EDUGROSS
WISDOMISING KNOWLEDGE

Revised MATHEMATICS (IX-X)
(CODE NO. 041)
Session 2020-21

The Syllabus in the subject of Mathematics has undergone changes from time to time in accordance with growth of the subject and emerging needs of the society. The present revised syllabus has been designed in accordance with National Curriculum Framework 2005 and as per guidelines given in the Focus Group on Teaching of Mathematics which is to meet the emerging needs of all categories of students. For motivating the teacher to relate the topics to real life problems and other subject areas, greater emphasis has been laid on applications of various concepts.

The curriculum at Secondary stage primarily aims at enhancing the capacity of students to employ Mathematics in solving day-to-day life problems and studying the subject as a separate discipline. It is expected that students should acquire the ability to solve problems using algebraic methods and apply the knowledge of simple trigonometry to solve problems of height and distances. Carrying out experiments with numbers and forms of geometry, framing hypothesis and verifying these with further observations form inherent part of Mathematics learning at this stage. The proposed curriculum includes the study of number system, algebra, geometry, trigonometry, mensuration, statistics, graphs and coordinate geometry, etc.

The teaching of Mathematics should be imparted through activities which may involve the use of concrete materials, models, patterns, charts, pictures, posters, games, puzzles and experiments.

Objectives

The broad objectives of teaching of Mathematics at secondary stage are to help the learners to:

- consolidate the Mathematical knowledge and skills acquired at the upper primary stage;
- acquire knowledge and understanding, particularly by way of motivation and visualization, of basic concepts, terms, principles and symbols and underlying processes and skills;
- develop mastery of basic algebraic skills;
- develop drawing skills;
- feel the flow of reason while proving a result or solving a problem;
- apply the knowledge and skills acquired to solve problems and wherever possible, by more than one method;
- to develop ability to think, analyze and articulate logically;
- to develop awareness of the need for national integration, protection of environment, observance of small family norms, removal of social barriers, elimination of gender biases;
- to develop necessary skills to work with modern technological devices and mathematical software's.
- to develop interest in mathematics as a problem-solving tool in various fields for its beautiful structures and patterns, etc.
- to develop reverence and respect towards great Mathematicians for their contributions to the field of Mathematics;
- to develop interest in the subject by participating in related competitions;
- to acquaint students with different aspects of Mathematics used in daily life;
- to develop an interest in students to study Mathematics as a discipline.

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COURSE STRUCTURE CLASS -X

Units	Unit Name	Marks
I	NUMBER SYSTEMS	06
II	ALGEBRA	20
III	COORDINATE GEOMETRY	06
IV	GEOMETRY	15
V	TRIGONOMETRY	12
VI	MENSURATION	10
VII	STATISTICS & PROBABILTY	11
	Total	**80**

UNIT I: NUMBER SYSTEMS

1. REAL NUMBER (8) Periods

Fundamental Theorem of Arithmetic - statements after reviewing work done earlier and after illustrating and motivating through examples, Proofs of irrationality of $\sqrt{2}, \sqrt{3}\ \sqrt{5}$ Decimal representation of rational numbers interms of terminating/non-terminating recurring decimals.

UNIT II: ALGEBRA

1. POLYNOMIALS (4) Periods

Zeros of a polynomial. Relationship between zeros and coefficients of quadratic polynomials.

2. PAIR OF LINEAR EQUATIONS IN TWO VARIABLES (11) Periods

Pair of linear equations in two variables and graphical method of their solution, consistency/inconsistency.

Algebraic conditions for number of solutions. Solution of a pair of linear equations in two variables algebraically - by substitution, by elimination. Simple situational problems. Simple problems on equations reducible to linear equations.

3. QUADRATIC EQUATIONS (10) Periods

Standard form of a quadratic equation $ax^2 + bx + c = 0$, $(a \neq 0)$. Solutions of quadratic equations (only real roots) by factorization, and by using quadratic formula. Relationship between discriminant and nature of roots.

4. ARITHMETIC PROGRESSIONS (4) Periods

Motivation for studying Arithmetic Progression Derivation of the n^{th} term and sum of the first n terms of A.P.

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UNIT III: COORDINATE GEOMETRY

1. LINES (In two-dimensions) (10) Periods

Review: Concepts of coordinate geometry, graphs of linear equations. Distance formula. Section formula (internal division).

UNIT IV: GEOMETRY

1. TRIANGLES (10) Periods

Definitions, examples, counter examples of similar triangles.

1. (Prove) If a line is drawn parallel to one side of a triangle to intersect the other two sides in distinct points, the other two sides are divided in the same ratio.
2. (Motivate) If a line divides two sides of a triangle in the same ratio, the line is parallel to the third side.
3. (Motivate) If in two triangles, the corresponding angles are equal, their corresponding sides are proportional and the triangles are similar.
4. (Motivate) If the corresponding sides of two triangles are proportional, their corresponding angles are equal and the two triangles are similar.
5. (Motivate) If one angle of a triangle is equal to one angle of another triangle and the sides including these angles are proportional, the two triangles are similar.
6. (Motivate) If a perpendicular is drawn from the vertex of the right angle of a right triangle to the hypotenuse, the triangles on each side of the perpendicular are similar to the whole triangle and to each other.
7. (Prove) In a right triangle, the square on the hypotenuse is equal to the sum of the squares on the other two sides.

2. CIRCLES (8) Periods

Tangent to a circle at, point of contact

1. (Prove) The tangent at any point of a circle is perpendicular to the radius through the point of contact.
2. (Prove) The lengths of tangents drawn from an external point to a circle are equal.

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3. CONSTRUCTIONS (4) Periods

1. Division of a line segment in a given ratio (internally).
2. Tangents to a circle from a point outside it.

UNIT V: TRIGONOMETRY

1. INTRODUCTION TO TRIGONOMETRY (8) Periods

Trigonometric ratios of an acute angle of a right-angled triangle. Proof of their existence (well defined). Values of the trigonometric ratios of 30^0, 45^0 and 60^0. Relationships between the ratios.

2. TRIGONOMETRIC IDENTITIES (10) Periods

Proof and applications of the identity $sin^2A + cos^2A = 1$. Only simple identities to be given.

3. HEIGHTS AND DISTANCES: Angle of elevation, Angle of Depression. (8) Periods

Simple problems on heights and distances. Problems should not involve more than two right triangles. Angles of elevation / depression should be only 30°, 45°, 60°.

UNIT VI: MENSURATION

1. AREAS RELATED TO CIRCLES (10) Periods

Motivate the area of a circle; area of sectors and segments of a circle. Problems based on areas and perimeter / circumference of the above said plane figures. (In calculating area of segment of a circle, problems should be restricted to central angle of 60° and 90° only. Plane figures involving triangles, simple quadrilaterals and circle should be taken.)

2. SURFACE AREAS AND VOLUMES (8) Periods

1. Surface areas and volumes of combinations of any two of the following: cubes, cuboids, spheres, hemispheres and right circular cylinders/cones.
2. Problems involving converting one type of metallic solid into another and other mixed problems. (Problems with combination of not more than two different solids be taken).

UNIT VII: STATISTICS AND PROBABILITY

1. STATISTICS (10) Periods

Mean, median and mode of grouped data (bimodal situation and step deviation method for finding the mean to be avoided).

2. PROBABILITY (10) Periods

Classical definition of probability. Simple problems on finding the probability of an event.

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MATHEMATICS-Standard
QUESTION PAPER DESIGN
CLASS – X (2020-21)

Time : 3 Hours **Max. Marks: 80**

S. No.	Typology of Questions	Total Marks	% Weightage (approx.)
1	**Remembering:** Exhibit memory of previously learned material by recalling facts, terms, basic concepts, and answers. **Understanding:** Demonstrate understanding of facts and ideas by organizing, comparing, translating, interpreting, giving descriptions, and stating main ideas	43	54
2	**Applying:** Solve problems to new situations by applying acquired knowledge, facts, techniques and rules in a different way.	19	24
3	**Analysing :** Examine and break information into parts by identifying motives or causes. Make inferences and find evidence to support generalizations **Evaluating:** Present and defend opinions by making judgments about information, validity of ideas, or quality of work based on a set of criteria. **Creating:** Compile information together in a different way by combining elements in a new pattern or proposing alternative solutions	18	22
	Total	80	100

INTERNAL ASSESSMENT	**20 MARKS**
Pen Paper Test and Multiple Assessment (5+5)	10 Marks
Portfolio	05 Marks
Lab Practical (Lab activities to be done from the prescribed books)	05 Marks

MATHEMATICS-Basic
QUESTION PAPER DESIGN
CLASS – X (2020-21)

Time : 3Hours **Max. Marks: 80**

S. No.	Typology of Questions	Total Marks	% Weightage (approx.)
1	**Remembering:** Exhibit memory of previously learned material by recalling facts, terms, basic concepts, and answers. **Understanding:** Demonstrate understanding of facts and ideas by organizing, comparing, translating, interpreting, giving descriptions, and stating main ideas	60	75
2	**Applying:** Solve problems to new situations by applying acquired knowledge, facts, techniques and rules in a different way.	12	15
3	**Analysing :** Examine and break information into parts by identifying motives or causes. Make inferences and find evidence to support generalizations **Evaluating:** Present and defend opinions by making judgments about information, validity of ideas, or quality of work based on a set of criteria. **Creating:** Compile information together in a different way by combining elements in a new pattern or proposing alternative solutions	8	10
	Total	80	100

INTERNAL ASSESSMENT	**20 MARKS**
Pen Paper Test and Multiple Assessment (5+5)	10 Marks
Portfolio	05 Marks
Lab Practical (Lab activities to be done from the prescribed books)	05 Marks

PRESCRIBED BOOKS:

1. Mathematics - Textbook for class IX - NCERT Publication
2. Mathematics - Textbook for class X - NCERT Publication
3. Guidelines for Mathematics Laboratory in Schools, class IX - CBSE Publication
4. Guidelines for Mathematics Laboratory in Schools, class X - CBSE Publication
5. Laboratory Manual - Mathematics, secondary stage - NCERT Publication
6. Mathematics exemplar problems for class IX, NCERT publication.
7. Mathematics exemplar problems for class X, NCERT publication.

ıtable, responsive and legitimate government • Economic growth and development • Reduction of inequality and poverty • Accommodation of social diversity • Dignity and freedom of the citizens	• Understand the causes for continuation of democracy in India. • Distinguish between sources of strengths and weaknesses of Indian democracy.
Unit 4: Understanding Economic Development	**44 Periods**
Themes	**Objectives**
1. **Development** • What Development Promises - Different people different goals • Income and other goals • National Development • How to compare different countries or states? • Income and other criteria • Public Facilities • Sustainability of development	• Familiarize with concepts of macroeconomics. • Understand the rationale for overall human development in our country, which includes the rise of income, improvements in health and education rather than income. • Understand the importance of quality of life and sustainable development.
2. **Sectors of the Indian Economy** • Sectors of Economic Activities • Comparing the three sectors • Primary, Secondary and Tertiary Sectors in India • Division of sectors as organized and unorganized • Sectors in terms of ownership: Public and Private Sectors	• Identify major employment generating sectors. • Reason out the government investment in different sectors of economy.
3. **Money and Credit** • Money as a medium of exchange • Modern forms of money • Loan activities of Banks • Two different credit situations • Terms of credit • Formal sector credit in India • Self Help Groups for the Poor	• Understand money as an economic concept. • Understand the role of financial institutions from the point of view of day-to- day life.
4. **Globalization and the Indian Economy**	

:tion across countries • Interlinking production across countries • Foreign Trade and integration of markets • What is globalization? • Factors that have enabled Globalisation • World Trade Organisation • Impact of Globalization on India • The Struggle for a fair Globalization	• Explain the working of the Global Economic phenomenon.

PROJECT WORK
CLASS X (2020-21)

05 Periods	**05 Marks**

1. ***Every student*** has to compulsorily undertake ***any one project*** on the following topics:

Consumer Awareness
OR
Social Issues
OR
Sustainable Development

2. **Objective:** The overall objective of the project work is to help students gain an insight and pragmatic understanding of the theme and see all the Social Science disciplines from interdisciplinary perspective. It should also help in enhancing the Life Skills of the students.

Students are expected to apply the Social Science concepts that they have learnt over the years in order to prepare the project report.

If required, students may go out for collecting data and use different primary and secondary resources to prepare the project. If possible, ***different forms of art*** may be integrated in the project work.

3. The distribution of marks over different aspects relating to Project Work is as follows:

	Aspects	Marks
a.	Content accuracy, originality and analysis	**2**
b.	Presentation and creativity	**2**
c.	Viva Voce	**1**

4. The projects carried out by the students in different topics should subsequently be shared among themselves through interactive sessions such as exhibitions, panel discussions, etc.

5. All documents pertaining to assessment under this activity should be meticulously maintained by concerned schools.

6. A Summary Report should be prepared highlighting:

- objectives realized through individual work and group interactions;
- calendar of activities;
- innovative ideas generated in the process ;
- list of questions asked in viva voce.

7. It is to be noted here by all the teachers and students that the projects and models prepared should be made from eco-friendly products without incurring too much expenditure.

8. The Project Report should be handwritten by the students themselves.

9. Records pertaining to projects (internal assessment) of the students will be maintained for a period of three months from the date of declaration of result for verification at the discretion of Board. Subjudiced cases, if any or those involving RTI / Grievances may however be retained beyond three months.

PRESCRIBED BOOKS:

1. India and the Contemporary World-II (History) - Published by NCERT
2. Contemporary India II (Geography) - Published by NCERT
3. Democratic Politics II (Political Science) - Published by NCERT
4. Understanding Economic Development - Published by NCERT
5. Together Towards a Safer India - Part III, a textbook on Disaster Management - Published by CBSE
6. Learning Outcomes at the Secondary Stage – Published by NCERT

Note: Please procure latest reprinted edition (2020) of prescribed NCERT textbooks.

SOCIAL SCIENCE (CODE NO. 087)
QUESTION PAPER DESIGN
CLASS X (2020-21)

Time: 3 Hours			Maximum Marks : 80
Sr. No.	**Competencies**	**Total Marks**	**% Weightage**
1	**Remembering and Understanding:** Exhibiting memory of previously learned material by recalling facts, terms, basic concepts, and answers; Demonstrating understanding of facts and ideas by organizing, translating, interpreting, giving descriptions and stating main ideas.	28	35%
2	**Applying:** Solving problems to new situations by applying acquired knowledge, facts, techniques and rules in a different way.	15	18.75%
3	**Formulating, Analysing, Evaluating and Creating:** Examining and breaking information into parts by identifying motives or causes; Making inferences and finding evidence to support generalizations; Presenting and defending opinions by making judgments about information, validity of ideas, or quality of work based on a set of criteria; Compiling information together in a different way by combining elements in a new pattern or proposing alternative solutions.	32	40%
4	**Map Skill**	5	6.25%
		80	**100%**

Note:

1. Teachers may refer 'Learning Outcomes' published by NCERT for developing lesson plans, assessment framework and questions.
2. 02 Items from History Map List and 03 Items from Geography Map List

Internal Assessment: 20 Marks

INTERNAL ASSESSMENT

<table>
<tr><th></th><th>Marks</th><th>Description</th></tr>
<tr><td>Periodic Assessment</td><td>10 Marks</td><td>
<table>
<tr><td>Pen Paper Test</td><td>5 marks</td></tr>
<tr><td>Assessment using multiple strategies
For example, Quiz, Debate, Role Play, Viva, Group Discussion, Visual Expression, Interactive Bulletin Boards, Gallery Walks, Exit Cards, Concept Maps, Peer Assessment, Self-Assessment, etc.</td><td>5 marks</td></tr>
</table>
</td></tr>
<tr><td>Portfolio</td><td>5 Marks</td><td>• Classwork and Assignments
• Any exemplary work done by the student
• Reflections, Narrations, Journals, etc.
• Achievements of the student in the subject throughout the year
• Participation of the student in different activities like Heritage India Quiz</td></tr>
<tr><td>Subject Enrichment Activity</td><td>5 Marks</td><td>• Project Work</td></tr>
</table>

LIST OF MAP ITEMS
CLASS X (2020-21)

A. **HISTORY** (Outline Political Map of India)

Chapter - 3 Nationalism in India – (1918 – 1930) for Locating and Labelling / Identification

1. **Indian National Congress Sessions:**
    a. Calcutta (Sep. 1920)
    b. Nagpur (Dec. 1920)
    c. Madras (1927)
2. **Important Centres of Indian National Movement**
    a. Champaran (Bihar) - Movement of Indigo Planters
    b. Kheda (Gujarat) - Peasant Satyagrah

hmedabad (Gujarat) - Cotton Mill Workers Satyagraha
d. Amritsar (Punjab) - Jallianwala Bagh Incident
e. Chauri Chaura (U.P.) - Calling off the Non-Cooperation Movement
f. Dandi (Gujarat) - Civil Disobedience Movement

B. GEOGRAPHY (Outline Political Map of India)

Chapter 1: Resources and Development (Identification only)

a. Major soil Types

Chapter 3: Water Resources (Locating and Labelling)

Dams:

a. Salal
b. Bhakra Nangal
c. Tehri
d. Rana Pratap Sagar
e. Sardar Sarovar
f. Hirakud
g. Nagarjuna Sagar
h. Tungabhadra

Note: Only map items of this chapter as listed above will be evaluated in Board Examination.

Chapter 4: Agriculture (Identification only)

a. Major areas of Rice and Wheat
b. Largest / Major producer states of Sugarcane, Tea, Coffee, Rubber, Cotton and Jute

Chapter 5: Minerals and Energy Resources

Power Plants

(Locating and Labelling only)

a. Thermal

- Namrup
- Singrauli
- Ramagundam

b. Nuclear

- Narora
- Kakrapara
- Tarapur
- Kalpakkam

Note: Only Map Items of this chapter as listed above will be evaluated in Board Examination.

Chapter 6: Manufacturing Industries (Locating and Labelling Only)

Cotton Textile Industries:

a. Mumbai
b. Indore

e. Coimbatore

d. Kanpur

Iron and Steel Plants:

a. Durgapur
b. Bokaro
c. Jamshedpur
d. Bhilai
e. Vijaynagar
f. Salem

Software Technology Parks:

a. Noida
b. Gandhinagar
c. Mumbai
d. Pune
e. Hyderabad
f. Bengaluru
g. Chennai
h. Thiruvananthapuram

Chapter 7: Lifelines of National Economy (Locating and Labelling)

Major Ports:

a. Kandla
b. Mumbai
c. Marmagao
d. New Mangalore
e. Kochi
f. Tuticorin
g. Chennai
h. Vishakhapatnam
i. Paradip
j. Haldia

International Airports:

a. Amritsar (Raja Sansi)
b. Delhi (Indira Gandhi International)
c. Mumbai (Chhatrapati Shivaji)
d. Chennai (Meenam Bakkam)
e. Kolkata (Netaji Subhash Chandra Bose)
f. Hyderabad (Rajiv Gandhi)

Note: Items of Locating and Labelling may also be given for Identification.