

# AUTUMN BREAK HOLIDAYS HOMEWORK

## Class VII

### MATHEMATICS

- 1) With the help of paper cutting and pasting method prove the following properties of triangles
  - a. Angle sum property: sum of all interior angles of a triangle is 180.
  - b. Exterior angle property: exterior angle of a triangle is equal to the sum of two opposite interior angles.
- 2) Learn squares of the number and table from 1 to 20.
- 3) Note down your routine in tabular form as mentioned below

| Activity    | No of hours | on of hours per day |
|-------------|-------------|---------------------|
| playing     |             |                     |
| Watching TV |             |                     |
| computers   |             |                     |
| sleeping    |             |                     |

- 4) Revision of all chapters

## Class IX

### Maths

#### INSTRUCTIONS :

- \*\* Do question 1 in rough note book.
  - \*\* Do remaining questions in A-4 size sheets.
1. Revise chapter 1-8 for Half yearly examination.
  2. Show how  $\sqrt{3}$  can be represented on the number line?
  3. Visualize 7.356 on the number line up to 4 decimal places.
  4. Factorize  $4x^2+y^2+z^2- 4xy-2yz+4xz$ .
  5. Show that  $(x+5)$  is a factor of the polynomial

$$x^3+x^2+3x+115$$

6. Factorize :  $x^2-4x-21$
7. Give the geometrical representation of the equation  $x = -3$  as an equation.
  - (i) In one variable
  - (ii) In two variables
8. Write any 8 algebraic identities.
9. Write the fifth Euclid's postulate in your own words.
10. State and prove mid-point theorem.
11. Prove that parallelogram on the same base and between the same parallels are equal in area.
12. Prove that the diagonals of a parallelogram divide it into four triangles of equal areas therefore
13. Define factor theorem and factorise  $x^3-1$ .
14. Find two solutions of linear equation  $2x + 3y = 5$ .
15. Write two rational number between  $\sqrt{2}$  and  $\sqrt{3}$ .
16. Write an article on Arya Bhatta's contribution in Mathematics.
17. Write an article on S Ramanujan-A role model for Indian Mathematicians.

## CLASS X

## MATHEMATICS

NOTE:- SOLVE ALL THE QUESTIONS ON LOOSE A 4 SIZE SHEETS.TIE THE SHEETS WITH THREAD.DON'T USE ANY KIND OF PLASTIC FOLDERS

### CHAPTER 1 REAL NUMBER

Q 1.Has the rational number  $\frac{441}{2^2 \cdot 5^7 \cdot 7^2}$  a terminating or a non-terminating decimal representation?

Q2. Find the LCM and HCF of 120 and 144 by using Fundamental Theorem of Arithmetic.

Chapter 2 polynomials

Q3. Prove that  $(5 + 3\sqrt{2})$  is an irrational number.

Q4. The LCM and HCF of two numbers are 240 and 12 respectively. If one of the numbers is 60, then find the other number.

Q5. Using Euclid's division algorithm, find the HCF of 56, 96 and 404.

### CHAPTER 2 POLYNOMIALS

Q 1. If 1 is a zero of the polynomial  $p(x) = ax^2 - 3(a - 1)x - 1$ , then find the value of a.

Q 2. Write a quadratic polynomial, the sum and product of whose zeroes are 3 and -2 respectively

Q 3. Find the zeroes of the quadratic polynomial  $5x^2 - 4 - 8x$  and verify the relationship between the zeroes and the coefficient of the polynomial.

Q 4. Find the quadratic polynomial, the sum of whose zeroes is 8 and their product is 12. Hence, find the zeroes of the polynomial.

Q 5. Obtain all other zeroes of the polynomial  $2x^3 - 4x - x^2 + 2$ , if two of its zeroes are  $\sqrt{2}$  and  $-\sqrt{2}$ .

### CHAPTER 3 LINEAR EQUATIONS IN TWO VARIABLES

Q 1. For what value of  $k$  will the following equations have infinitely many solutions?

$$2x-3y=7, (k+1)x + (1-2k)y=5k-4$$

Q 2. Solve the following pair of equations graphically.  $x+3y=6$ ,  $2x-3y=12$ . Also find the area of the triangle formed by the lines representing the given equations with  $y$ -axis.

Q.3 A man travels 600km apart by train and partly by car. It takes 8 hours and 40 minutes if he travels 320 km by train and rest by car. It would take 30 minutes more if he travels 200 km by train and the rest by the car/. Find the speed of the train and by car separately.

Q 4. A boat covers 14 kms in upstream and 20 kms downstream in 7 hours. Also it covers 22 kms upstream and 34 kms downstream in 10 hours. Find the speed of the boat in still water and of that the stream.

## CHAPTER 6 TRIANGLES

TH.1. State and prove Basic Proportionality Theorem.

TH 2. State and prove Pythagoras Theorem.

TH 3. State and prove converse of Pythagoras Theorem .

TH 4. The ratio of the areas of two similar triangles is equal to the square of the ratio of their corresponding sides.

TH 5. Prove that a tangent at any point on the circle is perpendicular to the radius through the point of contact.

## CHAPTER 7 CO-ORDINATE GEOMETRY

Q 1. Find the value of  $P$  if the point  $A(0,2)$  is equidistant from  $(3, p)$  and  $(p,3)$

Q 2. Show that the points  $(1, 7)$ ,  $(4, 2)$ ,  $(-1, -1)$  and  $(-4, 4)$  are the vertices of a square.

Q 3. Find the ratio in which the line segment joining the points  $(-3, 10)$  and  $(6, -8)$  is divided by  $(-1, 6)$ .

Q 4. For what value of  $p$  are the points  $(2, 1)$ ,  $(p,-1)$  and  $(-1, 3)$  collinear?

Q5 Find the area of the quadrilateral whose vertices, taken in order, are  $(-4, -2)$ ,  $(-3, -5)$ ,  $(3, -2)$  and  $(2, 3)$ .

## CHAPTER 8 INTRODUCTION TO TRIGONOMETRY

Q 1 IF  $\sin 3\theta = \cos(\theta-6^\circ)$  and  $3\theta$  and  $\theta-6^\circ$  are acute angles, find value of  $\theta$

Q2. If  $\tan A = 4/3$ , then find value of  $\sin A + \cos A$  and  $\sin A - \cos A$

Q3. Prove that:  $(\sin\theta + \operatorname{cosec}\theta)^2 + (\cos\theta + \sec\theta)^2 = 7 + \tan^2\theta + \cot^2\theta$  .

Q 4. Given  $\operatorname{cosec}\theta = 4/3$ , calculate all other trigonometric ratios.

Q5

$\cos 60^\circ - \cot 45^\circ + \operatorname{cosec} 30^\circ$  Evaluate

$\sec 60^\circ + \tan 45^\circ - \sin 30^\circ$

- Learn all the important formulas of above chapters
- Do 10 mcq questions from each chapter given above.

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