

## Course Structure

### Class IX

Second Term	Marks : 80
UNITS	MARKS
II. ALGEBRA	14
III. GEOMETRY (Contd.)	35
V. MENSURATION (Contd.)	15
VI. STATISTICS AND PROBABILITY	16
<b>TOTAL</b>	<b>80</b>

### UNIT II : ALGEBRA (Contd.)

#### 2. LINEAR EQUATIONS IN TWO VARIABLES (14) Periods

Recall of linear equations in one variable. Introduction to the equation in two variables. Prove that a linear equation in two variables has infinitely many solutions and justify their being written as ordered pairs of real numbers, plotting them and showing that they seem to lie on a line. Examples, problems from real life, including problems on Ratio and Proportion and with algebraic and graphical solutions being done simultaneously.

### UNIT III : GEOMETRY (Contd.)

#### 4. QUADRILATERALS (10) Periods

1. (Prove) The diagonal divides a parallelogram into two congruent triangles.
2. (Motivate) In a parallelogram opposite sides are equal, and conversely.
3. (Motivate) In a parallelogram opposite angles are equal, and conversely.
4. (Motivate) A quadrilateral is a parallelogram if a pair of its opposite sides is parallel and equal.
5. (Motivate) In a parallelogram, the diagonals bisect each other and conversely.
6. (Motivate) In a triangle, the line segment joining the mid points of any two sides is parallel to the third side and (motivate) its converse.

#### 5. AREA (4) Periods

Review concept of area, recall area of a rectangle.

1. (Prove) Parallelograms on the same base and between the same parallels have the same area.
2. (Motivate) Triangles on the same base and between the same parallels are equal in area and its converse.

## 6. CIRCLES

(15) Periods

Through examples, arrive at definitions of circle related concepts, radius, circumference, diameter, chord, arc, subtended angle.

1. (Prove) Equal chords of a circle subtend equal angles at the center and (motivate) its converse.
2. (Motivate) The perpendicular from the center of a circle to a chord bisects the chord and conversely, the line drawn through the center of a circle to bisect a chord is perpendicular to the chord.
3. (Motivate) There is one and only one circle passing through three given non-collinear points.
4. (Motivate) Equal chords of a circle (or of congruent circles) are equidistant from the center(s) and conversely.
5. (Prove) The angle subtended by an arc at the center is double the angle subtended by it at any point on the remaining part of the circle.
6. (Motivate) Angles in the same segment of a circle are equal.
7. (Motivate) If a line segment joining two points subtends equal angle at two other points lying on the same side of the line containing the segment, the four points lie on a circle.
8. (Motivate) The sum of the either pair of the opposite angles of a cyclic quadrilateral is  $180^\circ$  and its converse

## 7. CONSTRUCTIONS

(10) Periods

1. Construction of bisectors of line segments & angles,  $60^\circ$ ,  $90^\circ$ ,  $45^\circ$  angles etc., equilateral triangles.
2. Construction of a triangle given its base, sum/difference of the other two sides and one base angle.
3. Construction of a triangle of given perimeter and base angles.

## UNIT V : MENSURATION (Contd.)

### 2. SURFACE AREAS AND VOLUMES

(12) Periods

Surface areas and volumes of cubes, cuboids, spheres (including hemispheres) and right circular cylinders/ cones.

## UNIT VI : STATISTICS AND PROBABILITY

### 1. STATISTICS

(13) Periods

Introduction to Statistics : Collection of data, presentation of data — tabular form, ungrouped / grouped, bar graphs, histograms (with varying base lengths), frequency polygons, qualitative analysis of data to choose the correct form of presentation for the collected data. Mean, median, mode of ungrouped data.

### 2. PROBABILITY

(12) Periods

History, Repeated experiments and observed frequency approach to probability. Focus is on empirical probability. (A large amount of time to be devoted to group and to individual activities to motivate the concept; the experiments to be drawn from real - life situations, and from examples used in the chapter on statistics).