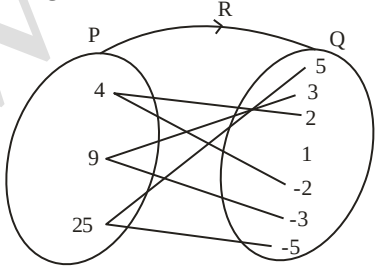


CHAPTER 2

RELATIONS AND FUNCTIONS

ASSIGNMENT

	Questions
1.	If $P = \{a, b, c\}$ and $Q = \{q\}$, find $(P \times Q)$ and $(Q \times P)$. Show that $(P \times Q) \neq (Q \times P)$.
2.	Find x and y , if $(x+3, 5) = (6, 2x+y)$.
3.	If $A = \{1, 2, 3\}$, $B = \{3, 4\}$ and $C = \{4, 5, 6\}$, find $A \times (B \cap C)$
4.	Is the relation a function? Give reasons. $f = \{(1, 3), (1, 5), (2, 3), (2, 5)\}$
5.	Let $f(x) = x^2$ and $g(x) = 3x + 2$ be two real functions. Then, find $(f+g)(x)$
6.	Let $f : \mathbb{R} - \{2\} \rightarrow \mathbb{R}$ be defined by $f(x) = \frac{x^2 - 4}{x - 2}$ and $g : \mathbb{R} \rightarrow \mathbb{R}$ be defined by $g(x) = x + 2$. Find whether $f = g$ or not.
7.	Let $A = \{1, 3\}$ and $B = \{2, 3, 4\}$. Find the number of relations from A to B .
8.	If $A \times B = \{(3, 2), (3, 4), (5, 2), (5, 4)\}$, find A and B .
9.	Find the domain and range of the real function $f(x) = x^2$
10.	Find the domain and range of the real function $f(x) = - x $
11.	Find the domain and range of the real function $f(x) = \frac{1}{(1-x^2)}$.
12.	If $A = \{1, 3, 5\}$ and $B = \{x, y\}$ represent $A \times B$ in arrow diagram
13.	Find the domain and range of the function $f(x) = \frac{x^2 - 9}{x - 3}$
14.	Find the domain and range of the function $f(x) = \frac{1}{\sqrt{x^2 - 1}}$
15.	The given figure shows a relation R between two sets P and Q  Write the relation R in i) Set builder form

	ii) Roster form. What is its domain and range and co-domain?
16.	Find the domain and range of the function $f(x) = 1 - x - 3 $
17.	Let $A = \{x \in N : x^2 - 5x + 6 = 0\}$, $B = \{x \in W : 0 \leq x < 2\}$ and $C = \{x \in N : x < 3\}$, then verify that i) $A \times (B \cup C) = (A \times B) \cup (A \times C)$ ii) $A \times (B \cap C) = (A \times B) \cap (A \times C)$
18.	Find the domain and range of the real function $f(x) = \sqrt{4 - x^2}$
19.	Let R be the relation on Z defined by $R = \{(a, b) : a, b \in Z, a^2 = b^2\}$. Find R, domain and range of R
20.	Let $A = \{1, 2\}$, $B = \{2, 3, 4\}$ write: a) the number of relations from A to B. b) the number of functions from A to B. c) the number of functions from B to A.
21.	Determine the domain and range of the relation $R = \{(x + 2, x + 4) : x \in \{0, 1, 2, 3, 4, 5\}\}$
22.	Define a function $f : R \rightarrow R$ by $y = f(x) = x^2$, $x \in R$. What is the domain and range of the function? Draw the graph of f.
23.	Find the domain and range of the function $y = \sqrt{x - 2}$
24.	Let $A = \{1, 2, 3, 4, 5, 6\}$ Define a relation R from A to A by $R = \{(x, y) : y = x + 2\}$
25.	Let $f(x) = \sqrt{x}$ and $g(x) = x^2 - x$ be two real functions, then find $(f + g)(x)$, $(f - g)(x)$, $(fg)(x)$, $\left(\frac{f}{g}\right)(x)$.
26.	The function f is defined on the set $\{1, 2, 3, 4, 5\}$ as follows: $f(x) = \begin{cases} 1 + x, & \text{if } 1 \leq x < 2 \\ 2x - 1, & \text{if } 2 \leq x < 4 \\ 3x - 10, & \text{if } 4 \leq x < 6 \end{cases}$. Find the range of the function. Find the value of $f(1)$, $f(3)$, $f(5)$.