



# INDIAN SCHOOL NIZWA - WORKSHEET

## Ch. 4 RELATIONS

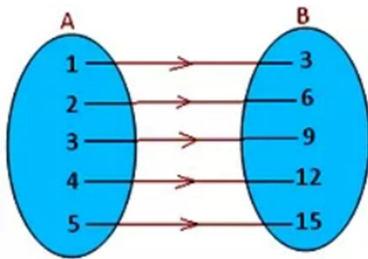
Name: \_\_\_\_\_

Class : XI Sec: B

### Multiple choice questions

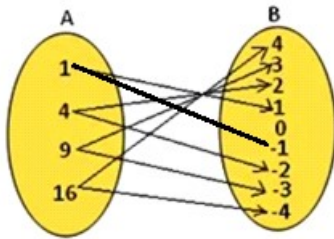
- If  $n(A) = 3$ ,  $n(B) = 4$ , then find  $n(A \times B) =$  \_\_\_\_\_  
(a) 7 (b) 3 (c) 4 (d) 12
- The number of relations from A to itself if  $n(A) = 2$  is \_\_\_\_\_  
(a) 2 (b) 4 (c) 8 (d) 16
- If  $n(A) = 3$ , then  $n(A \times A)$  is \_\_\_\_\_  
(a) 3 (b) 6 (c) 9 (d) 12
- The domain of the relation  $R = \{ (a, b) : a, b \in N, a + 3b = 12 \}$  is  
(a)  $\{1, 2, 3\}$  (b)  $\{9, 6, 3\}$  (c) N (d)  $\{1, 2, 3, 9, 6\}$
- The Cartesian product  $A \times A$  has 9 elements among which are found  $(-1, 0)$  and  $(0, 1)$ . Then A is  
(a)  $\{0, 1\}$  (b)  $\{-1, 0\}$  (c)  $\{-1, 1\}$  (d)  $\{-1, 0, 1\}$
- Find the domain and range of the relation R, where  
 $R = \{(x + 1, x + 5), x \in \{0, 1, 2, 3, 4, 5\}\}$   
(a)  $D = \{0, 1, 2, 3, 4, 5\}, R = \{0, 1, 2, 3, 4, 5\}$  (b)  $D = \{0, 1, 2, 3, 4, 5\}, R = \{5, 6, 7, 8, 9, 10\}$   
(c)  $D = \{1, 2, 3, 4, 5, 6\}, R = \{0, 1, 2, 3, 4, 5\}$  (d)  $D = \{1, 2, 3, 4, 5, 6\}, R = \{5, 6, 7, 8, 9, 10\}$
- A and B are two sets having 4 and 6 elements respectively. The number of relations that can be defined from A to B are \_\_\_\_\_  
(a)  $2^{2^1}$  (b)  $2^{2^4} - 1$  (c)  $2^{2^4} - 3$  (d)  $2^{2^4}$
- If the ordered pairs  $(a + 2, 4) = (5, 2a + b)$  are equal, then the value of a and b are  
(a)  $(2, -2)$  (b)  $\{3, -2\}$  (c)  $\Phi$  (d)  $\{2, 3\}$
- The range of the relation  $R = \{(x, x^2) : x \text{ is a prime number less than } 15\}$  is \_\_\_\_\_.  
(a)  $\{2, 3, 5, 7\}$  (b)  $\{2, 3, 5, 11\}$  (c)  $\{2, 3, 5, 7, 11, 13\}$   
(d)  $\{4, 9, 25, 49, 121, 169\}$
- If there are 256 relations from a set  $A = \{1, 2, 3, 4\}$  to a set B, then the number of elements of B is \_\_\_\_\_.  
(a) 3 (b) 2 (c) 4 (d) 8
- If A and B are two sets having m and n elements respectively. The number of relations that can be defined from A to B is \_\_\_\_\_.  
(a)  $2^{m+n}$  (b)  $2^{m-n}$  (c)  $2^{mn}$  (d)  $2^{m \div n}$

12.	For two sets A and B, given $n(A \times B) = 6$ and three of the elements of $(A \times B)$ are $(2,5), (4,6), (8,6)$ , then the remaining elements are _____. (a) $(2,6), (4,5), (8,5)$ (b) $(2,4), (4,8), (5,6)$ (c) $(2,6), (4,5), (4,8)$ (d) $(2,4), (4,5), (6,8)$
13.	Let R be the relation in the set N given by $R = \{(a, b) : a = b - 2, b > 6\}$ . Choose the correct answer (a) $(2,4) \in R$ (b) $(3,8) \in R$ (c) $(6,8) \in R$ (d) $(8,7) \in R$
14.	Which of the following does not belong to $A \times B$ for the sets $A = \{1,2\}$ and $B = \{0,2\}$ ? (a) $R = \{(1,0), (2,2)\}$ (b) $R = \{(1,1), (2,1)\}$ (c) $R = \{(1,0), (1,2)\}$ (d) $R = \{(1,2), (2,2)\}$
15.	If $n(A) = 2$ and the total number of possible relations from set A to set B is 1024, then $n(B) =$ _____ (a) 512      (b) 20      (c) 10      (d) 5
16.	Let $A = \{1, 3, 5, 7\}$ and $B = \{p, q, r\}$ . Let R be a relation from A into B defined by $R = \{(1, p), (3, r), (5, q), (7, p), (7, q)\}$ find the domain and range of R.
17.	Let $A = \{2, 4, 6\}$ and $B = \{x, y, z\}$ . State which of the following are relation from A into B (i) $R_1 = \{(2, x), (y, 4), (6, z)\}$ (ii) $R_2 = \{(4, y) (y, 4)\}$ (iii) $R_3 = \{(2, x) (4, y) (6, z)\}$
18.	Let $A = \{3, 4, 5, 6\}$ and $B = \{1, 2, 3, 4, 5, 6\}$ Let $R = \{(a, b) : a \in A, b \in B \text{ and } a < b\}$ . Write R in the roster form. Find its domain and range.
19.	Let $A = \{1, 2, 3, 4, 5, 6, 7, 8, 9, 10\}$ Let R be A relation on A defined by $R = \{(a, b) : a \in A, b \in A, a \text{ is a multiple of } b\}$ . Find R, domain of R, range of R.
20.	Determine the range and domains of the relation R defined by $R = \{(x - 1), (x + 2) : x \in (2, 3, 4, 5)\}$
21.	Let $A = \{1, 2, 3, 4, 5, 6\}$ Define a relation R from A to A by $R \{(x, y) : y = x + 2\}$ • Depict this relation using an arrow diagram. • Write down the domain and range of R
22.	The adjoining figure shows a relation between the set A and B. Write this relation in (i) Set builder form. (ii) Roster form. (iii) Find domain and range.



23. If  $A = \{1, 4, 9, 16\}$  and  $B = \{1, 2, 3\}$  Let  $R$  be a relation 'is square of' from  $A$  to  $B$ . Find  $R$  domain and range of  $R$ .

24. The adjoining figure shows relation between  $A$  and  $B$ . Write relation in (i) Set builder form. (ii) Roster form. (iii) Find domain and range of  $R$ .



25. Let  $A = \{3, 4, 5\}$  and  $B = \{6, 8, 9, 10, 12\}$ . Let  $R$  be the relation 'is a factor of' from  $A$  to  $B$ . Find  $R$ .

26. A relation  $R$  in  $N$  is defined such that  $xRy \Leftrightarrow x + 4y = 16$ , then find the range of  $R$ .