

Sub: - Mathematics

D.A.V. PUBLIC SCHOOL, NEW PANVEL

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Holiday Homework Topic-Sets

Worksheet- 1

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1. P = {x: x is a prime number less than 20} and

M = {x: x is a multiple of 6, 0 < x <30}, then find n(P) - n(M)

- 2. If a set has 2 elements then find the difference between the subsets of its power set and number of its subsets.
- 3. Describe the set {0} in the set builder form.
- 4. If X and Y are any two sets, then find $X \cap (X \cup Y)^c$.
- 5. Write the number of subsets of the letters of the word 'FOLLOW'
- 6. Find the number of non empty subsets of the set { 1, 2, 3, 4 }
- 7. A and B are two sets such that n(A − B) = 14 + x, n(B − A) = 3x and n(A ∩ B) = x.
 Draw a Venn diagram to illustrate information and if n(A) = n(B) then find the value of x.
- 8. Prove that $(A-B) \cup (B-A) = (A \cup B) (A \cap B)$
- 9. If A= {1, 2}. How many elements does P (P (P (A))) contains.
- 10. If X is the universal set and A, B are subsets of X such that n(X) = 99, n(A') = 80, n(B') = 85 and $n[(A \cap B)'] = 94$, find $n(A \cup B)$.
- 11. For any sets A and B, show that $P(A \cap B) = P(A) \cap P(B)$
- 12. Write the power set of $\{\phi, \{\phi\}\}$
- 13. Describe the following sets in Roster form

i) {x: x is an integer, $|x| \le 2$ } ii) {x: 3x+5 < 23, $n \in N$ }

14. Describe the following sets in set-builder form:

$\int_{1} \frac{1}{2} \frac{1}{2} \frac{1}{2} \frac{1}{2} \frac{1}{2} \frac{1}{2}$	ii\ ∫	∫1	2	3	4	5	6	7
$1, \frac{1}{2}, \frac{1}{3}, \frac{1}{4}, \dots$	")	$\overline{2}$	· 5	10	17	26	37	' 50 ∫

- iii) { a, t, c, e, r, h} iv) { 1, 2, 3, 4, 6, 9, 12, 18, 36 }
- 15. If n(U) = 50, n(A) = 24 and n(B) = 30, where U is the universal set, then find
- (i) The greatest value of $n(A \cup B)$
- (ii) The least value of $n(A \cap B)$
- 16. In a class of 200 students who appeared certain examinations, 35 students failed in MHT-CET, 40 in AIEEE and 40 in IIT entrance, 20 failed in MHT-CET and AIEEE, 17 failed in IIT and AIEEE, 15 failed in MHT-CET and IIT entrance and 5 failed in all 3

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examinations. Find how many students

- i) Did not fail in any examination.
- ii) Failed in IIT or AIEEE entrance.
- iii) What will you suggest the students failed in all examinations?
- 17. A college awarded38 medals in football, 15 in basketball and 20 in cricket. If these medals went to a total of 58 men and only 3 men got medals in all 3 sports, how many received medals in
 - i) exactly two of the 3 sports
 - ii) all the 3 sports
- 18. In class XI of a certain school, there are 30 students in a mathematics class and20 students in biology class. Find the no of students which are in mathematics class or in biology class in the following cases:
 - i) two classes are conducted at the same time.
 - ii) two classes are conducted at the different time and 5 students study both the subject.
- 19. In a university out of 120 students, 15 opted mathematics only, 16 opted statistics only, 9 opted for physics only and 45 opted for physics and mathematics, 30 opted physics and statistics, 8 opted mathematics and statistics and 80 opted physics.
 - By drawing Venn diagram, find the number of students who
 - i) opted mathematics
 - ii) opted statistics
 - iii) did not opted any of the above three subjects
- 20. In town of 10000 families, it was found that 40% families buy newspaper A, 20 % buy newspaper B and 10% buy newspaper C. 5% families buy A & B, 3% buy B & C and 4% buy A & C. If 2 % families buy all three newspapers, find the number of families which buy (i) A only, (ii) B only, (iii) none of A, B & C.
- 21. In a survey of 60 people, it was found that 25 people read newspaper H, 26 read newspaper T, 26 read newspapers I, 9 read both H and I, 11 read both H and T, 8 read both T and I, 3 read all three newspapers. Draw a Venn diagram describing above sets and Find:
 - i) the number of people who read at least one of the newspapers.
 - ii) the number of people who read exactly one newspaper.
 - iii) who read H but neither T nor I.
 - iv) who read T and H but not I.