

HOLIDAYS HOMEWORK

CLASS XI (MATHS)

- 1 Make a model on any of the following topics
a) Sets b) Relations & Functions.
- 2 Prepare a mind twister or a puzzle based on class 11th concepts
- 3 Do set1 and set2 question papers of May Exam.
- 4 DO 10 questions of Ch -4 (including all three types)
- 5 Do the assignment attached along with

Assignment

- 1 Find the smallest set A such that $A \cup \{1,2\} = \{1,2,3,5,9\}$
- 2 Show that for any sets A and B, $A = (A \cap B) \cup (A - B)$
- 3 Let $U = \{1,2,3,4,5,6,7,8,9\}$ $A = \{2,4,6,8\}$ $B = \{2,3,5,7\}$ Verify that
"a)
 $(A \cup B)' = A' \cap B'$ b) $(A \cap B)' = A' \cup B'$
- 4 A survey shows that 76% of the Indians like oranges, where as 62% like bananas. What % of Indians like both oranges and bananas?
5. In a group of 1000 people, there are 750 who speak Hindi, 400 who can speak Bengali. How many can speak Hindi only? How many can speak Bengali only? How many can speak both?
6. A survey of 500 t.v. viewers says that 285 watch football, 195 watch hockey, 115 watch basketball, 45 watch football and basketball, 70 watch football and hockey 50 watch hockey and basketball, 50 do not any of the game. How many watch exactly one of the three games?
7. The school organised sports week for class XI having 100 students. Many activities like athletics, yoga, gymnastics were held. Out of students of class XI, 30 participated in athletics, 35 in Yoga and 20 in Gymnastics, 12 participated in athletics & gymnastics, 8 in yoga & athletics, 10 in yoga & gymnastics, while none participated in all the three activities. Find the number of students who did not participated in any of the three activities.
- 8 If A and B be two sets having 3 & 6 elements respectively. What can be the minimum number of elements in $A \cup B$ and also the maximum number of elements in $A \cup B$?
- 9 In a survey of 25 students, it was found that 15 had taken Maths, 12 had taken Physics & 11 had taken Chemistry, 5 had taken Maths & Chemistry, 9 had taken Maths & Physics, 4 had taken Physics & Chemistry and 3 had taken all the three subjects. Find the no. of students that had
a) Only chemistry b) only maths c) only physics d) physics & chemistry but not maths
e) maths & physics but not chemistry
f) only one of the subjects g) atleast one of the three subjects
h) none of the subjects.
- 10 Of all the members of three athletic teams in a certain school, 21 are in Basketball team, 26 in hockey team, 29 in football team. 14 play hockey and basketball, 15 play hockey and football, 12 play football and basketball, 8 play all the three games. How many members are there in all?

- 11 Express $\sin 5\theta$ in the terms of $\sin \theta$
- 12 Prove that $\tan A + \tan(60+A) + \tan(120+A) = 3\tan 3A$
- 13 Evaluate $\sin 18^\circ$ & $\sin 36^\circ$
- 14 Prove that $2\cos \theta = \sqrt{2+\sqrt{2+\sqrt{2+\sqrt{2+2\cos 8\theta}}}}$
- 15 Prove that $4 \sin \alpha \sin(\alpha+\pi/3) \sin(\alpha+2\pi/3) = \sin 3\alpha$
- 16 If $\cos(A-B) = 3\cos(A+B)$, prove that $\cot A \cdot \cot B = 2$
- 17 Prove that $\cos 20^\circ \cos 40^\circ \cos 60^\circ \cos 80^\circ = 1/16$
- 18 Prove that $\tan 70^\circ = 2\tan 50^\circ + \tan 20^\circ$
- 19 Solve the following trigonometric equations
- i) $\sin 2x + \cos x = 0$
 - ii) $\sin x + \sin 3x + \sin 5x = 0$
 - iii) $4\cos^2 x + 6\sin^2 x = 5$
 - iv) $\sqrt{3} \cos x + \sin x = 2$
- 20 Find the square root of $1 + 4\sqrt{3}i$