CLASS – X (2015-16)

HOLIDAY HOMEWORK (SUMMER BREAK)

SUBJECT: MATHEMATICS

QUESTION BANK

TOPIC COVERED: 1. REAL NUMBERS.

2. PAIR OF LINEAR EQUATIONS IN TWO VARIABLES.

CHAPTER- 1

1. Show that any positive integer of the form 3q or, 3q+1 or, 3q+2 for some integer q.

2. Prove that n^2-n is divisible by 2 for every positive integer n.

3. Use Euclid's division lemma find the HCF of the following:

i. 4052 and 12576 ii. 240 and 6552 iii. 100 and 190 (Ans. i. 4. ii 24 iii. 10.)

4. Find the HCF of 81 and 237 and express it as a linear combination of 81 and 237.

5. If d is the HCF of 56 and 72, find x,y satisfying d= 56x+72y. Also, show that x and y are not unique.

6. Find the largest number which divides 615 and 963 leaving remainder 6 in each case. (ans. 87)

7. Use Euclid's division lemma to show that the square of any positive integer is either of the form 3m or 3m+1 for some integer m.

8. Given that HCF (325,315)=5. Find LCM of 325 and 315. (ans. 20475)

9. Find the smallest number divisible by 15, 24 and 36. (ans. 360)

10. Check whether 6^n can end with the digit 0 for any natural number n.

11. Explain why the following numbers are composite numbers:

i. 7x11x13+13 ii. 3x5x7x11x23+11 iii. 7x6x5x4x3x2x1+5

12. Show that $\sqrt{7}$ is an irrational number.

13. Show that 2- $\sqrt{3}$ is an irrational number.

14. By observing the decimal expansion, state whether the following are rational numbers or not. If they are rational express in the form p/q and comment over the prime factors of q.

i. 3.255 ii. 7.010010001……. iii. 3.14 iv. $0.\overline{32}$

15. Show that there is no positive integer n for which $\sqrt{n-1}+\sqrt{n+1}$ is rational.

16. Express 111972 as a product of its prime factors.

17. Prove that $(3+2\sqrt{5})^2$ is irrational.

CHAPTER- 3

Solve the following system of equations graphically.

1. x+y =3; 3x-2y =4 2. 2x+4y= 10; 3x+6y=12 3. 3x-y=2; 9x-3y=6

Solve the following system of equations graphically and shade the region between the lines and the y-axis.

4. 3x-4y=7; 5x+2y=3 5. 4x-y=4; 3x+2y= 14.

6. On comparing the ratio $\frac{a_1}{a_2}, \frac{b_1}{b_2}$ and $\frac{c_1}{c_2}$, find out whether following pair of linear equations are consistent or inconsistent:

i. 3x+2y=5; 2x-3y=7 (consistent) ii. 5x-3y=11; -10x+6y=-22. (consistent)

iii. 2x-3y=8; 4x-6y=9. (inconsistent)

Solve the following equations by substitution method:

7. 3x+2y=11; 2x+3y=4 (x=5, y=-2) 8. 8x+5y=9; 3x+2y=4 (x=-2, y=5)

9. ax+by=a-b; bx-ay=a+b. (x= 1, y=-1)

Solve the following equations by elimination method:

10. $\frac{x}{10}+\frac{y}{5}+1=15$; $\frac{x}{8}+\frac{y}{6}=15$. (x=80, y=30) 11. 7(y+3)-2(x+2)=14; 4(y-2)+3(x-3)=2. (x=5, y=1)

Solve the following equations by cross multiplication method:

12. 2x-y-3=0; 4x+y-3=0 (x=1, y=-1) 13. x+y=a+b; ax-by=a^2-b^2 (x=a, y=b)

Solve the following equations:

14. 3(2x+y)=7xy ; 3(x+3y)=11xy. (x=1, y=3/2)

15. $\frac{5}{x+y}-\frac{2}{x-y}=-1$; $\frac{15}{x+y}+\frac{7}{x-y}=10$ (x=3, y=2)

16. A man has only 20 paisa coins and 25 paisa coins in his purse. If he has 50 coins in all totaling Rs. 11.25. How many coins of each kind does he has? (25,25)

17. A and B have certain number of apples. A says to B, If you give me your 20 apples, I will be twice as many as you left with. B replies, If you give me 10, I will be thrice as many as left with you. How many apples does each have? (20,40)

18. In a co-educational school, there were 400 students. The school authorities reduced the fee of the girl students by 50% consequently the next year the number of boys increased by 50% and that of girls increased by 100%. The total number of students became 625.

i. Find the original number of boys and girls. (350,50)

ii. What values are exhibited by school authorities?