 3$$

$$y = 1 + 3 = 4$$

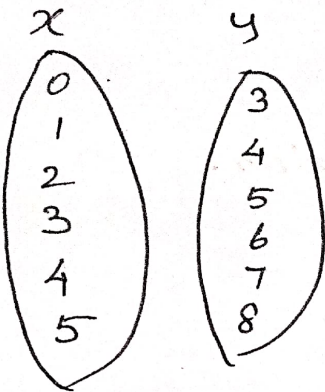
$$y = 2 + 3 = 5$$

$$y = 3 + 3 = 6$$

$$y = 4 + 3 = 7$$

$$y = 5 + 3 = 8$$

So,



Domain = $\{0, 1, 2, 3, 4, 5\}$: Range = $\{3, 4, 5, 6, 7, 8\}$

4) Given

$$x = 2y$$

$$x = \{2, 3, 4, 5\}$$

$$y = \{1, 2, 3, 4\}$$

Put $y = 1$

$$x = 2(1) = 2$$

$y = 2$

$$x = 2(2) = 4$$

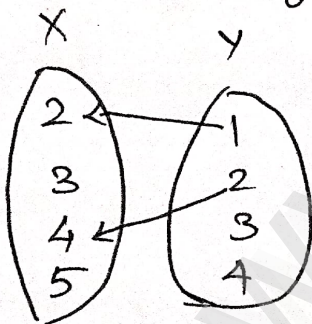
$y = 3$

$$x = 2(3) = 6$$

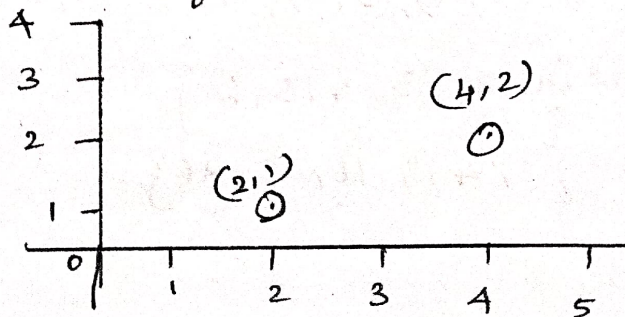
$y = 4$

$$x = 2(4) = 8$$

a) Arrow diagram



b) Graph



c) Roaster form:

$$\{(2, 1), (4, 2)\}$$

4) (ii) $\{y = x + 3 \quad x, y \text{ are natural numbers } < 10\}$

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

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

Put $x = 1$

$$y = x + 3$$

$$x = 1 \Rightarrow y = 1 + 3 = 4$$

$$x = 2 \Rightarrow y = 2 + 3 = 5$$

$$x = 3 \Rightarrow y = 3 + 3 = 6$$

$$x = 4 \Rightarrow y = 4 + 3 = 7$$

$$x = 5 \Rightarrow y = 5 + 3 = 8$$

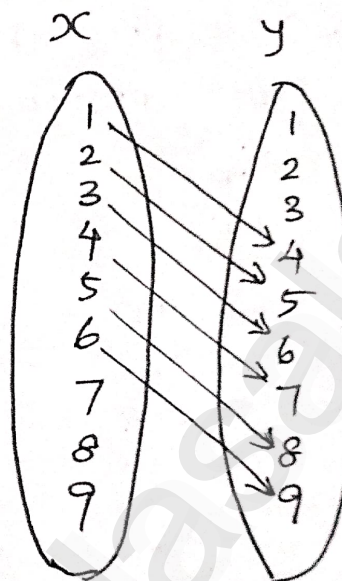
$$x = 6 \Rightarrow y = 6 + 3 = 9$$

$$x = 7 \Rightarrow y = 7 + 3 = 10$$

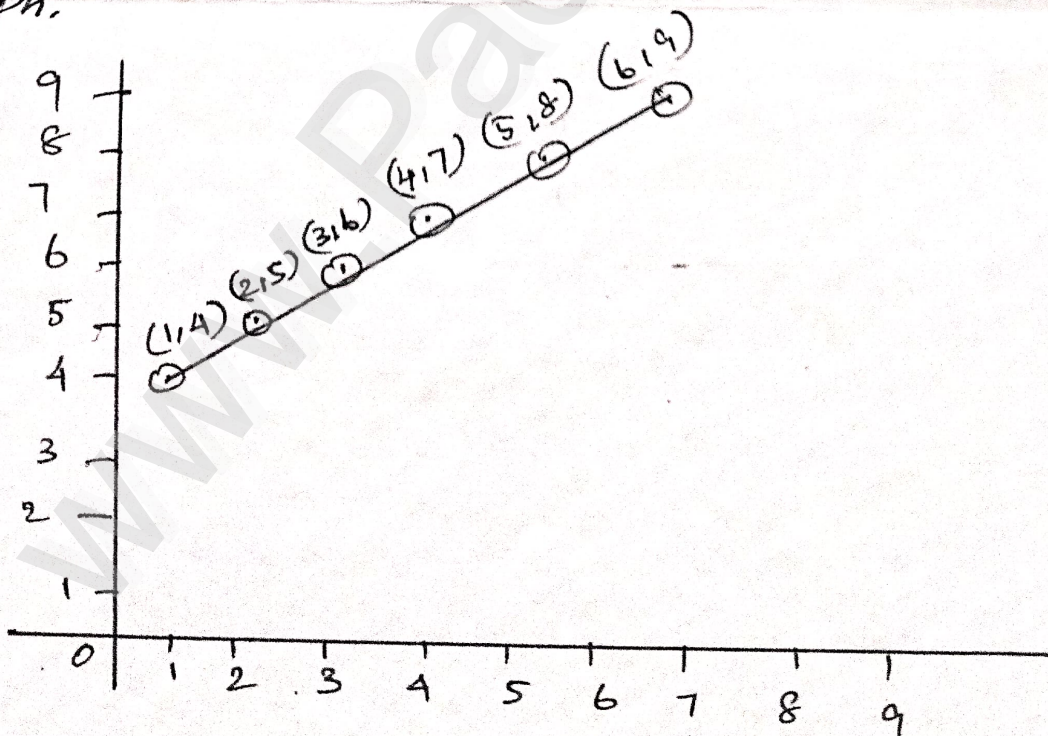
$$x = 8 \Rightarrow y = 8 + 3 = 11$$

$$x = 9 \Rightarrow y = 9 + 3 = 12$$

a) Arrow Diagram



b) Graph:



Q:5

Assistants : A_1, A_2, A_3, A_4, A_5

Clerks : C_1, C_2, C_3, C_4

Managers : M_1, M_2, M_3, M_4

Executive officers = E_1, E_2

$$R = \{ (10,000, A_1) (10,000, A_2), (10,000, A_3) (10,000, A_4) (10,000, A_5) \\ (25,000, C_1) (25,000, C_2) (25,000, C_3) (25,000, C_4) (50,000, M_1) \\ (50,000, M_2) (50,000, M_3) (1,00,000, E_1) (1,00,000, E_2) \}$$

Arrow Diagram:

