REAL NUMBERS

1. Prove that the product of two consecutive positive integers is divisible by 2.
2. For any Positive integer n , prove that $n^3 - n$ is divisible by 6.
3. Find the largest number that will divide 382, 446 and 674 leaving remainders 5, 11 and 7 respectively.
4. Find the HCF of 85 and 153 and express it in the form of 85x +153y.
5. Check whether 7^n can end with digit zero for any natural number n.
6. The LCM of two numbers is 14 times their HCF. The sum of LCM and HCF is 600. If one number is 280 find the other.
7. If x is a non zero rational number and $\sqrt{y}$ is irrational then show that x $\sqrt{y}$ is irrational.
8. Check whether the following are terminating or non terminating:

    a.) $\frac{27}{7}$

    b.) 3.1414145

    c.) $\prod$

9. Show that the square of any positive integer can not be of the form 6m +2 or 6m +5 for any integer n.
10. The HCF and LCM of two numbers are 9 and 90 respectively. If one of the number is 18 find the other.
11. If HCF of 570 and 1425 is 285 find the LCM.

12. Use Euclid's algorithm to find the HCF of 4052 and 12576.

    13. Show that any positive odd integer is of the form of 4q + 1 or 4q + 3, where   q is some integer.

SUBJECT MATHEMATICS   CLASS X   DATE OF SUBMISSION 5-5-17

LINEAR EQUATIONS IN TWO VARIABLES

1. Find the value of K for which the given system of equations has infinite many solutions:
   a.) $(k-3)x+3y=k$
   $Kx + ky=12$

2. Find the unknowns if it has no solution :
   a) $3x-y-5=0$
   $6x-2y-k=0$

3. Solve :
   a.) $37x + 43y = 123$; $43x + 37y = 117$
   b.) $\frac{3}{5}x - \frac{2}{3}y + 1=0$; $\frac{1}{3}x + \frac{2}{5}y =4$
   c.) $ax + by = a-b$; $bx - ay = a+b$
   d.) $\frac{10}{x+y} + \frac{2}{x-y} =4$; $\frac{15}{x+y} - \frac{5}{x-y} = -2$

4. The sum of the digits of a two digit number is 9. Also, nine times this number is twice the number obtained by reversing the order of the digits of the number. Find the number.

5. Represent the system of linear equations $3x +y -5 =0$ and $2x - y - 5 =0$ graphically. From graph find the points where the lines intersect y-axis.

6. A boat goes 12 km upstream and 40 km downstream in 8 hrs. It can go 16 km upstream and 32 km downstream in the same time. Find the speed of boat in still water and speed of stream.

7. Anshu can row a boat 20km downstream in 2 hrs and 4km upstream in 2 hrs. Find her speed of rowing in still water and speed of the current.

8. If $x =-a$ and $y=k$ is a solution of $\frac{bx}{a} - \frac{ay}{b} + a + b =0$ and $bx - 9y +2ab =0$, then find value of K.

9. A two digit number is such that the product of its digits is 14. If 45 is added to the number, the digits interchange their places. Find the number.

10. Two places A and B are 120 km apart from each other on a highway. A car starts from A and another from B at the same time. If they move in the same direction, they meet in 6

hrs and if they move in opposite direction, they meet in I hour and 12 min. Find the speed of each car.

11. Solve the following system of linear equation:

$5x - 6y + 30 = 0$ $\qquad\qquad$ $5x + 4y - 20 = 0$

Find the vertices of the triangle formed by the above two lines and x-axis.