EduSahara™ Worksheet

Name : Chapter Based Worksheet

Chapter : Relations and Mapping

Grade : ICSE Grade VIII

1. If A = {h,j,s,f} and B = {k,q,c,d} ,
which of the following is relation R:A→B ?

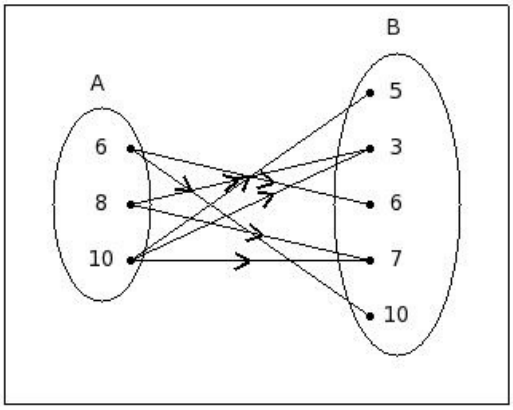
(i) {(f,q),(s,c),(f,k),(f,d),(s,d)} (ii) {(m,h),(n,f),(m,j),(n,s),(n,j)} (iii) {(c,s),(d,f),(q,f),(d,j),(c,j)}

(iv) {(c,n),(c,m),(q,n),(k,n),(k,m)} (v) {(f,m),(h,m),(j,m),(h,n),(s,n)}

2. If f:A→B is defined by $f(x)=(4x+4)$ and A = {7,5,1,3} ,
find the range

(i) {16,6,8,24,10,32} (ii) {16,32,8} (iii) {16,28,-2,24} (iv) {32,24,16,7} (v) {32,24,8,16}

3. Find the cardinality of the given relation



(i) 6 (ii) 10 (iii) 8 (iv) 4 (v) 7

4. Find the domain and range of the given relation
R:A→B = {(3,7),(3,5),(1,7),(1,5),(5,7),(5,5)}

(i) A = {3,1,5} , B = {7,5} (ii) A = {-3,12,-1} , B ={12,9} (iii) A = {3,1,7} , B ={5}

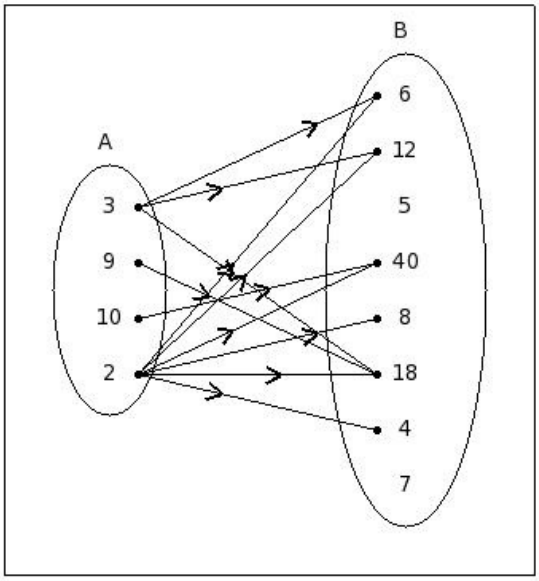
(iv) A = {2,10,1,3} , B ={4,2,5} (v) A = {5,10,1} , B ={13,5}

5. If A = {r,s,g,h} and B = {d,k,c,a} ,
which of the following is relation R:B→A ?

(i) {(q,g),(p,h),(l,h),(l,g),(p,s)} (ii) {(s,q),(h,p),(s,m),(r,q),(h,e)} (iii) {(s,c),(s,k),(g,a),(r,d),(g,d)}

(iv) {(d,g),(d,h),(k,r),(a,r),(a,s)} (v) {(k,e),(a,m),(k,l),(a,q),(k,m)}

6. If $A = \{3,9,10,2\}$ and $B = \{6,12,5,40,8,18,4,7\}$,
then the relation $R: A \to B$ such that $a \in A$ is a factor of $b \in B$ is



(i) {(3,6),(3,12),(3,18),(9,18),(10,40),(2,12),(2,40),(2,8),(2,18),(2,4)}

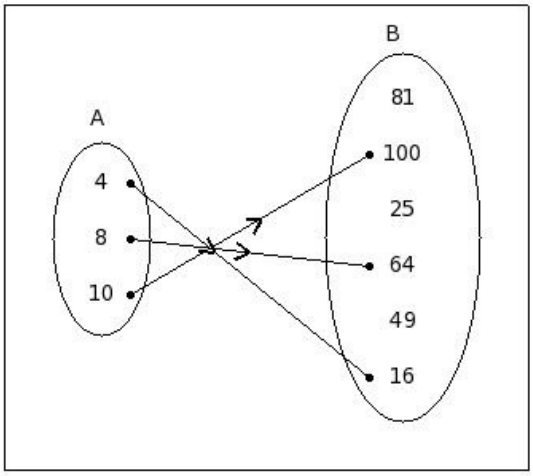
(ii) {(3,6),(3,12),(3,18),(9,18),(2,6),(2,12),(2,40),(2,8),(2,18),(2,4),(41,9)}

(iii) {(3,6),(3,12),(3,18),(9,18),(10,40),(2,6),(2,12),(2,40),(2,8),(2,18),(2,4),(18,9)}

(iv) {(3,6),(3,12),(3,18),(9,18),(10,40),(2,6),(2,12),(2,40),(2,8),(2,18),(2,4)}

(v) {(3,6),(3,12),(3,18),(10,40),(2,6),(2,12),(2,40),(2,8),(2,18),(2,4),(18,9)}

7. If $A = \{4,8,10\}$ and $B = \{81,100,25,64,49,16\}$,
then the relation $R: A \to B$ such that $a \in A$ is the square root of $b \in B$ is



(i) {(4,16),(10,100)} (ii) {(4,16),(10,100),(64,8)} (iii) {(4,16),(8,64),(10,100)} (iv) {(4,16),(8,64),(101,9)}

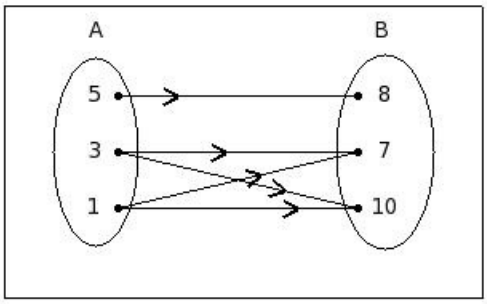
(v) {(4,16),(8,64),(10,100),(64,8)}

8. If $f(t) = (2t^2 + 7t + 7)$ then find $f(8x - 1)$

(i) $(127x^2 + 24x + 2)$ (ii) $(130x^2 + 24x + 2)$ (iii) $(128x^2 + 24x + 2)$ (iv) $(129x^2 + 24x + 2)$

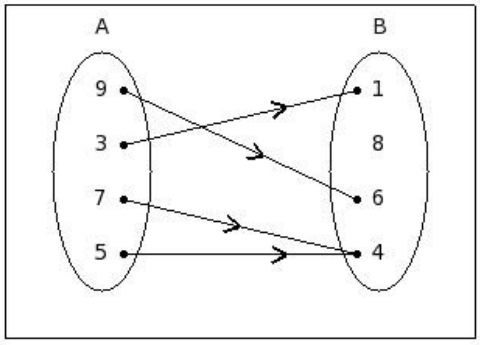
(v) $(125x^2 + 24x + 2)$

9. Find the range of given relation diagram.

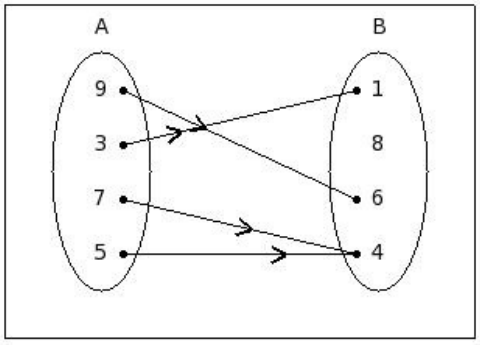


(i) {3,1,5,7} (ii) {8,7,10,5} (iii) {5,3,1} (iv) {10,8,7} (v) {7,10}

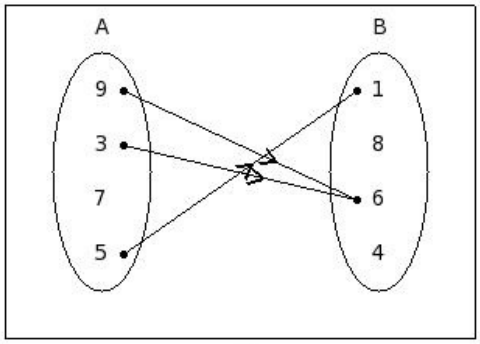
10. Which of the following does not represent a function $f: A \to B$, where $A = \{9,3,7,5\}$ and $B = \{1,8,6,4\}$?



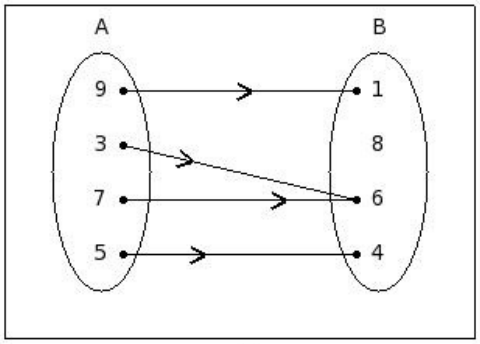
I



II



III



IV

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

11. Let $f: R \to R$ be a function defined by given conditions

$f(x) = (2x+7)$ if $x < 2$

$f(x) = (x+9)$ if $2 \le x \le 6$

$f(x) = (5x+7)$ if $x > 6$

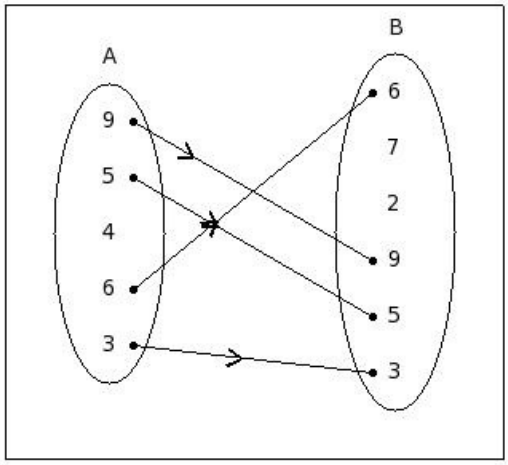
find $f(x)$ where $x = 6$

(i) 15 (ii) 14 (iii) 37 (iv) 16 (v) 19

12. If n(A) = 3 and n(B) = 1 then the number of possible relations from A → B is

(i) 8 (ii) 6 (iii) 10 (iv) 5 (v) 7

13. If $A = \{9,5,4,6,3\}$ and $B = \{6,7,2,9,5,3\}$,
then the relation $R: A \to B$ such that $a \in A$ is equal of $b \in B$ is



(i) {(9,9),(5,5),(6,6),(3,3)} (ii) {(9,9),(5,5),(6,6),(3,3),(7,7)} (iii) {(9,9),(5,5),(6,6),(3,3),(4,4)}

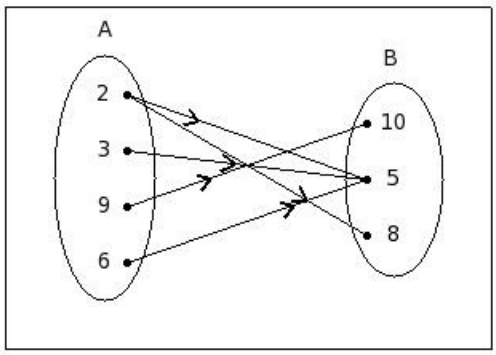
(iv) {(9,9),(5,5),(3,3)} (v) {(9,9),(5,5),(3,3),(7,5)}

14. Find the range of $f: Z \to Z$ where $f(x) = (7x+4)$
and domain of f is $\{x : -4 \leq x \leq 0\}$

(i) {-24,-17,-10,-3,5} (ii) {-24,-10,-3,4,-19} (iii) {-24,-17,-3,4,-11} (iv) {-24,-17,-10,-3,4}

(v) {-24,-17,-10,4,-1}

15. Write the relation $R: A \to B$ in the given diagram,
where $A = \{2,3,9,6\}$ and $B = \{10,5,8\}$



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

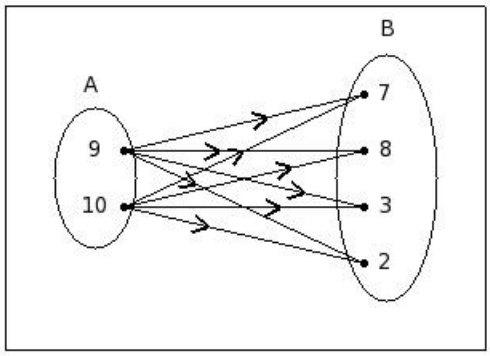
(iv) {(9,10),(3,5),(2,8),(2,5),(6,5)} (v) {(9,10),(3,5),(2,5),(6,5)}

16. Which of the following are true?

a) $(a,b) \in \{(a,b)\}$
b) $(a,b) = (b,a)$
c) $(a,b) \subset \{a,b\}$
d) $(a,b) \neq \{a,b\}$
e) $a \in (a,b)$

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

17. If $A = \{9,10\}$ and $B = \{7,8,3,2\}$, find $A \times B$



(i) {(9,7),(9,8),(9,3),(9,2),(10,7),(10,8),(10,3),(10,2),(3,9)}

(ii) {(9,7),(9,8),(9,2),(10,7),(10,8),(10,3),(10,2),(3,9)} (iii) {(9,7),(9,8),(9,3),(9,2),(10,8),(10,3),(10,2)}

(iv) {(9,7),(9,8),(9,3),(9,2),(10,7),(10,8),(10,3),(10,2)} (v) {(9,7),(9,8),(9,3),(10,7),(10,8),(10,3),(10,2),(3,8)}

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18. If $f(x)=(4x-3)$ and $g(x)=(8x^2+9x-5)$, find the value of $\frac{f(1)+f(-2)+f(5)}{g(-2)+g(5)+g(2)}$

(i) $\frac{1}{44}$ (ii) $\frac{1}{40}$ (iii) $\frac{1}{42}$ (iv) $(\frac{-1}{42})$ (v) $\frac{1}{14}$

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19. If $((8x+y+10),5) = (7,(7x+7y+5))$ then find (x,y)

(i) $((\frac{-3}{7}),\frac{3}{7})$ (ii) $((\frac{-1}{7}),\frac{3}{7})$ (iii) $(\frac{3}{7},(\frac{-3}{7}))$ (iv) $((\frac{-1}{3}),\frac{1}{3})$ (v) $((\frac{-3}{7}),\frac{3}{5})$

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

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

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

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

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21. Find the cardinality of the given roster form, where $R = \{(8,9),(8,1),(8,4),(10,4),(5,4),(5,9),(10,9)\}$

(i) 8 (ii) 7 (iii) 6 (iv) 5 (v) 10

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22. If $f(x)=(x+2)$, then find $f(5)$

(i) 8 (ii) 10 (iii) 4 (iv) 6 (v) 7

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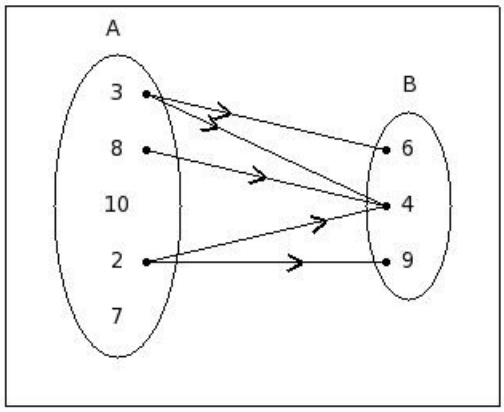
23. Which of the following statements are true if $f: A \to B$ and $a \in A, b \in B$?

a) $f(a)=b$
b) $f(b)=a$
c) $f(a)$ is called the image of a under f
d) $f(b)$ is called the image of b under f

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

24. Find the domain of the given relation.



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

25. If $f(x)=(4x+1)$ and $g(y)=(y+3)$, then find $f(9), g(6)$

(i) 34,7 (ii) 39,11 (iii) 37,9 (iv) 36,8 (v) 38,10

Assignment Key

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