CAMBRIAN PUBLIC SCHOOL

Kanke Road, Ranchi (Jharkhand-834008) Affi-3430087, School code- 66276

SUMMER ASSIGNMENT

SUB- MATHEMATICS **CLASS-XII**

1.Check whether a function f : R → $[\ \frac{-1}{2}, \frac{1}{2}\ ]$ defined as f(x) = x^3 is one-one or not.

2.Mohit is pursuing his B.B.A course from a reputed institute. For his college project he visited two societies in Gurugram and prepared the lists of school going kids from the two societies. Let A =[1,2,3,4,5} and B ={ a, b ,c ,d} be the sets of school going students of societies F and G respectively. Using the above information answer the following questions:

(i) Find the number of relations from A to B

(ii)Mohit wants to define a reflexive relation on set A. Find total number of such relations

(iii)Find the number of symmetric relations

(iv) Find the number of relations on A which are not reflexive

(v) The relation R= { a,b} : a and b are students of the same age} on set A is

(a) reflexive only (b) reflexive and symmetric but not transitive (c) symmetric and transitive but not reflexive (d) an equivalence relation

3.An organization conducted bike race under 2 different categories- boys and girls. Totally there were 250 participants. Among all of them from Category 1 and two from Category 2 were selected for the final race. Ravi forms two sets B and G with these participants for his college project.Let B={ a,b,c}, G ={ g,h} where B represents the set of boys selected and G the set of girls who were selected for the final race.

Ravi decides to explore these sets for various types of relations and functions

(i)Ravi wishes to form all the relations possible from B to G. How many such relations are possible?

(ii)Ravi wants to know among those relations, how many functions can be formed from B to G?

(iii) Ravi wants to find the number of injective functions from B to G. How many numbers of injectivefunctions are possible?

(iv) Find the number of surjective functions from B to G.

4.Activity-1

OBJECTIVE: To verify that relation R on the set L of all lines in a plane, defined by (l_1 , l_2} ϵ R if and only if line l_1 is parallel to line l_2 is an equivalence relation.

5. ACTIVITY-2

OBJECTIVE To verify that the relation R in the set L of all lines in a plane, defined by R = { a,b}: a perpendicular to b and a,b ϵL is symmetric, but neither reflexive nor transitive.

Note : write these two activities in A4 size practical note book.

6.Simplyfy: (i) $\tan^{-1}\left(\frac{sinx}{1+cosx}\right)$ (ii) $\sin^{-1}\left(\frac{x}{\sqrt{1+x^2}}\right)$