EduSahara™ Worksheet

Name : Chapter Based Worksheet

Chapter : Relations and Mapping

Grade : ICSE Grade VIII

1. If A = {j,f,g,b,e} and B = {a,n,d,h,m} ,
which of the following is relation R:A→B ?

(i) {(a,j),(d,e),(a,g),(n,b),(h,b)} (ii) {(a,s),(m,s),(m,r),(d,k),(d,r)} (iii) {(g,k),(b,k),(g,r),(b,s),(g,s)}

(iv) {(r,g),(k,b),(r,j),(r,b),(k,e)} (v) {(g,n),(j,m),(j,d),(f,a),(j,h)}

2. Which of the following are true?

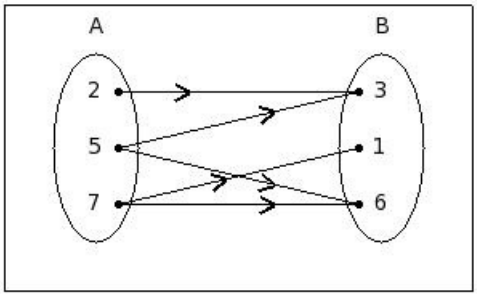
a) (a,b)∈{(a,b)}
b) (a,b)⊂{a,b}
c) (a,b)≠{a,b}
d) a∈(a,b)
e) (a,b) = (b,a)

(i) {d,c} (ii) {b,a} (iii) {d,c,a} (iv) {e,b,a} (v) {a,c}

3. Find the range of f:Z→Z where $f(x) = (x^2 + 2x + 1)$
and domain of $f$is {x : -3 ≤ x ≤ 1}

(i) {4,1} (ii) {4,0,3} (iii) {1,0,3} (iv) {4,1,0} (v) {4,1,-2}

4. Find the cardinality of the given relation



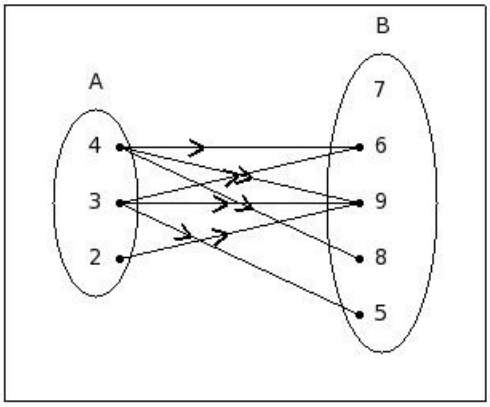
(i) 7 (ii) 2 (iii) 4 (iv) 5 (v) 6

5. Which of the following relations does not represent a function f:A→B ,
where A = {i,m,d,o,k} and B = {l,a,n,j,g,c} ?

(i) {(i,c),(o,l),(k,j),(m,j),(d,n)} (ii) {(o,c),(m,c),(d,j),(k,c),(i,n)} (iii) {(o,g),(k,l),(i,c),(o,j),(d,c)}

(iv) {(k,c),(m,j),(i,c),(o,c),(d,j)} (v) {(m,j),(o,c),(k,g),(d,j),(i,a)}

6. Write the relation R:A→B in the given diagram,
where A = {4,3,2} and B = {7,6,9,8,5}

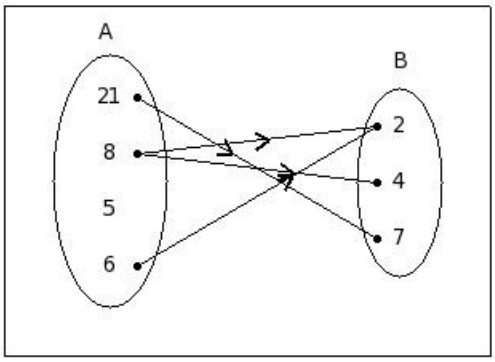


(i) {(2,9),(3,5),(3,6),(4,6),(4,8),(4,9),(9,3)} (ii) {(2,9),(3,5),(3,9),(3,6),(4,6),(4,8),(4,9),(9,3)}

(iii) {(2,9),(3,5),(3,9),(4,6),(4,8),(4,9),(7,2)} (iv) {(2,9),(3,5),(3,9),(3,6),(4,6),(4,8),(4,9)}

(v) {(2,9),(3,5),(3,9),(4,6),(4,8),(4,9)}

7. If A = {21,8,5,6} and B = {2,4,7} ,
then the relation R:A→B such that $a \in A$ is a multiple of $b \in B$ is



(i) {(21,7),(8,2),(6,2),(5,7)} (ii) {(21,7),(8,2),(6,2)} (iii) {(21,7),(8,2),(8,4),(6,2),(2,8)}

(iv) {(21,7),(8,2),(8,4),(6,2)} (v) {(21,7),(8,4),(6,2),(2,8)}

8. Which of the following relations is a function given ,
A = {2,1,7,4,6,9} and B = {5,1,6,4} ?

(i) {(2,4),(1,5),(4,4),(6,5),(9,6),(4,7)} (ii) {(2,4),(1,5),(7,4),(4,4),(6,5),(9,6)}

(iii) {(2,4),(1,5),(7,4),(6,5),(9,6),(5,3)} (iv) {(2,4),(1,5),(7,4),(6,5),(9,6)}

(v) {(2,4),(1,5),(7,4),(4,4),(6,5),(9,6),(4,7)}

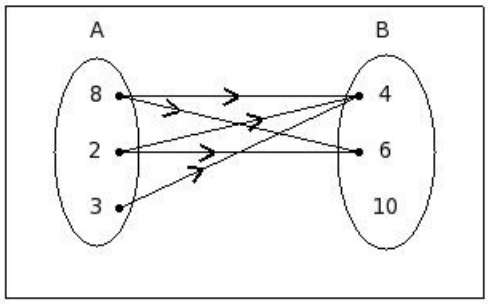
9. If $f(x)=(6x+5)$ and $g(x)=(5x^2+7x-2)$,
find the value of $\frac{f(2)+f(-2)+f(-3)}{g(-2)+g(-3)+g(5)}$

(i) $(\frac{-1}{62})$ (ii) $(\frac{-1}{184})$ (iii) $(\frac{-3}{182})$ (iv) $(\frac{-5}{184})$ (v) $(\frac{-3}{184})$

10. If f:A→B is defined by $f(x)=(2x+4)$ and A = {8,4,3,6} ,
find the range

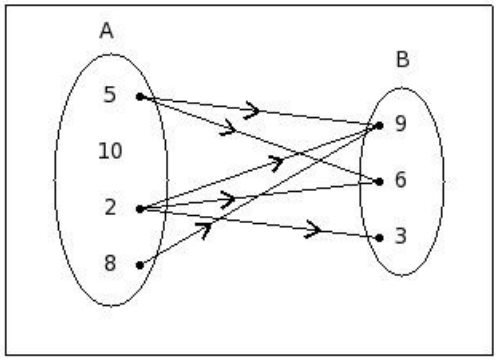
(i) {-10,10,20,16,12,14} (ii) {20,27,3,14} (iii) {20,12,10,16} (iv) {16,20,1,12} (v) {20,12,16}

11. Find the range of given relation diagram.



(i) {8,2,3} (ii) {2,8,3,6} (iii) {6,4} (iv) {4,6,10,8} (v) {4,6,10}

12. If $A = \{5,10,2,8\}$ and $B = \{9,6,3\}$,
then the relation $R: A \to B$ such that $a \in A$ is less than $b \in B$ is

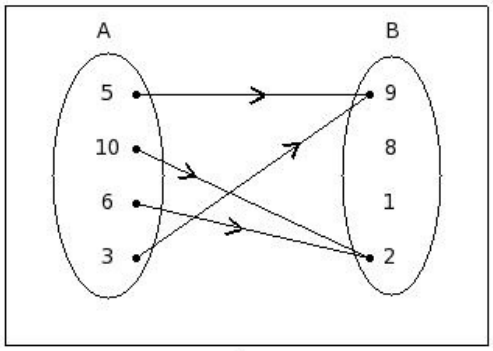


(i) {(5,9),(5,6),(2,6),(2,3),(8,9),(9,2)} (ii) {(5,9),(5,6),(2,9),(2,3),(8,9),(7,1)}

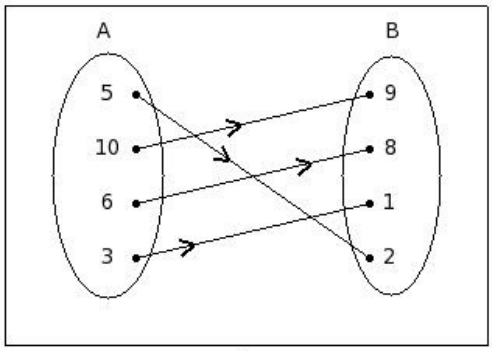
(iii) {(5,9),(5,6),(2,9),(2,6),(2,3),(8,9),(9,2)} (iv) {(5,9),(5,6),(2,9),(2,6),(2,3),(8,9)}

(v) {(5,9),(5,6),(2,9),(2,3),(8,9)}

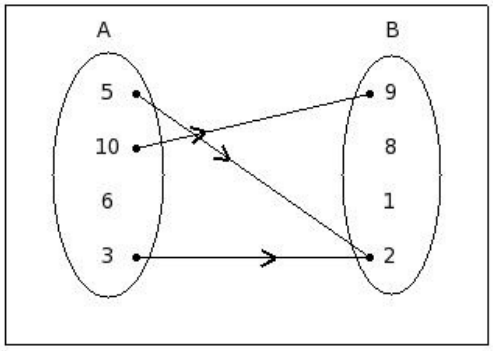
13. Which of the following does not represent a function $f: A \to B$,
where $A = \{5,10,6,3\}$ and $B = \{9,8,1,2\}$?



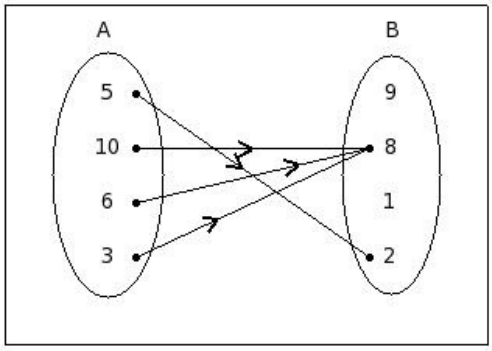
I



II



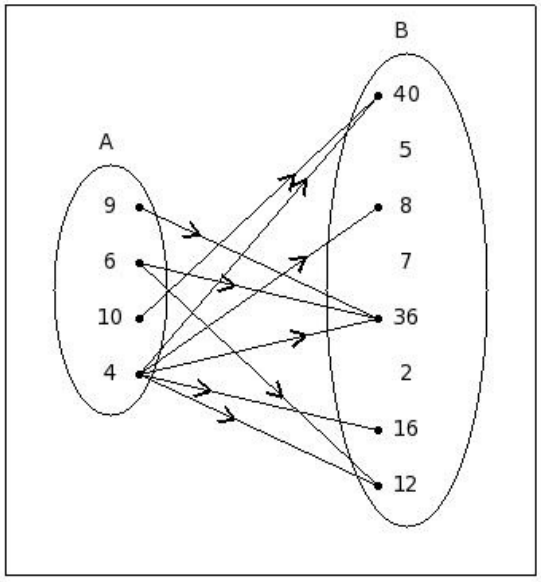
III



IV

(i) IV (ii) I (iii) II (iv) III

14. If $A = \{9,6,10,4\}$ and $B = \{40,5,8,7,36,2,16,12\}$,
then the relation $R: A \to B$ such that $a \in A$ is a factor of $b \in B$ is



(i) {(9,36),(6,36),(6,12),(10,40),(4,40),(4,8),(4,36),(4,16),(4,12),(40,10)}

(ii) {(9,36),(6,36),(6,12),(10,40),(4,8),(4,36),(4,16),(4,12),(41,3)}

(iii) {(9,36),(6,36),(6,12),(10,40),(4,8),(4,36),(4,16),(4,12)}

(iv) {(9,36),(6,36),(6,12),(4,40),(4,8),(4,36),(4,16),(4,12),(40,10)}

(v) {(9,36),(6,36),(6,12),(10,40),(4,40),(4,8),(4,36),(4,16),(4,12)}

15. If $f(t) = (t^2 + 2t + 5)$ then find $f(5x)$

(i) $(27x^2 + 10x + 5)$ (ii) $(24x^2 + 10x + 5)$ (iii) $(25x^2 + 10x + 5)$ (iv) $(23x^2 + 10x + 5)$ (v) $(26x^2 + 10x + 5)$

16. Let $f: R \to R$ be a function defined by given conditions
$f(x) = (3x + 6)$ if $x < -9$
$f(x) = (8x + 3)$ if $-9 \leq x \leq -5$
$f(x) = (8x + 1)$ if $x > -5$
find $f(x)$ where $x = -4$

(i) -32 (ii) -31 (iii) -6 (iv) -29 (v) -30

17. Find the range of $f: Z \to Z$ where $f(x) = (8x - 4)$
and domain of f is $\{x : -1 \leq x \leq 3\}$

(i) {-12,-4,4,20,10} (ii) {-12,-4,4,12,20} (iii) {-12,4,12,20,-2} (iv) {-12,-4,4,12,19} (v) {-4,4,12,20,-11}

18. Which of the following does not represent a function $f: A \to B$,
where $A = \{2,10,3,6\}$ and $B = \{1,9,8,5,7,4\}$?

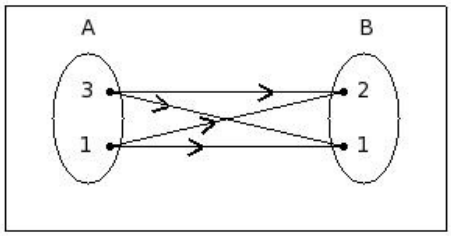
(i) {(10,1),(2,9),(6,1),(3,8)} (ii) {(6,5),(3,9),(10,1),(2,1)} (iii) {(10,8),(3,7),(2,4),(6,9)}

(iv) {(3,1),(10,9),(6,5),(2,1)} (v) {(2,4),(6,9),(3,5)}

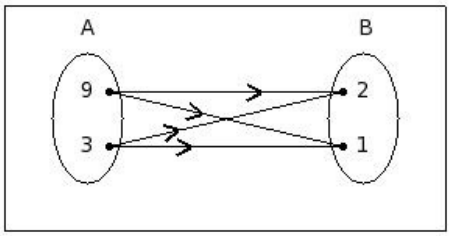
19. Find the domain in the given roster form,
where $R = \{(4,7),(3,10),(9,7),(5,10),(6,8)\}$

(i) {10,7,1,8,2} (ii) {4,3,9,5,6,2} (iii) {5,6,4,9,3,7} (iv) {4,3,9,5,6} (v) {5,6,4,3}

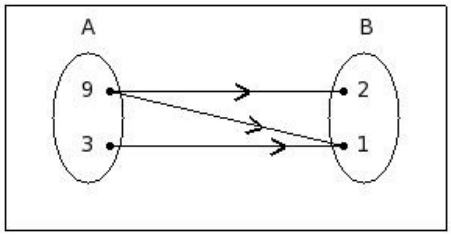
20. If $A = \{9,3\}$ and $B = \{2,1\}$, then $A \times B$ is



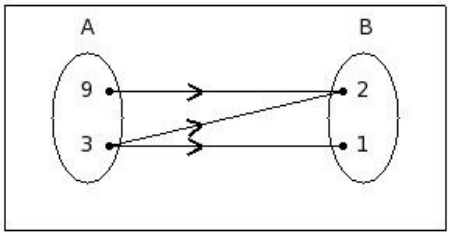
I



II



III



IV

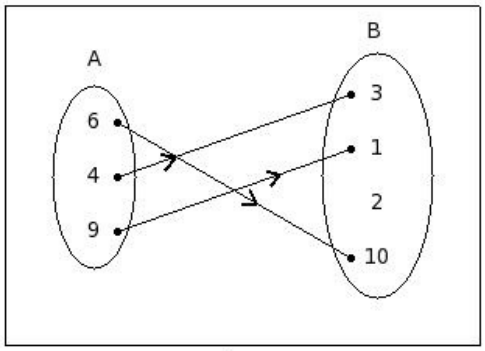
(i) I (ii) II (iii) IV (iv) III

21. If $A = \{a,h,k,l,c\}$ and $B = \{e,g,n,m,r\}$,
which of the following is relation $R: B \to A$?

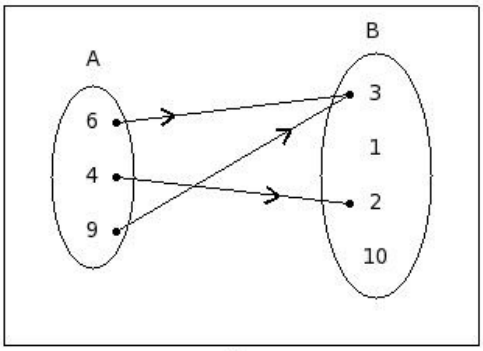
(i) {(n,j),(e,s),(m,s),(g,p),(m,j)} (ii) {(g,a),(n,k),(r,a),(g,k),(e,a)} (iii) {(a,p),(a,s),(l,j),(h,j),(l,s)}

(iv) {(c,r),(c,n),(a,r),(k,n),(l,e)} (v) {(p,h),(p,l),(p,a),(j,c),(s,a)}

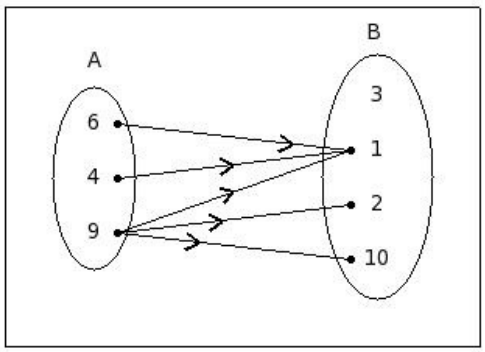
22. Which of the following does not represent a function $f: A \to B$,
where $A = \{6,4,9\}$ and $B = \{3,1,2,10\}$?



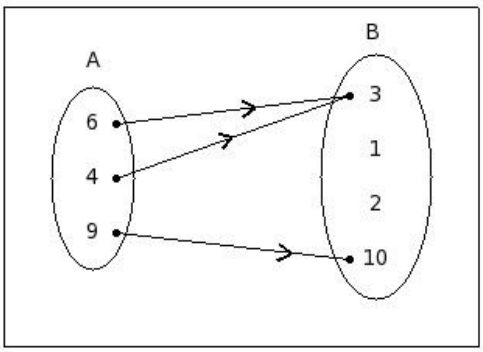
I



II



III



IV

(i) I (ii) IV (iii) III (iv) II

23. If $((2x+5y+6), 5) = (5, (9x+2y+1))$ then find (x,y)

(i) $(\frac{22}{41}, (\frac{-17}{41}))$ (ii) $(\frac{24}{41}, (\frac{-17}{41}))$ (iii) $((\frac{-17}{41}), \frac{22}{41})$ (iv) $(\frac{22}{43}, (\frac{-17}{43}))$ (v) $(\frac{22}{41}, (\frac{-17}{39}))$

24. Find the cardinality of the given roster form,
where $R = \{(2,2),(8,10),(2,8),(9,9),(9,2)\}$

(i) 5 (ii) 4 (iii) 6 (iv) 3 (v) 7

25. Find the range in given roster form,
where $R = \{(4,9),(5,1),(5,9),(3,10),(2,6)\}$

(i) {9,6,10,1,7} (ii) {9,1,10,6} (iii) {5,2,4,3,8} (iv) {9,6,10,1,7,2} (v) {4,5,3,2,7}

Assignment Key

1) (v)	2) (v)	3) (iv)	4) (iv)	5) (iii)	6) (iv)
7) (iv)	8) (ii)	9) (v)	10) (iii)	11) (iii)	12) (iv)
13) (iv)	14) (v)	15) (iii)	16) (ii)	17) (ii)	18) (v)
19) (iv)	20) (ii)	21) (ii)	22) (iii)	23) (i)	24) (i)
25) (ii)					