Blooming Vale Public School - Affiliation No. 3530117

Annual Academic Calendar : 2025-2026

A. **For Pre-primary Section** – There will be no fixed curriculum. Students will be allowed to learn at their own pace as much as possible. Blooming Vale Public School being an English medium school, the main focus will be on developing students' understanding of English and their ability to speak and write in English.

a. In Nursery Class –

English : Students will be made to recite, recognise and write as many capital alphabet as possible.

Hindi : Students will recite, recognise and write as many Hindi alphabet as easily possible.

Numbers : Students will recite and recognise numbers 1 to 100 and write 1 to 50 if possible.

General Awareness: Students will be made to learn as many names as possible of animals, birds, insects, fruits, vegetables, flowers, things in the classroom, things at home, things in the bathroom, parts of the body, colours, electrical appliances, modes of transport, games articles and things we eat and drink and recognise them as well if possible.

Rhymes : Students will be taught Hindi and English rhymes so that they may gain fluency in speaking the words of both the languages.

Creativity : Students will do drawing, craft work and play with blocks to develop their motor system and co-ordination between the brain and the hand.

PT & Games : Simple exercises and games will be taught to the students for the development of healthy body.

b. **In LKG –**

English : Students ability to recognise and write capital and small alphabet will be developed. They will be made to read as many words as possible of 'a', 'e', 'I', 'o', 'u' sounds and learn their spellings if possible. Students' skill of reading small simple sentences will be developed. Stress will be laid on developing the speaking skill.

Hindi : Students will develop the to recite, recognise and write all the Hindi alphabet and to read and write 2, 3 and 4 letter words with all or as many vowel sounds as easily possible.

Mathematics : Students' will be made to recite the numbers from 1 to 100 and their ability to recognise these numbers will be developed by giving them dictation. Students will learn the multiplication table of 2 & 3, addition table of 1 & 2, what comes after, what comes between, number names (1 to 10) and reverse counting (20 to 1).

Rhymes : Students will be taught Hindi and English rhymes so that they may gain fluency in speaking the words of both the languages.

Creativity : Students will do drawing, craft work and play with blocks to develop their motor system and co-ordination between the brain and the hand.

PT & Games : Simple exercises and games will be taught to the students for the development of healthy body.

c. In UKG –

English : **Reader** – developing listening, reading, writing and speaking skills

Vocabulary – Students vocabulary and the ability to form grammatically correct sentences will be developed by making them fill in the blanks correctly with a noun, pronoun, verb, adjective, preposition and articles. Students will also be taught opposite words, vowels, consonants, compound words, names of babies of animals and homes of animals.

Hindi: **Reader -** developing listening, reading, writing and speaking skills.

Vocabulary– Students learning rhyming words, singular and plural, numbers 1 to 20 in Hindi, days of the week in Hindi, opposites, words formed by using all the vowels.

Mathematics : Students will learn backward counting, what comes before, what comes between, what comes after, smallest number, ascending order, descending order, number smaller thangiven number, number greater than given number, equal to, addition, subtraction, number names, names of shapes, multiplication tables of 2 to 10 and addition table of 2 to 8.

General Awareness : Students will be made to know the names and recognise the parts of the human body and the food we eat. They will also learn about healthy habits, likes and dislikes, colours, family, home, school,neighbourhood, community helpers, transport problems, land animals, water animals, wild animals, the food animals eat, babies of animals, homes of animals, names of trees, parts of a plant, names of seasons, our country and festivals.

Poems : Learning & reciting poems in Hindi & English to develop fluency.

Creativity : Drawing & craft will be used to develop students' creative skills.

Fine Arts : Teachers will find the singing, dancing and acting talents in the students.

PT & Games : Simple exercises and games will be taught to the students for the development of healthy body.

हिन्दी

कक्षा 1 से 5 तक हिंदी पढाने के उद्देश्य

हिन्दी भाषा शिक्षण के सामान्य उद्देश्य:

1-बच्चों को स्कूल के वातावरण में अपनापन महसूस कराना।

2- बच्चे घर की भाषा और स्कूल की भाषा में आपसी संबंध बनाते हुए उसको विस्तार दे सकें।

3-बच्चों में अपने अनुभव और विचार बताने की इच्छा और उत्सुकता को जगाना।

4-बच्चों को प्रश्न पूछने और अपनी बात कहने का भरपूर मौका देना।

5-बच्चों में दूसरों की बात सुनने में रुचि और धैर्य पैदा करना और सुनी बात पर टिप्पणी दे पाना।

6- बच्चों द्वारा अक्षर जोड़कर पढ़ने की बजाय समझकर पढ़ना।

7- परिवेश में उपलब्ध संदर्भों, चित्रों और छपी हुई सामग्री से परिचित होने के कारण बच्चों का अनुमान से पढ़ने का प्रयास कर पाना।

8-.बच्चों द्वारा अपनी दुनिया तथा अपने पूर्वज्ञान की मदद से पाठ्यसामग्री और स्कूली परिवेश में उपलब्ध लिखित सामग्री से अर्थ ग्रहण करना।

9- पढ़ने की प्रक्रिया को दैनिक जीवन की (स्कूल और बाहर की) ज़रूरतों से जोड़ना, जैसे - कक्षा और स्कूल में अपना नाम, अपनी मनपसंद पाठ्यसामग्री और पाठ्यपुस्तक का नाम पढ़ना।

10-बच्चे अपने अनुभव संसार और काल्पनिक संसार में बेझिझक और सहज ढंग से अभिव्यक्ति कर सकें।

11-बच्चे सुनी हुई कहानियों को अपने शब्दों और अपने अंदाज में दूसरों को सुना सकें।

12- बच्चे लिपि चिह्नों को देखकर और उनकी ध्वनियों को सुनकर और समझकर उनमें सहसंबंध बनाते हुए लिखने का प्रयास कर सकें।

पाठ्यपुस्तक से संबंधित पाठों के मुख्य उद्देश्यः

1- बच्चों में पुस्तकों के प्रति रुचि जागृत करना।

2- पाठ्यपुस्तक की विधाओं से परिचित होना और उससे प्रेरित हो कर उन विधाओं की अन्य पुस्तकें पढ़ना।

3- मुख्य बिंदु/विचार को ढूँढ़ने के लिए विषय-सामग्री की बारीकी से जाँच करना।

4- विषय सामग्री के माध्यम से नए शब्दों का अर्थ जानने की कोशिश करना।

5-. पूर्व अर्जित भाषायी कौशलों का उत्तरोत्तर विकास करना।

6- दूसरे के विचारों को सुनकर समझना और अपनी प्रतिक्रिया व्यक्त कर सकना।

7- दूसरों के विचारों को पढ़कर समझने की योग्यता का विकास करना।

8- पठन के द्वारा ज्ञानार्जन एवं आनंद प्राप्ति में समर्थ बनाना।

9- अध्ययन की कुशलता का विकास करना।

10- स्वतंत्रता और आत्मविश्वास के साथ लिख पाना।

11- मनपसंद विषय का चुनाव कर लिख सकना।

12- विषयवस्तु और विचारों के प्रस्तुतीकरण में लेखन की तकनीक का विकास करना।

13- दूसरों की अभिव्यक्ति को सुनकर उचित गति से शब्दों एवं वाक्यों को लिख सकना।

14-भाषा को अपने परिवेश और अपने अनुभवों को समझने का माध्यम मानना और उसका सार्थक उपयोग करना।

15- कक्षा में बच्चों को बहुभाषिक और बहुसांस्कृतिक संदर्भों से जोड़ना।

16- बच्चों की कल्पनाशीलता और सृजनात्मकता को विकसित करना।

17- भाषा के सौंदर्य की सराहना करने की योग्यता का विकास करना।

18- व्याकरण के बिंदु

कक्षा 3

1- तरह-तरह के पाठों (पाठ्यपुस्तक व अन्य) के संदर्भ में और कक्षा के संदर्भ में संज्ञा, विशेषण और वचन की पहचान और व्यवहारिक प्रयोग।
2- गणित के पाठ्यक्रम के अनुरूप हिंदी में संख्याएं, संयुक्ताक्षरों की पहचान।

कक्षा 4

1- तरह-तरह के पाठों (पाठ्यपुस्तक के व अन्य) के संदर्भ में और कक्षा के संदर्भ में सर्वनाम और लिंग की पहचान।
2- विशेषण का संज्ञा के साथ सुसंगत प्रयोग, वचन का प्रयोग।

कक्षा 5

1- तरह-तरह के पाठों के संदर्भ में (पाठ्यपुस्तक के एवं अन्य) और कक्षा के संदर्भ में क्रिया, काल और कारक चिह्नों की पहचान।
2- शब्दों के संदर्भ में लिंग का प्रयोग।

अभ्यास प्रश्नों के ही माध्यम से बच्चों को व्याकरण सिखाया जाएगा। इस प्रकार के अभ्यास दिए जाएंगे जिनसे बच्चे सहज रूप से संज्ञा, सर्वनाम और शब्द व्यवस्था (पर्याय और विलोम-स्तरानुकूल) की जानकारी प्राप्त करेंगे।

कक्षा 6 से 8

हिन्दी भाषा शिक्षण के सामान्य उद्देश्य:

1- निजी अनुभवों के आधार पर भाषा का सृजनशील इस्तेमाल।
2- दूसरों के अनुभव से जुड़ पाना और उनके परिप्रेक्ष्य से चीजों, स्थितियों तथा घटनाओं को समझने की क्षमता का विकास।
3- भाषा की बारीकी और सौन्दर्यबोध को सही रूप में समझने की क्षमता का विकास।
4- दृश्य और श्रव्य माध्यमों की सामग्रियों (बाल साहित्य, पत्र-पत्रिकाएं, दूरदर्शन व कम्प्यूटर जनित कार्यक्रम, नाटक,
सिनेमा, परिचर्चा, भाषण आदि) को पढ़कर,देखकर और सुनकर समझने तथा उस पर स्वतंत्र व स्वाभाविक मौखिक
एवं लिखित प्रतिक्रिया व्यक्त करने की क्षमता का विकास।
5- विभिन्न साहित्यिक विधाओं और ज्ञान से संबंधित अन्य विषयों की समझ का विकास तथा उससे आनंद उठाने की क्षमता का विकास।
6- पाठ्यपुस्तकों के अतिरिक्त अभिनय, गीत, संवाद, परिचर्चा, अन्त्याक्षरी, घटनावर्णन, प्रश्नोत्तरी, भाषण, खेल-कूद व अन्य महत्वपूर्ण पाठ्यक्रम सहगामी क्रिया-कलापों के आधार पर भाषा और साहित्य को समझना।
7- पठित, लिखित और सुने हुए भाषिक ज्ञान से संबंधित सामग्रियों का तार्किक दृष्टि से अध्ययन करने की प्रवृति का
विकास।
8 - सरसरी तौर पर किसी पाठ को देखकर उसकी विषयवस्तु का पता करने के कौशल का विकास और उसमें किसी विशेष बिंदु को खोजने के लिए पाठ की बारीकी से जाँच करने की क्षमता का विकास।
9- सुनी, पढ़ी और समझी हुई भाषा को सहज और स्वाभाविक लेखन द्वारा अभिव्यक्त करने की क्षमता का विकास।
10- शब्दों, मुहावरों, लोकोक्तियों और कहावतों का सुचिंतित प्रयोग करने की प्रवृति का विकास
11- मौखिक और लिखित अभिव्यक्ति में संदर्भ और आवश्यकतानुसार समुचित भाषा शैली व प्रयोग को चुनने की समझ का विकास।
12- भाषा की नियमबद्ध प्रकृति को पहचानना और उसका विश्लेषण करना।

पाठ्यपुस्तक से संबंधित पाठों के मुख्य उद्देश्यः

1- बच्चों में पुस्तकों के प्रति रुचि जागृत करना।
2- पाठ्यपुस्तक की विधाओं से परिचित होना और उससे प्रेरित हो कर उन विधाओं की अन्य पुस्तकें पढ़ना।
3- मुख्य बिंदु/विचार को ढूँढ़ने के लिए विषय-सामग्री की बारीकी से जाँच करना।
4- विषय सामग्री के माध्यम से नए शब्दों का अर्थ जानने की कोशिश करना।
5-. पूर्व अर्जित भाषायी कौशलों का उत्तरोत्तर विकास करना।
6- दूसरे के विचारों को सुनकर समझना और अपनी प्रतिक्रिया व्यक्त कर सकना।

7- दूसरों के विचारों को पढ़कर समझने की योग्यता का विकास करना।
8- पठन के द्वारा ज्ञानार्जन एवं आनंद प्राप्ति में समर्थ बनाना।
9- अध्ययन की कुशलता का विकास करना।
10- स्वतंत्रता और आत्मविश्वास के साथ लिख पाना।
11- मनपसंद विषय का चुनाव कर लिख सकना।
12- विषयवस्तु और विचारों के प्रस्तुतीकरण में लेखन की तकनीक का विकास करना।
13- दूसरों की अभिव्यक्ति को सुनकर उचित गति से शब्दों एवं वाक्यों को लिख सकना।
14- भाषा को अपने परिवेश और अपने अनुभवों को समझने का माध्यम मानना और उसका सार्थक उपयोग कर सकना।
15- कक्षा में बच्चों को बहुभाषिक और बहुसांस्कृतिक संदर्भों से जोड़ना।
16- बच्चों की कल्पनाशीलता और सृजनात्मकता को विकसित करना।
17- भाषा के सौंदर्य की सराहना करने की योग्यता का विकास करना।

व्याकरण के बिंदु

कक्षा 6
1- विविध पाठों (पाठ्यपुस्तक के व अन्य के संदर्भ में संज्ञा और विशेषण के भेदों की पहचान व प्रयोग) वाक्य में ‘‘ने’’ के प्रयोग का क्रियारूप पर प्रभाव।
2- मुहावरों का वाक्यों में प्रयोग और उनके लिए उचित संदर्भ का वर्णन।
3- विराम चिह्नों का प्रयोग: पूर्णविराम, अल्पविराम, प्रश्नवाचक चिह्न।

कक्षा 7
1-कर्म के आधार पर क्रिया के भेदों की पहचान व प्रयोग (अकर्मक, सकर्मक)।
2-समास का सामान्य परिचय।
3-मुहावरों और लोकोक्तियों का वाक्यों में प्रयोग।

कक्षा 8
1-वाक्य के प्रकारः सरल, संयुक्त, मिश्र।
2-विविध पाठों के संदर्भ में अर्थ की दृष्टि से पुनरुक्ति की पहचान व प्रयोग।
3-संधि का सामान्य परिचय ।
4-पाठ्यपुस्तकों में दी गई लिपि के रूप का प्रयोग।

कक्षा 6 से 8 तक शब्द व्यवस्था (पर्याय, विलोम आदि) से भी बच्चों को परिचित कराना।

कक्षा 9 और 10

हिन्दी भाषा शिक्षण के सामान्य उद्देश्य:
1 - कक्षा आठ तक अर्जित भाषिक कौशलों ;सुनना, बोलना, पढ़ना, लिखना और चिंतनद्ध का उत्तरोत्तर विकास।
2- सृजनात्मक साहित्य के आलोचनात्मक आस्वाद की क्षमता का विकास।
3- स्वतंत्रा और मौखिक रूप से अपने विचारों की अभिव्यक्ति का विकास।
4- ज्ञान के विभिन्न अनुशासनों के विमर्श की भाषा के रूप में हिंदी की विशिष्ट प्रकृति एवं क्षमता का बोध कराना।
5- साहित्य की प्रभावकारी क्षमता का उपयोग करते हुए सभी प्रकार की विविधताओं ;राष्ट्रीयताओं, धर्म, जेंडर, भाषाद्ध के प्रति सकारात्मक और संवेदनशील रवैये का विकास।
6- जाति, धर्म, लिंग, राष्ट्रीयताओं, क्षेत्र आदि से संबंधित पूर्वाग्रहों के चलते बनी रूढ़ियों की भाषिक अभिव्यक्तियों के प्रति सजगता।
7- विदेशी भाषाओं समेत गैर हिंदी भाषाओं की संस्कृतिक विविधता से परिचय।
8- व्यावहारिक और दैनिक जीवन में विविध किस्म की अभिव्यक्तियों की मौखिक व लिखित क्षमता का विकास।
9- संचार माध्यमों ; पिं्रट और इलेक्ट्रॉनिक द्ध में प्रयुक्त हिंदी की पकृति से अवगत कराना और नए-नए तरीके से प्रयोग करने की क्षमता से परिचय।
10- सघन विश्लेषण, स्वतंत्रा अभिव्यक्ति और तर्कक्षमता का विकास।
11- अमूर्तन की पूर्व अर्जित क्षमताओं का उत्तरोत्तर विकास।
12- भाषा में मौजूद हिंसा की संरचनाओं की समझ का विकास।
13- मतभेद, विरोध और टकराव की परिस्थितियों में भी भाषा के संवेदनशील और तर्कपूर्ण

इस्तेमाल से शांतिपूर्ण संवाद की क्षमता का विकास।
14- भाषा की समावेशी और बहुभाषिक प्रकृति के प्रति ऐतिहासिक नजरिए का विकास।
15- शारीरिक और अन्य सभी प्रकार की चुनौतियों का सामना कर रहे बच्चों में भाषिक क्षमताओं के विकास की उनकी अपनी विशिष्ट गति और प्रतिभा की पहचान।

पाठ्यपुस्तक से संबंधित पाठों के मुख्य उद्देश्यः
काव्य और गद्य संग्रह में प्रमुख रचनाकारों द्वारा लिखे साहित्य की विविध विधाओं से संबंधित काव्य और गद्य के पाठों पर आधारित प्रश्न-अभ्यासों के द्वारा पाठगत संदर्भयुक्त भाषिक-प्रयोगों की ओर ध्यान दिलाते हुए भाषा की नियमबद्ध प्रकृति से परिचित कराया जाएगा।

संस्कृत

संस्कृत शिक्षण के उद्देश्य

सामान्य उद्देश्य

1- संस्कृत भाषा के प्रति रुचि व प्रेम उत्पन्न करना।
2- छात्राओं का बौद्धिक व मानसिक विकास करना।
3- संस्कृत भाषा में सामान्य वार्तालाप करने की क्षमता का विकास करना।
4- संस्कृत भाषा का उच्चारण, श्रवण एवं लेखन का विकास करना।
5- विद्यार्थियों में नैतिक मूल्यों का विकास करना।
6- सभ्य एवं सुसंस्कृत नागरिकों का विकास करना।
7- भाषा के माध्यम से प्राचीन संस्कृति एवं सभ्यता का ज्ञान कराना।

पाठ्य पुस्तक से संबंधित पाठों के मुख्य उद्देश्य

पाठ्य पुस्तकों में प्रस्तुत पाठों के माध्यम से भ्रूण हत्या जैसे जघन्य अपराधों के प्रति विद्यार्थियों को जागरुक करना। कन्या शिक्षण का महत्तव समझाना। समाज में महिलाओं के प्रति सम्मान की भावना को विकसित करना। प्लास्टिक प्रदूषण के प्रति विद्यार्थियों कों जागरुक करना। उन्हें दैनिक जीवन में प्लास्टिक का प्रयोग न करने के लिए प्रेरित करना। विद्यार्थियों को प्लास्टिक से वातावरण में होने वाले दुष्प्रभावों से अवगत करना। प्रस्तुत पाठों के माध्यम से महान महिलाओं द्वारा स्त्री शिक्षा के संबंध में किए गए अथक प्रयासों से विद्यार्थियों को अवगत करवाना। महिलाओं के सम्मान व अधिकार की रक्षा कर उन्हें आत्मनिर्भर बनाना।

ENGLISH

Objectives of Teaching English

Class I & II

The general objectives will be:

- to build familiarity with the language primarily through spoken input in meaningful situations (teacher talk, listening to recorded material, etc.).
- to provide and monitor exposure to and comprehension of spoken, and spoken and written inputs (through signs, visuals, pictures, sketches, gestures, single word questions/answers).
- to help learners build a working proficiency in the language, especially with regard to listening with understanding and basic oral production (words/phrases, fragments of utterances, formulaic expressions as communicative devices).
- to recite and sing poems, songs and rhymes and enact small plays/skits.
- to use drawing and painting as precursors to writing and relate these activities to oral communication.
- to become visually familiar with text, what it means, and to notice its components

- letter(s) and the sound - values they stand for.
• to associate meaning with written/printed language.

At the end of this stage, learners will be able to :
• talk about themselves, members of the family and the people in their surroundings.
• follow instructions, requests & questions, and use formulaic expressions appropriately
• enjoy doing tasks (including singing a rhyme or identifying a person, object or thing) in English
• recognise whole words or chunks of language
• recognise small and capital forms of English alphabet both in context and in isolation
• read simple words/short sentences with the help of pictures and understand them
• write simple words/phrases/short sentences

Classes III, IV and V

The general objectives will be:
• to provide print-rich environment to relate oracy with literacy.
• to build on learners' readiness for reading and writing.
• to promote learners' conceptualisation of printed texts in terms of headings, paragraphs & horizontal lines.
• to enrich learners' vocabulary mainly through telling, retelling and reading aloud of stories/ folktales in English.
• to use appropriate spoken and written language in meaningful contexts/situations.
• to give the students an opportunity to listen to sounds/sound techniques and appreciate the rhythm and music of rhymes/sounds.
• to enable the students to relate words (mainly in poems) with appropriate actions and thereby provide understanding of the language.
• to familiarize learners with the basic process of writing.

At the end of this stage, the learners will be able to do the following:
• narrate his/her experiences and incidents
• exchange his/her ideas with the peers
• carry out a brief conversation involving seeking/giving information
• enjoy reading a story, poem, a short write-up, a notice, poster etc
• take dictation of simple sentences and to practise copy writing from the blackboard and textbook and to use common punctuation marks
• write a short description of a person, thing or place – prepare a notice, or write a message for someone
• write a short composition based on pictures
• take part in group activity, role play and dramatisation

Language Items

At the primary level, knowledge of grammar will be seen mainly as a process of discovering uses and functions of items through exposure to spoken and written inputs. The students will be able to use in speaking and writing :
• nouns, pronouns, adjectives, adverbs
• is, am, are, has, have
• tense forms (simple present and present continuous, simple past and past continuous)
• expressing future (will and be going to) • articles
• this, that, these, those • question words • an, or, but • possessive adjectives
•prepositions •punctuation marks (full stop, comma, question mark, inverted commas)

CLASSES VI to VIII

The general objectives at this stage will be :

• to understand, enjoy & appreciate a wide range of texts representing different cultures & ways of living.
• to be able to articulate individual/personal responses effectively.
• to use language and vocabulary appropriately in different contexts and social encounters.

• to be able to organise and structure thoughts in writing and in speech.
• to develop fluency and accuracy in speaking and writing,
• to use dictionary suitable to their needs.
• to understand and enjoy jokes, skits, children's films, anecdotes and riddles

At the end of this stage, the learners will be able to do the following :

• understand the central idea and locate details in the text.
• use his/her critical / thinking faculty to read between the lines and go beyond the text.
• narrate simple experiences, describe objects and people and report events to peers.
• speak accurately with appropriate pauses and clear word/sentence stress to be intelligible in familiar social contexts.
• write simple messages, invitations, short paragraphs, letters (formal and informal) applications, simple narrative and descriptive pieces, etc.
• use his/ her proficiency in English to explore and study other areas of knowledge through print and non-print media.
• to undertake small projects on a regular basis.

Language Items

At the upper primary level, knowledge of grammar will remain a process of discovery combined with a conscious effort to explicitly understand and name grammatical items. In addition to consolidating the items learnt earlier, the following will be introduced and recycled through the upper primary stage :

• determiners • linking words • adjectives (comparative and superlative forms)
• adverbs (place & types) • modal auxiliaries • tense forms
• word order in sentence types • clauses • reported speech

Classes IX & X

The general objectives at this stage will be to:

• build greater confidence and proficiency in oral and written communication
• develop the ability and knowledge required in order to engage in independent reflection and inquiry
• use appropriate English to communicate in various social settings
• equip learners with essential language skills to question and to articulate their point of view
• build competence in the different registers of English
• develop sensitivity to & appreciation of other varieties of English, like Indian English, and the culture they reflect
• enable the learner to access knowledge and information through reference skills (consulting a dictionary / thesaurus, library, internet, etc.)
• develop curiosity and creativity through extensive reading
• facilitate self-learning to enable them to become independent learners
• review, organise and edit their own work and work done by peers
• build listening and speaking into the curriculum.

At the end of this stage, learners will be able to do the following :

• give a brief oral description of events / incidents of topical interest
• retell the contents of authentic audio texts (weather reports, public announcements, simple advertisements, short interviews, etc.)
• participate in conversations, discussions, etc., on topics of mutual interest in non-classroom situations
• narrate the story depicted pictorially or in any other non-verbal mode
• respond in writing to business letters, official communications email etc.
• read and identify the main points / significant details of texts like scripts of audio-video interviews, discussions, debates, etc.
• write without prior preparation on a given topic and be able to defend or explain the position taken / views expressed in the form of article, speech, or a debate
• write a summary of short lectures on familiar topics by making / taking notes
• write an assessment of different points of view expressed in a discussion / debate
• read poems effectively (with proper rhythm and intonation)
• transcode information from a graph / chart to a description / report and write a dialogue, short story or report Language Items In addition to consolidating the grammatical items practised earlier, the courses

at the secondary level seek to reinforce the following explicitly :
• sequence of tenses
• reported speech in extended texts
• modal auxiliaries (those not covered at upper primary)
• non-finites (infinitives, gerunds, participles)
• conditional clauses
• complex and compound sentences
• phrasal verbs and prepositional phrases
• cohesive devices
• punctuation (semicolon, colon, dash, hyphen, parenthesis or use of brackets and exclamation mark)

Teachers will :

(i) encourage classroom interaction among peers, students and teachers through activities such as role play, group work etc.
(ii) reduce teacher-talk time and keep it to the minimum,
(iii) take up questions for discussion to encourage pupils to participate and to marshal their ideas and express and defend their views.

MATHEMATICS

Class I

Geometry

SHAPES & SPATIAL UNDERSTANDING

• Students will be made to develop and use vocabulary of spatial relationship, that is, Top, Bottom, On, Under, Inside, Outside, Above, Below, Near, Far, Before, After

SOLIDS AROUND US

Students will learn to:
• collect objects from the surroundings having different sizes and shapes like pebbles, boxes, balls, cones, pipes, etc.
• sort, classify and describe the objects on the basis of shapes and other observable properties.
• observe and describe the way shapes affect movements like rolling and sliding.
• sort 2-D shapes such as flat objects made of card etc.

Numbers

Students will learn to:
• observe object and make collections of objects.
• arrange the collection of objects in order by
  – Matching and
  – One to one correspondence
• Count the number of objects in a collection.
• Make collection of objects corresponding to a specific number.
• Recognise and speak numbers from 1 to 100.
• Use numbers from 1 to 9 in counting and comparison.
• Read and write numerals from 1 to 100.
• Add and subtract using real objects and pictures.
• Add and subtract the numbers using symbols '+' and '-'.
• Approach zero through the subtraction pattern (such as 3 – 1 = 2, 3 – 2 = 1, 3 – 3 = 0).
• Form number sequence from 10 to 20.
• Count objects using these numbers.

• Groups objects into a group of 10s and single objects.
• Develop the vocabulary of group of 'tens' and 'ones'.
• Show the group of tens and ones by drawing.
• Count the number of tens and ones in a given number.
• Write the numerals for eleven to hundred.
• Write numerals for ten and twenty.
• Compare numbers upto 20.
• Add and subtract numbers upto 20.
• Write numerals for Twenty-one to Ninety nine.
• Group objects into tens and ones.
• Draw representation for groups of ten and ones.
• Group a number orally into tens and ones.

MENTAL ARITHMETIC

Students will learn to:

• Add two single digit numbers mentally.

Money

Students will learn to:

• Identify common currency notes and coins.
• Put together small amounts of money.

Measurement

LENGTH

Students will learn to:

• Distinguish between near, far, thin, thick, longer/taller, shorter, high, low.
• Seriate objects by comparing their length.
• Measure short lengths in terms of non-uniform units.
• Estimate distance and length, and verify by using non-uniform units (e.g. hand span)

WEIGHT

Students will learn to:• Compare between heavy and light objects.

Time

Students will learn to:

• Distinguish between events occurring in time using terms - earlier and later.
• Get the qualitative feel of long & short duration of school days v/s holidays.
• Narrate the sequence of events in a day.

Data Handling

Students will learn to:

• Collect, represent and interpret simple data such as measuring the arm length or circumference of the head using a paper strip.

Patterns

Students will learn to:

• Describe sequences of simple patterns found in shapes in the surroundings and in numbers, e.g., stamping activity using fingers and thumb.
• Complete a given sequence of simple patterns found in shapes in the surroundings and in numbers.

Class II

Geometry

SHAPES & SPATIAL UNDERSTANDING

Students will learn to:

• observe objects in the environment and get a qualitative feel for their geometrical attributes.
• identify the basic 3-D shapes such as cuboid, cylinder, cone & sphere by their names.
• trace the 2-D outlines of 3-D objects.
• observe and identify 2-D shapes, viz., rectangle, square, triangle & circle by their names.
• describe intuitively the properties of the 2-D shapes.
• identify and make straight lines by folding, straight edged objects, stretched strings and draw free hand and with a ruler.
• draw horizontal, vertical and slant lines (free hand).
• distinguish between straight and curved lines.
• identify objects by observing their shadows.

Numbers

Students will learn to:

• read and write numerals for numbers up to ninety nine.
• expand a number with respect to place values.
• count and regroup objects into tens and ones.
• use the concept of place value in the comparison of numbers.
• Count in various ways: – Starting from any number. – Group counting etc.
• Arrange numbers upto hundred in ascending and descending order.
• Form the greatest and the smallest two digit numbers with and without repetition of given digits.
• Indicate and identify the position of an object in a line.

ADDITION AND SUBTRACTION

Students will learn to:

• Add and subtract two digit numbers by drawing representations of tens and ones without and with regrouping.
• Add zero to a number and subtracts zero from a number.
• Observe the commutative property of addition through patterns.
• Solve addition, subtraction problems presented through pictures and verbal description.
• Describe orally the situations that correspond to the given addition and subtraction facts.
• Estimate the result of addition and subtraction and compare the result with another given number.
• Situations involving repeated addition and situations involving equal sharing.
• Making equal groups

MENTAL ARITHMETIC

Students will learn to:

• Add and subtract single digit numbers mentally.
• Add and subtract multiples of ten mentally.

Money

Students will learn to:

• Identify currency – notes and coins.
• Put together amounts of money not exceeding Rs 50/-.
• Add and subtract small amounts of money mentally.
• Transact an amount using 3-4 notes.

Measurement

LENGTH

Students will learn to: Measure lengths & distances along short & long paths using uniform (non-standard) units, extending to longer lengths.

WEIGHT

Students will learn to:• Compare two or more objects by their weight.
• Appreciate the need for a simple balance. • Compare weights of given objects using simple balance.

CAPACITY (VOLUME)

Students will learn to:

• Compare and order containers in terms of internal volume (capacity).
• Order given containers as per their capacities on the basis of perception & verify by pouring out etc.

TIME

Students will learn to:

• Get familiar with the days of the week and months of the year.
• Get a feel for sequence of seasons (varying locally).
• Sequence the events occurring over longer periods in terms of dates/days.

Data Handling

Students will learn to:

• Collect data through measurement.
• Represent the data followed by discussion (e.g. heights of children).
• Collect and present the data on birthdays.
• Draw inferences from the data at the appropriate level.

Patterns

Students will learn to:

• Observe and extend patterns in sequence of shapes and numbers.
• Search for patterns in different ways of splitting a number.
• Create block patterns by stamping thumbprints, leaf prints, vegetable prints, etc.
• Create patterns of regular shapes by stamping.

Class III

Geometry

SHAPES & SPATIAL UNDERSTANDING

Students will learn to:

• Create shapes through paper folding and paper cutting.
• Identify 2-D shapes
• Describe the various 2-D shapes by counting their sides, corners and diagonals.
• Make shapes on the dot-grid using straight lines and curves.
• Create shapes using tangram pieces.
• Match the properties of two 2-D shapes by observing their sides and corners.
• Tile a given region using a tile of a given shape.
• Distinguish between shapes that tile and that do not tile.
• Read simple maps.
• Draw some 3D-objects.

Numbers

NUMBER SEQUENCE UPTO 1000

Students will learn to:

• Read and write 3-digit numbers.
• Expand a number with reference to place values.
• Count in different ways – starting from any number.
• Compare numbers.
• Form greatest and smallest numbers using given digits.

ADDITION AND SUBTRACTION

Students will learn to:

• Add and subtract numbers by writing them vertically in the following two cases:
  – without regrouping. – with regrouping.
• Use the place value in standard algorithm of addition and subtraction.
• Solve addition and subtraction problems in different situations presented through pictures and stories.

• Frame problems for addition and subtraction facts.
• Estimate the sum of, and difference between, two given numbers.

MULTIPLICATION

Students will learn to:

• Explain the meaning of multiplication (as repeated addition).
• Identify the sign of multiplication.
• Construct the multiplication tables of 2 to 12
• Use multiplication facts in situations.
• Multiply two digit numbers using standard algorithm and Lattice multiplication algorithm.

DIVISION

Students will learn to:

• Explain the meaning of division from context of equal grouping and sharing.
• Relate division with multiplication.
• Complete division facts: – by grouping – by using multiplication tables.

MENTAL ARITHMETIC

Students will learn to:

• Add and subtract single digit numbers and two digit numbers mentally.
• Double two digit numbers mentally (result not exceeding two digits).

Money

Students will learn to:

• Convert Rupee to Paise using play money.
• Add and subtract amounts using column addition, and subtraction without regrouping.
• Make rate charts and bills.

Measurement

LENGTH

Students will learn to:

• Appreciate the need for a standard unit.
• Measure length using appropriate standard units of length by choosing between centimetres and metres.
• Estimate the length of given object in standard units and verify by measuring.
• Use a ruler.
• Relate centimetre and metre.

WEIGHT

Students will learn to:

• Weigh objects using non standard units. • Appreciate the conservation of weight.

VOLUME

Students will learn to:

• Measure and compare the capacity of different containers in terms of non-standard units.
• Appreciate the conservation of volume.

TIME

Students will learn to:

• Read a calendar to find a particular day and date.
• Read the time correct to the hour.
• Sequence the events chronologically.

Data Handling

Students will learn to:

• Record data using tally marks.
• Collect data and represents in terms of pictograph choosing appropriate scale and unit

for display through pictographs.
• Draw conclusions from the data by discussing with the teacher.

Patterns

Students will learn to:

• Identify simple symmetrical shapes and patterns.
• Make patterns and designs from straight lines and other geometrical shapes.
• Identify patterns in the numerals for odd and even numbers and in adding odd and even numbers.
• Partition a number in different ways.
• Identify patterns in his surroundings
• Identify patterns in multiplication with, and dividing by 10s.

Class IV

Geometry

SHAPES & SPATIAL UNDERSTANDING

Students will learn to :

• Draw a circle free hand and with a compass.
• Identify centre, radius and diameter of a circle.
• Use Tangrams to create different shapes.
• Tile geometrical shapes: using one or two shapes.
• Choose a tile among a given number of tiles that can tile a given region both intuitively and experimentally.
• Explore intuitively the area and perimeter of simple shapes.
• Make 4-faced, 5-faced and 6-faced cubes from given nets especially designed for the same.
• Explore intuitively the reflections through inkblots, paper cutting and paper folding.
• Read and draw 3-D objects, making use of the familiarity with the conventions used in this.
• Draw intuitively the plan, elevation and side view of simple objects.

Numbers

NUMBERS AND OPERATIONS

Students will learn to :

• Write multiplication facts.
• Write tables upto 10 × 10.
• Multiply two and three digit numbers using lattice algorithm and the standard (column) algorithm.
• Divide a given number by another number in various ways such as:
– by drawing dots.– by grouping. – by using multiplication facts.– by repeated subtraction.
• Apply the four operations to life situations.
• Frame word problems.
• Estimate sums, differences and products of given numbers.

MENTAL ARITHMETIC

Students will learn to :

• Add and subtract multiples of 10 and 100, mentally.
• Complete multiplication facts by adding partial products, mentally, (e.g.7×6=5×6+2×6)

FRACTIONAL NUMBERS

Students will learn to :

• Identify half, one fourth and three-fourths of a whole.
• Identify the symbols $\frac{1}{2}$, $\frac{1}{4}$, $\frac{3}{4}$
• Explain the meaning of ½, ¼, 3/4
• Appreciates equivalence of 2/4 and ½, and of 2/2, 3/3, 4/4 and 1.

MONEY

Students will learn to :

• Convert Rupees to Paise.
• Add and subtract amounts using column addition and subtraction with regrouping.
• Use operations to find totals, change, multiple costs and unit cost.
• Estimate roughly the totals and total cost.

Measurement
LENGTH
Students will learn to :
• Relate metre with centimetre.
• Convert metre into centimetre and vice versa.
• Solve problems involving length and distances.
• Estimate length of an object and distance between two given locations.

WEIGHT
Students will learn to:
• Weigh objects using a balance and standard units.
• Determine sums and differences of weights.
• Estimate the weight of an object and verify using a balance.

VOLUME
Students will learn to:
• Measure volumes of given liquid using containers marked with standard units.
• Determine sums and differences of volumes.
• Estimate the volume of a liquid contained in a vessel and verify by measuring.

TIME
Students will learn to:
• Compute the number of weeks in a year.
• Correlate the number of days in a year with the number of days in each month.
• Justify the reason for the need of a leap year.
• Read clock time to the nearest hours and minutes.
• Express time, using the terms, ‘a.m.’ and ‘p.m.’
• Estimate the duration of familiar events.
• Find approximate time elapsed by (to the nearest hour) forward counting.
• Compute the number of days between two dates.

Data Handling
Students will learn to:
• Collect data and represents in the form of bar graphs;
• Draw Inferences by discussing with the teacher.

Patterns
Students will learn to:
• Identify patterns in multiplication and division: multiples of 9,
• Cast out nines from a given number to check if it is a multiple of nine.
• Multiply and divide by 10s, 100s.
• Identify geometrical patterns based on symmetry.

Class V
Geometry
SHAPES & SPATIAL UNDERSTANDING
Students will learn to :
• Get the feel of perspective while drawing a 3-D object in 2-D.
• Get the feel of an angle through observation and paper folding.
• Identify right angles in the environment.
• Classify angles into right, acute and obtuse angles.

• Represent right angle, acute angle and obtuse angle by drawing and tracing.
• Explore intuitively rotations and reflections of familiar 2-D shapes.
• Explore intuitively symmetry in familiar 3-D shapes.
• Make the shapes of cubes, cylinders and cones using nets especially designed for this purpose.

Numbers
NUMBERS AND OPERATIONS
Students will learn to :
• Find place value in numbers beyond 1000.
• Appreciate the role of place value in addition, subtraction and multiplication algorithms.
• Use informal and standard division algorithms.
• Explain the meaning of factors and multiples.

MENTAL ARITHMETIC
Students will learn to :
• Estimate sums, differences, products and quotients and verifies using approximation.

FRACTIONAL NUMBERS
Students will learn to :
• Find the fractional part of a collection.
• Compare fractions.
• Identify equivalent fractions.
• Estimate the degree of closeness of a fraction to known fractions ½, ¼, ¾, etc.
• Use decimal fractions in the context of units of length and money.
• Express a given fraction in decimal notation and vice versa.

Money
Students will learn to : • Apply the four operations in solving problems involving money.

Measurement
LENGTH
Students will learn to :
• Determine area and perimeter of simple geometrical figures.
• Apply the four operations in solving problems involving length, weight and volume.
• Relate commonly used larger and smaller units of length, weight & volume & converts one to the other.
• Apply simple fractions to quantities.
• Convert fractional larger unit into complete smaller units.
• Appreciate volume of a solid body: intuitively and also by informal measurement.
• Use addition and subtraction in finding time intervals in simple cases.

Data Handling
Students will learn to:
• Collect two-dimensional quantitative data, represent the data in the form of a table.
• Draw a bar graph or a pictograph to present a data.

Patterns
Students will learn to:• Identify patterns in square numbers, triangular numbers.
• Relate sequences of odd numbers between consecutive square numbers.
• Make border strip and tiling patterns.

Class VI
Number System
(i) Knowing our Numbers:
Consolidating the sense of numberness up to 5 digits, Size, estimation of numbers, identifying smaller, larger, etc. Place value (recapitulation and extension), connectives: use of symbols =, <, > and use of

brackets, word problems on number operations involving large numbers up to a maximum of 5 digits in the answer after all operations. This would include conversions of units of length & mass (from the larger to the smaller units), estimation of outcome of number operations. Introduction to a sense of the largeness of, and initial familiarity with, large numbers up to 8 digits and approximation of large numbers)

(ii) Playing with Numbers:

Simplification of brackets, Multiples and factors, divisibility rule of 2, 3, 4, 5, 6, 8, 9, 10, 11. (All these through observing patterns. Children would be helped in deducing some and then asked to derive some that are a combination of the basic pattern of divisibility.) Even/odd and prime/composite numbers, Co-prime numbers, prime factorisation, every number can be written as products of prime factors. HCF and LCM, prime factorization and division method for HCF and LCM, the property LCM × HCF = product of two numbers. All this is to be embedded in contexts that bring out the significance and provide motivation to the child for learning these ideas.

(iii) Whole numbers

Natural numbers, whole numbers, properties of numbers (commutative, associative, distributive, additive identity, multiplicative identity), number line. Seeing patterns, identifying and formulating rules to be done by children. *(As familiarity withalgebra grows, the child can express the genericpattern.)*

(iv) Negative Numbers and Integers

How negative numbers arise, models of negative numbers, connection to daily life, ordering of negative numbers, representation of negative numbers on number line.

Children tosee patterns, identify and formulate rules. What are integers, identification of integers on the number line, operation of addition and subtraction of integers, showing the operations on the number line (addition of negative integer reduces the value of the number) comparison of integers, ordering of integers.

(v) Fractions:

Revision of what a fraction is, Fraction as a part of whole, Representation of fractions (pictorially and on number line), fraction as a division, proper, improper & mixed fractions, equivalent fractions, comparison of fractions, addition and subtraction of fractions (Avoid large and complicated unnecessary tasks). (Moving towards abstraction in fractions) Review of the idea of a decimal fraction, place value in the context of decimal fraction, inter conversion of fractions and decimal fractions (avoid recurring decimals at this stage), word problems involving addition and subtraction of decimals (two operations together on money, mass, length and temperature)

Algebra

INTRODUCTION TO ALGEBRA

• Introduction to variable through patterns and through appropriate word problems and generalisations (example 5 × 1 = 5 etc.)
• Generate such patterns with more examples.
• Introduction to unknowns through examples with simple contexts (single operations)

Ratio and Proportion

• Concept of Ratio
• Proportion as equality of two ratios
• Unitary method (with only direct variation implied)
• Word problems

Geometry

(i) *Basic geometrical ideas (2-D)***:**Introduction to geometry. Itslinkage with & reflection in everyday experience.

• Line, line segment, ray.
• Open and closed figures.
• Interior and exterior of *closed* figures.
• Curvilinear and linear *boundaries*
• Angle — Vertex, arm, interior and exterior,
• Triangle — vertices, sides, angles, interior and exterior, altitude and median

• Quadrilateral — Sides, vertices, angles, diagonals, adjacent sides and opposite sides (only convex quadrilateral are to be discussed), interior and exterior of a quadrilateral.
• Circle -Centre, radius, diameter, arc, sector, chord, segment, semicircle, circumference, interior & exterior.

(ii) *Understanding Elementary Shapes* **(***2-D and 3-D***):**
• Measure of Line segment
• Measure of angles
• Pair of lines – Intersecting and perpendicular lines – Parallel lines
• Types of angles- acute, obtuse, right, straight, reflex, complete and zero angle
• *Classification* of triangles (*on the basis of* sides, and of angles)
• Types of quadrilaterals – Trapezium, parallelogram, rectangle, square, rhombus.
• Simple polygons *(introduction)* (Upto octagons regulars as wellas non regular).
• *Identification of* 3-D shapes: Cubes, Cuboids, cylinder, sphere, cone, prism (triangular), pyramid (triangular and square). Identification and locating in the surroundings.
• Elements of 3-D figures. (Faces, Edges and vertices)
• Nets for cube, cuboids, cylinders, cones and tetrahedrons.

(iii) *Symmetry:* **(***reflection***)**
• Observation and identification of 2-D symmetrical objects for reflection symmetry
• Operation of reflection (taking mirror images) of simple 2-D objects
• Recognising reflection symmetry (identifying axes)

(iv) Constructions (using Straight edge Scale, protractor, compasses)
• Drawing of a line segment
• Construction of circle
• Perpendicular bisector
• Construction of angles (using protractor)
• Angle 60°, 120° (Using Compasses)
• Angle bisector- making angles of 30°, 45°, 90° etc. (using compasses)
• Angle equal to a given angle (using compass)
• Drawing a line perpendicular to a given line from a point a) on the line b) outside the line.

Mensuration

CONCEPT OF PERIMETER AND INTRODUCTION TO AREA

Introduction and general understanding *of perimeter* using many shapes. Shapes of different kinds with the same perimeter.

Concept of area,

Area of a rectangle and a square *Counterexamples to different misconcepts relatedto perimeter and area.* Perimeter of a rectangle – and its special case – a square. Deducing the formula of the perimeter for a rectangle and then a square through pattern and generalisation.

Data handling

(i) What is data - choosing data to examine a hypothesis?
(ii) Collection & organisation of data - examples of organising it in tally bars & a table.
(iii) Pictograph- Need for scaling in pictographs interpretation & construction.
(iv) Making bar graphs for given data interpreting bar graphs+.

Class VII

Number System (50 hrs)

(i) *Knowing our Numbers:*

Integers

• Multiplication and division of integers (through patterns). Division by zero is meaningless.
• Properties of integers (including identities for addition & multiplication, *commutative, associative,*

distributive) (through patterns). These would include examples from whole numbers as well. Involve expressing commutative and associative properties in a general *form*. Construction of counterexamples, including some by children. Counter examples like subtraction is not commutative.
• Word problems including integers (all operations).

(ii) *Fractions and rational numbers:*
• Multiplication of fractions
• Fraction as an operator
• Reciprocal of a fraction
• Division of fractions
• Word problems involving mixed fractions
• Introduction to rational numbers (with representation on number line)
• Operations on rational numbers (all operations)
• Representation of rational number as a decimal.
• Word problems on rational numbers (all operations)
• Multiplication and division of decimal fractions
• Conversion of units (length & mass)
• Word problems (including all operations)

(iii) *Powers:*
• Exponents only natural numbers.
• Laws of exponents (through observing patterns to arrive at generalisation.)
(i) $a^m \cdot a^n = a^{m+n}$ (ii) $(a^m)^n = a^{m+n}$ *(iii)* $\frac{a^m}{a^n} = a^{m-n}$

Algebra

ALGEBRAIC EXPRESSIONS

• Generate algebraic expressions (simple) involving one or two variables
• Identifying constants, coefficient, powers
• Like & unlike terms, degree of expressions e.g., x^2y etc. (exponent ≤ 3, number of variables)
• Addition, subtraction of algebraic expressions (coefficients should be integers).
• Simple linear equations in one variable (in contextual problems) with two operations (avoid complicated coefficients)

Ratio and Proportion
• Ratio and proportion (revision)
• Unitary method continued, consolidation, general expression.
• Percentage- an introduction.
• Understanding percentage as a fraction with denominator 100.
• Converting fractions and decimals into percentage and vice-versa.
• Application to profit and loss (single transaction only)
• Application to simple interest (time period in complete years).

Geometry

(i) *Understanding shapes:*
• Pairs of angles (linear, supplementary, complementary, adjacent, vertically opposite) (verification and simple proof of vertically opposite angles)
• Properties of parallel lines with transversal (alternate, corresponding, interior, exterior angles)

(ii) *Properties of triangles:*
• Angle sum property (with notions of proof & verification through paper folding, proofs using property of parallel lines, difference between proof and verification.)
• Exterior angle property
• Sum of two sides of a it's third side
• Pythagoras Theorem (Verification only)

(iii) *Symmetry*

• Recalling reflection symmetry
• Idea of rotational symmetry, observations of rotational symmetry of 2-D objects. (900, 1200, 1800)
• Operation of rotation through 900 and 1800 of simple figures.
• Examples of figures with both rotation and reflection symmetry (both operations)
• Examples of figures that have reflection and rotation symmetry and vice-versa

(iv) *Representing 3-D in 2-D:*

• Drawing 3-D figures in 2-D showing hidden faces.
• Identification and counting of vertices, edges, faces, nets (for cubes cuboids, and cylinders, cones).
• Matching pictures with objects (Identifying names)
• Mapping the space around approximately through visual estimation.

(v) *Congruence*

• Congruence through superposition (examples : blades, stamps, etc.)
• Extend congruence to simple geometrical shapes e.g. triangles, circles.
• Criteria of congruence (by verification) SSS, SAS, ASA, RHS

(vi) *Construction (Using scale, protractor, compass)*

• Construction of a line parallel to a given line from a point outside it. (Simple proof as remark with the reasoning of alternate angles)
• Construction of simple triangles. Like given three sides, given a side and two angles on it, given two sides and the angle between them.

Mensuration

• Revision of perimeter, Idea of Circumference of Circle

Area

Concept of measurement using a basic unit area of a square, rectangle, triangle, parallelogram and circle, area between two rectangles and two concentric circles.

Data handling

(i) Collection and organisation of data – choosing the data to collect for a hypothesis testing.
(ii) Mean, median and mode of ungrouped data – understanding what they represent.
(iii) Constructing bargraphs
(iv) Feel of probability using data through experiments. Notion of chance in events like tossing coins, dice etc. Tabulating and counting occurrences of 1 through 6 in a number of throws. Comparing the observation with that for a coin. Observing strings of throws, notion of randomness.

Class VIII

Number System

(i) *Rational Numbers:*

• Properties of rational numbers (including identities). Using general form of expression to describe properties.
• Consolidation of operations on rational numbers.
• Representation of rational numbers on the number line
• Between any two rational numbers there lies another rational number (Making children see that if we take two rational numbers then unlike for whole numbers, in this case you can keep finding more and more numbers that lie between them.)
• Word problem (higher logic, two operations, including ideas like area)

(ii) *Powers*

• Integers as exponents.
• Laws of exponents with integral powers

(iii) *Squares, Square roots, Cubes, Cube roots.*

• Square and Square roots
• Square roots using factor method and division method for numbers containing
(a) no more than total 4 digits and (b) no more than 2 decimal places
• Cubes and cubes roots (only factor method for numbers containing at most 3 digits)
• Estimating square roots and cube roots. Learning the process of moving nearer to the required number.

(iv) *Playing with numbers*

• Writing and understanding a 2 and 3 digit number *in generalizedform*
($100a + 10b + c$, where a, b, c can be only digit 0-9) and engaging with various puzzles concerning this.
(Like finding the missing numerals represented by alphabets in sums involving any of the four operations.) Children to solve and create problems and puzzles.
• Number puzzles and games
• Deducing the divisibility test rules of 2, 3, 5, 9, 10 for a two or three-digit number expressed in the general form.

Algebra

(i) *Algebraic Expressions*

• Multiplication and division of algebraic expressions.(Coefficient should be integers)
• Some common errors (e.g. $2 + x \neq 2x$, $7x + y \neq 7xy$)
• Identities $(a \pm b)^2 = a^2 \pm 2ab + b^2$, $a^2 - b^2 = (a - b)$ (a + b)
Factorisation (simple cases only) as examples the following types :
$a(x + y)$, $(x \pm y)^2$, $a^2 - b^2$, $(x + a).(x + b)$
• Solving linear equations in one variable in contextual problems involving multiplication and division (word problems) (avoid complex coefficient in the equations)

Ratio and Proportion

• Slightly advanced problems involving applications on percentages, profit & loss, overhead expenses, discount, tax.
• Difference between simple & compound interest (compounded yearly up to 3 years or half-yearly up to 3 steps only), Arriving at the formula for compound interest through patterns & using it for simple problems.
• Direct variation – Simple and direct word problems
• Inverse variation – Simple and direct word problems
• Time & work problems– Simple and direct word problems

Geometry

(i) *Understanding shapes:*

• Properties of quadrilaterals – Sum of angles of a quadrilateral is equal to 3600 (By verification)
• Properties of parallelogram (By verification)
(i) Opposite sides of a parallelogram are equal,
(ii) Opposite angles of a parallelogram are equal,
(iii) Diagonals of a parallelogram bisect each other. [Why(iv),(v) & (vi)follow from (ii)
(iv) Diagonals of a rectangle are equal and bisect each other.
(v) Diagonals of a rhombus bisect each other at right angles.
(vi) Diagonals of a square are equal and bisect each other at right angles.

(ii) *Representing 3-D in 2-D*

• Identify and match pictures with objects [more complicated, e.g., nested, joint 2-D

and 3-D shapes (not more than 2)].
• Drawing 2-D representation of 3-D objects (Continued and extended)
• Counting vertices, edges & faces & verifying Euler's relation for 3-D figures with flat faces (cubes, cuboids, tetrahedrons, prisms and pyramids)

(iii) *Construction:*
Construction of Quadrilaterals:
Given
• Four sides and one diagonal
• Three sides and two diagonals
• Three sides and two included angles
• Two adjacent sides and three Angles

Mensuration
(i) Area of a trapezium and a polygon.
(ii) Concept of volume, measurement of volume using a basic unit, volume of a cube, cuboid and cylinder.
(iii) Volume and capacity (measurement of capacity)
(iv) Surface area of a cube, cuboid, cylinder.

Data handling
(i) Reading bar-graphs, ungrouped data, arranging it into groups, representation of grouped data through bar-graphs, constructing and interpreting bar-graphs.
(ii) Simple Pie charts with reasonable data numbers
(iii) Consolidating and generalising the notion of chance in events like tossing coins, dice etc. Relating it to chance in life events. Visual representation of frequency outcomes of repeated throws of the same kind of coins or dice. Throwing a large number of identical dice/coins together and aggregating theresult of the throws to get large number of individual events.
Observing the aggregating numbers over a large number of repeated events.
Comparing with the data for a coin. Observing strings of throws, notion of randomness.

Introduction to graphs
Preliminaries :
(i) Axes (Same units), Cartesian Plane
(ii) Plotting points for different kind of situations (perimeter vs length for squares, area as a function of side of a square, plotting of multiples of different numbers, simple interest vs number of years etc.)
(iii) Reading off from the graphs
- Reading of linear graphs
- Reading of distance vs time graph

Class IX
UNIT I: NUMBER SYSTEMS
1. REAL NUMBERS
1. Review of representation of natural numbers, integers, rational numbers on the number line. Representation of terminating / non-terminating recurring decimals onthe number line through successive magnification. Rational numbers as recurring/ terminating decimals. Operations on real numbers.
2. Examples of non-recurring/non-terminating decimals. Existence of non-rational numbers (irrational numbers) such as , and their representation on the number line. Explaining that every real number is represented by a unique point on the number line and conversely, viz. every point on the number line represents a unique real number.
3. Definition of nth root of a real number.

4. Rationalization (with precise meaning) of real numbers of the type and (and their combinations) where x and y are natural number and a and b are integers.
5. Recall of laws of exponents with integral powers. Rational exponents with positive real bases (to be done by particular cases, allowing learner to arrive at the general laws.)

UNIT II: ALGEBRA

1. POLYNOMIALS

Definition of a polynomial in one variable, with examples and counter examples. Coefficients of a polynomial, terms of a polynomial and zero polynomial. Degree of a polynomial. Constant, linear, quadratic and cubic polynomials. Monomials, binomials, trinomials. Factors and multiples. Zeros of a polynomial. Motivate and State the Remainder Theorem with examples. Statement and proof of the Factor Theorem. Factorization of $ax^2 + bx + c$, $a \neq 0$ where a, b and c are real numbers, and of cubic polynomials using the Factor Theorem. Recall of algebraic expressions and identities. Verification of identities: + and their use in factorization of polynomials.

2. LINEAR EQUATIONS IN TWO VARIABLES

Recall of linear equations in one variable. Introduction to the equation in two variables. Focus on linear equations of the type ax+by+c=0. Explain 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 lie on a line. Graph of linear equations in two variables. Examples, problems from real life, including problems on Ratio and Proportion and with algebraic and graphical solutions being done simultaneously.

UNIT III: COORDINATE GEOMETRY COORDINATE GEOMETRY

The Cartesian plane, coordinates of a point, names and terms associated with the coordinate plane, notations, plotting points in the plane.

UNIT IV: GEOMETRY

1. INTRODUCTION TO EUCLID'S GEOMETRY

History - Geometry in India and Euclid's geometry. Euclid's method of formalizing observed phenomenon into rigorous Mathematics with definitions, common/obvious notions, axioms/postulates and theorems. The five postulates of Euclid. Equivalent versions of the fifth postulate. Showing the relationship between axiom and theorem, for example: (Axiom)

i. Given two distinct points, there exists one and only one line through them. (Theorem)

ii. (Prove) Two distinct lines cannot have more than one point in common.

2. LINES AND ANGLES

i. (Motivate) If a ray stands on a line, then the sum of the two adjacent angles so formed is 180O and the converse.

ii. (Prove) If two lines intersect, vertically opposite angles are equal.

iii. (Motivate) Results on corresponding angles, alternate angles, interior angles when a transversal intersects two parallel lines.

iv. (Motivate) Lines which are parallel to a given line are parallel.

v. (Prove) The sum of the angles of a triangle is 180O .

vi. (Motivate) If a side of a triangle is produced, the exterior angle so formed is equal to the sum of the two interior opposite angles.

3 TRIANGLES

i. (Motivate) Two triangles are congruent if any two sides and the included angle of one triangle is equal to any two sides and the included angle of the other triangle (SAS Congruence).

ii. (Prove) Two triangles are congruent if any two angles and the included side of one triangle is equal to any two angles and the included side of the other triangle (ASA Congruence).

iii. (Motivate) Two triangles are congruent if the three sides of one triangle are equal to three sides of the other triangle (SSS Congruence).

iv. (Motivate) Two right triangles are congruent if the hypotenuse and a side of one triangle are equal (respectively) to the hypotenuse and a side of the other triangle. (RHS Congruence)

v. (Prove) The angles opposite to equal sides of a triangle are equal.

vi. (Motivate) The sides opposite to equal angles of a triangle are equal.

vii. (Motivate) Triangle inequalities and relation between ‘angle and facing side' inequalities in triangles.

4. QUADRILATERALS

i. (Prove) The diagonal divides a parallelogram into two congruent triangles.
ii. (Motivate) In a parallelogram opposite sides are equal, and conversely.
iii. (Motivate) In a parallelogram opposite angles are equal, and conversely.
iv. (Motivate) A quadrilateral is a parallelogram if a pair of its opposite sides is parallel and equal.
v. (Motivate) In a parallelogram, the diagonals bisect each other and conversely.
vi. (Motivate) In a triangle, the line segment joining the mid points of any two sides is parallel to the third side and in half of it and (motivate) its converse.

5. AREA

Review concept of area, recall area of a rectangle.

i. (Prove) Parallelograms on the same base and between the same parallels have equal area.
ii. (Motivate) Triangles on the same base (or equal bases) and between the same parallels are equal in area.

6. CIRCLES

Through examples, arrive at definition of circle and related concepts - radius, circumference, diameter, chord, arc, secant, sector, segment, subtended angle.

i. (Prove) Equal chords of a circle subtend equal angles at the center and (motivate) its converse.
ii. (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.
iii. (Motivate) There is one and only one circle passing through three given non-collinear points.
iv. (Motivate) Equal chords of a circle (or of congruent circles) are equidistant from the center (or their respective centers) and conversely.
v. (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.
vi. (Motivate) Angles in the same segment of a circle are equal.
vii. (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 either of the pair of the opposite angles of a cyclic quadrilateral is 180° and its converse.

UNIT V: MENSURATION

1. AREAS

Area of a triangle using Heron's formula (without proof) and its application in finding the area of a quadrilateral.

2. SURFACE AREAS AND VOLUMES

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

UNIT VI: STATISTICS & PROBABILITY

1. STATISTICS

Introduction to Statistics: Collection of data, presentation of data — tabular form, ungrouped / grouped, bar graphs, histograms (with varying base lengths), frequency polygons. Mean, median and mode of ungrouped data.

2. PROBABILITY

History, Repeated experiments and observed frequency approach to probability. Focus is on empirical probability. (A large amount of time to be devoted to groupand 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).

Class X

UNIT I: NUMBER SYSTEMS

1. REAL NUMBER

   Fundamental Theorem of Arithmetic - statements after reviewing work done earlier and after illustrating and motivating through examples, Proofs of irrationality.

UNIT II: ALGEBRA

1. POLYNOMIALS

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

2. PAIR OF LINEAR EQUATIONS IN TWO VARIABLES

   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 method. Simple situational problems.

3. QUADRATIC EQUATIONS

   Standard form of a quadratic equation $ax^2 + bx + c = 0$, $(a \neq 0)$. Solutions of quadratic equations (only real roots) by factorization, & by using quadratic formula. Relationship between discriminant and nature of roots. Situational problems based on quadratic equations related to day to day activities to be incorporated.

4. ARITHMETIC PROGRESSIONS

   Motivation for studying Arithmetic Progression Derivation of the nth term and sum of the first n terms of A.P. and their application in solving daily life problems.

UNIT III: COORDINATE GEOMETRY

LINES (In two-dimensions)

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

UNIT IV: GEOMETRY

1. TRIANGLES

   Definitions, examples, counter examples of similar triangles.

(i) (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.

(ii) (Motivate) If a line divides two sides of a triangle in the same ratio, the line is parallel to the third side.

(iii) (Motivate) If in two triangles, the corresponding angles are equal, their corresponding sides are proportional and the triangles are similar.

(iv) (Motivate) If the corresponding sides of two triangles are proportional, their corresponding angles are equal and the two triangles are similar.

(v) (Motivate) If one angle of a triangle is equal to one angle of another triangle & the sides including these angles are proportional, the two triangles are similar.

2. CIRCLES

   Tangent to a circle at, point of contact

(i) (Prove) The tangent at any point of a circle is perpendicular to the radius through the point of contact.

(ii) (Prove) The lengths of tangents drawn from an external point to a circle are equal.

UNIT V: TRIGONOMETRY

1. INTRODUCTION TO TRIGONOMETRY

   Trigonometric ratios of an acute angle of a right-angled triangle. Proof of their existence (well defined); motivate the ratios whichever are defined at 0^o and 90^o. Values of the trigonometric ratios of 30, 45 & 60 degrees . Relationships between the ratios.

2. TRIGONOMETRIC IDENTITIES

Proof and applications of the identity sin2 A + cos2 A = 1. Only simple identities to be given.

3. HEIGHTS AND DISTANCES:
   Angle of elevation, Angle of Depression.
   Simple problems on heights and distances. Problems not involving more than two right triangles. Angles of elevation / depression will be only 30°, 45°, 60°.

UNIT VI: MENSURATION

1. AREAS RELATED TO CIRCLES
   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°, 90° and 120° only. Plane figures involving triangles, simple quadrilaterals and circle should be taken.)
2. SURFACE AREAS AND VOLUMES
   i. Surface areas and volumes of combinations of any two of the following: cubes, cuboids, spheres, hemispheres and right circular cylinders/cones.
   ii. 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
   Mean, median and mode of grouped data (bimodal situation to be avoided).
2. PROBABILITY
   Classical definition of probability. Simple problems on finding the probability of an event.

SOCIAL SCIENCE

The main objectives of teaching Social Science are to:

- develop an understanding of the processes of change and development-both in terms of time and space, through which human societies have evolved
- make learners realise that the process of change is continuous and any event or phenomenon or issue cannot be viewed in isolation but in a wider context of time and space
- develop an understanding of contemporary India with its historical perspective, of the basic framework of the goals and policies of national development in independent India, and of the process of change with appropriate connections to world development
- deepen knowledge about and understanding of India's freedom struggle and of the values and ideals that it represented, and to develop an appreciation of the contributions made by people of all sections and regions of the country
- help learners understand and cherish the values enshrined in the Indian Constitution and to prepare them for their roles and responsibilities as effective citizens of a democratic society
- deepen the knowledge and understanding of India's environment in its totality, their interactive processes and effects on the future quality of people's lives
- facilitate the learners to understand and appreciate the diversity in the land and people of the country with its underlying unity
- develop an appreciation of the richness and variety of India's heritage-both natural and cultural and the need for its preservation
- promote an understanding of the issues and challenges of contemporary Indian environmental, economic and social, as part of the development process

- help pupils acquire knowledge, skills and understanding to face the challenges of contemporary society as individuals and groups and learn the art of living a confident and stress-free life as well as participating effectively in the community
- develop scientific temperament by promoting the spirit of enquiry and following a rational and objective approach in analysing and evaluating data and information as well as views and interpretations
- develop academic and social skills such as critical thinking, communicating effectively both in visual and verbal forms - cooperating with others, taking initiatives and providing leadership in solving others' problems
- develop qualities clustered around the personal, social, moral, national and spiritual values that make a person humane and socially effective.

CLASS VI: OUR PASTS – I

Themes	Objectives
An Introduction to History	Explain the specific nature of the discipline.
When, Where and How	
(a) The time frame under study.	(a) Familiarise the learner with the major developments to be studied.
(b) The geographical framework.	(b) Develop an understanding of the significance of geographical terms used during the time frame.
(c) Sources.	(c) Illustrate the sources used to reconstruct history.
The Earliest Societies	
(a) Hunting and gathering as a way of life, its implications.	(a) Appreciate the skills and knowledge of hunter-gatherers.
(b) Introduction to stone tools and their use.	(b) Identify stone artefacts as archaeological evidence, making deductions from them.
(c) Case study: the Deccan.	
The First Farmers and Herders	
(a) Implications of farming and herding.	(a) Appreciate the diversity of early domestication.
(b) Archaeological evidence for crops, animals, houses, tools, pottery, burials, etc	(b) Identify the material culture generated by people in relatively stable settlements.
(c) Case study: the North-West, and North-East.	(c) Understand strategies for analyzing these.
The First Cities	
(a) The settlement pattern of the Harappan civilisation.	(a) Appreciate the distinctive life in cities.
(b) Unique architectural features.	(b)Identify the archaeological evidence of urban centres.
(c) Craft production.	
(d) The meaning of urbanism.	(c) Understand how this is used to reconstruct processes such as craft production.
(e) Case study: the North-West.	
Different Ways of Life	
(a) The Vedas and what they tell us.	(a) Appreciate that different developments were taking place in different parts of the subcontinent simultaneously.
(b) A contemporary chalcolithic settlement.	(b) Introduce simple strategies of textual analysis.
(c) Case studies: the North-West and the Deccan.	(c) Reinforce the skills of archaeological analysis already developed.
Early States	
(a) Janapadas to Mahajanapadas	(a) Introduce the concept of the state and its varieties.
(b)Case study: Bihar, Magadha and the Vajji confederacy.	(b)Understand the use of textual sources in this context.

New Ideas	
(a) Upanisads. (b) Jainism. (c) Buddhism.	(a) Outline the basic tenets of these systems of thought, and the context in which they developed and flourished. (b)Introduce excerpts from sources relating to these traditions.
The First Empire	
(a) The expansion of the empire. (b) Asoka (c) Administration.	(a) Introduce the concept of empire. (b) Show how inscriptions are used as sources.
Themes	**Objectives**
Life in towns and villages	
(a) The second urbanisation. (b) Agricultural intensification. (c) Case study: Tamil Nadu.	(a) Demonstrate the variety of early urban centres— coastal towns, capitals, religious centres. (b) Illustrate the use of archaeological material including coins, sculpture, as well as textual sources to reconstruct social and economic histories.
Contacts with Distant lands	
(a) The Sangam texts and long distance exchange. Suggested regions: the Tamil region, extending to south east Asia and the west. (b) Conquerors from distant lands: north western and western India. (c) The spread of Buddhism: north India to Central Asia.	(a) Introduce the idea of different contexts of contact between distant lands, and the motivating forces (including conquest). (b) Examine the implications of journeys within the subcontinent. (c) Illustrate the use of textual and visual material for reconstructing the histories of such contacts.
Political Developments	
(a) Gupta empire and Harshavardhana. (b) Pallavas and Chalukyas.	(a) Introduce the idea that strategies of expansion, and their logic, differ. (b)Explain the development of different administrative systems. (c) Understand how *prasastis* and *caritas* are used to reconstruct political history.
Culture and Science	
(a) Literature, including the Puranas, the epics, other Sanskrit and Tamil works. (b)Architecture including early monasteries and temples, sculpture, painting (Ajanta); (c) Science.	(a) Develop a sense of appreciation of textual and visual traditions of the period. (b) Introduce excerpts from texts and visual material for analysis and appreciation.

CLASS VII: OUR PASTS – II

Themes	Objectives
Where, When and How	

(a) Terms used to describe the subcontinent and its regions with a map. (b)An outlining of the time frame and major developments. (c) A brief discussion on sources.	(a) Familiarise the student with the changing names of the land. (b) Discuss broad historical trends. (c) Give examples of the kinds of sources that historians use for studying this period. E.g., buildings, chronicles, paintings, coins, inscriptions, documents, music, literature.
New Kings and Kingdoms (a) An outline of political developments c. 700-1200 (b) A case study of the Cholas, including agrarian expansion in the Tamil region.	(a) Trace the patterns of political developments and military conquests – Gurjara Pratiharas, Rashtrakutas, Palas, Chahamanas, Ghaznavids. (b)Develop an understanding of the connections between political and economic processes through the exploration of one specific example. (c) Illustrate how inscriptions are used to reconstruct history.
Themes	**Objectives**
The Sultans of Delhi (a) An overview. (b) The significance of the court, nobility and land control. (c) A case study of the Tughlaqs.	(a) Outline the development of political institutions, and relationships amongst rulers. (b)Understand strategies of military control and resource mobilisation. (c) Illustrate how travellers' accounts, court chronicles and historic buildings are used to write history.
The Creation of An Empire (a) An outline of the growth of the Mughal Empire. (b) Relations with other rulers, administration, and the court. (c) Agrarian relations. (d) A case study of Akbar.	(a) Trace the political history of the 16th and 17th centuries. (b)Understand the impact of an imperial administration at the local and regional levels. (c) Illustrate how the *Akbarnama* and the *Ain-i-Akbari* are used to reconstruct history.
Architecture as Power: Forts & Sacred Places (a) Varieties of monumental architecture in different parts of the country. (b)A case study of Shah Jahan's patronage of architecture.	(a) Convey a sense of the range of materials, skills and styles used to build: waterworks, places of worship, palaces and havelis, forts, gardens. (b) Understand the engineering and construction skills, artisanal organisation and resources required for building works. (c) Illustrate how contemporary documents, inscriptions, and the actual buildings can beused to reconstruct history.
Towns, Traders and Craftsmen (a) Varieties of urban centres—court towns, pilgrimage centres, ports and trading towns. (b) Case studies: Hampi, Masulipatam, Surat.	(a) Trace the origins and histories of towns, many of which survive today. (b) Demonstrate the differences between founded towns and those that grow as a result of trade. (c) Illustrate how travellers' accounts, contemporary maps and official documents are used to reconstruct history.
Social Change: Mobile and settled communities (a) A discussion on tribes, nomads and itinerant groups.	(a) Convey an idea of long-term social change and movements of people in the subcontinent.

(b) Changes in the caste structure.	(b)Understand political developments in specific regions.
(c) Case studies of state formation: Gonds, Ahoms.	(c) Illustrate how anthropological studies, inscriptions and chronicles are used to write history.
Popular Beliefs and Religious Debates (a) An overview of belief-systems, rituals, pilgrimages, and syncretic cults. (b) Case Study: Kabir.	(a) Indicate the major religious ideas and practices that began during this period. (b) Understand how Kabir challenged formal religions. (c) Illustrate how traditions preserved in texts and oral traditions are used to reconstruct history.
The Flowering of Regional Cultures (a) An overview of the regional languages, literatures, painting, music. (b) Case study: Bengal.	(a) Provide a sense of the development of regional cultural forms, including 'classical' forms of dance and music. (b) Illustrate how texts in a regional language can be used to reconstruct history.
Themes	**Objectives**
New Political Formations in the Eighteenth Century (a) An overview of the independent and autonomous states in the subcontinent. (b) Case study: Marathas	(a) Delineate developments related to the Sikhs, Rajputs, Marathas, later Mughals, Nawabs of Awadh and Bengal, and Nizam of Hyderabad. (b) Understand how the Marathas expanded their area of control. (c) Illustrate how travellers' accounts and state archives can be used to reconstruct history.

CLASS VIII: OUR PASTS – III

Themes	Objectives
Where, When, How (a) An overview of the period. (b) Introduction to the new geographical categories. (c) An outline of the time frame. (d) An introduction to the sources.	(a) Introduce the changing nomenclature of the subcontinent and regions. (b) Delineate major developments within the time frame. (c) Suggest how the sources of study for this period are different to those of earlier periods.
The Establishment of Company Power (a) Mercantilism and trade-wars. (b) Struggle for territory, wars with Indian rulers. (c) The growth of colonial army and civilian administration. *Regional focus: Tamil Nadu*.	(a) Unravel the story of a trading company becoming a political power. (b) Show how the consolidation of British power was linked to the formation of colonial armies and administrative structures.
Rural Life and Society (a) Colonial agrarian policies; their effect on peasants and landlords. (b) Growth of commercial crops.	(a) Provide a broad view of changes within rural society through a focus on two contrasting regions. (b) Show the continuities and changes with earlier societies.

(c) Peasant revolts: focus on indigo rebellions. *Regional focus: Bengal and Bihar. Some comparison with later developments in Punjab*.	(c) Discuss how growth of new crops often disrupted the rhythms of peasant life and led to revolts.
Colonialism and Tribal Societies (a) Changes within tribal economies and societies in the nineteenth century. (b) Tribal revolts: focus on Birsa Munda. *Regional focus: Chotanagpur and North-East*.	(a) Discuss different forms of tribal societies. (b) Show how government records can be read against the grain to reconstruct histories of tribal revolts.
Crafts and Industries (a) Decline of handicrafts in the nineteenth century. (b)Brief reference to growth of industries in the twentieth century. *Case-studies: textiles*.	(a) Familiarise students with the processes of de-industrialisation and industrialisation. (b) Give an idea of the technologies of weaving and the lives of weavers.
Themes	**Objectives**
The Revolt of 1857-58 (a) The rebellion in the army and the spread of the movement. (b) The nature of elite and peasant participation. *Regional focus: Awadh*.	(a) Discuss how revolts originate and spread. (b) Point to the changes in colonial rule after 1857. (c) Illustrate how vernacular and British accounts can be read to understand the rebellion.
Education and British rule (a) The new education system – schools, syllabi, colleges, universities, technical training. (b) Changes in the indigenous systems. (c) Growth of 'National education'. *Case-studies: Baroda, Aligarh*.	(a) Show how the educational system that is seen as universal and normal today has a history. (b) Discuss how the politics of education is linked to questions of power and cultural identity.
Women and reform (a) Debates around sati, widow remarriage, child marriage and age of consent. (b) Ideas of different reformers on the position of women and women's education. *Regional focus: Maharashtra and Bengal*.	(a) Discuss why so many reformers focused on the women's question, and how they visualised a change in women's conditions. (b) Outline the history of new laws that affect women's lives. (c) Illustrate how autobiographies, biographies and other literature can be used to reconstruct the histories of women.
Challenging the Caste System (a) Arguments for caste reform. The ideas of Phule, Veerasalingam, Sri Narayana Guru, Periyar, Gandhi, Ambedkar. (b) Consequences and implications of the activities of the reformers. *Region: Maharashtra, Andhra*.	(a) Familiarise students with the biographies and writings of individuals who sought to criticise and reform the caste system. (b) Discuss why the question of caste was central to most projects of social reform.
Colonialism and Urban Change (a) De-urbanisation and emergence of new towns.	(a) Outline the nature of urban development in the 19th and 20th centuries.

(b) Implications of colonial policies and institutions – municipalities, public works, planning, railway links, police. *Case-study: Delhi*.	(b) Introduce students to the history of urban spaces through photographs. (c) Show how new forms of towns emerged in the colonial period.
Changes in the Arts: Painting, Literature, architecture (a) Impact of new technologies and institutions: art schools, printing press. (b) Western academic style and nationalist art. (c) Changes in performing arts – music and dance enter the public arena. (d) New forms of writing. (e) New architecture. *Case-studies: Mumbai, Chennai*.	(a) Outline the major development in the sphere of arts. (b)Discuss how these changes are linked to the emergence of a new public culture. (c) Illustrate how paintings and photographs can be used to understand the cultural history of a period.

Themes	Objectives
The Nationalist Movement (a) Overview of the nationalist movement from the 1870s to the 1940s. (b) Diverse trends within the movement and different social groups involved. (c) Links with constitutional changes. *Case study: Khilafat to Non Cooperation*.	(a) Outline the major developments within the national movement and focuses on a detailed study of one major event. (b) Show how contemporary writings and documents can be used to reconstruct the histories of political movements.
India after Independence (a) National and regional developments since 1947. (b) Relations with other countries. (c) Looking to the future.	(a) Discuss the successes and failures of the Indian democracy in the last fifty years. (b) Illustrate how newspapers and recent writings can be used to understand contemporary history.

Class IX

Course Content

Unit 1: India and the Contemporary World – I **60 Periods**

Themes	Learning Objectives
Section 1: Events and Processes: (All the three themes are compulsory)	In each of the themes in this unit students would get familiarized with distinct ideologies, extracts of speeches, political declarations, as well as the politics of caricatures, posters and engravings. Students would learn how to interpret these kinds of historical evidences.
I. The French Revolution: ▪ French Society During the Late Eighteenth Century ▪ The Outbreak of the Revolution ▪ France Abolishes Monarchy and becomes a Republic ▪ Did Women have a Revolution?	▪ Familiarize with the names of people involved, the different types of ideas that inspired the revolution, the wider forces that shaped it. ▪ Know the use of written, oral and visual material to recover the history of revolutions.

- The Abolition of Slavery
- The Revolution and Everyday Life

II. Socialism in Europe and the Russian Revolution:

- The Age of Social Change
- The Russian Revolution
- The February Revolution in Petrograd
- What Changed after October?
- The Global Influence of the Russian Revolution and the USSR

- Explore the history of socialism through the study of Russian Revolution.
- Familiarize with the different types of ideas that inspired the revolution.

III. Nazism and the Rise of Hitler:

- Birth of the Weimar Republic
- Hitler's Rise to Power
- The Nazi Worldview
- Youth in Nazi Germany
- Ordinary People and the Crimes Against Humanity

- Discuss the critical significance of Nazism in shaping the politics of modern world.
- Get familiarized with the speeches and writings of Nazi Leaders.

Section 2: Livelihoods, Economies and Societies:

Any one theme of the following:

IV. Forest Society and Colonialism:

- Why Deforestation?
- The Rise of Commercial Forestry
- Rebellion in the Forest
- Forest Transformations in Java

- Discuss the social and cultural world of forest communities through the study of specific revolts.
- Understand how oral traditions can be used to explore tribal revolts.

V. Pastoralists in the Modern World:

- Pastoral Nomads and their Movements
- Colonial Rule and Pastoral Life
- Pastoralism in Africa

- Highlight varying patterns of developments within pastoral societies in different places.
- Analyse the impact of colonialism on forest societies, and the implication of scientific forestry.
- Show the different processes through which agrarian transformation may occur in the modern world.
- Analyse the impact of modern states, marking of boundaries, processes of sedentarization, contraction of pastures, and expansion of markets on pastoralism in the modern world.

Unit 2: Contemporary India – I **55 Periods**

Themes	Learning Objectives
1. India - Size and Location - India and the World - India's Neighbours	- Identify the location of India in the Indian subcontinent.
2. Physical Features of India: - Major Physiographic Divisions	- Understand the major landform features and the underlying geological structure; their association with various rocks and minerals as well as nature of soil types.
3. Drainage: - Major rivers and tributaries - Lakes - Role of rivers in the economy - Pollution of rivers	- Identify the river systems of the country and explain the role of rivers in the human society.
4. Climate: - Concept - Climatic Controls - Factors influencing India's climate	- Identify various factors influencing the climate and explain the climatic variation of our country and its impact on the life of the people.

▪ The Indian Monsoon ▪ Distribution of Rainfall ▪ Monsoon as a unifying bond	▪ Explain the importance and unifying role of monsoons.
5. Natural Vegetation and Wild Life: ▪ Factors affecting Vegetation ▪ Vegetation types ▪ Wild Life ▪ Conservation	▪ Explain the nature of diverse flora and fauna as well as their distribution. ▪ Develop concern about the need to protect the biodiversity of our country.
6. Population: ▪ Size ▪ Distribution ▪ Population Growth and Process of Population Change	▪ Analyse the uneven nature of population distribution and show concern about the large size of our population. ▪ Identify the different occupations of people and explain various factors of population change. ▪ Explain various dimensions of National Population Policy and understand the needs of adolescents as underserved group.

Unit 3: Democratic Politics – I

50 Periods

Themes	**Learning Objectives**
1. What is Democracy? Why Democracy?: ▪ What is Democracy? ▪ Features of Democracy ▪ Why Democarcy? ▪ Broader Meaning of Democracy	▪ Develop conceptual skills of defining democracy. ▪ Understand how different historical processes and forces have promoted democracy. ▪ Develop a sophisticated defense of democracy against common prejudices. ▪ Develop a historical sense of the choice and nature of democracy in India.
2. Constitutional Design: ▪ Democratic Constitution in South Africa ▪ Why do we need a Constitution? ▪ Making of the Indian Constitution ▪ Guiding Values of the Indian Constitution	▪ Understand the process of Constitution making. ▪ Develop respect for the Constitution and appreciation for Constitutional values. ▪ Recognize Constitution as a dynamic and living document.
3. Electoral Politics: ▪ Why Elections? ▪ What is our System of Elections? ▪ What makes elections in India democratic?	▪ Understand representative democracy via competitive party politics. ▪ Familiarize with Indian electoral system. ▪ Reason out for the adoption of present Indian Electoral System. ▪ Develop an appreciation of citizen's increased participation in electoral politics. ▪ Recognize the significance of the Election Commission.
4. Working of Institutions: ▪ How is the major policy decision taken? ▪ Parliament ▪ Political Executive ▪ Judiciary	▪ Get an overview of central governmental structures. ▪ Identify the role of Parliament and its procedures. ▪ Distinguish between political and permanent executive authorities and functions. ▪ Understand the parliamentary system of executive's accountability to the legislature. ▪ Understand the working of Indian Judiciary.

5. Democratic Rights: ▪ Life without rights ▪ Rights in a Democracy ▪ Rights in the Indian Constitution ▪ Expanding the scope of rights	▪ Recognize the need for rights in one's life. ▪ Understand the availability /access of rights in a democratic system/government. ▪ Identify and be able to comprehend the Fundamental Rights given by the Indian Constitution to its citizens. ▪ Create awareness regarding the process of safeguarding rights.

Unit 4: **50 Periods**
Economics

Themes	Objectives
1. The Story of Village Palampur: ▪ Overview ▪ Organization of production ▪ Farming in Palampur ▪ Non-farm activities of Palampur	▪ Familiarize with basic economic concepts through an imaginary story of a village.
2. People as Resource: ▪ Overview ▪ Economic activities by men and women ▪ Quality of Population ▪ Unemployment	▪ Understand the demographic concepts ▪ Understand how population can be as asset or a liability for the nation.
3. Poverty as a Challenge: ▪ Two typical cases of poverty ▪ Poverty as seen by Social Scientists ▪ Poverty Estimates ▪ Vulnerable Groups ▪ Interstate disparities ▪ Global Poverty Scenario ▪ Causes of Poverty ▪ Anti-poverty measures ▪ The Challenges Ahead	▪ Understand poverty as a challenge. ▪ Identify vulnerable group and interstate disparities ▪ Appreciate the initiatives of the government to alleviate poverty.
4. Food Security in India: ▪ Overview ▪ What is Food Security? ▪ Why Food Security? ▪ Who are food insecure? ▪ Food Security in India ▪ What is Buffer Stock? ▪ What is the Public Distribution System? ▪ Current Status of Public Distribution System	▪ Understand the concept of food security ▪ Appreciate and analyse the role of government in ensuring food supply.

PROJECT WORK
CLASS IX (2019-20)

5 Periods & 5 Marks

1. Every student has to compulsorily undertake ***one project on Disaster Management***
2. **Objectives:** The main objectives of giving project work on Disaster Management to the students are to:
   a. create awareness in them about different disasters, their consequences and management
b. prepare them in advance to face such situations
c. ensure their participation in disaster mitigation plans
d. enable them to create awareness and preparedness among the community.
3. The project work should also help in enhancing the Life Skills of the students.
4. If possible, various forms of art may be integrated in the project work.

CLASS IX : LIST OF MAP ITEMS

SUBJECT - HISTORY

Chapter-1: The French Revolution
Outline Political Map of France (For locating and labeling / Identification) · Bordeaux · Nantes · Paris · Marseilles

Chapter-2: Socialism in Europe and the Russian Revolution
Outline Political Map of World (For locating and labeling / Identification)
· Major countries of First World War (Central Powers and Allied Powers) Central Powers - Germany, Austria-Hungary, Turkey (Ottoman Empire) Allied Powers - France, England, Russia, U.S.A.

Chapter-3: Nazism and Rise of Hitler
Outline Political Map of World (For locating and labeling / Identification)
· Major countries of Second World War Axis Powers – Germany, Italy, Japan Allied Powers – UK, France, Former USSR, USA
· Territories under German expansion (Nazi Power) Austria, Poland, Czechoslovakia (only Slovakia shown in the map), Denmark, Lithuania, France, Belgium

SUBJECT – GEOGRAPHY

(Outline Political Map of India)
Chapter -1: India-Size and Location
· India-States with Capitals, Tropic of Cancer, Standard Meridian (Location and Labelling)

Chapter -2: Physical Features of India
· Mountain Ranges: The Karakoram, The Zasker, The Shivalik, The Aravali, The Vindhya, The Satpura, Western & Eastern Ghats
· Mountain Peaks – K2, Kanchan Junga, Anai Mudi
· Plateau - Deccan Plateau, Chotta Nagpur Plateau, Malwa Plateau
· Coastal Plains - Konkan, Malabar, Coromandal & Northern Circar (Location, Label)

Chapter -3: Drainage
· Rivers: (Identification only)
The Himalayan River Systems - The Indus, The Ganges, and The Satluj
o The Peninsular rivers-The Narmada, The Tapi, The Kaveri, The Krishna, The Godavari, The Mahanadi
· Lakes: Wular, Pulicat, Sambhar, Chilika

Chapter - 4: Climate
· Areas receiving rainfall less than 20 cm and over 400 cm (Identification only)

Chapter - 5: Natural Vegetation and Wild Life

· Vegetation Type: Tropical Evergreen Forest, Tropical Deciduous Forest, Thorn Forest, Montane Forests and Mangrove- For identification only
· National Parks: Corbett, Kaziranga, Ranthambor, Shivpuri, Kanha, Simlipal & Manas · Bird Sanctuaries: Bharatpur and Ranganthitto
· Wild Life Sanctuaries: Sariska, Mudumalai, Rajaji, Dachigam (Location and Label)

Chapter - 6: Population (location and labelling)
· The state having highest and lowest density of population
· The state having highest and lowest sex ratio
· Largest and smallest state according to area

Social Science
Class X

Unit 1: India & the Contemporary World – II 60 Periods

Themes	Learning Objectives
1: Events and Processes:	
1. The Rise of Nationalism in Europe: ▪ The French Revolution and the Idea of the Nation ▪ The Making of Nationalism in Europe ▪ The Age of Revolutions: 1830-1848 ▪ The Making of Germany and Italy ▪ Visualizing the Nation ▪ Nationalism and Imperialism	▪ Enable the learners to identify and comprehend the forms in which nationalism developed along with the formation of nation states in Europe in the post-1830 period. ▪ Establish the relationship and bring out the difference between European nationalism and anti-colonial nationalisms. ▪ Understand the way the idea of nationalism emerged and led to the formation of nation states in Europe and elsewhere.
2. Nationalism in India: ▪ The First World War, Khilafat and Non - Cooperation ▪ Differing Strands within the Movement ▪ Towards Civil Disobedience ▪ The Sense of Collective Belonging	▪ Recognize the characteristics of Indian nationalism through a case study of Non-Cooperation and Civil Disobedience Movement. ▪ Analyze the nature of the diverse social movements of the time. ▪ Familiarize with the writings and ideals of different political groups and individuals. ▪ Appreciate the ideas promoting Pan Indian belongingness.
Section 2: Livelihoods, Economies and Societies: Any **one theme** of the following: **3. The Making of a Global World:** ▪ The Pre-modern world	▪ Show that globalization has a long history and point to the shifts within the process.

- The Nineteenth Century (1815-1914)
- The Inter war Economy
- Rebuilding a World Economy: Post-War Era

- Analyze the implication of globalization for local economies.
- Discuss how globalization is experienced differently by different social groups.

4. The Age of Industrialization:
- Before the Industrial Revolution
- Hand Labour and Steam Power
- Industrialization in the colonies
- Factories Come Up
- The Peculiarities of Industrial Growth
- Market for Goods

- Familiarize with the Pro- to-Industrial phase and Early – factory system.
- Familiarize with the process of industrialization and its impact on labour class.
- Enable them to understand industrialization in the colonies with reference to Textile industries.

Section 3: Everyday Life, Culture and Politics:

5. Print Culture and the Modern World:
- The First Printed Books
- Print Comes to Europe
- The Print Revolution and its Impact
- The Reading Mania
- The Nineteenth Century
- India and the World of Print
- Religious Reform and Public Debates
- New Forms of Publication
- Print and Censorship

- Identify the link between print culture and the circulation of ideas.
- Familiarize with pictures, cartoons, extracts from propaganda literature and newspaper debates on important events and issues in the past.
- Understand that forms of writing have a specific history, and that they reflect historical changes within society and shape the forces of change.

Unit 2: Contemporary India – II

55 Periods

Themes	**Learning Objectives**
1. Resources and Development: - Types of Resources - Development of Resources - Resource Planning in India - Land Resources - Land Utilization - Land Use Pattern in India - Land Degradation and Conservation Measures - Soil as a Resource - Classification of Soils - Soil Erosion and Soil Conservation	- Understand the value of resources and the need for their judicious utilization and conservation.
2. Forest and Wildlife - Biodiversity or Biological Diversity - Flora and Fauna in India - Vanishing Forests - Asiatic Cheetah: Where did they go? - The Himalayan Yew in trouble - Conservation of forest and wildlife in India - Project Tiger - Types and distribution of forests and wildlife resources - Community and Conservation ***Note: The chapter 'Forest and Wildlife' to be assessed in the Periodic Tests only and will not be evaluated in Board Examination.***	- Understand the importance of forests and wild life in one environment as well as develop concept towards depletion of resources.
3. Water Resources: - Water Scarcity and The Need for Water Conservation and Management - Multi-Purpose River Projects and Integrated	

Water Resources Management ▪ Rainwater Harvesting ***Note: The chapter 'Water Resources' to be assessed in the Periodic Tests only and will not be evaluated in Board Examination.***	▪ Comprehend the importance of water as a resource as well as develop awareness towards its judicious use and conservation.
4. Agriculture: ▪ Types of farming ▪ Cropping Pattern ▪ Major Crops ▪ Technological and Institutional Reforms ▪ Impact of Globalization on Agriculture	▪ Explain the importance of agriculture in national economy. ▪ Identify various types of farming and discuss the various farming methods; describe the spatial distribution of major crops as well as understand the relationship between rainfall regimes and cropping pattern.
5. Minerals and Energy Resources ▪ What is a mineral? ▪ Mode of occurrence of Minerals ▪ Ferrons and Non-Ferrons Minerals ▪ Non-Metallic Minerals ▪ Rock Minerals ▪ Conservation of Minerals ▪ Energy Resources o Conventional and Non-Conventional o Conservation of Energy Resources	▪ Explain various government policies for institutional as well as technological reforms since independence. ▪ Identify different types of minerals and energy resources and places of their availability ▪ Feel the need for their judicious utilization
6. Manufacturing Industries: ▪ Importance of manufacturing ▪ Contribution of Industry to National Economy ▪ Industrial Location ▪ Classification of Industries ▪ Spatial distribution ▪ Industrial pollution and environmental degradation ▪ Control of Environmental Degradation	▪ Bring out the importance of industries in the national economy as well as understand the regional disparities which resulted due to concentration of industries in some areas. ▪ Discuss the need for a planned industrial development and debate over the role of government towards sustainable development.
7. Life Lines of National Economy: ▪ Transport – Roadways, Railways, Pipelines, Waterways, Airways ▪ Communication ▪ International Trade ▪ Tourism as a Trade	▪ Explain the importance of transport and communication in the ever-shrinking world. ▪ Understand the role of trade and tourism in the economic development of a country.

Unit 3: Democratic Politics – II 50 Periods

Themes	**Learning Objectives**
1. Power Sharing: ▪ Case Studies of Belgium and Sri Lanka ▪ Why power sharing is desirable? ▪ Forms of Power Sharing	▪ Familiarize with the centrality of power sharing in a democracy. ▪ Understand the working of spatial and social power sharing mechanisms.
2. Federalism: ▪ What is Federalism? ▪ What make India a Federal Country? ▪ How is Federalism practiced? ▪ Decentralization in India	▪ Analyse federal provisions and institutions. ▪ Explain decentralization in rural and urban areas.

3. Democracy and Diversity:

- Case Studies of Mexico
- Differences, similarities and divisions
- Politics of social divisions

- Analyse the relationship between social cleavages and political competition with reference to Indian situation.

Note: The chapter 'Democracy and Diversity' to be assessed in the Periodic Tests only and will not be evaluated in Board Examination.

4. Gender, Religion and Caste:

- Gender and Politics
- Religion, Communalism and Politics
- Caste and Politics

- Identify and analyse the challenges posed by communalism to Indian democracy.
- Recognise the enabling and disabling effects of caste and ethnicity in politics.
- Develop a gender perspective on politics.

5. **Popular Struggles and Movements:**

- Popular Struggles in Nepal and Bolivia
- Mobilization and Organization
- Pressure Groups and Movements

- Understand the vital role of people's struggle in the expansion of democracy.

Note: The chapter 'Popular Struggles and Movements' to be assessed in the Periodic Tests only and will not be evaluated in Board Examination.

6. Political Parties:

- Why do we need Political Parties?
- How many Parties should we have?
- National Political Parties
- State Parties
- Challenges to Political Parties
- How can Parties be reformed?

- Analyse party systems in democracies.
- Introduction to major political parties, challenges faced by them and reforms in the country.

7. Outcomes of Democracy:

- How do we assess democracy's outcomes?
- Accountable, responsive and legitimate government
- Economic growth and development
- Reduction of inequality and poverty
- Accommodation of social diversity
- Dignity and freedom of the citizens

- Evaluate the functioning of democracies in comparison to alternative forms of governments.
- Understand the causes for continuation of democracy in India.
- Distinguish between sources of strengths and weaknesses of Indian democracy.

8. Challenges to Democracy:

- Thinking about challenges
- Thinking about Political Reforms
- Redefining democracy

- Reflect on the different kinds of measures possible to deepen democracy.
- Promote an active and participatory citizenship.

Note: The chapter 'Challenges to Democracy' to be assessed in the Periodic Tests only and will not be evaluated in Board Examination.

Unit 4: Understanding Economic Development

50 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 & 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:** ▪ Production 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 Globalisation	▪ Explain the working of the Global Economic phenomenon.
5. Consumer Rights: ***Note: Chapter 5 'Consumer Rights' to be done as Project Work.***	▪ Gets familiarized with the rights and duties as a consumer; and legal measures available to protect from being exploited in markets.

PROJECT WORK

5 Periods

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, various forms of art may be integrated in the project work.

LIST OF MAP ITEMS
CLASS X

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 (Gujrat) - Peasant Satyagrah
   c. Ahmedabad (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) : 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: The chapter 'Water Resources' will be assessed in the Periodic Tests only and will not 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 Minerals (Identification only) :

a. Iron Ore mines :· Mayurbhanj · Durg · Bailadila · Bellary · Kudremukh

b. Coal Mines :· Raniganj · Bokaro · Talcher · Neyveli

c. Oil Fields : · Digboi · Naharkatia · Mumbai High · Bassien · Kalol · Ankaleshwar

D. Power Plants (Locating and Labelling only) :

i. Thermal : · Namrup · Singrauli · Ramagundam

ii. Nuclear : · Narora · Kakrapara · Tarapur · Kalpakkam

Chapter 6: Manufacturing Industries (Locating and Labelling Only) :

Cotton Textile Industries: a. Mumbai b. Indore c. Surat d. Kanpur e. Coimbatore Iron & 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.

S C I E N C E

Motives for Teaching Science

The main objective of the process of teaching science is to establish connection between real life and theoretical teaching of class from cleaning of environment, precaution against disease, judicious use of resources and use of non-conventional resources, to get insight of day to day changes occurring in the surroundings, to develop zeal and thirst for more & more knowledge. It helps students to:

1. Explore and discover
2. Test new ideas
3. To develop critical thinking, conceptual understanding
4. To relate with day to day life problem
5. To develop inquisitiveness, and skill to solve problem, and make decisions
6. To develop scientific insight and decision making skills in scientific context
7. To develop learning by doing approach

From junior classes, plant and human physiology will been taught to develop insight of how plant and human body works. It helps them to develop their observational and helps them to learn from simple to complex and concrete to abstract.

Knowledge of 'Natural resources', their judicial use and awareness about pollution is developed among students to shape concerned and practical individuals of future who will prove helpful in saving our home 'Earth'.

CLASS VI

Questions	Key Concepts	Resources	Activities/Processes
1. Food ***a) Sources of food*** What are the varioussources of our food? What do other animals eat?	Plant parts and animal products as sources of food; herbivores, carnivores, omnivores.	Examples of food from different parts of plants and of food from animals sources.	Germination of seeds such as mung, chick pea etc.; preparing a chart on food habits of animals and food culture of different regions of India.
b) Components of food What is our food made up of? Why do we eat a variety of food?	Carbohydrates, fats, proteins, vitamins, minerals, fibres, their sources and significance for human health; balanced diet; diseases and disabilities due to food deficiencies.	Mid Day Meal; Charts, pictures/ films of children suffering from food deficiencies and disabilities.	Studying the variety of food in different regions in India; preparing a menu of balanced diet in the context of the diversity of foods eaten in different parts of the country. Classifying foods according to food components; test for starch, sugars, proteins and fats.

c) Cleaning food How do we separate the grains after harvesting the wheat /rice crop?	Threshing, winnowing, hand picking, sedimentation, filtration.	Talking to some elders about practices after harvesting the crop; kit materials.	Discussion on threshing, winnowing, and picking; experiments on Sedimentation, filtration. Separating mixture of salt and sand.
2. Materials ***a) Materials of daily use***What are our clothes made of?	Different types of cloth materials – cotton, wool, silk and synthetics. Development of clothing materials.	Sharing of prior knowledge with parents and community.	Whole class discussion. Simple activities to distinguish among different types of cloth.
How did people manage when there were no clothes?		Archaeological and historical accounts.	Whole class discussion.
Are some of our clothes made of materials obtained from plants?	Plant fibre, especially cotton and jute; production of cotton, jute and other locally available plant fibres; types of soil required for the growth of different fibrous plants.	Sharing of prior knowledge with parents and community.	Field survey/ collecting information on locally available plant fibres (coconut, silk cotton, etc.)
In what kinds of places do these plants grow?			
Which parts of the plants are used for making clothes?	Grouping things on the basis of common properties.		
b) Different kinds of materials What kinds of things do we see around us?		Materials, kit items.	Collecting and grouping things on the basis of gross properties e.g. roughness, lustre, transparency, solubility, sinking/floating using prior knowledge, through experiments.
c) How things change/ react with one another In what ways do things change on being heated?			Experiments involving heating of air, wax, paper, metal, water to highlight effects like

Do they change back on being cooled? Why does a burning candle get shorter?	Some changes can be reversed and others cannot be reversed.	Prior knowledge, kit items.	burning, expansion/compression, change of state. Discussion on other changes which cannot be reversed – growing up, opening of a bud, ripening of fruit, curdling of milk.
d) How much salt can be dissolved in a cup of water?	Solubility, saturated solutions. Amount of substance dissolving varies with temperature. At the same temperature amounts of different substances that dissolve varies.	Salt, sugar and other common substances, kit items.	Experiments for testing the solubility of commonly available substances. Experiments on the effect of heating and cooling on solubility. Comparison of solubilities of different substances using nonstandard units (eg. spoon, paper cone).
3. The World of the Living			
a) Things around usAre all things around usliving? What is thedifference between livingand non-living? Are allliving things similar? Do all living things move? Where do plants and animals live? Can we	Living / non-living characteristics; habitat; biotic, abiotic (light, temperature, water, air, soil, fire)	Recollection of diversity of living organisms and the habitat where they live.	Listing of things around us, listing of characteristics after making observations say on size, colour, shape etc., categorisation;

grow plants in the dark?			
b) The habitat of the living How does habitat affectplants and animals?	Habitat varies –aquatic, deserts, mountains etc. – and animals show adaptation; other plant part modifications like tendrils, thorns etc.		observations on habitat;
How do fish live in water?	Animals in deserts and water.		
c)Plants – form and functionWhat is the structure and function of various parts of the plants - stem, leaf and roots? How do different flowers differ from one another? How does one study flowers?	Morphological structure and function of root, stem & leaves. Structure of the flower, differences.	Potted plants or seeds, pots, etc; thermometer, any water plants, any xerophytic plants. Information on desert & aquatic plants & animals. Plants, flowers, blade, hand lens.	observing germination of seeds, also observing under dark conditions; growth & development of domestic animals, hatching of birds' eggs etc., developing drawing skills. Listing the diverse set of living organisms aroundus; prepare herbarium specimens of different leaves, plants; studying modifications in plants and animals; observing how different environmental factors (water availability,temperature) affect living organisms; Studying plant parts – types of stems, roots, leaves, seeds; experiment to show conduction by stem, activity to show anchorage by roots, absorption by roots. Study of any flower, counting number of parts, names of parts, cutting sections of

d) Animals – form and function What is inside our bodies? How do animals move? Do all animals have bones in their bodies? How do fishes move? And birds fly? What about snakes, snails, earthworms?	Structure and functions of the animal body; Human skeletal system, some other animals, e.g., fish, bird, cockroach, snail.	Observation of nature; model of skeleton, X-rays of arms or legs, chest, hips, jaws, vertebral column (could be given in the textbook).	ovary to observe ovules. Activities to study X-rays, find out the direction in which joints bend, feel the ribs, backbone etc. Observation/ discussion on movement and skeletal system in other animals.
4. Moving Things, People and Ideas ***Moving*** How did people travel from one place to another in earlier times? How did they know how far they had travelled? How do we know that something is moving? How do we know howfar it has moved?	Need to measure distance (length). Measurement of length. Motion as change in position with time.	Everyday experience; equipment (scale etc.) to measure length. Stories for developing contexts for measuring distances.	Measuring lengths and distances. Observation of different types of moving objects on land, in air, water and space. Identification and discrimination of various types of motion. Demonstrating objects having more than one type of movement (screw motion, bicycle wheel, fan, top etc) Observing the periodic motion in hands of a clock/watch, sun, moon, earth.
5. How things work*)* ***a) Electric current andcircuits***How does a torch work?	Electric current: Electric circuit (current flows only when a cell and other components are connected in an unbroken loop)		

Do all materials allow current to flow through them?	Conductor, Insulator.	Torch: cell, bulb or led, wires, key.	Activity using a bulb, cell and key and connecting wire to show flow of current and identify closed and open circuits. Making a switch.
		Mica, paper, rubber, plastic, wood, glass metal clip, water, pencil (graphite), etc.	Opening up a dry cell. Experiment to show that some objects allow current to flow and others do not.
b) Magnets What is a magnet?	Magnet.	Magnet, iron pieces.	Demonstrating how things are attracted by a magnet. Classification of objects into magnetic /non-magnetic classes.
Where on a magnet do things stick?	Poles of a magnet.	Magnet, iron pieces, iron filings, paper.	Activity to locate poles of a magnet; activity with iron filings and paper.
How is a magnet used to find direction?	A freely suspended magnet always aligns in a particular direction. North and South poles.	Bar magnet, stand, thread, compass.	Activities with suspended bar magnet and with compass needle.
How do two magnets behave when brought close to each other?	Like poles repel and unlike poles attract each other.	Two bar magnets, thread, stand.	Activities to show that like poles repel and unlike poles attract.
6. Natural Phenomena ***a) Rain, thunder andlightning***Where does rain comefrom? How do cloudsform?	Evaporation and condensation, water in different states. Water cycle.	Everyday experience; kit items.	Condensation on outside of a glass containing cold water; activity of boiling water and condensation of steam on a spoon. Simple model of water cycle. Discussion on three states of water.
		Previous experience, candle/torch/lamp,	

b) *Light* Which are the things wecan see through?	Classification of various materials in terms of transparent, trans-lucent & opaque.	white paper, cardboard box, black paper.	Discussion, observation; looking across different materials at a source of light.
When are shadows formed? Do you get a shadow at night – when there is no light in the room, no moonlight or other source of light? What colour is a shadow?	A shadow is formed only when there is a source of light and an opaque material obstructs a source it. A shadow is black irrespective of the colour of the object.	Child's experience, candle/ torch/lamp, white paper, black paper, coloured objects.	Discussion; observing shadow formation of various objects of different shapes, and of same shape &different colours; playing and forming shadows with the hands in sunlight, in candle light & in a well lit region during daytime; making a pinhole camera and observing static and moving objects.
On what kinds of surfaces can we see images?	Reflecting surfaces; images are different from shadows.	Experience, objects with polished surfaces, mirror etc.	Observing differences between the image and the shadow of the same object.
7 Natural Resources*a) Importance of water*What will happen to soil,people, domestic animals,rivers, ponds and plantsand animals if it does notrain this year?	Importance of water, dependence of the living on water. Droughts and floods.	Experience, newspaper reports.	Estimation of water used by a family in one day, one month, one year. Difference between need and availability. Discussion. Activity: plant growth in normal, deficient and excess water conditions.
What will happen to soil, people, domestic animals,plants and animalsliving in rivers and ponds, if it rains heavily?	Some animals and plants live in water; some live on land and some live in upper layers of soil; but all need air to breath/to respire.	Experience.	Discussion.
b)*Importance of air* Why do			

earthwormscome out of the soil whenit rains?			
c) Waste Do you throw away fruitand vegetable peels andcuttings? Can these be reused?If we dump themanywhere, will it harm thesurroundings? What if wethrow them in plasticbags?	Waste; recycling of waste products; things that rot and things that don't. Rotting is supported by animals/ animal and plant products.	Observation and experience.	Survey of solid waste generation by households; estimation of waste accumulated (by a house/ village/colony etc.) in a day, in a year; discussion on 'what is waste'; Activity to show that materials rot in soil, this is affected by wrapping in plastics.

CLASS VII

Questions	Key Concepts	Resources	Activities/ Processes
1. Food			
a) Food from whereHow do plants get their food?	Autotrophic and heterotrophic nutrition; parasites, saprophytes; photosynthesis.	Coleus or any other plant with variegated leaves, alcohol, iodine solution, kit materials.	Need for light, green leaf for photosynthesis, looking at any saprophyte/ parasite and noting differences from a green plant.
b) Utilisation of food How do plants andanimals utilise their food?	Types of nutrition, nutrition in amoeba and human beings, Digestive system – human, ruminants; types of teeth; link with transport and respiration.	Model of human teeth, charts of alimentary canal, types of nutrition etc., chart and model of amoeba. The story of the stomach with a hole.	Effect of saliva on starch, permanent slide of *Amoeba*. Role play with children.
2. Materials			
a) Materials of daily use Do some of our clothescome from animalsources?Which are these animals?	Wool, silk – animal fibres. Process of extraction of silk;	Samples of wool and silk; brief account of silk worm rearing and sheep breeding.	Collection of different samples of woollen and silk cloth. Activities to differentiate natural silk

Who rears them? Which parts of the animals yield the yarn? How is the yarn extracted? What kinds of clothes help us to keep warm?	associated health problems.		and wool from artificial fibres. Discussion.
What is heat? What is the meaning of 'cool','cold' & 'warm' 'hot'? How does heat flow from/to our body to/ from the surroundings?	Heat flow; temperature.	Potassium permanganate, metal strip or rod, wax, common pins, spirit lamp, matches, tumblers, thermometer etc.	Experiment to show that 'hot' and 'cold' are relative. Experiments to show conduction, convection and radiation. Reading a thermometer.
b) Different kinds of materials Why does turmeric stainbecome red on applyingsoap?	Classification of substances into acidic, basic and neutral; indicators	Common substances like sugar, salt, vinegar etc, test tubes, plastic vials, droppers, etc.	Testing solutions of common substances like sugar, salt, vinegar, lime juice etc. with turmeric, litmus, china rose. Activity to show neutralisation.
c)How things change/ react with one another What gets deposited on a*tawa/khurpi /kudal* if leftin a moist state? Why does the exposed surface of a cut brinjal become black? Why is seawater salty? Is it possible to separate salt from seawater?	Chemical substances; in a chemical reaction a new substance is formed..	Test tubes, droppers, common pins, vinegar, baking powder, CuSO4, etc. Urea, copper sulphate, alum etc, beaker, spirit lamp, watch glass, plate, petridish etc .	Experiments involving chemical reactions like rusting of iron, neutralization (vinegar and baking soda), displacement of Cu from CuSO4 etc. *Introduce chemical formulaewithout explaining them.*
3. World of the Living ***a) Surroundings affect the living***Why are nights cooler?How			

does having winters and summers affect soil?Are all soils similar? Can we make a pot with sand? Is soil similar when you dig into the ground? What happens to water when it falls on the cemented/ bare ground?	Climate, soil types, soil profile, absorption of water in soil, suitability for crops, adaptation of animals to different climates.	Data on earth, sun – size, distance etc, daily changes in temperature, humidity from the newspaper, sunrise, sunset etc.	Graph for daily changes in temperature, day length, humidity etc.; texture of various soils by wettingand rolling; absorption/percolation of water in different soils, which soil can hold more water.
b)The breath of life Why do we/animalsbreathe? Do plants also breathe? Do they alsorespire? How do plants/animals live in water?	Respiration in plants and animals.	Lime water, germinating seeds, kit materials.	Experiment to show plants and animals respire; rate of breathing; what do we breathe out? What do plants 'breathe' out? Respiration in seeds; heat release due to respiration.Anaerobic respiration, root respiration.
c) Movement of substancesHow does water move inplants? How is foodtransported in plants?Why do animals drinkwater? Why do we sweat? Why and how is there blood in all parts of the body? Why is blood red? Do all animals have blood? What is there in urine?	Respiration in plants and animals.	Twig, stain; improvised stethoscope; plastic bags, plants, egg, sugar, salt, starch, Benedicts solution, AgNO3 solution.	Translocation of water in stems, demonstration of transpiration, measurement of pulse rate, heartbeat; after exercise etc. Discussion on dialysis, importance; experiment.
d) Multiplication in plants Why are some plant partslike potato, onion swollen– are they of	Herbs, shrubs, trees;		

any use tothe plants? What is thefunction of flowers?	Transport of food and water in plants; circulatory and excretion system in animals; sweating.	*Bryophyllum* leaves, potato, onion etc.; yeast powder, sugar.	Study of tuber, corm, bulb etc; budding in yeast; T.S./ L.S. ovaries, w.m. pollen grains; comparison of wind pollinated and insect pollinated flowers;
How are fruits and seeds formed? How are they dispersed?	Vegetative, asexual and sexual reproduction in plants, pollination-cross, self pollination; pollinators,fertilisation, fruit, seed.		observing fruit and seed development in some plants; collection and discussion of fruits/seeds dispersed by different means.
4. Moving Things,People and Ideas*a) Moving objects*			
Why do people feel the need to measure time? How do we know how fast something is moving?	Appreciation of idea of time and need to measure it.	Daily-life experience; metre scale, wrist watch/ stop watch, string etc.	Observing and analysing motion (slow or fast) of common objects on land, in air, water and space.
	Measurement of time using periodic events. Idea of speed of moving objects – slow and fast motion along a straight line.		Measuring the distance covered by objects moving on a road in a given time and calculating their speeds. Plotting distance vs. time graphs for uniform motion. Measuring the time taken by moving objects to cover a given distance & calculating their speeds. Constancy of time period of a pendulum.

5. How Things Work

a) Electric current and circuits

How can we conveniently represent an electric circuit?	Electric circuit symbols for different elements of circuit.	Recollection of earlier activities. Pencil and paper.	Drawing circuit diagrams.
Why does a bulb get hot?	Heating effect of current.	Cells, wire, bulb.	Activities to show the heating effect of electric current.
How does a fuse work?	Principle of fuse.	Cells, wire, bulb or LED, aluminium foil.	Making a fuse.
How does the current in a wire affect the direction of a compass needle?	A current-carrying wire has an effect on a magnet.	Wire, compass, battery.	Activity to show that a current-carrying wire has an effect on a magnet.
What is an electromagnet?	A current-carrying coil behaves like a magnet.	Coil, battery, iron nail.	Making a simple electromagnet.Identifying situations in daily life where electromagnets are used.
How does an electric bell work?	Working of an electric bell.	Electric bell.	Demonstration of working of an electric bell.
6. Natural Phenomena *a) Rain, thunder andlightning*What causes storms? What are the effects of storms?	High-speed winds and heavy rainfall have disastrous consequences for human and other life.	Experience; newspaper reports. Narratives/stories.	Making wind speed and wind direction indicators. Activity to show “lift” due to moving air.

Why are roofs blown off?			Discussion on effects of storms and possible safety measures.
b) Light Can we see a source oflight through a bent tube?	Rectilinear propagation of light.	Rubber/plastic tube/ straw, any source of light.	Observation of the source of light through a straight tube, a bent tube. Observing reflection of light on wall or white paper screen.
How can we throw sunlight on a wall?	Reflection, certain surfaces reflect light. Real and virtual images.	Glass/metal sheet/metal foil, white paper.	Open ended activities allowing children to explore images made by different objects, &recording observations. Focussed discussions on real and virtual images.
What things give images that are magnified or diminished in size?		Convex/concave lenses and mirrors.	
How can we make a coloured disc appear white?	White light is composed of many colours.	Newton's disc	Making the disc and rotating it.
7. Natural Resources ***a) Scarcity of water***Where and how do youget water for yourdomestic needs? Is it enough? Is there enough water for agricultural needs? What happens to plants when there is not enough water for plants?	Water exists in various forms in nature. Scarcity of water and its effect on life.	Experience; media reports; case material.	Discussions. Case study of people living in conditions of extreme scarcity of water, how they use water in a judicious way. Projects exploring various kinds of water resources that exist in nature in different regions in India; variations of water availability in different regions.
Where does a plant go when it dies?			
b) Forest products			
What are the products we get from forests?			Case study of forests.

Do other animals also benefit from forests? What will happen if forests disappear?	Interdependence of plants and animals in forests. Forests contribute to purification of air and water.	Case material on forests.	
c) Waste Management			
Where does dirty water from your house go? Have you seen a drain? Does the water stand in it sometimes? Does this have any harmful effect?	Sewage; need for drainage/sewer systems that are closed.	Observation and experience; photographs.	Survey of the neighbourhood, identifying locations with open drains, stagnant water, and possible contamination of ground water by sewage. Tracing the route of sewage in your building, and trying to understand whether there are any problems in sewage disposal.

Class VIII

Questions	Key Concepts	Resources	Activities/Processes
1. Food			
a) Crop production Crop production: How are different food crops produced? What are the various foods we get from animal sources?	Crop production: Soil preparation, selection of seeds, sowing, applying fertilizers, irrigation, weeding, harvesting and storage; nitrogen fixation, nitrogen cycle.	Interaction and discussion with local men & women farmers about farming and farm practices; visit to cold storage, go- downs; visit to any farm/ nursery/ garden.	Preparing herbarium specimens of some crop plants; collection of some seeds etc; preparing a table/chart on different irrigation practices and sources of water in different parts of India; looking at roots of any legume crop for nodules, hand section of nodules.
b) Micro-organisms		Microscope, kit materials; information	Making a lens with a bulb; Observation of

What living organisms do we see under a microscope in a drop of water? What helps make curd? How does food go bad? How do we preserve food?	Micro organisms – useful and harmful.	about techniques of food preservation.	drop of water, curd, other sources, bread mould, orange mould under the microscope; experiment showing fermentation of dough – increase in volume (using yeast) – collect gas in balloon, test in lime water.
2. Materials ***a) Materials in daily life***			
Are some of our clothes synthetic? How are they made? Where do the raw materials come from? Do we use other materials that are synthetic?	Synthetic clothing materials. Other synthetic materials, especially plastics; usefulness of plastics &problems associated with their excessive use.	Sharing of prior knowledge, source materials on petroleum products. Collection of material from neighbourhood or should be part of the kit.	Survey on use of syntheticmaterials. Discussion.
Do we use cloth (fabric) for purposes other than making clothes to wear? What kind of fabric do we see around us? What are they used for?	There are a variety of fibrous materials in use. A material is chosen based on desired property.		Testing various materials – for action of water, reaction on heating, effect of flame, electrical conductivity, thermal conductivity, tensile strength.
***b) Different kinds of materials and their reactions*.** Can a wire be drawn out of wood?	Metals and non-metals.	Kit items.	Simple observations relating to physical properties of metals and non-metals, displacement reactions, experiments involving reactions with acids

Do copper or aluminium also rust like iron? What is the black material inside a pencil? Why are electrical wires made of aluminium or copper?			and bases. Introduction of word equations.
c) How things change/ react with one another? What happens to the wax when a candle is burnt? Is it possible to get this wax back? What happens to kerosene/natural gas when it is burnt? Which fuel is the best? Why?	Combustion, flame All fuels release heat on burning. Fuels differ in efficiency, cost etc. Natural resources are limited. Burning of fuels leads to harmful by products.	"The Chemical History of a Candle", by M. Faraday, 1860. Collecting information from home and other sources.	Experiments with candles. Collecting information. Discussions involving whole class.
3. The World of the Living ***a) Why conserve*** What are reserve forests/ sanctuaries etc? How do wekeep track of our plants and animals? How do we know that some species are in danger of disappearing? What would happen if you continuously cut trees?	Conservation of biodiversity/wild life/ plants; zoos, sanctuaries, forest reserves etc. flora, fauna endangered species, red data book; endemic species, migration.	Films on wild life, TV programmes, visit to zoo/ forest area/ sanctuaries etc.; case study with information on disappearing tigers; data on endemic and endangered species from MEF, Govt. of India, NGOs .	Discussion on whether we find as many diverse plants/ animals in a 'well kept area' like a park or cultivated land, as compared to any area left alone. Discussion on depletion of wild life, why it happens, on poaching, economics.
b) The cell			

What is the internal structure of a plant – what will we see if we look under the microscope? Which cells from our bodies can be easily seen? Are all cells similar?	Cell structure, plant and animal cells, use of stain to observe, cell organelles – nucleus, vacuole, chloroplast, cell membrane, cell wall.	Microscope, onion peels, epidermal peels of any leaves, petals etc, buccal cavity cells, *Spirogyra*; permanent slides of animal cells.	Use of a microscope, preparation of a slide, observation of onion peel and cheek cells, other cells from plants e.g. *Hydrilla*leaf, permanent slides showing different cells, tissues, blood smear; observation of T.S. stem to see tissues; observing diverse types of cells from plants and animals (some permanent slides).
c) How babies are formed How do babies develop inside the mother? Why does our body changewhen we reach our teens? How is the sex of the child determined? Who looks after the babies in your homes? Do all animals give birth to young ones.	Sexual reproduction and endocrine system in animals, secondary sexual characters, reproductive health; internal and external fertilisation.	Counsellors, films, lectures.	Discussion with counsellors on secondary sexual characters, on how sex of the child is determined, safe sex, reproductive health; observation on eggs, young ones, life cycles. Discuss on gender issues and social taboos.
4. Moving things, People and Ideas ***a) Idea of force*** What happens when we push or pull anything?	Idea of force-push or pull; change in speed, direction of moving objects and shape of objects by applying	Daily-life experience, kit items.	Observing & analysing the relation between force and motion in a

How can we change the speed, direction of a moving object? How can we shape the shape of an object?	force; contact and non-contact forces.		variety of daily-life situations.
b) Friction What makes a ball rolling on the ground slow down?	Friction – factors affecting friction, sliding and rolling friction, moving; advantages and disadvantages of friction for the movement of automobiles, airplanes and boats/ships; increasing and reducing friction.	Various rough and smooth surfaces, ball bearings.	Demonstrating change in speed of a moving object, its direction of motion and shape by applying force. Measuring the weight of an object, as a force (pull) by the earth using a spring balance. Demonstrating friction between rough/smooth surfaces of moving objects in contact, and wear and tear of moving objects by rubbing (eraser on paper, card board, sand paper). Activities on static, sliding and rolling friction. Studying ball bearings. Discussion on other methods of reducing friction and ways of increasing friction.
c) Pressure Why are needles madepointed? Why does a balloon burst if too much air is blown into it? Why does an inverted glass/bottle/pitcher resist being pushed down into water?	Idea of pressure; pressure exerted by air/liquid;atmospheric pressure.	Daily-life experiences; Experimentation - improvised manometer and improvised pressure detector.	Observing the dependence of pressure exerted by a force on surface area of an object. Demonstrating that air exerts pressure in a variety of situations. Demonstrating that liquids exert pressure. Designing an improvised manometer

How can air/liquids exert pressure?			and measuring pressure exerted by liquids. Designing improvised pressure detector and demonstrating increase in pressure exerted by a liquid at greater depths.
d) Sound How do we communicate through sound? How is sound produced? What characterises different sounds?	Various types of sound; sources of sound; vibration as a cause of sound; frequency; medium for propagation of sound; idea of noise as unpleasant and unwanted sound and need to minimise noise.	Daily-life experiences; kit items; musical instruments.	Demonstrating and distinguishing different types (loud and feeble, pleasant/ musical and unpleasant / noise, audible and inaudible) of sound.Producing different types of sounds. using the same source. Making a '*JalTarang'*. Demonstrating that vibration is the cause of sound. Designing a toy telephone. Identifying various sources of noise. (unpleasant and unwanted sound) in the locality and thinking of measures to minimise noise and its hazards (noise-pollution).
5. How Things Work ***Electric current andcircuits***			
Why do we get a shock when we touch an electric appliance with wet hands?	Water conducts electricity depending on presence/ absence of salt in it. Other liquids may or may not conduct electricity.	Rubber cap, pins, water, bulb or LED, cells, various liquids.	Activity to study whether current flows through various liquid samples (tap water, salt solution, lemon juice, kerosene, distilled water if available).
What happens to a conducting solution	Chemical effects of current.	Carbon rods, beaker, water, bulb, battery.	Emission of gases from salt solution.

when electric current flows through it?			
How can we coat an object with a layer of metal?	Basic idea of electroplating.	Improvised electrolytical cell, $CuSO_4$	Deposition of Cu from copper sulphate solution. Electric pen using KI and starch solution. Simple experiment to show electroplating.
6. Natural Phenomena *a) Rain, thunder andlightning* What is lightning? What safety measures should we take against lightning strikes?	Clouds carry electric charge. Positive and negative charges, attraction and repulsion. Principle of lightning conductor.	Articles on clouds and lightning; kit items.	Discussion on sparks. Experiments with comb and paper to show positive and negative charge. Discussion on lightning conductor.
b) Light What are the differences between the images formed on a new utensil and an old one? Why is there this difference?When you see your image in the mirror it appears as if the left is on the right – why?	Laws of reflection.	Mirror, source of light, ray source (mirror covered with black paper with a thin slit).	Exploring laws of reflection using ray source and another mirror.
Why don't we see images on all surfaces around us? What makes things visible? How do we see images of our back in a mirror?	Characteristics of image formed with a plane mirror. Regular and diffusedreflection. Reflection of light from an object to the eye.	Plane glass, candle, scale. Experience.	Locating the reflectedimage using glass sheetand candles. Discussion with variousexamples. Activity of observing an object through an object through a straight and bent tube; and discussion. Observing multipleimages formed

Why do we sometimes see colours on oil films on water?	Multiple reflection. Dispersion of light.	Mirrors and objects to be seen. Plane mirror, water.	by mirrors placed at angles to each other. Making a kaleidoscope. Observing spectrumobtained on a white sheet of paper/wall using a plane mirror inclined on a water surface at an angleof 45°.
What is inside our eye that enables us to see?	Structure of the eye.	Model or chart of thehuman eye.	Observing reaction ofpupil to a shining torch. Demonstration of blindspot.
Why are some people unable to see?	Lens becomes opaque, light not reaching the eye. Visually challenged use other senses to make sense of the world around. Alternative technology available. Role of nutrition in relation to blindness.	Experiences of children; case histories. Samples of Braille sheets.	Description of case histories of visually challenged people who have been doing well in their studies and careers. Activities with Braille sheet.
c) Night sky What do we see in the sky at night? How can we identify stars and planets?	Idea about heavenly bodies/celestial objects and their classification – moon, planets, stars, constellations. Motion of celestial objects in space; the solar system.	Observation of motion of objects in the sky during the day and at night; models, charts, role-play and games, planetarium.	Observing & identi-fying objects moving in the sky during the day and at night. Observing and identifying some prominent stars and constellations. Observing and identifying some prominent planets, visible to the naked eye,

			(Venus, Mars, Jupiter) in the night sky & their movement. Design and preparing models and charts of the solar system, constellations, etc. Roleplay & games for understanding movement of planets, stars etc. Looking at structures/ large objects & guessing what will happen to them in the event of an earthquake; activities to explore stable and unstable structures.
d) Earthquakes What happens during an earthquake? What can we do to minimise its effects?	Phenomena related to earthquakes.	data; visit to seismographic centre.	
7. Natural Resources ***a) Man's intervention in phenomena of nature***What do we do with wood? What if we had no wood? What will happen if we go on cutting trees/grass without limit?	Consequences of deforestation: scarcity of products for humans and other living beings, change in physical properties of soil, reduced rainfall. Reforestation; recycling of paper.	Data and narratives on deforestation and on movements to protect forests.	Narration and discussions. Project- Recycling of paper.
What do we do with coal and petroleum? Can we create coal and petroleum artificially?	Formation of coal and petroleum in nature. (fossil fuels?). Consequences of over extraction of coal and petroleum.	Background materials, charts etc.	Discussion.
b) Pollution of air and water What are the various activities by human beings that make air impure? Does clear,	Water & air are increasingly getting polluted & therefore become scarce for use. Biological &chemical	Description of some specific examples of extremely polluted rivers.	Case study and discussion. Purification of water by physical and chemical methods including using sunlight.

transparent water indicate purity?	contamination of water; effect of impure water on soil & living beings; effect of soil containing excess of fertilisers and insecticides on water resources. Potable water.	Discussion on other methods of water purification.

Class IX

Theme: Materials

Unit I: Matter-Nature and Behaviour

Definition of matter; solid, liquid and gas; characteristics - shape, volume, density; change of state-melting (absorption of heat), freezing, evaporation (cooling by evaporation), condensation, sublimation.

Nature of matter: Elements, compounds and mixtures. Heterogeneous and homogenous mixtures, colloids and suspensions.

Particle nature, basic units: Atoms and molecules, Law of constant proportions, Atomic and molecular masses.

Mole concept: Relationship of mole to mass of the particles and numbers.

Structure of atoms: Electrons, protons and neutrons, valency, chemical formula of common compounds. Isotopes and Isobars.

Theme: The World of the Living

Unit II: Organization in the Living World

Cell - Basic Unit of life : Cell as a basic unit of life; prokaryotic and eukaryotic cells, multicellular organisms; cell membrane and cell wall, cell organelles and cell inclusions; chloroplast, mitochondria, vacuoles, endoplasmic reticulum, Golgi apparatus; nucleus, chromosomes - basic structure, number.

Tissues, Organs, Organ System, Organism: Structure and functions of animal and plant tissues (only four types of tissues in animals; Meristematic and Permanent tissues in plants).

Biological Diversity: Diversity of plants and animals-basic issues in scientific naming, basis of classification. Hierarchy of categories / groups, Major groups of plants (salient features) (Bacteria, Thallophyta, Bryophyta, Pteridophyta, Gymnosperms and Angiosperms). Major groups of animals (salient features) (Non-chordates upto phyla and chordates upto classes).

Health and Diseases: Health and its failure. Infectious and Non-infectious diseases, their causes and manifestation. Diseases caused by microbes (Virus, Bacteria and Protozoans) and their prevention; Principles of treatment and prevention. Pulse Polio programmes.

Theme: Moving Things, People and Ideas

Unit III: Motion, Force and Work

Motion: Distance and displacement, velocity; uniform and non-uniform motion along a straight line; acceleration, distance-time and velocity-time graphs for uniform motion and uniformly accelerated motion, derivation of equations of motion by graphical method; elementary idea of uniform circular motion.

Force and Newton's laws : Force and Motion, Newton's Laws of Motion, Action and

Reaction forces, Inertia of a body, Inertia and mass, Momentum, Force and Acceleration. Elementary idea of conservation of Momentum.

Gravitation: Gravitation; Universal Law of Gravitation, Force of Gravitation of the earth (gravity), Acceleration due to Gravity; Mass and Weight; Free fall.

Floatation: Thrust & Pressure. Archimedes' Principle; Buoyancy; Elementary idea of Relative Density.

Work, energy and power: Work done by a Force, Energy, power; Kinetic and Potential energy; Law of conservation of energy. Sound: Nature of sound and its propagation in various media, speed of sound, range of hearing in humans; ultrasound; reflection of sound; echo and SONAR. Structure of the Human Ear (Auditory aspect only).

Theme: Natural Resources: Balance in Nature

Unit IV: Our Environment

Physical Resources: Air, Water, Soil. Air for respiration, for combustion, for moderating temperatures; movements of air and its role in bringing rains across India. Air, water and soil pollution (brief introduction). Holes in ozone layer and the probable damages.

Bio-geo chemical cycles in nature: Water, Oxygen, Carbon and Nitrogen.

Theme: Food

Unit V: Food Production

Plant and animal breeding and selection for quality improvement and management; Use of fertilizers and manures; Protection from pests and diseases; Organic farming.

PRACTICALS

Practicals will be conducted alongside the concepts taught in theory classes.

LIST OF EXPERIMENTS

1. Preparation of:
 a) a true solution of common salt, sugar and alum
 b) a suspension of soil, chalk powder and fine sand in water
 c) a colloidal solution of starch in water and egg albumin/milk in water and distinguish between these on the basis of · transparency · filtration criterion · stability

2. Preparation of :
 a) A mixture
 b) A compound using iron filings and sulphur powder and distinguishing between these on the basis of:
  (i) appearance, i.e., homogeneity and heterogeneity
  (ii) behaviour towards a magnet
  (iii) behaviour towards carbon disulphide as a solvent
  (iv) effect of heat

3. Separation of the components of a mixture of sand, common salt & ammonium chloride (or camphor).

4. Perform the following reactions and classify them as physical or chemical changes:
 a) Iron with copper sulphate solution in water
 b) Burning of magnesium ribbon in air
 c) Zinc with dilute sulphuric acid
 d) Heating of copper sulphate crystals
 e) Sodium sulphate with barium chloride in the form of their solutions in water

5. Preparation of stained temporary mounts of :
  (a) onion peel,
  (b) human cheek cells & to record observations and draw their labeled diagrams.

5. Identification of Parenchyma, collenchyma & Sclerenchyma tissues in plants, striped, smooth &

cardiac muscle fibers and nerve cells in animals, from prepared slides. Draw their labeled diagrams.
7. Determination of the melting point of ice and the boiling point of water.
8. Verification of the Laws of reflection of sound.
9. Determination of the density of solid (denser than water) by using a spring balance & a measuring cylinder.
10. Establishing the relation between the loss in weight of a solid when fully immersed in : a) tap water b) strong salty water with the weight of water displaced by it by taking at least two different solids.
11. Determination of the speed of a pulse propagated through a stretched string/slinky (helical spring).
12. Study of the characteristics of Spirogyra, Agaricus, Moss, Fern, Pinus (either with male or female cone) and an Angiospermic plant. Draw & give two identifying features of the groups they belong to.

13. Observe the given pictures/charts/models of earthworm, cockroach, bony fish and bird. For each organism, draw their picture and record:
    a) one specific feature of its phylum, and,
    b) one adaptive feature with reference to its habitat.

14. Verification of the law of conservation of mass in a chemical reaction.
15. Study of the external features of root, stem, leaf and flower of monocot and dicot plants.

Class X

Theme : Materials

Unit I: Chemical Substances - Nature and Behaviour

Chemical reactions: Chemical equation, Balanced chemical equation, implications of a balanced chemical equation, types of chemical reactions: combination, decomposition, displacement, double displacement, precipitation, neutralization, oxidation and reduction.

Acids, bases and salts: Their definitions in terms of furnishing of H+ and OH– ions, General properties, examples and uses, concept of pH scale (Definition relating to logarithm not required), importance of pH in everyday life; preparation and uses of Sodium Hydroxide, Bleaching powder, Baking soda, Washing soda and Plaster of Paris.

Metals and nonmetals: Properties of metals and non-metals; Reactivity series; Formation and properties of ionic compounds; Basic metallurgical processes; Corrosion and its prevention.

Carbon compounds: Covalent bonding in carbon compounds. Versatile nature of carbon. Homologous series. Nomenclature of carbon compounds containing functional groups (halogens, alcohol, ketones, aldehydes, alkanes and alkynes), difference between saturated hydrocarbons and unsaturated hydrocarbons. Chemical properties of carbon compounds (combustion, oxidation, addition and substitution reaction). Ethanol and Ethanoic acid (only properties and uses), soaps & detergents.

Periodic classification of elements: Need for classification, early attempts at classification of elements (Dobereiner's Triads, Newland's Law of Octaves, Mendeleev's Periodic Table), Modern periodic table, gradation in properties, valency, atomic number, metallic and non-metallic properties.

Theme: The World of the Living

Unit II: World of Living

Life Processes: 'Living Being'. Basic concept of nutrition, respiration, transport and excretion in plants and animals.

Control and co-ordination in animals and plants: Tropic movements in plants; Introduction of plant hormones; Control and co-ordination in animals: Nervous system; Voluntary, involuntary and reflex action; Chemical co-ordination: animal hormones. **Reproduction**: Reproduction in animals and plants (asexual and sexual) reproductive health-need and methods of family planning. Safe sex vs HIV/AIDS. Child bearing and women's health.

Heredity and Evolution: Heredity; Mendel's contribution- Laws for inheritance of traits: Sex determination: brief introduction; Basic concepts of evolution.

Theme : Natural Phenomena

Unit III: Natural Phenomena

Reflection of light by curved surfaces; Images formed by spherical mirrors, centre of curvature, principal axis, principal focus, focal length, mirror formula (Derivation not required), magnification.

Refraction; Laws of refraction, refractive index. Refraction of light by spherical lens; Image formed by spherical lenses; Lens formula (Derivation not required); Magnification. Power of a lens. Functioning of a lens in human eye, defects of vision & their corrections, applications of spherical mirrors and lenses. Refraction of light through a prism, dispersion of light, scattering of light, applications in daily life.

Theme: How Things Work

Unit IV: Effects of Current

Electric current, potential difference and electric current. Ohm's law; Resistance, Resistivity, Factors on which the resistance of a conductor depends. Series combination of resistors, parallel combination of resistors and its applications in daily life. Heating effect of electric current and its applications in daily life. Electric power, Interrelation between P, V, I and R.

Magnetic effects of current : Magnetic field, field lines, field due to a current carrying conductor, field due to current carrying coil or solenoid; Force on current carrying conductor, Fleming's Left Hand Rule, Electric Motor, Electromagnetic induction. Induced potential difference, Induced current. Fleming's Right Hand Rule, Electric Generator, Direct current. Alternating current: frequency of AC. Advantage of AC over DC. Domestic electric circuits.

Theme: Natural Resources

Unit V: Natural Resources

Sources of energy: Different forms of energy, conventional & non-conventional sources of energy: Fossil fuels, solar energy; biogas; wind, water and tidal energy; Nuclear energy. Renewable versus non-renewable sources of Energy.

Our environment: Eco-system, Environmental problems, Ozone depletion, waste production and their solutions. Biodegradable and non-biodegradable substances.

Management of natural resources: Conservation and judicious use of natural resources. Forest and wild life; Coal and Petroleum conservation. Examples of people's participation for conservation of natural resources. Big dams: advantages and limitations; alternatives, if any. Water harvesting. Sustainability of natural resources.

PRACTICALS

Practical will be conducted alongside the concepts taught in theory classes

LIST OF EXPERIMENTS

1. A. Finding the pH of the following samples by using pH paper/universal indicator:
(i) Dilute Hydrochloric Acid (ii) Dilute NaOH solution (iii) Dilute Ethanoic Acid solution
(iv) Lemon juice (v) Water (vi) Dilute Hydrogen Carbonate solution

   B. Studying the properties of acids and bases (HCl & NaOH) on the basis of their reaction with: a)litmus solution (blue/red) b)zinc metal c)solid sodium carbonate

2. Performing and observing the following reactions and classifying them into:
   A. Combination reaction B. Decomposition reaction C. Displacement reaction
   D. Double displacement reaction :
      (i) Action of water on quicklime
      (ii) Action of heat on ferrous sulphate crystals
      (iii) Iron nails kept in copper sulphate solution
      (iv) Reaction between sodium sulphate and barium chloride solutions
3. Observing the action of Zn, Fe, Cu and Al metals on the following salt solutions:
   i) $ZnSO_4(aq)$ ii) $FeSO_4(aq)$ iii) $CuSO_4(aq)$ iv) $Al_2(SO_4)_3(aq)$
   Arranging Zn, Fe, Cu and Al (metals) in the decreasing order of reactivity based on the above result.
4. Studying the dependence of potential difference (V) across a resistor on the current

(I) passing through it & determine its resistance. Also plotting a graph between V & I.

5. Determination of the equivalent resistance of two resistors when connected in series and parallel.

6 Preparing a temporary mount of a leaf peel to show stomata.

7 Experimentally show that carbon dioxide is given out during respiration.

8 Study of the following properties of acetic acid (ethanoic acid):
i) odour ii) solubility in water iii) effect on litmus
iv) reaction with Sodium Hydrogen Carbonate

9 Study of the comparative cleaning capacity of a sample of soap in soft and hard water.

10 Determination of the focal length of :
i) Concave mirror ii) Convex lens by obtaining the image of a distant object.

11 Tracing the path of a ray of light passing through a rectangular glass slab for different angles of incidence. Measure the angle of incidence, angle of refraction, angle of emergence and interpret the result.

12 Studying : (a) binary fission in Amoeba, and,
(b) budding in yeast and Hydra with the help of prepared slides.

13 Tracing the path of the rays of light through a glass prism.

14 Finding the image distance for varying object distances in case of a convex lens and drawing corresponding ray diagrams to show the nature of image formed.

15 Identification of the different parts of an embryo of a dicot seed (pea, gram or red kidney bean).

CLASS III – ENVIRONMENTAL STUDIES

Questions	Key Concepts/ Issues	Suggested Resources	Suggested Activities
1. Family and Friends			
1.1 RELATIONSHIPS*My family*			
Who all live with you at home? How are they	Concept of a family; diversity in family types; Family as a	Child's daily life experience; Family members.	Observation, enquiry about family relations from adults, discussion.

related to each other? Do you have relatives who do not live with you? Have they always been there? How many children did your grandparents have? Who do you think will be your new relatives in future?	support system, Ideas about relationships; Simple family tree (three generations).		
My family and me Do you look like anybody in your family? Have you learnt anything from anybody in your family? Whom do you admire most among all your relatives? Who is the most caring and patient person? When do you meet members of your family who do not live with you?	Family influences – physical characteristics, values and habits, appreciating qualities and skills of family members; family as a support system.	Family members, local knowledge, story/poems on different festivals.	Observation, exploring from elders about extended family, narrating stories/singing poems related to festivals, writing about any festival, drawing.
Whom do I look like? Do some of your relatives look similar? Which features are similar – eyes, ears, the voice orheight? Are there any two people in your family who look exactly alike?	Concept of similarity between relations, hereditary features.	Family photographs; Narrations by elders about family members when they were young.	Discussion About stories/ films/jokes involving twins
Old and the physically challenged Do you know of people who are hard of hearing? Are many of them old? Do you have any friends who cannot hear/see well? Is there any way in which you may have helped them? Are there any sounds you like but others/elders do not?	Sensitivity to the old and physically challenged; Introduction to the sense of hearing and sight; sensitization to the fact that the body ages, also that some children may not hear /see at all or may be partially affected. Basic idea about Braille.	"*Meri bahen sun nahin sakti*' a book by Bharat Vigyan Samiti or any other material on differently abled children.	Reading and discussion; Making different kinds of sounds and expressing likes and dislikes about them.; blindfold act, visiting any local institution that deals with the blind or any other institution.
Questions	**Key Concepts/ Issues**	**Suggested|Resources**	**Suggested Activities**
1.2 PLANTS			
Plants around us How many different kinds of plants do you see around you? What are the differences you notice? What things around you are made of plants?	Exploring children's ideas about a 'plant'. Plant diversity; size, where they grow, shape, colour, aroma, etc.; dependence on plants for everyday life.	Child's daily life experience, observation, information from grandparents/ elders, a sample/picture of a plant which is unusual	Observation of different plants around, compare and classification based on simple characters; Discussion about things made of plants, pencil

Is there a plant in your area that was not there when your grandparents were young? Do you know of some plants which do not grow around you, say things that we eat and not grown around you?	Introduction of new plants/crops and changes observed by elders over time. Plants and the climate/environment.	in the local surroundings.	prints of barks, leaf prints.
Leaves in our lives What different kinds of leaves do you see? Do you use plant leaves to eat on? In what other ways are leaves used? Is there some time of the year when lots of leaves fall to the ground? Are they burnt? Have you seen a compost pit?What leaf motifs do you find on clothes, pots, walls, animals, etc.? Do you decorate your house with leaves on some occasions?	Leaf diversity – colour, shape, texture, aroma, etc. Seasonal shedding of leaves; compost from leaves. Leaf designs/motifs on different objects.	Child's daily life experience, observation, a story on a compost pit.	Observation, collection of different leaves, smelling different plant leaves, discussion, visit to a nearby compost pit, decorating the classroom with leaf motifs. Applying *mehndi* on palms in different designs.
1.3 ANIMALS ***Animals: small and big*** Which are the smallest and the biggest animals you have seen? Which have you only heard about? Which animals have tails? How many legs?	Exploring children's ideas of an 'animal'.	Child's daily life experience, observation, stories/ poems on animals (NBT)	Observation of diversity of animals around you, listing, Discussion about what they eat, were they live relative size of animals they have seen, pictures in books, animals heard about. Drawing pictures of favourite animals.
Some creepy crawlies – and flyers too What different kinds of small crawling animals do you know? Where and from what does each ofthem hide? Which insects can crawl and also fly?	Exploring children's ideas of crawling animals, flyers and insects.	Child's daily life experience, observation, stories/ poems on insects, flyers and crawling animals (NBT)	Observation of ants, flies, spiders, crickets, cockroaches, earth-worms, lizards and other animals. Discussion about them where they live, what they eat,
Questions	**Key Concepts/ Issues**	**Suggested Resources**	**Suggested Activities**
Which ones bite us? Can flies make us ill? Why does a spider make a web?			Insect bites (wasp) etc. Drawing some of them.
Birds Which are the birds you see around your area?	Exploring children's ideas of birds-their	Child's daily life experience,	Drawings of birds; mimicking different

Do they like some trees more than others? What do they eat? Can you recognize birds by their feathers? What are the different sounds they make? Are they saying something to each other? Are there some birds that come from other places? Do you feed any birds or place water for them?	living places, eating habits, common features like feathers and sounds produced by them. Feeding birds.	observation, stories/ poems on birds (NBT)	neck movements and sounds of birds, collecting feathers.
1.4 WORK & PLAY ***Work around me*** What are the different kinds of work done around me? What work does my mother/ father/ brother/ sister etc. do? What work do I do? What work do others do? When I am not working what do I do? When my father/ mother is not working what do they do?	Different occupations, idea of working time and leisure time; work inside and outside homes – gender, age, caste, economic, etc. aspects.	Poem 'Home work' by Shyam Bahadur Namra *Case study*: time chart of the daily routine of a child who does a lot of housework	Draw a daily time-chart for your father, mother and yourself, discussion.
Working children What kind of work was done by children when your grandparents were young? Has that changed today? Who are the children you know who work and go to school/ who work and cannot go to school?	Sensitize children to other children who work at home & outside not as a result of family neglect but more as a systemic cause.Important that all children go to school. A sense of how child labour existed in other countries before all children began to go to good common schools.	Excerpt from story by Charles Dickens. Narrative describing a poor child's/child laborers experience in a common school in another country.	Reading and listening to the story/excerpts. Discussion and narratives about children making firecrackers at Shivkashi., child workers at Dhabas and auto workshops.
Games we play What games do I play? Did my grandparents play the same games? Are these indoor/outdoor?	Leisure; games in school and outside, past and present; for some play is work	Traditional and local games; folk toys	Listing, classifying indoor and outdoor games.
Questions	**Key Concepts/ Issues**	**Suggested Resources**	**Suggested Activities**
2. Food ***Foods from plants and animals*** Which of these is food – red ants, bird's nests, snakes, bananas, goat's milk, etc.? What plants	Appreciation of cultural diversity in food; basic ideas about various	Regional narratives and stories about 'unusual' foods mentioned.	Listing and discussing about food we do or do not eat; tabulating food we take from different

do you eat what parts of the plant? What food do we take from animals?	plant used as food; food from animals.		plants and animals. Observing and drawing different parts of plants eaten.
Cooking What do you eat that is not cooked? What is eatenonly when cooked? How do you cook food? What do you cook it on? What are the different kinds of vessels used for cooking? What are they made of? Is water used in all forms of cooking? Which food is cooked without using water? How?	Food may be eaten raw or cooked - steamed,boiled, baked, fried etc.; Different fuels, types of stoves; Types of vessels used in cooking, different shapes (regional/ traditional), different materials, etc.	Songs/poems on food or lack of food; local knowledge about what is edible; photographs.	Listing raw and cooked food; discussion on cooking methods/ materials, etc; survey to find out the types of fuels/vessels used; drawing various utensils; historical time line tracing what in the kitchen has changed and roughly when.
Eating in the family Dall members of the family eat the same food in your family? Who eats more? Who eats last in your family? Who buys the food and what is bought from the market? Who cooks the food in your family? What do babies have for food? When do babies start eating and what do they eat other than milk?	Different eating practices in the family. Amount of food varying with gender, age, physical activity, etc. Cooking and gender/ caste roles in the family; Food for the baby, significance of milk.	Everyday experience, local knowledge. Poems/ illustrations on gender stereotyping.	Observation and asking adults, discussion. Listing of food items bought from the market/grown at home.
What animals eat Do animals eat the same things? What do different animals eat? Do you feed the animals around you what? What do they take from your house even when not fed?	Food of domestic and wild animals; care of domestic animals.	Stories, cartoons and films.	Observing and listing different animals and their feeding habits,; Discussing food given to animals.; observing animals being fed, keeping food out and observing animals come and feed.

Questions	Key Concepts/ Issues	Suggested Resources	Suggested Activities
3. Shelter ***Houses and houses*** Have you seen - a house on stilts, a tent, a	Some unusual houses, a narrative and a discussion about why such houses are built.	Pictures of different types of houses; easily available materials for model making.	Discussion; observation; Drawing, model making and art work. Creative writing

flat on the tenth floor, a house on wheels or a house on a boat? Do you know anyone living in such houses? Why do people use such houses?	Different types of houses Need for shelter, need for living together		about imagined experiences.
Decorating and cleaning our shelter How do you decorate your shelter? Do you draw designs on your walls/ floor or decorate with leaves/flowers/other objects? How do you keep your house clean? Do you also help in cleaning? Who mops and sweeps it? Where do you throw the garbage? Do you have any problems living in your house during rains, summer or winter? Have you seen houses with sloping roofs? Why are they made sloping?	My house, Houses/ shelters are decorated in different ways in different cultures; Need for shelter to provide protection from heat, cold, rain and problems faced. Need to share housework. Garbage disposal.	Illustrations of designs/ motifs used for decoration of the house.	Draw a picture of your house. Draw the various kinds of designs/motifs used to decorate walls/ floors of houses.
My family and other animals Who all live with you? Which animals live withyou - which are the biggest and the smallest animals living in your house? From where do they get their food? Where in your house do these animals live? Which of them are seen only at night?	Family members; pets and other animals, insects, rodents, etc. Food for the pets and other animals. Some are seen only at night.	Daily life experiences. Cartoons.	Discussion and sharing of experiences and knowledge. Drawings of insects, rodents; pets and other domestic animals.

Questions	**Key Concepts/ Issues**	**Suggested Resources**	**Suggested Activities**
Mapping my neighbourhood How big is your school? What kind of a	Neighbourhood, mapping and	Survey of different parts of the school,	Estimating distances, marking location of

building is it? Can you draw a picture of your school and your classroom ? Do you know your way around your neighbor-hood? Can we explain to someone how to reach the post office or the bus stand from our house?	representation in two dimensions. Directions.	survey of the neighbourhood	places and drawing/ mapping from different perspectives, like from the top, from the front etc, Draw a map of the route from our house to the nearest shop.
4. Water			
Water for my family What are the main sources of water in your locality? Who fetches the water and from how far? Do all the people in your locality use the same source of water? Are some people not allowed to take water from where you take it? From where do you get water? Does it look clean enough for drinking?	Local sources of water; uses of water; gender roles; distance estimates; social discrimination; clean water for drinking	Child's daily life experience, local knowledge	Listing the sources of water, Exploring by asking questions from elders or people around, Discussion.
Do animals and plants need water? What happens if plants and animals do not get water – how do you see that a plant or animal is thirsty? Do all animals/ plants need the same amount of water? Which plants/animals need the least?	Water for plants and animals.	Library resource-brief information about the camel, cactus along with their pictures.	Reading, Discussion; Comparison of a well watered and a wilting plant.
Water shortage When is it difficult to get water? Are there some people in your area who always face water shortage? What would happen if we had no water? Have you seen water being wasted – how? How can we avoid it? Do you reuse water?	Water scarcity, wastage and recycling, water harvesting.	Newspaper clippings about water shortage/ water being wasted.	Poster making/ writing activity in groups with a message of saving water.
Questions	**Key Concepts/ Issues**	**Suggested Resources**	**Suggested Activities**
Water in our lives Which of your daily activities use water? Do	Use of water in different activities; cultural expressions	Library resources, observations related to	Enacting different activities that utilise water/ a rainy day,

you and others you know wash your hands and feet before you enter the house? Why do you think this is done? Can you describe the scene of a rainy day – with details about birds, animals, plants and yourself.	about water/ rain/ rivers; observations related to rain and the response of plants and animals.	daily life. Songs about water/river/rain?	listing the activities in which water is used, singing rain/river/ water songs/poems together in the class.
Storing water How do you store water in your home? Do you collect rainwater - how? How much water do you store every day? About how much do you use for drinking or bathing? In what kinds of containers do you store water for drinking/ washing/or for animals? What are the containers made of? If the water is at the same level in a narrow and a broad container does it mean they contain the same amount of water?	Measurement of volume in terms of non-standard units such as buckets, pots, etc. Estimates of quantities used for different domestic activities; safe handling of water. Containers made of different shapes and materials to store water for different purposes; Conceptual development of conservation of volume.	Child's daily life experience, bottles of different shapes/sizes/ materials; Panchtantra story.	Drawings of different containers. Measurement activities; demonstration to help the understanding of conservation of volume. Touching different containers and discussing about their material.
5. Travel ***Going places*** Has your family traveled together to another place? Where and what for? How did you go? How long did it take? How far did your grandparents (or other elderly persons) travel when they were young? How did people travel in those times? How do people travel today in the desert, hilly areas, on sea, etc.	Need for travel, travel within the locality and beyond; travel to different social spaces – forest, village, city, etc.; travel for migration, sight-seeing, family occasions.	Story of a journey along the river, mountain, etc.	Reading and Discussion, Drawing a village / sea/ forest /mountain scene.
Questions ***Ways to travel***	**Key Concepts/ Issues**	**Suggested Resources** Pictures of modes of transport;	**Suggested Activities** Collect pictures of different modes of

How do we go to school? How do we travel to other places? How many different ways have we travelled? How many different ways of travel do we know of? Have you been to a railway station? What all do you seen there? Who are the people who work at the station and on the train? How did people travel in the past?	Different modes of transport; short distance, long distance, newer ways of traveling. Different kinds of workers associated with railways/station.		transport; classify them into different types of transport; enact a train journey/railway station, Observations of activities at the station like loading, weighing, washing trains, signaling, selling tea, level crossing, etc
Talking without speaking If I cannot speak, how do I tell people what I want to say?	Communication without speaking, Use of sign language, dance mudra's.	Sign language, dance mudra's.	Playing dumb charades, enacting situations without speaking, learning sign language, practicingmudra's.
Mailing a letter What happens when I post a letter? How does it reach my friend? Who are the people who help to do this? Are there any other ways of sending a message? How was a letter sent in the past?	Letter as a means of communication, work and people associated with the post office; different means of communication, changes with time.	Local post office, different samples of letters- inland, post card, greeting card, etc. Discussion with workers at the post office.	Trip to local post office, Observing sorting, stamping, weighing etc.
6. Things we Make and Do *Pottery* What kinds of pots do we see around us? What containers are used to store grain? What kinds of containers did people make long, long back with rings of clay- when they did not have a potter's wheel? Can you make such pots and dry them in the sun – how long do you think these will last? How does the potter bake them?	To meet basic needs human beings make things; need natural resources, creativity; have changed the way we live. An idea of the earliest pots made for storage of grain – when there was no potters wheel. The experience of making such pots with clay; drying and the need to bake them for greater strength.	Narratives and illustrations of pots and containers made in early times – with rings of clay (e.g., Social Studies book by Eklavya).	Making pots of clay; also with rings; with different types of clay; drying in the sun; talking to potters or brick makers to find out how these are burnt/ baked in furnaces. Making different ornaments etc. with clay.
Textiles	Diversity in types of clothing we were; even with unstitched	The idea of different styles of dress; traditional unstitched	Activity to wear/drape a dupatta or long cloth in different styles to

In how many different ways can you wear a long cloth that is not stitched? How many kinds of sarees or lungis have you seen worn by people from different parts of the country? How many different colours do we know of – how many new ones can we create? What are fast colours and what problems do we face when colours run? How do we make our own vegetable block prints and tie and dye?	clothing. Colours and design are used in textiles; scope for creativity; vegetable dyes.	clothing and different styles of draping it. Some idea of mixing colours to make new ones; fast colours and colours that run; tie and dye; block printing and making our own blocks with vegetables.Samples of blocks, dyes.	emulate what different people do and also to create their own designs. Play with colours and colour mixing;Using dyes to dye cloth; making blocks with potato or ladies fingers for printing on paper.

CLASS IV - ENVIRONMENTAL STUDIES

Questions	Key Concepts/ Issues	Suggested Resources	Suggested Activities
1. Family and Friends **1.1RELATIONSHIPS** ***Your mother as a child*** When your mother was your age, who were the relatives she lived with?	Change with time in people residing together. Family tree today.	Discussion with mother, grandparents and other relatives.	Asking questions from mother about her childhood.
Where do babies come from? Have you seen a new-born baby? Where did she come from? Where does the puppy/ kitten/ calf/ chick come from? Do you know of people who are looking after/ have adopted a child?	From the mother's body; mother-child relationship; Foster parents and adoption	*Kya tum meri amma ho*? (NBT story)	Story telling and discussion.
My extended family Are there things you learn from your family members? What? Do you do anything different from other members of your family? Do all your family members live with you all the time? When do you meet members of your family who do not live with you? What festivals do you celebrate together?	Family as a micro-cosm; (Family values – gender, earning capacity, decision making, caste, religion perceptions etc.); changes in family value system lead to changes in society; Festivals and family gatherings	Family members, family photographs,	Discussion on family values, habits within family; discussion on family occasions.

Feeling around with eyes shut With your eyes and ears closed can you identify the people/animals living with you merely by touching/smelling? By touching can you tell if anything is cold/hot, wet/ dry, smooth/rough, sticky/slippery, soft/hard? Are there some things which you are not allowed to touch? Do you feel uncomfortable when some people touch you?	Sensitivity to people who are differently abled; Senses of smell and touch;, emotional response to a caress/slap; 'good' and 'bad' touch.	Child's daily life experience, observation; narratives related to smell and touch; materials for games and activities.	Guessing game: Group activity where children touch different things with their eyes shut.
1. 2 Work and play ***Fun and fights at play!*** Do you play the same games at school that you play at home? What things do you use to play with? Does the school provide these? Do you fight while you play? How do you decide the rules for the games? Does anyone stop you from playing? Who and why? Do you play with every child (boys and girls) in your neighbourhood? Are you stopped from playing with certain children?	Different games at home and school. Play as a way of social negotiation; rules of each game; fights and the need to negotiate – ideas of fair play. Restrictions on play; playmates from children of different gender or class/caste backgrounds.	Tom Sawyer – story 'Whitewashing The Fence' or any other story on 'work' and 'play'.	Discussing and planning rules for local games and playing together in groups; writing them down.
How they learnt their skills In your area do you know the people who do the following: make pots/stitch clothes/ make shoes/cure people/ build bridges/ embroider/fly planes/ repair cycles/ drive buses, etc? How well do you know them – their names, family etc? What tools do they use for their work? Where did they learn how to do these things?	Different occupations in the local region/ country; who does what work. Gender and work.	Local crafts persons and other professionals	Drawing people with their professional tools; talking to some people and describe how they learnt their skills

Fun at the fair/Circus			
Have you been to a fair or a circus? Which is the item you liked best – was it a ride, a game, something you saw/ate/bought? When do you fly kites? How do you make them fly?	Ways of recreation.	Circus/fair, a poem on *Mela*.	Kite-making and kiteflying activity in groups, making tops, writing a paragraph about an experience in a fair/circus.
1.3 Animals			
Animals and their friends			
Which animals like to move around in groups? Which animals are shy and do not come near you? Have you seen animals playing with or riding on different animals?	Herds; group behaviour; animal-human interaction.	Observation, child's daily life experience, story on animals moving in groups, visuals	
Who is attracted to flowers?			
Why do bees/butterflies come to flowers? How do people collect the honey from bee hives?	Honey from flowers; bee hive and basic idea of honey collection.	Film; description Illustrated narratives/discussion with beekeepers on the process of honey collection.	Observation of flowers and the insects that visit them, drawing the flowers, insects,; discussion on colour, fragrance.
Long ears or short?			
Which animals have ears? Which animals have hair on their body?	Some animals have external ears. They also have hair.	Child's observation, information/description and illustrationsabout animals.	Listing and classification of animals with and without ears; with and without hair; drawing them; feeling them.
1.4 PLANTS			
Roots of plants			
Do all plants need water to grow? Which part of the plant absorbs water from the soil? When you tug at grass, why does it not come out easily? Why do plants/trees not get uprooted when there is a strong wind? Which roots are eaten by people during famine when nothing else grows?	Plants need water; roots absorb water and hold it to the ground. Roots eaten normally by people like carrots, radish, sweet potato, and during famine. Aerial roots of some plants	Child's observation, information about the roots eaten by people; pictures/specimens of roots.	Observation, collection, drawing of roots of different types, Observing trees/plants whose roots are affected by activities like construction/paving/ plastering. Observation and discussion about swinging on *pipal/bargad* aerial roots.

Flowers			
Which plants around us have flowers? Do they come only at some times of the year? How is the bud different from theflower? What are the different kinds of flowers we have seen – shapes, colours, petals, aroma, etc? What do we use flowers for? Do you eat any flower? Have you seen flowers motif painted on clothes, walls, floors, pots, animals? Who sells flowers in our area? Where do these come from? How are flowers sold - for how much?	Flowering plants; seasons; observation of buds blossoming into flowers; different shapes, colours, petals, aroma, etc. Flowers used in everyday life, festivals, etc. Floral motifs and designs on clothes, animals, pots, walls, etc. Knowing the local flower seller; some idea of the local unit of measurement (by cubit, fixed garland, each stem, etc.) and cost.	Child's, observation, stories/ poems about flowers, a visit to a garden. Talking to flower seller, gardener, etc.	Drawing flower motifs for clothes, animals, pots, etc. Making floral decorations; Observing the flowers and buds, noting similarities and differences; observing /smelling and feeling different flowers.
Whom do trees belong to?			
Which plants/trees around you are looked after by people – by whom?Which are not? Whom do they belong to? Who eats the fruit of trees that grow wild?	Neighbourhood and its plants; wild and domestic plants; Fruits eaten by people living in forests. Cutting trees.	Local knowledge, information about domestic and wild plants (NBT books)	Listing of some common trees in the neighbourhood; discussion about ownership of trees; fruits that are not eaten by us.
2. **FOOD**			
How we get our food			
How does food reach us? Who grows it? How you seen vegetables and fruits growing? How you seen plants of rice/ wheat/ dal etc? What are the spices do you know? Which spices can we recognize by smelling or tasting.	From field to mandi from market to house; grown by farmers; fruit trees, vegetables, cereals, pulses, oil seeds; Spices	Discussion with a vegetable seller/retailer in the mandi, / truck driver who transports food items.	Listing plants children know that provide them food; bringing samples; common spices, observing and drawing samples, recognizing them by smell and taste.
Special occasions	Community eating;		
When do many people eat together? What food is eaten? Who cooks it? How is it served? Does you get a mid day meal meal in school? What items? Who provides the mid day meal?	Midday meal (where applicable). Cultural diversity in foods associated with special occasions like festivals, family celebrations/ ceremonies etc. Boarding school.	Visit to a langar/such occasions, talking to people who cook on such occasions. Narratives about hostel food/pantry car of train.	Discussion on occasions at which there is community eating; Listing of the different foods eaten at different occasions; drawing and descriptions of the large utensil used on such occasions

Tongue and Teeth How do we taste different foods? How do teeth help us to eat – are all teeth similar? Which teeth have I dropped and how are the new ones different?	Taste, tongue; teeth – types, milk teeth, permanent teeth. Tongue and speech.	Samples of different food items; peer observations; pictures or models of teeth.	Observation of each other's teeth, tongue and mouth; counting teeth; drawing; experiments with different tasting items.
Teeth, beaks and claws Are the teeth of other animals similar to ours? Can we tell what birds eat by looking at their beaks? Are the claws of birds also different? Is their shape related to the food they eat?	Teeth in some common animals; beaks and claws of birds – relationship with food they eat.	Visit to observe some animals; personal experiences; Visuals; (NBT books on birds.)	Observation and drawings of beaks, claws and teeth of different animals, birds, etc.
3. SHELTER ***Houses then and now*** Do you live in houses similar to ones your grandparents lived in? Are houses now made of similar materials as wasused then? What are the differences?	House change over time; rural and urban differences, multi-storeyed houses along with slums in cities. Materials used have changed.	Discussion with elders in the family. Visit to any old building in the area; changes in the construction of houses with time; houses in villages and cities.	Making models of houses; collection of materials used to make houses. Drawing pictures of old and new buildings.
Garbage? What do you do with waste in your house? Where do you throw it? Do you reuse any waste materials? Who takes away the garbage?	Waste materials, waste in our houses, urban/rural waste. Reduce garbage.	Newspaper articles and advertisements on waste/ garbage.	Listing things thrown away as garbage, waste. Discussion on reduction of waste.
Where animals live Do animals live in shelters? Which animals live in water? On land? Underground? Are there any animals that we see only at night? Where do they go during the day? Do we know of animals that make their own shelter?	Diversity in animal habitat and shelters. Some structures like webs have other purposes.	Stories/pictures of habitats and shelters animals use or make.	Discussion, listing of animals with respect to their habitat and shelter.; making birds nests with scrap materials, making caves, rat holes etc in mud/sand pits.
When birds make nests When and why do birds make their shelter? Do all birds make nests? Where do different birds nest when do they fly away? With what	Birds make nests for laying eggs. Nesting habits of different birds vary. Different materials are used for nests.	Child's observation; visuals; nest of any bird.	Observation of a bird's nest and drawing pictures. Songs and poems; dance and movement to simulate bird flight.

different materials do birds make their nests?			
Mapping our neighbourhood Who are my neighbors? Do I have any of thefollowing near my house – a school, grocery shop, market, well, river or pond? Where are they with respect to your house?	Introduction to the concept of givingdirections with respect to any landmark; also a preliminary mapping process, further use of use of symbols, use of a scale.	Child's experiences, enquiry, observation and previous knowledge of routes. Local map /chart of the school and its neighbourhood.	Discussion, enquiry from friends and neighbours; counting number of steps and estimation of distance for making a preliminary map.
4. WATER ***Water fit for drinking*** What are the major natural sources of water in your area? Is the water fit for drinking – do you clean it at home? Do you know how dirty water can make you ill? Why do we not drink seawater? How is salt separated from seawater?	Natural sources; inland water and sea water; potable water; diarrhoea and other common water borne diseases, safe handling of water, purification of water.	Health personnel of the local area, library resource.	Discussion with the elders/health personnel about pollution of natural sources of water and its effects; demonstration/ group activity of simple methods of water purification; separation of salt from saline water.
Water sources Where do you see large amounts of water in your neighborhood? Is it a tank/pond/canal/river/ dam? What do men/ women/children/ animals do with the water there? Is it used for bathing/washing? Who bathes/washes there and who does not? How can we ensure that this water is not made dirty? Do you find factories/ people dumping garbage or harmful materials inrivers or seas? Are some animals also facing problems due to what we do to the rivers or seas?	Reservoirs, canals, dams etc.; Different public activities at water bodies; protection of water bodies. Water as a scarce resource and the struggle for acquiring it (those who can exploit resources by digging deeper and deeper wells).	Film, photographs of dams/canals/tanks/ ponds etc., local knowledge. Narrative on the recent struggle of the panchayat's against Coke in Plachimada, Kerala.	Visit to the natural sources of water in the local area and observing what uses the water is put to. Discussion, and writing letters/making posters highlighting the misuse of the water body.

Our river/sea Which is the river closest to our locality? Do we find any change in the water flow in different seasons?Which are the big rivers we know of? Have you seen the sea? Which are the animals found in the sea/river?	Rivers and seas; seasonal change in water flow; animals in the sea/river. Water pollution and harmful effects on animals.	Local knowledge, Story on the lines of the SCERT, Delhi Class VI Civics – lesson called Yamuna.	Drawing/Painting/Make a model of a water body in the neighbourhood (using scrap materials) as well as the animals found in the river/sea.
Water vanishes when heated? Why do puddles dry? In which season do wet clothes dry easily? When do they dry with difficulty? Have you seen & wondered where water droplets on the outside of a cold glass of water came from?	Basic processes of evaporation and condensation	Child's daily observations and class room discussions.	Activity on water drying up from a wet cloth or dish of water in different conditions such as sunlight and shade.
5. TRAVEL ***Animals for transport*** Have you traveled on a tonga / horse carriage? How is it different from travelling on a bus? Are the horses well looked after?Have you seen a horseshoe?Why is it used? What materials have you seen being transported using animals?Are there any special occasions when you ride on animals?	Use of animals for transport; sensitivity towards animals.	Personal experience of travel; songs about travel by tonga, etc.	Enacting instances of animals used for transport and people riding them.
Paying for travel How do pay for our travel by train/bus/boat etc? Who issues/checks the bus /rail ticket? Which currency notes & coins have you seen? Pictures of which animals can we see on a 10 rupee note? Which symbol is found on every coin? How many scripts can you recog-nise on a note?	Familiarity with currency notes & coins, national symbols, recognizing some language scripts; Introduction to Mahatma Gandhi. Old coins, change.	Coins and currency notes; railway and bus tickets. Old coins/Pictures of old coins; visit toa museum.	Enactment of a bus journey. Comparison of coins and currency notes; /Tracing of coins. Designing a school emblem/logo.

Which person's face is shown on every currency note?What coins/notes did our grandparents use in their youth?			
Travel to another place Do you know anyone who has traveled very far from your village/city? Why did they go so far? What are they doing there? How do they travel when they visit your family?	Different land forms, languages, clothing, food habits, some idea of another country (only through a story/imaginary narrative).	Travelogue describing the place they have come from; description of a train/ship/plane journey.	Reading and listening, discussion, writing about a traveling experience of oneself or visiting relatives.
6. Things We Make And Do ***Building materials and tools*** How are bricks made? What tools have you seen being used for making a wall or a house? Is there a bridge to cross while coming to school? What kinds of bridges have we seen and where? How many kinds of bridges can we make?	Process of making involves raw materials, tools, labour, energy– changes over time in these and in environment too. Materials and tools used for construction; Different skills of people at engaged in a construction activity.	Narratives and pictures of different bridges children cross, on the lines of the book – Going to school in India (by Lisa Heydlauff Penguin); of the process of construction, use of tools and materials. Observationof different bridges; making bridges.	Making bricks; drawing and talking about different tools. Observing, drawing and describing different bridges and how people make their own local bridges from ropes, bamboo and logs of wood. Making toy bridges in school.

CLASS V − ENVIRONMENTAL STUDIES

Questions	Key Concepts/ Issues	Suggested Resources	Suggested Activities
1. Family and Friends 1.1 RELATIONSHIPS*Family tree* Can you make a family tree with as many of your relatives you can get information about? Who are the relatives whom you have never seen? Where do they live?	Family in transition – Impact of larger socioeconomic forces are changing family structure and quality of life in families; Idea about several generations; how some people move away, some continue to live together, and how households get formed/ reformed at several places. How	A story woven around a family tree with old family photographs.	Activity - Write the names of all your family members along with their ages. How many generations have you been able to get details about?

	these are affecting roles, relationships, value systems, aspirations within a family.		
Shifting from place to place Have you always lived at the place that you now live in? If not, where does your family come from?	Shifts in habitationmigration/transfers/ demolition displacement. Associated difficulties.	Story of a migrating family or a family displaced by the construction of a dam or demolition of an urban slum.	Discussion or letter writing; drawing.
Who laughs the loudest? Who is the tallest/shortest in the family? Who has the longest hair? How long? Who has the loudestvoice/laugh in the house? From how far away can you hear it? Who speaks the softest? When does a child cry the loudest? When she is hungry-or angry? Who is the best cook in the family?	Basic ideas of measurement - of height; Observing and appreciating qualities andskills of relatives; observing infants.	Cartoons; narratives.	Mimicking people in the family – laugh and voices; drawing people in the family. Working exercises about an infant they have observed.
Our likes and dislikes Which is your favourite colour? Which is your friend's favourite colour? Which is your favourite food? What about your friends favourite food? Do you know your friends' likes and dislikes? Are there any smells you don't like (fish, mustard oils, garlic, eggs etc) ? Do you eat fish?	Our bodies, our senses, our likes/ dislikes vary e.g. our concept of foul/ fragrant smell *Cultural influences of taste, smell, etc(to be discussed without stereotyping).*	Narratives about preferences in taste, smells, colours in different cultural context.	Observation, discussion, describing and writing about a friend's likes/ dislikes; a class survey about children's favourite colour/food etc.
Feeling to read Do you know how people read with their hands? Do you know someone who finds it difficult to walk/speak/see etc.? How do you think they learn to overcome the problem?	Awareness and sensitisation towards the problems of physically challenged;	Autobiography of Helen Keller; excerpt from her teacher's account of how she learnt; Braille sheet.	Activity with Braille paper (or simulated Braille paper).
1.2 WORK & PLAY ***Team games – your heroes*** Do you play any games inteams? Have you ever	Types of games/sports, importance of team spirit in games, gender	Library resources-Indian cricket team; narrative about some	Collecting information, making picture albums ;

been captain of the team? Do boys and girls play together? Have you heard of any Indian team playing in another country? Which is your favourite team sport? Do you know any National level player?	stereotyping. Some idea of other countries and national teams. Gender, class stereotyping in play.	national and international players.	posters of sports person
Local games/martial arts			
What are the local games/ martial arts of your area? Do you know someone who is good at them? Have you seen a young acrobat or wrestler practicing? Who taught them? For how long have they learnt the art/game? What are the new games in your area that were not played earlier?	Local and traditional martial art forms/games. Typical practice routines; teachers/gurus; changing patterns of local games.	Description or photographs of traditional martial arts, 'Nat', acrobat, boat race, etc.	Reading, discussion, collecting information and writing about local/ martial games.
What do you do in the evenings for leisure? What if there is no TV? Who decides what programmes to watch?	Changing nature of leisure.		
Blow hot blow cold			
How many times do you breathe in a minute – on sitting still, just after a run? How much can you expand your chest by breathingdeeply? Can you make a glass cloudy by blowing on it? How do you blow to make something cold? Do you also blow to keep a fire going?	Our breathing – estimates of different rates; chest expansion and contraction in the child's body while exhaling and inhaling; Mybreath – hot and humid; tacit understanding of cooling by blowing and helping a fire to burn.	Story by Zakir Hussain – "***Usee se thanda usee se garam***" – Zubaan books.	Observation, , activity of breathing in and out and observing the difference (mirror/glass/on palm); measuring chest; counting heart beat and breathing rate , making and using a stethoscope
Clean work – dirty work?			
Can you list ten different types of work that people do for you. In this list what work is seen as dirty and what is seen as clean? What would happen if there were no one to clean our streets/our home/clear the garbage?	Dignity of Labour Dependence of society on such essential services. Choice of work as a societal value.	Extract from Gandhi's autobiography; narrative from another country sweepers treated with dignity; story of a Valmiki boy discriminated in school because of parents' occupation.	Reading and discussion based on suggested resources.
1.3 ANIMALS ***How animals find their food?***			
If you leave some food outside your house do some	Sense organs; Comparison with	Information about animals' senses and	Observation of animals to study their response

animals take it away? How do they find it? Do these animals also hear/speak/ see/smell/ eat/ sleep?	humans – activities such as eating sleeping etc.	other functions. Narratives about animals such as ants, bees, dogs, birds, snakes etc giving ideas about their senses.	sound, food, light and other stimuli.
What we take from animals? What animal products do we use for clothing, shelter, etc.?	Animal products used by us.	Child's daily life experience, information about products we obtain from animals.	Listing and drawing of items made from animal products.
Why is the tiger in danger? Why do people kill wild animals? Which are the animals that are poached?	Protection of wild life; selling of animal parts.	Excerpt from 'Man Eaters of Kumaon' by Corbet.	Discussion, reading, poster making activity with a message to save wild life.
People who depend on animals Do you know people who catch/trap/hunt/ entertain using animals? Have you seen how snake charmers/gujjars depend on animals? What do you understand by cruelty to animals? Do you think a snake charmer is cruel to the snake? Have you seen scenes of hunting in rock paintings or on ancient seals?	Communities dependent upon animals; hunters restricted to smaller spaces; changing patterns of wild and domestic animals. To be sensitive about cruelty to animals; realize that people who depend on animals for their livelihood are not necessarily cruel to them. Basic idea of pre-historic hunters and the wild animals seen at that time.	Library resources; illustrations of pre-historic hunting scenes (Bhimbetka). Narrative of gujjars' or snake charmers' relationships with animals.Child's observation; an story/narrative about an animal & its caretaker, e,g,, mahouth/tongawala. Films/pictures of shooting, skins (tiger) of animals.	Discussion on people whose livelihood depend on animals; drawing; Discussion on people teasing/troubling animals at the zoo/other places.
1.4 PLANTS ***Growing plants*** How does a plant grow from a seed? Can you grow a plant without seeds? How do you grow mangoes/potatoes? Where does the seed come from? Have you seen seeds that fly/stick to your clothes/drift in the water?	Seed germination, root and shoot axis, baby plant, storage of food in the seed; seed dispersal.	Seeds, germinated seeds.	Study germination of some seeds, experiment to determine conditions suitable for germination (air and water).
Forests and forest people Have you seen or heard about a forest? How do people live in forests? How is their life threatened by forests being cut? What kinds of foods do they	Tribal life; effects of deforestation; communities dependent on forest products e.g.,	Information about tribal life, communities dependent on forest	Exploring from parents, reading, and discussion.; tracing tree trunks.

collect from the plants there? What leaves are used for eating on? Do your parents remember places with trees/forests where there are none today? Why were the trees cut and what is there today?	'pattals', bamboo products, etc.	produce, effects of deforestation.	
Protected trees Have you heard of a park/sanctuary? Who looks after it? Does anybody own it? Have you seen a place where trees are worshiped or protected by the villagers?	Public/private ownership of trees/forests. Sacred groves; people's movements to protect their forests.	Story of the Chipko Movement and the women's role in protecting trees.	Enactment of Chipko Andolan; poster – 'save trees'; survey and identify any 'green belt' in your neighbourhood.
Plants that have come from far Does tea come from a plant? Where did people first grow tea and what does the plant look like? Does it grow only insome places/climates? What did people drink when there was no tea in India?	Plants from different countries.	Song/poem from Chakmak: "Alu, mirchi, chaiji; Kaun kahan se aye ji" Story about the Chinar tree coming to Kashmir.	Local knowledge, reading, and discussion, reciting the poem together; making tea.
2. Food ***When food gets spoilt*** How does food spoil? How do we know that food is spoilt? Which food spoil sooner than others? What can we do to prevent food from getting spoilt? What do we do to keep it fresh during travel? Why do we need to preserve food? Do you leave food in your plate?	Spoilage and wastage of food. Preservation of food, drying and pickling.	Sharing family experiences Interaction with a person involved with food production/preservation.	Keep some bread, other food for a few days – see how they spoil.
Who produces the food we eat? Do you know of different kinds of farmers? Do all farmers own their land? How do farmers get the seeds they plant every year? What else besides seeds is required for a crop to grow?	On different types of farmers. Hardships faced by subsistence farming, including seasonal migration. Need for irrigation, fertilizers.	Farmers' narratives Could take one example from Punjab and the other from AP. Story of a child missing school because of his/her family's seasonal migration. Family members. Visit to a farm.	Study germination of seeds, experiment to determine conditions suitable for germination; Observations in any farm.

What did people grow earlier?		Information on food from different places.	
Did your grandparents or any elderly person eat thesame food you eat today? Do all of us eat the same kind of food? Why do we eat different kinds of food?	Changing food habits, changing crops grown insome areas. Different food habits in different places/cultures.		Collection of samples or pictures of food from different places/cultures.
When people do not get food		Print material on different calamities; Narrative of the Bengal famine as a man-made calamity; TV news bulletins etc.	Collection of pictures related to natural calmities; discussion on affects.
Do you know of times when many people do not get enough food to eat? Have you seen where extra grain is stored? How do you know when you are hungry? Do you know of people who get ill because they do not have enough to eat?	Hunger, famine (as both a natural and man-made phenomenon); grain being spoilt in storage; nutrition deficiency diseases.		
Our mouth – tastes and even digests food!			
How do we taste food? What happens in the mouth to the food we eat? Why do we give glucose to patients? What is glucose?	Tasting food; chappati/ rice becomes sweeter on chewing; digestion begins in the mouth; glucose is a sugar.	Child's experience; some samples of food items; story of someone on a glucose drip.	Tasting activity, action of saliva on rice/chappati.
Food for plants?		Pictures/visuals of insectivorous plants.	
What do plants need for food? Do you know of any plants that eat insects? What do animals eat? Do all animals eat the same food? Do animals eat other animals?	Water, manure, air for plants; Insectivorous plants e.g. pitcher plant, Venus fly trap; basic idea of food chain/web.		Observations and discussion on food for plants; making amodel of a food chain/web.
3. Shelter			
Why different houses		Different houses in different climates and regions.	
Why do you have different kind of houses in different places? Different houses in the same place?	Variation in shelter: regional difference, difference due to climate and materials available, economic status, etc.		Making models of houses; collection of materials used to make houses in different places.
A shelter for everyone?		Pictures of villages, colonies etc.	
Does everyone have a shelter to live in? Why do people live together in villages, hamlets, colonies, neighborhoods?	Need for living close to others, the idea of neighbourhoods. Need for sharing resources		Write and draw the area you live in, find out about people who work for everybody.

	and spaces, division of spaces.		
Ants live in colonies? Do you know how bees/ ants live together in colonies?	Ant or bee colony, social behaviour in insects.	A case study of social organisation in bees/ants.	Observations and drawings of ant colonies, different types of ants.
Times of emergency Have you heard of houses being damaged by floods/earthquakes/ cyclones/fires/storms/ lightening? What would it have felt like? Who are the people who come to help? What can you do to help others before the doctor comes? Where can we look for help at such times? Who runs such institutions?	Disaster and trauma of losing one's home; community help; Hospitals, police stations, ambulance, shelters, fire station, first aid.	Newspaper clippings.	Discussion, finding out about the hospital, police station, fire station, etc.
4. Water ***Water from where in earlier times?*** From where and how far did your grandparents get water? How far do you have to go for water? What are underground wells/'baolis'? Do you still see them being used? Have you seen a 'piaao'?	Estimates of distance measurement; changes in sources and water availability over time; community service especially for longdistance travellers.	Illustrations, story of a 'baoli'/stepwell	Enquiry from grand-parents/ other elders; drawing, model making of a step well.
Water flow From where do farmers get water to grow crops? Do all crops need the same amount of water? Have you seen water flowing upwards? What are the different ways in which you have seen water being lifted? How is flowing water used to grind grain?	Sources for irrigation; different quantities of water for different crops; Different methods of lifting water; the use of a waterwheel.	Farmer/any local person who works in fields, a plant/crop.	Interaction with a farmer, visit to a field, making water wheel., activity with water wheel.
Plants and animals in water What kinds of animals and plants live in water? Are there weeds that are covering your pond/ lake/	Animals and plant life in water; classification in terms of similarities and differences.	Weeds of different kinds; pictures of plants and animals	Listing and classification; drawing of water body.

river? Can you classify all the animals you see around you to show which ones live in water and which live on land?		living in different habitats.	
What floats, sinks or mixes?			
Have you ever seen anything floating in water? Can you classify as many things around you to see which float, which sink and which mix with water? Does oil mix with water? What are the similarities and differences in water, oil, milk, cold drink, etc.? How do we measure these?	Basic observations and classification related to floatation and solubility in water; oil and water are liquids that do not mix; basic concepts about liquids; litre as unit of measurement of volume.	Various materials to experiment with, such as, sugar, stone, oil, salt, sand etc. Story of the donkey and the salt/cotton bag.	Hands-on activity to observe solubility in water, floatation; discussion, interpretation.
Mosquitoes and malaria			
Is their any stagnant water in your locality? Do you find more mosquitoes in stagnant water? Is there any way to reduce the mosquitoes in water? Have you heard of malaria? In what season do you find more people getting ill with malaria?	Stagnant and flowing water; mosquitoes and malaria.	Health worker or a doctor. Newspaper articles on malaria etc.	Interaction with a community doctor; observation of site of stagnant/flowing water.
5. Travel			
Petrol or diesel			
Do all vehicles need petrol to run on? What other fuels do you know that are used for vehicles? What do trains run on? In the past what did they runon? What do tractors use as fuel? For what other purposes are petrol and diesel used? Find out the cost of a litre of petrol/diesel in your area?	Fuels used in vehicles; Fuel is costly. Non renewable source.	Poems and songs about trains/cars etc.; Enquiry from adults; the story of ‘petrol’.	Discussion, finding out different fuels used, comparison of cost of petrol and diesel.

Do all vehicles run an equal distance on a litre of fuel?			
Rough and tough Have you seen or been to a mountain? How and why do you think people make such difficult trips? How do you think they train for it?	Mountains, expeditions and the spirit of adventure; some idea of training for high altitude; national flag.	Excerpt from the autobiography of Bachendri Pal; Flag of India atop mount Everest; flags of some countries	Act/dance to show climbing on a difficult mountain; Designing a flag for your school; identifying some other flags
Ride on a spacecraft What all do you see in the sky – at day time? And at night? How many of the things you see in the sky are man-made? Have you heard of people traveling in a space craft?	The sky in the day and night. Basic exposure to the aerial view of the earth and what India looks like from there.	Story of Rakesh Sharma/ Kalpana Chawla.	Observation from a terrace to draw its aerial view. Imagine yourself in a spacecraft giving an interview to the PM about what you see from there!
Oldest buildings Is there any well-known monument/historical place in your area that people come to visit? What are the oldest buildings around your area? Have you traveled far to see any historical monuments?Have you heard of those personalities who lived in these monuments or who built these?	Heritage buildings as a source of knowledge about our past; to be able to understand how they were built; materials usedcome from a variety of places, skills of the crafts person; Somehistorical personalities.	Oral narratives from people; pictures.	Drawing pictures of the building or the monument in your neighbourhood or memory or imagination.
6. Things we Make & Do ***Growing Food*** How do we grow food? What tools do we use for preparing the field? For cutting and harvesting? For cutting and cooking different vegetables/ dishes? How do we water the crops? How do we lift water through a pump or a waterwheel? Can we make a water wheel, sprinkler, etc.?	After basic needs met, exploration leading to improving and overcoming human limitations; greater expression of creativity; overuse of natural resources needs to be checked. Some idea of the story of a grain from the field to our plate – in terms of processes and the tools used. Different things made from the same grain, say, wheat/rice. Simple observations of	Narratives; talking to elders, farmers, those involved in growing and cooking food. '*Dump se pump*' by Arvind Gupta.	Observing and talking about processes of growing food; drawing tools used in different processes; finding out about different dishes made from the same grain, say, wheat/rice. Making a simple waterwheel, sprinkler, pump.

water lifting in fields or in homes; making of a water wheel, sprinkler, etc.

Health & Physical Education

Overall Objectives of Health and Physical Education:

1 To develop awareness regarding the importance of physical fitness in individual and social life including Life Skills.
2 To bring the overall awareness of values with regard to personal health and fitness, and to inculcate among students the desired habits and attitudes towards health to raise their health status.
3 To make the pupils physically, mentally and emotionally fit and to develop such personal and social qualities that will help them to be good human beings.
4 To take action individually and collectively to protect and promote :
(i) own health
(ii) health of family members: and (iii) health of the surrounding community and seeking help when required from available community resources.
5 To develop interest in exercise, sports and games for self-satisfaction and make it a part of life;
6 To enable an individual to enhance inner qualities - self-mastery, discipline, courage, confidence and efficiency.
7 To enable an individual to display a sense of responsibility, patriotism, self-sacrifice and service to the community
8 To develop awareness of the importance of self-defence.
9 To create awareness among children about rules of safety in appropriate hazardous situations to avoid accidents and injuries. To acquaint them with first-aid measures about common sickness and injuries.
10 To help children learn correct postural habits in standing, walking, running, sitting and other basic movements so as to avoid postural defects and physical deformities.
11 To help children grow as responsible citizens by inculcating in them certain social and moral values through games, sports, Red Cross, Scouts and Guides etc.
12 To inculcate values and skills in children in order to promote self-control, concentration, peace and relaxation to avoid the ill effects of stress, strain and fatigue of routine everyday life.
13 To address the physical, psycho-social needs of CWSN (Children with Special Needs) in an integrated fashion.
14 To seek in instilling self-worth thus helping students to become confident, assertive, emotionally stable, independent and self-controlled.
15 To help release of emotional stress, anxiety and tension, leading to a reduced risk of depression.
16 To help strengthen peer relationships, social bonding, buddy mentorship and team camaraderie.
17 To develop more positive attitude towards challenges, winning and losing, thus preparing students for life and for the workplace.

COMPUTER

Objective of teaching Computer

The purpose of computer education is to provide young people with a greater awareness of computers in their lives enabling them to hold an informed opinion of the uses of computers in whatever context they meet them. This may be in their work, domestic life or from reports in newspapers or on television. Computer studies are offered to enhance the interest of student in computer.

To prepares a student for basic knowledge using computer to solve data processing problems in daily life.
It shows an awareness of what the major computer components are and how they act as system;
Develop in them the skill of thinking and analyzing
Inculcate proficiency in reasoning and synthesizing
Make students associate the knowledge in real time application
Imbibe in the student the skill of acquiring knowledge, create knowledge, and share their expertise.
Dig out the latent talents in students
To provide opportunity for the study of modern methods of information processing and its applications;
The purpose of teaching computer in school is to enable student to grasp the basic knowledge needed for further study of computer science related technology and to understand application. As Digital India is a program to prepare India for a knowledge future so it cannot complete without preparing the future of India, our students.