



Red Rose Sr. Sec. School
Work Sheet 1
Mathematics(Ch: 1,2.
Class : 11

Roll No. :
Date :

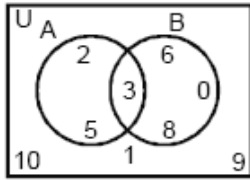
Time -
MM - 60

1. Are the following pair of sets equal ? Give reasons. 1
(i) $A = \{2, 3\}$; $B = \{x : x \text{ is a solution of } x^2 + 5x + 6 = 0\}$.
(ii) $A = \{x : x \text{ is a letter in the word FOLLOW}\}$.
 $B = \{x : x \text{ is a letter in the word WOLF}\}$.
2. Write all subsets of set $A = \{1, 2, 3\}$. 1
3. Write all subsets of set $A = \{\phi, 1\}$. 1
4. Are all days of a week beginning with letter T a well defined set? 1
5. Are students of class XI of a particular school a well defined set? 1
6. Write the members of each of the set: Days of a week 1
7. Represent each of the following in roster form : Set of odd numbers. 1
8. Represent Set of rational numbers between 6 and 7 in the set builder form. 1
9. Classify set of integers greater than 1000 as finite or infinite set. 1
10. Classify set of letters of Hindi alphabet as finite or infinite set. 1
11. Classify $\{x \in \mathbb{N} : (x - 1)(x - 2) = 0\}$ as finite or infinite set. 1
12. Insert the proper sign, for the following, from the signs $\in, \notin, \subseteq, \subset, \not\subseteq$. 1
 $7 \dots\dots\dots \{5, 6, 9, 7, 3\}$
13. Insert the proper sign, for the following, from the signs $\in, \notin, \subseteq, \subset, \not\subseteq$. 1
 $2 \dots\dots\dots \{x : x \text{ is not a prime number}\}$
14. Insert the proper sign, for the following, from the signs $\in, \notin, \subseteq, \subset, \not\subseteq$. 1
 $\{3, 4, 5\} \dots\dots\dots \{3, 4, 5\}$
15. State whether the given statement is true or false : $\{a, b\} = \{a, a, b, b, a\}$ 1
16. State whether the given statement is true or false : $10 \notin \{x : x \text{ is a multiple of } 20\}$. 1
17. State whether the given statement is true or false : Set of prime numbers and set of numbers divisible by 3 are disjoint sets. 1
18. Let $A = \{1, 2, \{3, 4\}, 5\}$. State as 'True' or 'False' for the following statements. 1
 $\{3, 4\} \subset A$
19. If $X = \{1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15\}$, write A subset of X that contains all prime numbers. 1

20. Taking the set of natural numbers as the universal set, write down the complements of the following sets: $\{x : x \text{ is a prime number}\}$ 1

21. If $A = \{2x : x \in \mathbb{N}\}$, $B = \{3x : x \in \mathbb{N}\}$, $C = \{5x : x \in \mathbb{N}\}$, then find : $B \cap C$ 1

22. From the adjoining Venn diagram, determine the following set $A - B$. 1



23. Given a universal set $U = \{0, 1, 2, 3, 4, 5, 6, 7, 8, 9\}$. Find the complement of each of the following : $C = \phi$. 1

24. Which of the following are examples of the null set ?
Set of even prime numbers 1

25. Write the following as intervals : $\{x : x \in \mathbb{R}, -4 < x \leq 6\}$ 1

26. Write the following intervals in set-builder form : $(-3, 0)$ 1

27. Write the following intervals in set-builder form : $[-23, 5)$ 1

28. Find the union of each of the following pairs of sets :
 $A = \{x : x \text{ is a natural number and multiple of } 3\}$
 $B = \{x : x \text{ is a natural number less than } 6\}$ 1

29. Find the union of each of the following pairs of sets :
 $A = \{x : x \text{ is a natural number and } 1 < x \leq 6\}$
 $B = \{x : x \text{ is a natural number and } 6 < x \leq 10\}$ 1

30. Taking the set of natural numbers as the universal set, write down the complements of the following sets: $\{x : x \text{ is an even natural number}\}$ 1

31. Taking the set of natural numbers as the universal set, write down the complements of the following sets: $\{x : x \text{ is a prime number}\}$ 1

32. Taking the set of natural numbers as the universal set, write down the complements of the following sets: $\{x : x + 5 = 8\}$ 1

33. Taking the set of natural numbers as the universal set, write down the complements of the following sets: $\{x : x \in \mathbb{N} \text{ and } 2x + 1 > 10\}$ 1

34. Let U be the set of all triangles in a plane. If A is the set of all triangles with at least one angle different from 60° , what is A' ? 1

35. Write the following set in the roster form. $A = \{x \mid x \text{ is a positive integer less than } 10 \text{ and } 2^x - 1 \text{ is an odd number}\}$ 1

36. Given that $N = \{1, 2, 3, \dots, 100\}$, then write the subset B of N , whose element are represented by $x + 2$, where $x \in N$. 1

37. State the given statement is true or false. Justify your answer.
 $35 \in \{x \mid x \text{ has exactly four positive factors}\}$. 1

38. State the given statement is true or false. Justify your answer.
 $128 \in \{y \mid \text{the sum of all the positive factors of } y \text{ is } 2y\}$ 1

39. State the given statement is true or false. Justify your answer. 1
 $3 \notin \{x \mid x^4 - 5x^3 + 2x^2 - 112x + 6 = 0\}$
40. State which of the following statements are true and which are false. Justify your answer. 1
 $496 \notin \{y \mid \text{the sum of all the positive factors of } y \text{ is } 2y\}$.
41. If $X = \{1, 2, 3\}$, if n represents any member of X , write the set containing all number represented by $4n$ 1
42. If $X = \{1, 2, 3\}$, if n represents any member of X , write the following sets containing all numbers represented by $n + 6$ 1
43. If $X = \{1, 2, 3\}$, if n represents any member of X , write the set containing all number represented by $\frac{n}{2}$. 1
44. If $X = \{1, 2, 3\}$, if n represents any member of X , write the set containing all number represented by $n - 1$ 1
45. Find x and y , if $(x + 3, 5) = (6, 2x + y)$. 1
46. If $f(x) = x^2$, find $\frac{f(1.1) - f(1)}{(1.1 - 1)}$. 1
47. If $A \times B = \{(a, x), (a, y), (b, x), (b, y)\}$. Find A and B . 1
48. $A = \{1, 2, 3, 5\}$ and $B = \{4, 6, 9\}$. Define a relation R from A to B by $R = \{(x, y) : \text{the difference between } x \text{ and } y \text{ is odd, } x \in A \text{ and } Y \in B\}$. Write R in roster form. 1
49. Find domain of the function $f(x) = \frac{x^2 + 2x + 1}{x^2 - 8x + 12}$. 1
50. What is the domain of the real valued function $f(x) = \frac{1}{3x - 2}$? 1
51. If $f(x) = x^2$ and $g(x) = 2x + 1$ are two real functions. Find $(f + g)(x)$. 1
52. If f and g are two functions over real numbers defined as $f(x) = 3x + 1$, $g(x) = x^2 + 2$, then find $f + g$ 1
53. If $\left(\frac{x}{3} + 1, y - \frac{2}{3}\right) = \left(\frac{5}{3}, \frac{1}{3}\right)$, find the values of x and y . 1
54. Is the given relation a function? Give reasons for your answer. 1
 $h = \{(4, 6), (3, 9), (-11, 6), (3, 11)\}$
55. Is the given relation a function? Give reasons for your answer. 1
 $f = \{(x, x) \mid x \text{ is a real number}\}$
56. Is the given relation a function? Give reasons for your answer. 1
 $g = \left\{ \left(n, \frac{1}{n} \right) \mid n \text{ is a positive integer} \right\}$
57. Is the given relation a function? Give reasons for your answer. 1
 $s = \{(n, n^2) \mid n \text{ is a positive integer}\}$

58. Is the given relation a function ? Give reasons for your answer. 1
 $t = \{(x, 3) \mid x \text{ is a real number}\}$
59. Let f and g be real functions defined by $f(x) = 2x + 1$ and $g(x) = 4x - 7$. For what real numbers x , $f(x) = g(x)$? 1
60. Let f and g be real functions defined by $f(x) = 2x + 1$ and $g(x) = 4x - 7$. For what real numbers x , $f(x) < g(x)$? 1