

2013-2014

Std: - XI

Sub: - Mathematics

Worksheet no.3

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SETS

EASY

1. Describe the following set in Roster form: $\{x: x \text{ is a two digit number such that the sum of its digits is } 8\}$
2. Describe the set $\{0\}$ in the set builder form.
3. If X and Y are any two sets, then find $X \cap (X \cup Y)^c$.
4. Write the number of subsets of the letters of the word 'FOLLOW'
5. Find the number of non empty subsets of the set $\{1, 2, 3, 4\}$

AVERAGE

1. A and B are two sets such that $n(A - B) = 14 + x$, $n(B - A) = 3x$ and $n(A \cap B) = x$. Draw a Venn diagram to illustrate information and if $n(A) = n(B)$ then find the value of x .
2. Prove that $(A - B) \cup (B - A) = (A \cup B) - (A \cap B)$
3. If $A = \{1, 2\}$. How many elements does $P(P(P(A)))$ contains.
4. 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 $n(A \cup B)$.
5. Let $A = \{x: x \in \mathbb{R} \text{ and } x^2 - 4x + 3 = 0\}$, $B = \{x: x \in \mathbb{Z} \text{ and } x^2 < 3\}$ and $C = \{\sqrt{m} : m \in \mathbb{N}\}$ State with reasons which of the following are true or false.

$$1) A \subset C, \quad 2) -1 \in B, \quad 3) A \cup C = C$$

6. For any sets A and B , show that $P(A \cap B) = P(A) \cap P(B)$
7. Describe the following sets in Roster form

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

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

$$\text{i) } \left\{1, \frac{1}{2}, \frac{1}{3}, \frac{1}{4}, \dots\right\} \quad \text{ii) } \left\{\frac{1}{2}, \frac{2}{5}, \frac{3}{10}, \frac{4}{17}, \frac{5}{26}, \frac{6}{37}, \frac{7}{50}\right\}$$

HOTS

1. There are 575 individuals with a skin disorder. 180 had been exposed to Chemical C_1 , 210 to chemical C_2 and 185 to chemical C_3 . 80 exposed to both C_1 and C_2 , 100 exposed to both C_2 and C_3 , and 60 to C_1 and C_3 . There were 10 exposed to all the three. find the number of individuals exposed to
 - (i) chemical C_1 but not to C_3
 - (ii) only chemical C_2
 - (iii) chemical C_2 and C_3 but not C_1

2. In town of 10000 families, it was found that 40% families buy news paper A, 20 % buy news paper B and 10% buy news paper C. 5% families buy A & B, 3% buy B & C and 4% buy A & C. If 2 % families buy all three news papers, find the number of families which buy (i) A only, (ii) B only, (iii) non of A, B & C.

3. 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 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?

5. A college awarded 38 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
 - iii) football and cricket but not basketball.