



RAMAGYA SCHOOL, NOIDA
WORKSHEET, 2017-18
SUBJECT: MATHEMATICS

CLASS: XI

MONTH: MAY

1. In a survey of 100 students, the number of students studying the various languages were found to be English only 18, English but not Hindi 23, English and Sanskrit 8, English 26, Sanskrit 48, Sanskrit and Hindi 8, no language 24. Find
 - a) How many students were studying all subjects?
 - b) How many students were studying Hindi?
 - c) How many students were studying English and Hindi?
 2. Find the domain and range of function $f(x) = \frac{1}{1-x^2}$
 3. Find the domain and range of function $f(x) = \frac{x^2}{1+x^2}$
 4. A survey of 500 television viewers produced the following information; 285 watch football, 195 watch hockey, 115 watch basketball, 45 watch football & basketball, 70 watch football & hockey, 50 watch hockey & basketball, 50 do not watch any of the three games. Find
 - a) How many watch all the three games?
 - b) How many watch exactly one of the three games?
 - c) How many watch exactly two of the three games?
 5. Find the domain and range of function $f(x) = \frac{3}{2-x^2}$
 6. A survey shows that 63% of the Americans like cheese whereas 76% like apples. If $x\%$ of the Americans like both cheese and apples, find the value of x .
 7. If R is the relation "less than" from $A = \{1, 2, 3, 4, 5\}$ to $B = \{1, 4, 5\}$, write down the set of ordered pairs corresponding to R . Find the inverse of R .
 8. Let R be the relation on the set N of natural numbers defined by $R = \{(a, b) : a + 3b = 12, a \in N, b \in N\}$
 9. If $f(x) = x + \frac{1}{x}$, prove that $[f(x)]^3 = f(x^3) + 3f\left(\frac{1}{x}\right)$
 10. If A, B and C are any three sets, then prove that : $A - (B \cap C) = (A - B) \cup (A - C)$
 11. For any two sets A and B prove that: $P(A \cap B) = P(A) \cap P(B)$
 12. Let $U = \{1, 2, 3, 4, 5, 6, 7, 8, 9\}$, $A = \{1, 2, 3, 4\}$, $B = \{2, 4, 6, 8\}$ and $C = \{3, 4, 5, 6\}$. Find
 - a) $(A \cap C)'$
 - b) $(B - C)'$
 - c) $A - D$
 - d) $B \cup C \cup D$
 13. Prove that : $A \cap (B - C) = (A \cap B) - (A \cap C)$
 14. If $A = \{1, 2, 3\}$, $B = \{3, 4\}$ and $C = \{4, 5, 6\}$, find
 - a) $A \times (B \cup C)$
 - b) $(A \times B) \cup (A \times C)$
 15. Find the domain and range of $f(x) = \frac{x}{1+x^2}$
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