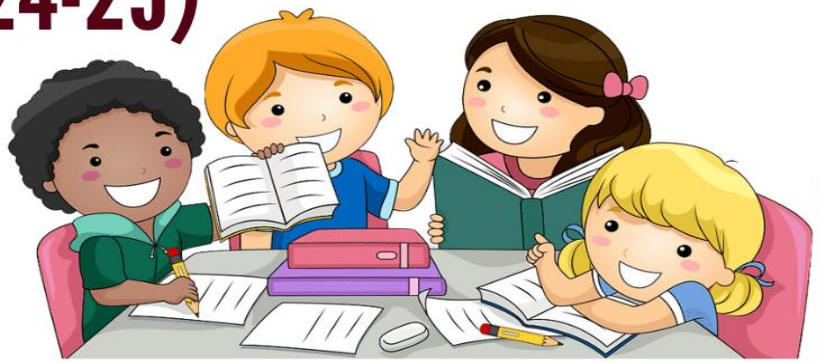
तत् त्वं पूषन् अपावृणु
केन्द्रीय विद्यालय संगठन

KENDRIYA VIDYALAYA SANGATHAN

CHENNAI REGION

Activity Handbook

CLASS IX (2024-25)



KENDRIYA VIDYALAYA SANGATHAN, CHENNAI REGION

ACTIVITY HANDBOOK- CLASS IX

FOREWORD

Teaching has become a challenging job for the teachers at present. The problem of students is that they are losing their interest in studies due to the implementation of monotonous teaching techniques which may ultimately lead to boredom and disinterest in the subject. It is even more important to experiment with activity-oriented learning by making it student-centric and pave way for boredom-free valuable sessions. This activity book serves as a permanent remedy for overcoming such issues which teachers regularly encounter in day-to-day teaching learning transactions. It gives a number of activities that a teacher can do inside the classroom to make the classes interesting and activity oriented. It suggests various activities to promote classroom participation and happy learning to students. It helps ease the tension of the teacher making it an enjoyable task for both the teacher as well as the students. Experimenting with these activities makes the entire learning process less tiring and more interesting. It would also help to train the minds of the students to learn, practice, imbibe and remember the concepts that they study for a longer period of time.

SUBJECT: COMMUNICATIVE ENGLISH

INDEX

A HANDBOOK OF ACTIVITIES /STRATEGIES /ASSESSMENT PLANNED

Lesson (LiteratureReader)	21st Century Skills	Activity	Assessment criteria/Rubrics	Learning Outcomes
1.How I Taught My Grandmother to Read	Critical Thinking and Problem Solving Life Skills	**Diaryentry**: An emotional moment with your grandparents or any elderly person you love (Students will be guided to do this as an individual activity, following a brain storming session where students share their experiences to the whole class) **Survey**: Each One Teach One. Students will teach any two illiterate persons to learn English/ the regional language, the alphabet and to teach them write their names and read and understand small words and sentences.	-Organization -Accuracy -Focus on assigned content -Writing process -Creativity -Content -Purpose -Clarity of questions -Choice of responses	• Writes a diary in the proper format and style. • Expresses ideas coherently and fluently. • Improves life skills- leadership- flexibility- initiative- social skills • Learns from real life experience. • Listens to and discusses inputs in varied contexts to infer, interpret, and appreciate.
2.A Dog Named Duke	Technology Literacy Critical Thinking	**Power Point Presentation** on - 'Service Dogs' - 'Role of Animals in Man's Life.'	elevance to the topic ntent verall presentation	• Expresses ideas coherently and fluently. • Ability to connect the given topic with real life. • Uses technology to express effectively.
3.The Man Who new Too Much	Collaboration Creativity and	**Enact** a situation as an example of 'Showing Off.' (Pair/ Group Activity)	-Dialogue delivery - Co-ordination/ Team work - Pronunciation	• Expresses ideas coherently and fluently. • Ability to present facts to support

	Innovation Skill			the given content.
4.Keeping It From Harold	Critical Thinking and Problem Solving	The students will be shown an audio or video clip on wrestling/ boxing (professional and amateur). **Discussion** on • Whether it is a respectable profession or not. • Dignity of Labour	-Expression of ideas -Deliberation -Critical thinking	• Expresses ideas coherently and fluently. • Relates to real life situations.
5.Best seller	Creativity and Innovation Art Integration	**Collage Work**: The students will make a collage on the books they have enjoyed reading. **Book Review**: (Individual work)	-Design -Content -Presentation -Attention to theme	• Enables to integrate art with the text. • Expresses ideas coherently and fluently. • Writes a book review in proper format and style.
6.The Brook	Creativity and Innovation	**Recitation**: The students will recite the poem in groups. Each student in a group will recite 1 stanza (group activity) - Students are guided to create visual representations of key scenes or images from the poem, either through drawings, collages, or multimedia presentations	-Synchronization -Rhyme and rhythm -Preparedness & practice -Group participation	• Appreciation of rhyme and rhythm. • To appreciate the beauty and visual imagery. • Recites poems with proper stress, pause, tone, and intonation

7.The Road Not ıken	Creativity and Innovation	- **Article Writing** on the road the learners will choose at the end of class ten. -Encourage students to take a **survey** about the road chosen by their school teachers and present it in classroom.	-Content -Organisation - Accuracy and fluency -Purpose -Clarity of questions -Choice of responses-L	• Expressesideas fluently and coherently • Usage of appropriate format and style.
8.The Solitary Reaper	Technology literacy skills Art integration	**Power Point Presentation** on the poem and the poet (group activity)	- Organization of slides -Content -Relevance -Presentation	• Interprets and comprehends the content. • Presents the poem in a different form through technology.
9.The Seven Ages	Creativity and innovation skill Art integration Clay modelling	**Roleplay**: The students are divided into different groups and they will enact the poem (group activity) **Picturerepresentation/ mindmap** on one or all the stages of life (group/ individual activity)	-Dialogue delivery - Co-ordination/ Team work - Pronunciation -Organization -Accuracy of facts -Content -Creativity	• Communicates thoughts, ideas, views and opinions verbally and non-verbally. • Expresses ideas pictorially through art.

10.Oh I wish I'd Looked After me Teeth	Creativity and innovation skill Art integration	**Poster Making**: Design a poster on "Oral hygiene" (Group activity) **Informal Letter** to a friend/ parent from hostel on the positive effect of the poem in aiding improved personal oral health	-Content -Creativity -Presentation	• Expresses ideas pictorially • Improves ideas through creative art. • Expresses ideas coherently and fluently in proper format and style.
11.Song of the Rain	Creativity and innovation skill	Give a **Picture Representation** of the speaker's portrayal of **rain**. **Presentation** of 'Misuse of Nature' and debate 'Man and Nature.'	-Content -Organization - Accuracy and fluency	• Expresses ideas pictorially through art. • Expresses ideas coherently and fluently.
12.Villa for Sale	Collaboration Creativity and Innovation	**Roleplay** (group activity) (Note: Whole class is divided into groups and characters and dialogues assigned)	-Dialogue delivery - Co-ordination/ Team work - Pronunciation	• Participates in role plays • Communicates thoughts, ideas, views and opinions verbally and non-verbally.
13.The Bishop's Candlesticks	Collaboration Creativity and Innovation	**HotSeatactivity**- The class questions a character of the play. The character on Hot Seat must justify his action based on the text or extrapolatory.	-Clarity -Content/knowledge -Creativity -Delivery	• Speaks with coherence and cohesion while participating in interactive tasks. • Communicates thoughts, ideas and opinions fluently and coherently.

SUBJECT: HINDI

गतिविधि पुस्तिका (हिन्दी) कक्षा 9 (क्षितिज भाग 1, कृतिकाभाग-1			
क्रम संख्या	पाठका नाम	पाठ्यपुस्तक	पृष्ठ संख्या
1	दोबैलों की कथा	(क्षितिज भाग -1) गद्य खं	2
2	ल्हासाकी ओर		3
3	उपभोक्तावादकी संस्कृति		4
4	साँवलेसपनों की याद		5
5	प्रेमचाँद के फाटे जूते		6
6	मेरेबचपन के दिन		7
7	सखियाँऔर सबद	(क्षितिज भाग -1)पद्य खंड	8
8	वाख		8
9	सवैये		9
10	कैदीऔर कोकिला		10
11	ग्रामश्री		11
12	मेघआए		11
13	बच्चेकाम पर जा रहे हैं |		12
1	इस जलप्रलय में	कृतिका भाग - 1	13
2	मेरेसंग की औरते		13
3	रीडकी हड्डी		14

क्रमसं.	पाठ कानाम	शीर्षक	सीखने केउद्देश्य	गतिविधियां	सीखने केपरिणाम
1	दो बैलों की कथा (लेखक मुंशी प्रेमचंद)	दो बैलों की कथा	1. मुंशी प्रेमचंद जी के जीवन और उनकी रचनाओं से अवगत करवाना| 2. जीवन में एकता के महत्व को बताना| 3. जीवन में स्वतंत्रता का महत्व और आवश्यकता से परिचय करवाना| 4. जीवन में संघर्ष के महत्व से अवगत करवाना| 5. पशु-पक्षियों और मनुष्य के आपसी प्रेम भाव से अवगत करवाना। 6. जीवन में एक सच्चे मित्र और सच्ची मित्रता के महत्त्व से अवगत करवाना| 7. बच्चों में नारी सम्मान की भावना का विकास करना।	1. लेखक परिचय से अवगत करवाते हुए कहानी को समझाना | 2. नीचे दिए गए विषयों पर कक्षा में लघु नाटक,कहानी आदि का प्रस्तुतीकरण करना| (i) संगठन में शक्ति (ii) सच्ची मित्रता (iii) दो दोस्त 3. छात्रों का उनके पालतू पशु के साथ प्रेमपूर्ण संबंध पर कक्षा में समूह चर्चा करना| 4. अतीत में भारत की आजादी के लिए अपने प्राणों का बलिदान देने वालें स्वतंत्रता सेनानियों के जीवन से जुडी कहानियों पर कक्षा में समूह चर्चा करना|	1.प्रेमचंद जी के जीवन के विषय में जानकारी प्राप्त कर सकेंगे| 2. कहानियों के मध्यम से प्रस्तुत कहानी का मूल भाव समझ सकेंगे| 3. "स्वतंत्रता हमारा जन्म सिद्ध अधिकार" के मूल भाव समझ सकेंगे| 4. पशु और मनुष्य के बीच भावनात्मक संबंधों को समझेंगे। 5. एक सच्चे मित्र की पहचान कर मित्रता निभा सकेंगे| 6. समाज में नारी का स्थान सर्वोपरि है| के विचारों को धयान में रखते नारी सम्मान कर सकेंगे और अन्य को समझा सकेंगे।

क्रमसं.	पाठ कानाम	शीर्षक	सीखने केउद्देश्य	गतिविधियां	सीखने केपरिणाम
2	ल्हासा की ओर (लेखक राहुल सांकृत्यायन)	ल्हासा की ओर	1. राहुल सांकृत्यायन जी के जीवन परिचय और उनकी रचनाओं से अवगत करवाना| 2. तिब्बत समाज व वहाँ की संस्कृति से अवगत करवाना| 3. अच्छे संबंधों और अच्छे व्यवहार के महत्व को समझाना| 4. तिब्बती समाज और अपने समाज के बीच अंतर को समझाना| 5. बौद्ध धर्म के बारे में सामान्य जानकारी देना। 6. पहाड़ी लोगों की और मैदानी भागों में रहने वाले लोगों की जीवन शैली से अवगत करवाना|	1. पाठ के आधार पर तिब्बत की भौगोलिक स्थिति का शब्द चित्र प्रस्तुत करें। 2. अपने जीवन में की गई किसी स्थान की यात्रा पर कक्षा में समूह चर्चा करना| 3. तिब्बत के प्रमुख पर्यटन स्थलों की सचित्र सूची बनाकर कक्षा में प्रस्तुत करना| 4. पीपीटी के माध्यम से तिब्बत के भौगोलिक दृश्यों को दिखाना|	1. राहुल सांकृत्यायन जी के जन्म तिथि, मृत्यु तिथि और उनकी रचनाओं को बताने में सक्षम होंगे। 2. पर्दा प्रथा छुआछूत आदि बुराइयां है हमें इन्हें अच्छे संबंधों और अच्छे व्यवहार से हमारी जान पहचान का दायरा बढ़ता है। 3. तिब्बती समाज और अपने समाज के बीच अंतर के तुलनात्मक अध्ययन कर समझ सकेंगे| 4. अपनी यात्रा के अनुभव को सांझा करने में सक्षम होंगे।

3	उपभोक्तावाद की संस्कृति (लेखक, श्यामाचरण दुबे)	उपभोक्तावाद की संस्कृति	1. श्यामचरण दुबे जी के जीवन और उनकी रचनाओं से अवगत करवाना। 2. बाजार की वस्तुतों का उपभोग, मांग ,उत्पादन के चक्र से परिचय करवाना। 3. उपभोक्तावाद और बाजारवाद की संस्कृति के अर्थ को समझाना| 4. भारतीय संस्कृति के प्रति सकारात्मक पहलुओं को समझाना|	1. प्रस्तुत निबंध का आदर्श वचन करना और कठिन शब्दों का अर्थ बताते हुए पाठ को समझाना | 2. आपके अनुसार वस्तुओं को खरीदने का आधार वस्तु की गुणवत्ता होनी चाहिए या विज्ञापन विषय कक्षा में वाद - प्रतिवाद करना| 3. आप प्रतिदिन टीवी पर बहुत से विज्ञापन देखते सुनते हैं उसी को आधार बनाकर अपने पुराने फोन को बेचने के लिए विज्ञापन तैयार कीजिए। 4. 'बाजार का महत्त्व' निबंध लेखन करवाना| 5. पीपीटी के माध्यम से विज्ञापन की भ्रामक दुनिया से अवगत करवाना और कक्षा में समूह चर्चा करना|	1. श्यामचरण दुबे जी के जन्म तिथि, मृत्यु तिथि उनकी रचनाओं को बताने में सक्षम होंगे। 2. उपभोक्तवाद और विज्ञापन की दुनियां को समझ सकेंगे| 3. वस्तुओं के उपयोग को उपभोग कहते हैं और उपभोग से मांग बढ़ती है ,मांग से उत्पादन बढ़ता है। 4. बाजार के भ्रामक विज्ञापनों के प्रति जागरूक हो सकेंगे| 5. बाजार के महत्त्व को समझते हुए बाजार की उपयोगिता सिद्ध कर सकेंगे|

4	साँवले सपनों की याद (लेखक जाबिर हुसैन)	साँवले सपनों की याद	1. पक्षी जगत से संबंधित ज्ञान से अवगत करवाना | 2. शब्दों के अर्थ प्रयोग एवं विविधता का ज्ञान कराना 3. भाव ग्रहण क्षमता विकसित करना। 4. शारीरिक सक्रियता और स्वास्थ्य के लिए भाव ग्रहण करवाना| 5. मिलजुल कर कार्य करने के भाव विकसित करना। 6.सामान्य ज्ञान में वृद्धि करना 7.सृजनात्मकता का विकास करना। 8.खोज प्रवृत्ति का विकास करना। 9. विभिन्न राज्यों के प्रति जुड़ाव एवं लगाव रखना।	1.छात्र व्यक्तिगत रूप से डायरी लेखन में स्थान, समय, कारण इत्यादि को लिखेंगेऔर जीवन से जुड़ी किसी घटना का उल्लेख भी समय व तिथि के अनुसार करेंगे। 2.समाज में पक्षी जगत के प्रति लोगों को जागरूक करने के लिए कक्षा में नाटक और कहानी आदि की क्रियाविधि करना| 3.पाठ के मूल सार एवं भाव को वर्तमान सामाजिक परिवेश से जोड़कर मौखिक या लिखित रूप में अपने विचार प्रकट करना| 4.विद्यार्थी अपने या किसी देखे हुए पर्यटन स्थल एवं पक्षी जगत से जुड़े अपने अनुभवों के बारे में परस्पर पूर्व तैयारी के आधार पर संवाद-वाचन करेंगे।	1. सहभागिता की प्रवृत्ति का विकास करना और जीवन में कार्य के महत्व को समझना सकेंगे। 2. मानव जीवन एक अनमोल उपहार है की सार्थकता जान सकेंगे। 3. लेखन और पठन कौशल का विकास करना। 4. डायरी लेखन की विद्या से परिचित हो सकेंगे और अपने जीवन में डायरी लिख सकेंगे| 5. अपने कार्य को योजना बद्ध तरीके से कर सकेंगे| 6.स्वयं के विचारों को सुनिश्चित करना।

5	प्रेमचंद के फटे जूते (लेखक हरिशंकर परसाई)	प्रेमचंद के फाटे जूते	1.निबंध के माध्यम से वर्तमान समाज की वास्तविक स्थिति समझने की समझ विकसित करना। 2. समाज से जुड़े जटिल विषयों की समझ विकसित करना 3.शब्दों के अर्थ प्रयोग एवं विविधता का ज्ञान कराना 4. मानवता और जीवन मूल्यों के महत्त्व का सही ज्ञान करवाना।	1. पाठ के मूल सार एवं भाव को वर्तमान सामाजिक परिवेश से जोड़कर मौखिक या लिखित रूप में अपने विचार प्रकट करना| गतिविधि-1 नाट्य रूपांतरण के माध्यम से पाठ का कक्षा प्रदर्शन करना| 2. प्रेमचंद के सामाजिक पृष्ठभूमि से जुड़े निबंध, कहानी और उपन्यासों की सूची तैयार करना 3. अपने जीवन या उसके आसपास घटित हो रहे। इस तरह के व्यवहार से संबंधित उद्धरण को मौखिक या लिखित रूप में प्रस्तुत करना। 4. समाज में व्याप्त आडम्बर और रुढियों के नकारत्मक प्रभावों पर कक्षा में समूह चर्चा करना |	1. लेखन क्षमता का विकास होना। 2. नाटक एवं कहानी लेखन कला में प्रवीणता प्राप्त करना। 3. जीवन मानवीय मूल्यों की स्थापना करना। 4. समाज के आडम्बरों और रुढियों को समझ सकेंगे | 5. प्रेमचंद के जीवन से परिचित होना।
6	मेरे बचपन के दिन (लेखिका, महादेवी वर्मा)	मेरे बचपन के दिन	1.संस्मरण के माध्यम से नई पीढ़ी को समाज में अंतर का परिचय करवाना। 2. रिश्तों, मूल्यों और भावनाओ के महत्त्व की	गतिविधि 1. पीढ़ियों की सूची तैयार करने को कहना। 2. नई और पुरानी पीढ़ी क्या क्या अंतर आए हैं उस पर एक सर्वे	1. अपनी वंशावली की पहचान करना। 2. प्राचीन और नवीन में अंतर स्पष्ट कर पाना।

			समझ विकसित करवाना। 3. मानव जीवन के सही मूल्यों का ज्ञान करवाना| 4. समाज में लड़कियों के प्रति दृष्टिकोण की समझ विकसित करना| 5 स्वतंत्रता आन्दोलनों महिलाओं की भूमिका से अवगत करवाना|	करवाना।. 3. विभिन पीढ़ियों में आए सकारात्मक और नकारात्मक अंतर को समझाने के लिए एक वाद-विवाद प्रतियोगिता के आयोजन करवाना 4. स्वतंत्रता आन्दोलनों प्रतिभाग करने वाली महिलाओं की सूची तैयार करवाना और कक्षा में समूह चर्चा करना|	3. वाचन कौशल विकसित होना। 4. तर्कपूर्ण तथ्य रखने में सक्षम होना।
7	सखियाँ और सबद, (कवि कबीर दास)	सखियाँ और सबद	1. कबीर दास जी के जीवन परिचय, रचनाओं और उनके जीवन मूल्यों से अवगत करवाना| 2. साखी, सबद के महत्व को समझना। 3.ब्रजभाषा का ज्ञान करवाना। 4.कबीर की ईश्वर भक्ति को समझना।	1.सखियों और सबदों का कक्षा में सस्वर वाचन करवाना। 2. कविता में प्रयुक्त ब्रजमिश्रित कठिन शब्दों के अर्थ चार्ट के द्वारा प्रस्तुत करना। 2.कबीर के जीवन के बारे में जानकारी चार्ट व पीपीटी के माध्यम प्रस्तुतीकरण करना|| 3.कविता का भावार्थ पीपीटी के माध्यम से प्रस्तुत।	1.कविता को आत्मसात कर सकेंगे| 2.वर्तमान में प्रयुक्त हिंदी के शब्दों को जान सकेंगे। 3. कबीर के बारे में जान पाएंगे। 4.ब्रज भाषा के बारे में जानेंगे। 5. विद्यार्थी ज्ञान के महत्व को समझ सकेंगे|

8	वाख (कवयित्री ललद्यद)	वाख	1.कवयित्री के जीवन परिचय और उनकी रचनाओं से अवगत करवाना| 2.भक्तिकाल की जनचेतना और उसकी अखिल भारतीय स्वरूप से अवगत करवाना| 3.कवयित्री द्वारा ईश्वर भक्ति को समझना । 4. कवयित्री द्वारा दी गई आत्मज्ञान की अवधारणा को समझाना	1.कवयित्री के जीवन पर चार्ट बनाकर जानकारी देना| 2. वाख का सस्वर आदर्श पाठ एवं बच्चों द्वारा अनुकरण वाचन करना | 3.वाख के कठिन शब्दों का अर्थ बताते हुए भावार्थ बताना। 4. कवयित्री के अनुसार ईश्वर की भेदभाव रहित सर्व व्यापकता पर कक्षा में समूह चर्चा करना|	1.कश्मीरी कवयित्री ललद्यद के बारे में जानकारी प्राप्त कर सकेंगे। 2.वाख के अर्थ समझ कर अपने जीवन में अपना सकेंगे। 3. कवयित्री की ईश्वर भक्ति को समझ सकेंगे। 4.शब्दार्थों को समझ सकेंगे।
9	सवैया (कवि रसखान)	सवैया	1.कृष्णभक्ति धारा के प्रमुख कवियों एवं उनकी रचनाओं के विषय में अवगत करवाना। 2.श्री कृष्ण की जन्म भूमि और वहाँ की ब्रज भाषा से अवगत करवाना। 3.रसखान के जीवन परिचय और उनकी रचनाओं से अवगत करवाना।	1.कवि के जीवन और कृतित्व पर चर्चा करना। 2. सवैयो का सस्वर वाचन करना बच्चों द्वारा अनुकरण वाचन करना। 3. कठिन शब्दों का श्याम पट्ट के माध्यम से कठिन्य निवारण कर सवैये के भाव सौंदर्य पर कक्षा में चर्चा करना।	1कवि रसखान के बारे में जान सकेंगे। 2.कविता को आत्मसात कर सकेंगे। 3 श्रीकृष्ण के प्रति लोगों आस्था एवं विश्वास की अवधारणा को समझ सकेंगे| 4.रसखान की भक्ति भावना को

				4.सवैये में आए अलंकारों पर चर्चा करना| 5.भक्ति आधारित अन्य कविताओं का संकलन करना	समझ सकेंगे।
10	कैदी और कोकिला (माखनलाल चतुर्वेदी)	कैदी और कोकिला	1. कवि के जीवन परिचय और उनकी रचनाओं से अवगत करवाना। 2. विद्यार्थी कोब्रिटेन की उपनिवेशवाद की अवधारणा से अवगत करवाना| 3. स्वतंत्रता आंदोलन में हिंदी साहित्यकारों के योगदान से अवगत करवाना| 4. विद्यार्थियों को अंग्रजी शासन काल में भारतियों के साथ किए गर दुर्व्यवहार से अवगत करवाना और उनमें देशप्रेम की भावना जागृत करना	1. कवि के जीवन परिचय और कृतित्व पर चर्चा करना| 2. कविता का सस्वर वाचन कर पीपीटी के माध्यम से भावार्थ स्पष्ट करना| 3. स्वतंत्रता आंदोलन में योगदान देने वाले हिंदी साहित्यकरो की सूची तैयार करना और उनके योगदान पर समूह चर्चा करना| 4. कक्षा में पशु - पक्षियों और मानव में स्वतंत्रता की आवश्यकता व महत्व पर परिचर्चा करना| 5.परतंत्र भारत व स्वतंत्र भारत में लोगों की जीवन शैली के अंतर पर	1. विद्यार्थी में भाषा की समझ विकसित हो सकेगी | 2. तर्क एवं तथ्यों के साथ लिखित एवं मौखिक अभियक्ति कर सकेंगे| 3. पशु पक्षियों के प्रति भी मानवता का भाव जागृत होगा 4. मौखिक अभिव्यक्ति का विकास हो सकेगा

				वाद-विवाद करना|	
11	ग्राम श्री (सुमित्रा नंदन पंत)	ग्राम श्री	1. कवि के जीवन परिचय और उनकी रचनाओं से अवगत करवाना। 2. विद्यार्थियों में ग्रामीण जीवन के प्रति लगाव व समझ विकसित करना| 3. प्राकृतिक सौंदर्य व प्रकृति के महत्व से परिचित करवाना|	1. कविता का सस्वर वाचन करते हुए कविता का भावार्थ स्पष्ट करना| 2. कक्षा में विभिन्न प्रकार की फसलों के विषय में चार्ट बनाकर जानकारी देना| 3 मानव जीवन में फसलों के महत्व पर अनुच्छेद लिखवाया जाएगा	1. भाषा का विकास कर सकेंगे| 2. प्रकृति के महत्व के प्रति जागरूकता का विकास कर सकेंगे| 3. ग्रामीण जीवन शैली में किसान और उसके कार्यों के महत्व के विषय में ज्ञान प्राप्त कर जीवन में उपयोगी बना सकेंगे	
12	मेघ आए (सर्वेश्वरदयाल सक्शेना)	मेघ आए	1. भारतीय समाज की रीति रिवाज व परंपराओं से परिचित करवाना 2. प्रकृति के प्रति सहजता का भाव संरक्षण करने की भावना विकसित होगा 3. "जल ही जीवन है" कि अवधारणा की समझ विकसित करना		1. कक्षा में भारतीय समाज की रीति रिवाज व परंपराओं से परिचित कराया जाना| 2. वर्षा ऋतु के महत्व पर अनुच्छेद लेखन करवाना| 3. भारतीय ग्रामीण संकृति में मेहमानों के प्रति सम्मान की भावना पर कक्षा में समूह चर्चा करना और अतिथि देवो भव: विषय पर निबन्ध लिखवाना		1. बच्चो में अलंकार की समझ विकसित होंगी 2. समाज व प्रकृति के महत्व को समझ सकेंगे 3. भारतीय संस्कृति के प्रति समझ विकसित होगी

13	बच्चे कम पर जा रहे हैं (कवि राजेश जोशी)	बच्चे कम पर जा रहे हैं	1.बाल मजदूरी से अवगत कराना| 2. शिक्षा के महत्व को प्रतिपादित कर बच्चों को जागरूक बनाना| 3. मानवीय संवेदनाओं को उजागर करना| 4. बाल मजदूरी के प्रति लोगों के दृष्टिकोण को बदलना और बाल मजदूरी एक अभिशाप की समझ विकसित करना |	1. कविता का पीपीटी के माध्यम सचित्रण भावार्थ स्पष्ट करना| 2. बाल श्रम पर आधारित एक नुक्कड़ नाटक तैयार कर उसका प्रस्तुतीकरण करना|| 3. बाल मजदूरी एक अभिशाप विषय परअनुच्छेद लिखवाना। 4. बाल मजदूरों का सर्वे करवाना और उन्हें शिक्षा से जोड़ने के लिए कक्षा में समूह चर्चा करना |	1. छात्र बाल मजदूरी से अवगत होंगे 2. शिक्षा के प्रति जिज्ञासा उत्पन्न होगी 3.बाल श्रमिकों की और स्वयं की दैनिक दशा को समझ सकेंगे| 4.बाल मजदूरों के प्रति संवेदनशील भावना उत्पन्न होगी।
1	इस जल प्रलय में (फणीश्वर नाथ रेणु)	इस जल प्रलय में	1. बच्चे प्राकृतिक आपदाओं एवं उनसे होने वाली हानियों के विषय में जानकारी देना। 2. किसी भी प्राकृतिक आपदा के बाद मनुष्य की विवशता और झेली जाने वाली यातनाओं से अवगत करवाना|	1.जल प्रलय में प्रभावित आम जन जीवन की समस्याओं का वर्णन करें | 2.प्राकृतिक आपदा के समय सरकारी मददकारी संस्थाओं एवं उनकी भूमिका के विषय में जानकारी एकत्र करें | 3.प्राकृतिक आपदा: कारण एवं निवारण पर अपने विचार प्रस्तुत करें	1. बच्चों में प्राकृतिक आपदाओं से बचने उपायों के संबंध में जानकारी प्राप्त हो सकेगी| 2. सरकारी मददकारी संस्थाओं के विषय में जानकारी प्राप्त कर सकेंगे।

2	मेरे संग की औरतें (मृदुला गर्ग)	मेरे संग की औरतें	1.भारतीय समाज में नारी के महत्व एवं भूमिका को दर्शाना से अवगत करवाना। 2. संयुक्त परिवार के महत्त्व और उसके सांस्कृतिक मूल्यों से अवगत करवाना|	1.भारतीय समाज में नारी की विभिन्न भूमिकाओं का उल्लेख कीजिए । 2. हिंदी साहित्य जगत में महिला लेखिकाओं के योगदान का वर्णन कीजिए । 3.शिक्षित नारी में स्वतंत्र चिंतन विषय पर अनुच्छेद लिखिए ।	1. समाज में महिलाओं के विभिन्न क्षेत्रों में योगदान से परिचित हो सकेंगे। 2. सत्य की राह पर चलने वालों का समाज में सभी सम्मान करते है इस भाव से अवगत होंगे 3.मानवता के आधार पर किए गए व्यवहार से व्यक्ति के चरित्र में सकारात्मक सुधार से परिचित होंगे ।
3	रीड की हड्डी (जगदीश चन्द्र माथुर)	'रीड की हड्डी	1. नारी जीवन में शिक्षा के महत्व व उसकी स्वंत्रता को दर्शाना । 2. स्त्री शिक्षा के प्रति दोहरी मानसिकता रखने वालों को बेनकाब करने की समझ विकसित करना | 3. समाज में स्त्री-पुरुष की समानता की समझ विकसित करना|	1.शिक्षा से नारी जीवन में क्या क्या क्रांतिकारी परिवर्तन आए? अपने विचार व्यक्त कीजिए । 2.आधुनिक समाज में नारी का शिक्षित होना ही नारी सशक्तिकरण की ओर पहला कदम है । अपने तर्क प्रस्तुत कीजिए । 3. “शिक्षित नारी पर मुखापेक्षी नही है “ अपने विचार व्यक्त कीजिए	1. नारी शिक्षा व स्वंत्रता के प्रति जागरूकता विकसित होगी । 2. समाज में दोहरी मानसिकता वाले लोगों की के प्रति जागरूक हो सकेंगे |

SUBJECT: SANSKRIT

विषयसूचिः

क्रमसंख्या	1
पाठः	अविवेक: परमापदांपदम्
उपविषयः	i. वाचनम् ii. कथाकथनम् iii. संवादः iv. अभिनयः v. शीर्षकलेखनम्
शिक्षणोद्देश्यानि	i. शुद्धोच्चारणक्षमतोत्पादनम्। ii. संस्कृतकथाग्रन्थान्प्रतिरुचिरुत्पादनम्। iii. संस्कृतवार्तालापस्यक्षमताया: उत्पादनम्। iv. अभिनयद्वारापाठावगमनम्। v. शिक्षा (संदेशः)
क्रियाकलापः	i.शिक्षकद्वारा आदर्शवाचनम्, छात्रद्वारा अनुवाचनम्, छात्रकृतानुवाचने दोषनिवारणञ्च । ii.शिक्षकः इमामेव कथां लट्लकारे लघुसंस्कृतवाक्यैः कक्ष्यायां वारद्वयं वारत्रयं वा श्रावयति। ततः छात्रान् कथां श्रावयितुं प्रेरयति। iii. संस्कृते वार्तालापः । अत्र शिक्षकः चित्राणि/ वस्तूनि दर्शयित्वा प्रश्नान् पृच्छति। येषां उत्तराणि आम्, न,

	माधयमेन भवितुं शक्यन्ते। यथा – शिक्षकः नकुलस्य चित्रं दर्शयित्वा छात्रान् पृच्छति। किम् अयं पक्षी अस्ति? छात्राः वदन्ति – न, अयं पक्षी नास्ति, अयं तु पशुः अस्ति।अनेन प्रकारेण संपूर्णपाठमाधृत्य वार्तालापः भवितुम् शक्यते। iv. कथाया: अभिनयः। छात्राः चतुर्षु वर्गेषु विभक्ताः सन्ति। वर्गमध्ये स्पर्धारूपेण नाटकीकरणं भवितुं अर्हति। अभ्यासार्थम् उचितः समयः प्रदेयः॥ v. अस्याः कथायाः कृते स्व - उचित-शीर्षक-लेखनम्।
शिक्षणाधिगमः	i. स्पष्टोच्चारणक्षमता | ii. श्रवणशक्तेः, भाषणशक्तेः च अभिवर्धनम् | iii. वार्तालापक्षमतासम्पादनम् | iv. संस्कृत- नाटकाभिनये/ भाषणे च क्षमतासम्पादनम्। v. चिन्तनाशक्तेः अभिवर्धनम्।

अविवेक: परमापदांपदम्- https://youtu.be/dXI9jZzINT0?si=zg7kJw8S0H9U-qCV

क्रमसंख्या	2
पाठः	पाथेयम् (पद्यपाठः)
उपविषयः	i. वाचनम् ii. श्लोकान्वयः iii. पद्यांशावबोधनम् iv. जीवनसम्बद्धमूल्यानि।
शिक्षणोद्देश्यानि	i.स्पष्टोच्चारणक्षमता। ii.अन्वयलेखने क्षमता।iii.श्लोकस्य अर्थावगमनम् | iv.श्लोक–संबद्ध-कथा-निर्माण-क्षमता |
क्रियाकलापः	i. शिक्षकद्वारा सन्धिविच्छेदपूर्वकम् आदर्शवाचनं क्रियते। तदनु छात्रैः अनुवाचनं क्रियते। कण्ठस्थीकरणाय अभ्यासः प्रदीयते। ii.अयं क्रियाकलापः रिक्तस्थनरूपेण भवितुम् अर्हति। रिक्तस्थानानि कर्तृक्रियापदानां, विशेषणविशेष्यपदानां विभक्त्यन्तपदानां च स्थानेषु रिक्तस्थानानि भवितुमर्हन्ति।। iii. शिक्षकः प्रश्नोत्तराणाम् अभ्यासपत्रस्य निर्माणं करोति । अभ्यासपत्रञ्च एकपदेन / पूर्णवाक्येन ,

	निर्देशानुसारम् च उत्तरत इत्यादिशीर्षकान्याधृत्य भवितुमर्हति। iv.श्लोकानां सन्देशान् (शिक्षाः) आधृत्य जीवनसंबद्धकथानिर्माणम्।
शिक्षणाधिगमः	i. छात्राः संस्कृतशब्दानां स्पष्टोच्चारणे सक्षमाः भवन्ति। ii. छात्राः श्लोकानाम् अन्वयकरणे पूर्णाङ्कप्रापणे च समर्थाः भवन्ति। । iii. छात्राः श्लोकार्थम् अवगच्छन्ति प्रश्नान् च उत्तरन्ति। पूर्णाङ्कान् अपि प्राप्नुवन्ति। iv. संस्कृते चिन्तन-लेखन-कथनक्षमतोत्पादनम्।

श्लोका: - https://youtu.be/FPsTaCA5Gmg?si=Pt1lFbjo19Ur5WQH

क्रमसंख्या	3
पाठः	विजयतांस्वदेश:
उपविषयः	नाटकम्

शिक्षणोद्देश्यानि	i. स्पष्टोच्चारण -कौशलम् ii. सन्धिज्ञानसम्पादनम् iii. विशेषणविशेष्यज्ञानार्जनम्। iv. पाठावगमनम्।
क्रियाकलापः	i.शिक्षकद्वारा भावपुरस्सरम् आदर्शवाचनं क्रियते। छात्रैः अनुवाचनं क्रियते। शिक्षकः अन्यच्छात्रसाहाय्येन छात्राणामनुवाचने काठिन्य/दोषनिवारणञ्च करोति। - ii. शिक्षकः छात्रान् पाठात् एकम् अनुच्छेदं स्वीकृत्य तत्रस्थस्वरसन्धियुक्तपदानि रेखाङ्कितानि कर्तुमादिशति। ततः सन्धियुक्तपदानुसारम् उदाहरणं परिकल्प्य सन्धिविच्छेदं च कृत्वा पाठस्थपदानां सन्धिविच्छेदं कर्तुम् च वदति। iiii. शिक्षकः पाठस्य पाठनात् पूर्वं विशेषणविशेष्यस्य सामान्यनियमान् वदति। यदा शिक्षकः पाठं पाठयति तदा छात्राः विशेष्यपदानाम् उपरि रक्तवर्ण-अङ्कन्या विशेषपदानि च हरितवर्ण-अङ्कन्या वर्तुलाकारं कुर्वन्ति। पुनः गृकार्यपुस्तिकायां पृथक् लिखन्ति च iv. केषाञ्चन वाक्यानां वक्ता कः श्रोता च कः इति कथनम् / लेखनम्

शिक्षणाधिगमः	i. छात्रा: संस्कृतशब्दानामुच्चारणे सामर्थ्यं सम्पादयन्ति।| ii. सन्धियुक्तशब्दानामन्वेषणे सन्धिविच्छेदकरणे च सामर्थ्यं संपादयन्ति। iii. छात्राः विशेषणविशेष्यमेलने /लेखने / प्रयोगे च समर्थाः भवन्ति। iv. छात्राः संपूर्णपाठम् अवगच्छन्ति।

स्वतंत्रता - https://youtu.be/1_EmrWwfYJs?si=bfXJ7sfkfQITJriA

क्रमसंख्या	4
पाठः	विद्ययाभान्तिसद्गुणा:(गद्य-पद्यात्मकः)
उपविषयः	i. पठनम् ii. व्याकरणम् iii. शब्दज्ञानम् iv. भाषणम्

शिक्षणोद्देश्यानि	i.स्पष्टोच्चारणज्ञानम्। ii.कर्तृक्रियापदज्ञानम्। iii.पर्यायपदविलोमपदानां ज्ञानम् IV. सम्स्कृतेन भाषणकौशलम्।
क्रियाकलापः	i. आदर्शवाचनम् , अनुवाचनम्, काठिन्यनिवारणम्, दोषनिवारणम् ii. छात्राः अनुच्छेदं स्वीकृत्य प्रत्येकं वाक्यात् कर्तृपदस्य एवं क्रियापदस्य च चयनं कुर्वन्ति। iii. प्रदत्तश्ब्देभ्यः पर्यायद्वयं चित्वा लेखनम्। यथा- वसुन्धरा- धरा - वाटिका = ---------- iv. पाठस्य अस्य कथां लघुसंस्कृतवाक्यैः कथनम्।
शिक्षणाधिगमः	i. स्पष्टोच्चारणक्षमतासम्पाद्यते। | ii. कर्तृक्रियापदयोः अन्वेषणे लेखने दक्षता सम्पाद्यते। iii. उचितपर्यायविलोमपदचयने क्षमता सम्पाद्यते। iv. अनेन क्रियाकलापेन संस्कृते भाषणक्षमतायाः विकासः भवति।

Stories in Eng. https://youtu.be/WRFtEDTbMC0?si=7ID6SS1OvCJrrNO

क्रमसंख्या	5
पाठः	कर्मणायातिसंसिद्धिम् (कथा)
उपविषयः	i. श्रवणम् भाषणञ्च। ii. प्रश्ननिर्माणम्। iii. विशेषणविशेष्यम्। iv. कथालेखनम्।
शिक्षणोद्देश्यानि	i. संस्कृतकथाश्रवणकौशलसम्पादनम्। ii. प्रश्ननिर्मानकौशलसम्पादनम्। iii. विशेष्यपदानुसारं विशेषणपदचयने लेखने च सामर्थ्यसम्पादनम्। iv. कथालेखनकौशलसम्पादनम्।
क्रियाकलापः	i.शिक्षकः पाठममुम् लघुसंस्कृतवाक्यैः लट्लकारे एव वारद्वयं वारत्रयं वा वदति। ततः एकैकः छात्रः एकं वाक्यं वदति। एवं सर्वे मिलित्वा कथां पूरयन्ति। ii. शिक्षकः पञ्च दश वा वाक्यानि ददाति। प्रत्येकं वाक्ये एकं पदं रेखाङ्कितं च करोति। छात्राः तत्

	रेखाङ्कितपदमाधृत्य मञ्जूषातः उचितप्रश्नवाचकपदानि च चित्वा प्रश्ननिर्माणं कुर्वन्ति। iii. पाठगतपात्राणां तेषां विशेषणपदानाञ्च चयनम्। iv.मञ्जूषातः उचितपदानि चित्वा कथायाः रिक्तस्थानपूरणम्॥
शिक्षणाधिगमः	i. छात्राः कथा-श्रवण/अवगमन –समर्थाः भवन्ति। ii. छात्राः प्रश्नकरणे समर्थाः भवन्ति। iii. छात्राः विशेषणपदचयने विशेष्यपदानुसारं विशेष्यपदलेखने च समर्थाः भवन्ति। iv. छात्राः कथापूरणे समर्थाः भवन्ति ।

Do your duty- https://youtu.be/hZ-lUpnHaIs?si=xiWfDKKIKrz8F8nO

क्रमसंख्या	6
पाठः	तत्त्वम्असि
उपविषयः	i. पठनम्। ii. व्याकरणम् (निर्देशानुसारम् उत्तरत) iii.शब्दज्ञानम्

	iv.संवादः(अभिनयः)
शिक्षणोद्देश्यानि	i. स्पष्टोच्चारणक्षमता ii. कर्तृ, क्रिया, विशेषण, विशेष्यपदानां ज्ञानम् । iii. पर्यायविलोमपदचयनक्षमता। IV. संवादकुशलतासम्पादनम्।
क्रियाकलापः	i.आदर्शवाचनम्, अनुवाचनम्, काठिन्य/दोषनिवारणम्। ii.वाक्येभ्यः कर्तृपदचयनम्, क्रियापदचयनम्, विशेषणपदचयनम्, विशेष्यपदचयनम्। iii.–शब्दसमूहात् पर्यायपद / विलोमपदद्वयस्य त्रयस्य वा लेखनम्। iv.आचार्यशिश्ययोः / पितापुत्रयोः / मित्रयोः/ आपणिकक्रेत्रोः/ यात्रीचालकयोः / पथिकयोः मध्ये संवादः।
शिक्षणाधिगमः	i. छात्राः स्पष्टोच्चारणक्षमतां सम्पादयन्ति। ii. छात्राः प्रत्येकं वाक्यात् कर्तृक्रियापदानां विशेषणविशेष्यपदानां चयने क्षमतां सम्पादयन्ति। iii. पर्यायविलोमपदानामवगमनसामर्थ्यं सम्पादयन्ति। iv.| संस्कृतेन वार्तालापक्षमतां सम्पादयन्ति।

तत्त्वम्असि- https://youtu.be/TvUjtMd5hF4?si=En2HcLLeRvcdjnAr

क्रमसंख्या	7
पाठः	तरवेनमोऽस्तु
उपविषयः	i. वाचनम् ii. व्याकरणम् (सन्धिविच्छेदः) iii. भावार्थः iv. वृक्षाणांमहत्त्वम्/ चन्दनवृक्षस्य महत्त्वम्?
शिक्षणोद्देश्यानि	i.स्पष्टोच्चारण/पदच्छेदनक्षमता सम्पादनम। ii.सन्धिविच्छेदकरणक्षम्तायाः सम्पादनम्। iii.श्लोकानामवगमनसामर्थ्यम्। IV. संस्कृतेन लेखनक्षमतासम्पादनम्।

क्रियाकलापः	i. पदच्छेदं कृत्वा वाचनम्। तालयं पुरस्सृत्य सस्वरवाचनम्। ii.सन्धियुक्तपदानां सङ्कलनं विच्छेदनञ्च। iii.मञ्जूषातः उचितपदानि चित्वा रिक्तस्थानानां पूरणम्। iv. चन्दनवृक्षस्य कः भागः कस्य आश्रयः इति चित्रमाध्यमेन लेखनम्॥
शिक्षणाधिगमः	i.छात्राःश्लोकवाचनेसमर्थाभविष्यन्ति । ii. छात्राः सन्धिकरणे सन्धिविच्छेदकरणे च समर्थाः भवन्ति। iii. छात्राः श्लोकानां भावार्थकथने लेखने समर्थाः भवन्ति। iv. वृक्षाणां माहत्म्यमवगच्छन्ति।
तरवेनमोऽस्तु	https://youtu.be/RNBrgok6Y0s?si=ypI6CA3nrze3v9uE

क्रमसंख्या	8
पाठः	नधर्मवृद्धेषुवयःसमीक्ष्यते
उपविषयः	i. सङ्ख्या ii. अव्ययानि iii. उपपदविभक्तयः iv. प्रत्ययः
शिक्षणोद्देश्यानि	i.संस्कृते सङ्ख्याज्ञानसम्पादनम्। ii.अव्ययपदानां परिभाषा एवं प्रयोगः। iii.उपपदविभक्तीनां परिभाषा एवं प्रयोगः iv. तुमुन् क्त्वा च
क्रियाकलापः	i. सङ्ख्याक्रीडा / अभ्यासपत्राणि / मौखिकाभ्यासः ii. मञ्जूषातः उचिताव्ययपदानि चित्वा रिक्तस्थानपूरनम्।(कार्यपत्राणि आवश्यकानि) iii. कोष्ठकात् उचितम् पदं चित्वा रिक्तस्थानपूरनम्। कोष्ठगतपदेषौचितां विभक्तिं प्रयुज्य रिक्तास्थानपूरणम्।

	iv. धातभिः सह क्त्वा एवस् तुमुन् प्रत्ययम् प्रयुज्यं पदनिर्मानम्। वाक्यप्रयोगश्च।
शिक्षणाधिगमः	i. छात्राः संस्कृते सङ्ख्यां लेखितुं समर्थाः भवन्ति। ii. अव्ययस्य लक्ष्णमवगच्छन्ति। प्रयोगं च कुर्वन्ति। iii. छात्राः उचित-उपपदविभक्तिचयने समर्थाः भवन्ति। iv. छात्राः धात्वन्तपदनिर्माणे सामर्थ्यं सम्पादयन्ति। वाक्यप्रयोगे अपि समर्थाः भवन्ति॥

नधर्मवृद्धेषुवयःसमीक्ष्यते-

https://youtu.be/im4o9zD50-k?si=l0JySdkLwQB_BFQ0

क्रमसंख्या	9
पाठः	कवयामिवयामियामि
उपविषयः	i. वाचनम् ii. व्याकरणम् (ल्यप् / शतृ) iii. क्रियापदानि

	iv. चित्रवर्णनम्
शिक्षणोद्देश्यानि	i.स्पष्टोच्चारणक्षमतसम्पादनम् । ii.ल्यबन्त / शतृ-अन्तपदनिर्मानक्षमता सम्पादनम्। iii.कर्तृपदस्य पुरुषवचनानुसारं क्रियापदचयनक्षमता। iv.मञ्जूषादत्तशब्दसाहाय्येन चित्रं दृष्ट्वा संस्कृतेन वाक्यलेखनक्षमता॥
क्रियाकलापः	i. आदर्शवाचनम् / अनुवाचनम् / दोषनिवारणम् ii. ल्यबन्त / शत्रन्तपदनिर्मानम् , वाक्यप्रयोगः , अभ्यासपत्रनिर्माणम् । iii. कोष्ठकात् उचितक्रियापदानि चित्वा रिक्तस्थानपूरणम्। iv. वाक्यनिर्माणक्षमता।
शिक्षणाधिगमः	i.छात्राः स्पष्टतया संस्कृतशब्दानाम् उच्चारणसमर्थाः भवन्ति। ii. प्रत्ययययुक्तशब्दानां निर्माणे वाक्यप्रयोगे च सक्षमाः भवन्ति। iii.कर्तृक्रियान्वये सामर्थ्यं सम्पादयन्ति। iv.छात्राः वाक्यनिर्माणे समर्थाः भवन्ति।

कवयामिवयामियामि- https://youtu.be/Ft2i4GP1v3Y?si=a8pzOirsqUHoLb38

क्रमसंख्या	10
पाठः	भारतीयंविज्ञानम् (केवलम् आन्तरिकमूल्याङ्कनाय)
उपविषयः	भारतदेशस्यगौरवशालीइतिहास:
शिक्षणोद्देश्यानि	i.छात्राःभारतीयप्राचीनज्ञानविज्ञानेगौरवम्अनुभवेयुः | ii.'वसुधैवकुटुम्बकम्' ध्येयवाक्यंअवगच्छेयुः | iii.आधुनिकविषयाणांमूलंविषयंछात्राःजानीयुः | iv. भारतीयसंस्कृत्याधारितं–सामान्य-ज्ञान-संवर्धनम्।
क्रियाकलापा:	i. भारतस्यवैज्ञानिकानांचिकित्सकानांचचित्राणांप्रदर्शनेनछात्राणांसहभागितयापाठस्यशिक्षणम् | ii. भारतदेशस्यमानचित्रस्यउपयोगंकृत्वाप्रमुखानाम्ऐतिहासिकभौगोलिक- स्थलानांपरिचयप्रदानम् | iii. भारतीयविभूतीनांनामानितथाचतै: विरचितानांकृतीनांसूचीनिर्माणम्।अथवातदाधारितप्रश्नोत्तरीप्रतियोगिताअपिकर्तुंशक्यते। iv. आधुनिकविषयाणांसंस्कृतेनामानिकथनस्यप्रतियोगिताअपिकर्तुंशक्यते।यथा Chemistry=रसायनविज्ञानम्इति।
शिक्षणाधिगमः	i.पाठस्यतथाचश्लोकस्यभावावबोधनम् | ii.संधियुक्तपदानांचयनम्संधिविच्छेदश्च |

	iii.श्लोकस्यअन्वयलेखनम् | iv.आधुनिकविषयाणांसंस्कृतेनामानिलेखनम् | v.प्रश्ननिर्माणम्।

भारतीयंविज्ञानम्- https://youtu.be/NdW-kT9UACs?si=d3tTcJIoxh1Afxq_

क्रमसंख्या	11
पाठः	भारतेनास्तिमेजीवनम्जीवनम्(केवलम् आन्तरिकमूल्याङ्कनाय)
उपविषयः	पद्यपाठः
शिक्षणोद्देश्यम्	i. छात्रेभ्यःभारतस्यजन-जीवनस्यकाव्यद्वाराअनुभूति-प्रदानम् | ii. छात्राःयति-गति-लयानुसारंकवितापाठेसक्षमाःस्युः | iii. 'भूतलेभारतंकथंराजते' इत्यस्यकवितामाध्यमेनप्रतिपादनम् | iv. छात्राःसन्धिकरणे, अन्वयलेखने, प्रश्नानिर्माणेचकुशलाःभवेयु : |
क्रियाकलापः	i. सर्वप्रथमंमानचित्रेभारतदेशस्यभौगोलिक-राजनीतिक- स्थितेःस्पष्टीकरणम् | ii. कवितायाःसमुचितरीत्यासस्वरपाठः | iii. भारतीयसांस्कृतिकक्रियाकलापानांचित्राणिप्रदर्श्यपद्यानांव्याख्यानम् | iv. अन्वयलेखनम्, संधिविच्छेदः, प्रश्नोत्तरविधिद्वाराअर्थस्पष्टिकरणम् |

शिक्षणाधिगमः	i. संस्कृतकवितापाठेदक्षता | ii. अन्वयलेखनक्षमतायाःविकासः | iii. पद्यानांभावावबोधनम् | iv. सन्धेःज्ञानम् |

भारतेनास्तिमेजीवनम्जीवनम्https://youtu.be/iacG984I4r4?si=aFzGCOd7sfzYTtkE

SUBJECT: MATHEMATICS

CONTENTS

ACTIVITIES

1. **Number system**

   I. To construct squarerootspiral

   II. Representing Irrational Numbers onNumber line

2. **Polynomials - To verify the algebraicidentity**

   I. $(a+b)^2$geometrically

   II. $(a - b)^2 = a^2 - 2ab + b^2$

   III. $a^2 - b^2 = (a + b)(a - b)$

3. **Co-Ordinate Geometry**

   I. To find the values of abscissa and ordinates of various points given in a Cartesian plane

   II. To find the values of abscissa and ordinates of various points given in a cartesian plane.

4. **Linear Equations In Two variables**

   I. Use of Geo – Gebra

5. Lines and Angles

I. Forming different lines and angles using geo board

II. Study of properties of parallel lines usinggeo board and rubber bands

III. Study the properties of intersecting lines

6. Triangles

I. Congruent figures by using different congruentplane figures of plastic or card board

II. Study of various criteria of congruence of Triangles

7. Quadrilaterals

I. Area of parallelogram

II. Study of properties of Parallelogram

8. Circle

I. Activity to identify the various parts of circles, like centre, radius, diameter, arc, chord, segment, sector etc. using the circle board that is given in the mathematical kit obtained under PMSHRI scheme.

II. Activity to study various theorems of circles using circular board given in the mathematical kit procured under PM SHRI scheme

9. Surface areas and Volumes

i. Activity to find the surface area of Cube

ii. volume of cube

iii. Activity to find the surface area of cuboid

iv. Activity to find the curved surface area of the cylinder

v.Activity to find the total surface area of the cylinder

vi. Volume of cylinder

vii.Activity to find the surface area of cone

viii.Activity to find the surface area of sphere

ix. Activity to find the volume of sphere

10.HERON'S FORMULA

11.Crossword puzzle with mathematical terms

Number system

ACTIVITY 1 :- Constructing the 'square root spiral'

OBJECTIVE

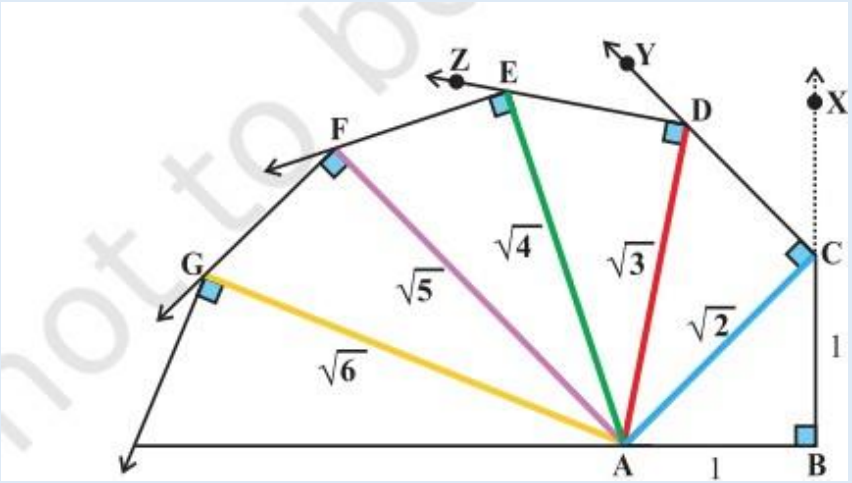
To construct a square-root spiral.

MATERIAL REQUIRED

Coloured threads, adhesive, drawing pins, nails, geometry box, sketch pens, marker, a piece of plywood.

METHOD OF CONSTRUCTION

1. Take a piece of plywood with dimensions 30 cm × 30 cm.
2. Taking 2 cm = 1 unit, draw a line segment AB of length one unit.
3. Construct a perpendicular BX at the line segment AB using set squares (or compasses).
4. From BX, cut off BC = 1 unit. Join AC.
5. Using blue coloured thread (of length equal to AC) and adhesive, fix the thread along AC.
6. With AC as base and using set squares (or compasses), draw CY perpendicular to AC.
7. From CY, cut-off CD = 1 unit and join AD.



8. Fix orange coloured thread (of length equal to AD) along AD with adhesive.

9. With AD as base and using set squares (or compasses), draw DZ perpendicular to AD.

10. From DZ, cut off DE = 1 unit and join AE.

11. Fix green coloured thread (of length equal to AE) along AE with adhesive [see Fig. 1].
Repeat the above process for a sufficient number of times.
This is called "**a square root spiral".**

DEMONSTRATION

1. From the figure, $AC^2 = AB^2 + BC^2 = 12 + 12 = 2$ or $AC = \sqrt{2}$
$AD^2 = AC^2 + CD^2 = 2 + 1 = 3$ or $AD = \sqrt{3}$.

2. Similarly, we get the other lengths AE, AF, AG, ... as √4 or 2, √5, √6 ……

OBSERVATION

On actual measurement

AC = ... , AD =..... , AE =..... , AF =....., AG =.....

√2 = AC = ... (approx.),

√3 = AD = ... (approx.),

√4= AE = ... (approx.),

√5 = AF = ... (approx.)

APPLICATION

Through this activity, existence of irrational numbers can be illustrated.

ACTIVITY 2 :- Representing irrational numbers on number line

Represent √2 on the number line.

Materials Required

A sheet of white paper, pencil, compass, eraser and ruler etc.

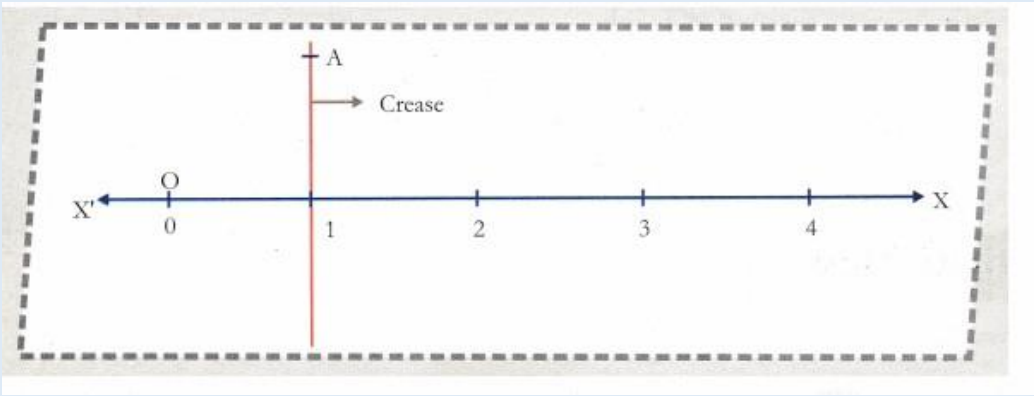
Procedure

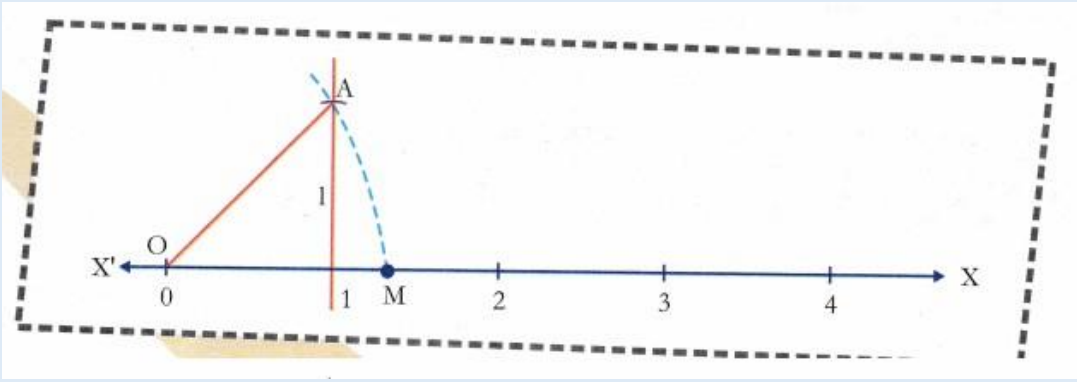
1.Draw a straight line X'OX on the white sheet of paper.

2.Divide that line into equal parts from point O by paper folding activity taking each part as 1 unit. Mark the points as 1,2,3,…. etc.

3.Draw the perpendicular at the point marked as '1' by paper folding.

4.Unfold the paper, and draw the line at the crease so formed. Mark a point A on this crease at 1 unit from line X'OX.





5. Join O and A, we get OA = √2 units (By Pythagoras theorem).

6. With O as centre, OA as radius, draw an arc intersecting the line X'OX at M.

Observation

We observe that OA = OM = $\sqrt{2}$ units.

Result

An irrational number $\sqrt{2}$ is represented on the number line.

Polynomials

Geometrical proofs of Algebraic Identities

ACTIVITY – 1 To verify the algebraic identity :$(a+b)^2 = a^2+2ab+b^2$

OBJECTIVE

To verify the algebraic identity : $(a+b)^2 = a^2+2ab+b^2$

MATERIAL REQUIRED

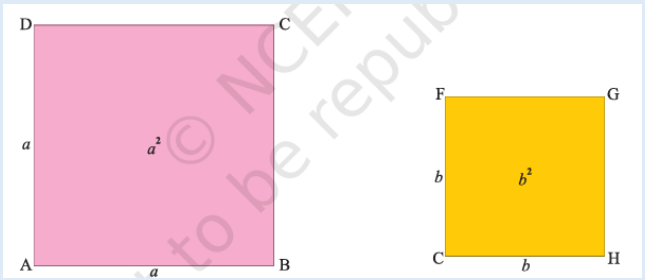
Drawing sheet, cardboard, cellotape, coloured papers, cutter and ruler**.**

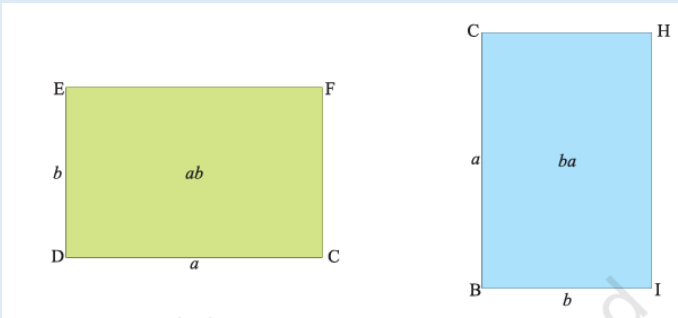
METHOD OF CONSTRUCTION MATERIAL REQUIRED

1. Cut out a square of side length a units from a drawing sheet/cardboard and name it as square ABCD [see Fig. 1].

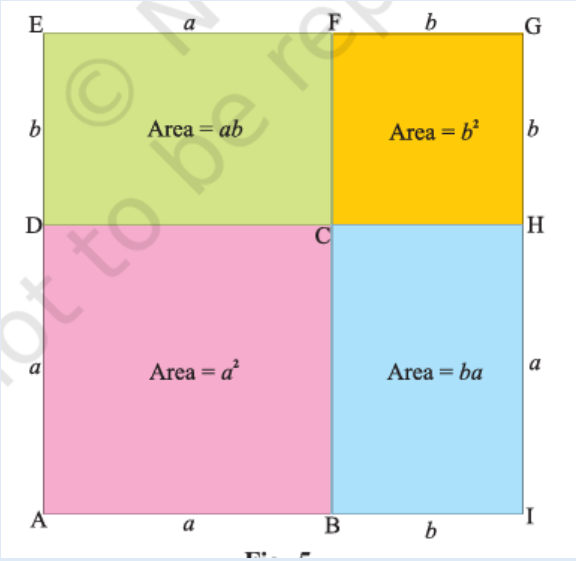
2. Cut out another square of length b units from a drawing sheet/cardboard and name it as square CHGF [see Fig. 2].

3. Cut out a rectangle of length a units and breadth b units from a drawing sheet/cardbaord and name it as a rectangle DCFE [see Fig. 3].





4. Cut out another rectangle of length b units and breadth a units from a drawing sheet/cardboard and name it as a rectangle BIHC [see Fig. 4].



5. Total area of these four cut-out figures = Area of square ABCD + Area of square CHGF + Area of rectangle DCFE + Area of rectangle BIHC

$= a^2 + b^2 + ab + ba = a^2 + b^2 + 2ab.$

6. Join the four quadrilaterals using cello-tape as shown in Fig**. 5.**

Clearly, AIGE is a square of side (a + b). Therefore, its area is $(a + b)^{2.}$

The combined area of the constituent units = $a^2 + b^2 + ab + ab = a^2 + b^2 + 2ab$.

Hence, the algebraic identity $(a + b)^2 = a^2+2ab+b^2$

ere, area is in square units.

OBSERVATION

On actual measurement: a = ...,b = ...(a+b) = ...,
So, a^2 = ...b^2 = ..., ab = ...
$(a+b)^2$ = ..., 2ab = ...
Therefore, $(a+b)^2 = a^2 + 2ab + b^2$.
The identity may be verified by taking different values of a and b.

APPLICATION

The identity may be used for
1. Calculating the square of a number expressed as the sum of two convenient numbers.
2. simplifications/factorisation of some algebraic expressions.

ACTIVITY – 2 To verify the algebraic identity: $(a–b)^2= a^2–2ab+b^2$

OBJECTIVE

To verify the algebraic identity : $(a–b)^2= a^2–2ab+b^2$

MATERIAL REQUIRED

Drawing sheets, cardboard, coloured papers, scissors, ruler and adhesive.

METHOD OF CONSTRUCTION

1. Cut out a square ABCD of side a units from a drawing sheet/cardboard [see Fig. 1].

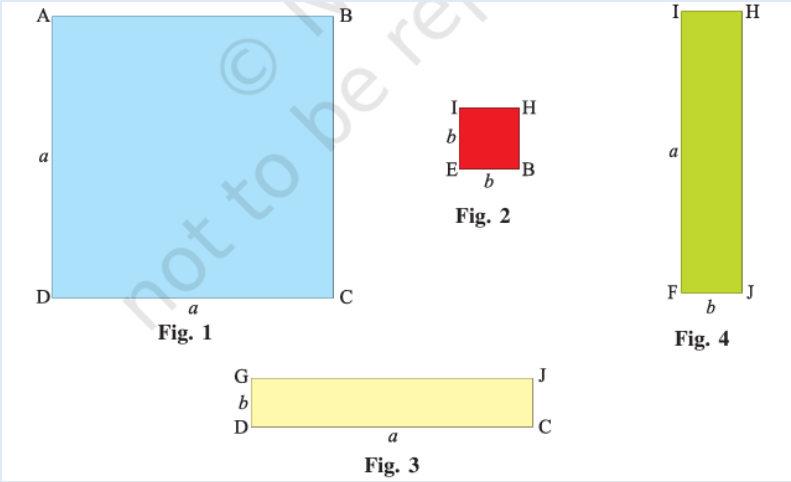
2. Cut out a square EBHI of side b units (b < a) from a drawing sheet/cardboard [see Fig. 2].

3. Cut out a rectangle GDCJ of length a units and breadth b units from a drawing

sheet/cardboard [see Fig. 3].

4. Cut out a rectangle IFJH of length a units and breadth b units from a drawing sheet/cardboard [see Fig. 4].

5. Arrange these cut outs as shown in Fig. 5.



DEMONSTRATION

According to figure 1, 2, 3, and 4, Area of square ABCD = a^2, Area of square EBHI = b^2

Area of rectangle GDCJ = ab, Area of rectangle IFJH = ab
From Fig. 5, area of square AGFE = AG × GF = (a – b) (a – b) = $(a – b)^2$

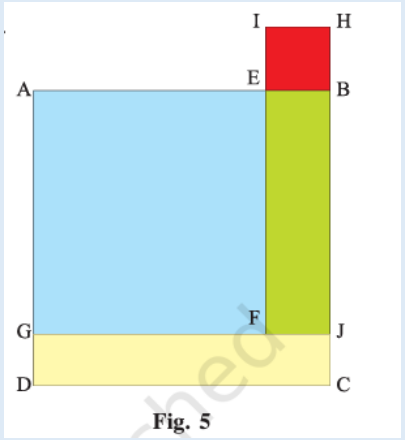


Fig. 5

Now, area of square AGFE = Area of square ABCD + Area of square EBHI– Area of rectangle IFJH – Area of rectangle GDCJ
$= a^2 + b^2 – ab – ab$
$= a^2 – 2ab + b^2$

Here, area is in square units.

OBSERVATION

On actual measurement: a = ..., b = ..., (a – b) = ...,
So, a^2= ....., b^2 = ..., $(a – b)^2$ = ...,
ab = ... 2ab = ...

Therefore, $(a – b)^2 = a^2 – 2ab + b^2$

APPLICATION

The identity may be used for
1. Calculating the square of a number expressed as a difference of two convenient numbers.
2. Simplifying/factorisation of some algebraic expressions.

ACTIVITY – 3 – To verify the algebraic identity : $a^2 – b^2 = (a + b)(a –b)$

OBJECTIVETo verify the algebraic identity : $a^2 – b^2 = (a + b)(a – b)$

MATERIAL REQUIRED Drawing sheets, cardboard, coloured papers, scissors, sketch pen, ruler, transparent sheet and adhesive.

METHOD OF CONSTRUCTION

1. Take a cardboard of a convenient size and paste a coloured paper on it.

2. Cut out one square ABCD of side a units from a drawing sheet [see Fig. 1].

3. Cut out one square AEFG of side b units (b < a) from another drawing sheet [see Fig. 2]

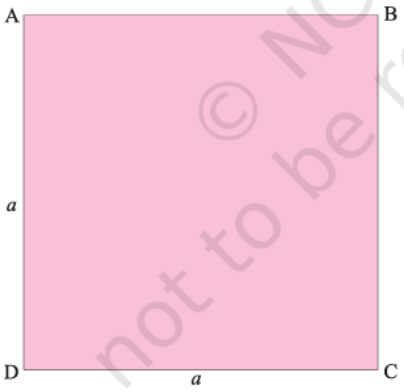


Fig. 1

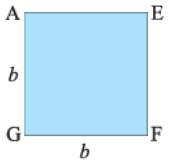


Fig. 2

4.Arrange these squares as shown in Fig. 3.

5. Join F to C using sketch pen. Cut out trapeziums congruent to EBCF and GFCD using a transparent sheet and name them as EBCF and GFCD, respectively [see Fig. 4 and Fig. 5].

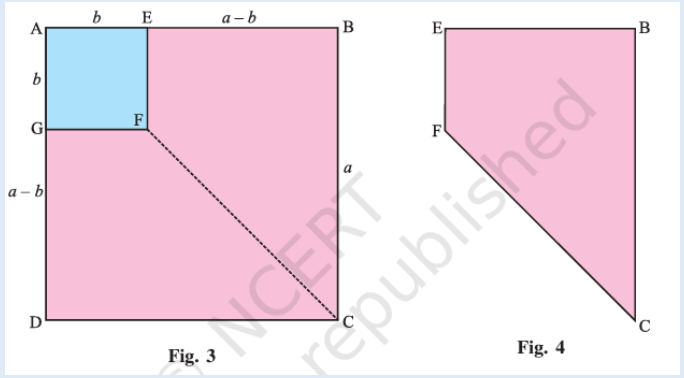


Fig. 3

Fig. 4

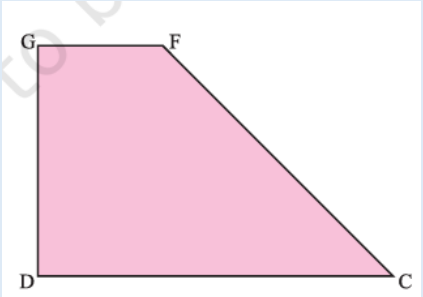


Fig. 5

6. Arrange these trapeziums as shown in Fi

DEMONSTRATION

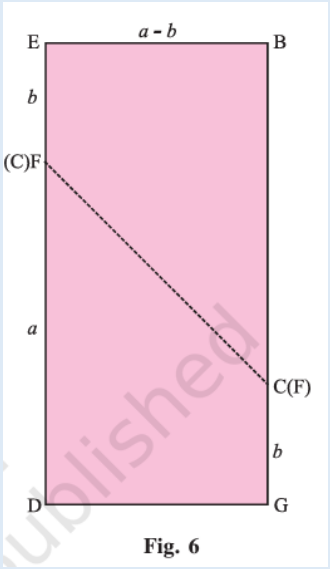


Fig. 6

Area of square ABCD = a^2

Area of square AEFG = b^2 In Fig. 3

, Area of square ABCD – Area of square AEFG

= Area of trapezium EBCF + Area of trapezium GFCD = Area of rectangle EBGD [Fig. 6]. = ED × DG

Thus, $a^2 – b^2 = (a+b) (a–b)$

Here, area is in square units.

OBSERVATION

On actual measurement: a = ..., b =....., (a+b) = ...,

So, a^2= .....,b^2 = ..., (a–b) = ...

, a^2–b^2 = ..., (a+b) (a–b) = ...,

Therefore, a^2–b^2 = (a+b) (a–b)

APPLICATION

The identity may be used for

1. Difference of two squares
2. Some products involving two numbers
3. Simplification and factorisation of algebraic expressions.

COORDINATE GEOMETRY

ACTIVITY 1:- To find the values of abscissa and ordinates of various points given in a cartesian plane.

OBJECTIVE

To find the values of abscissa and ordinates of various points given in a cartesian plane.

MATERIAL REQUIRED

Cardboard, white paper, graph paper with various given points, geometry box, pen/pencil.

METHOD OF CONSTRUCTION.

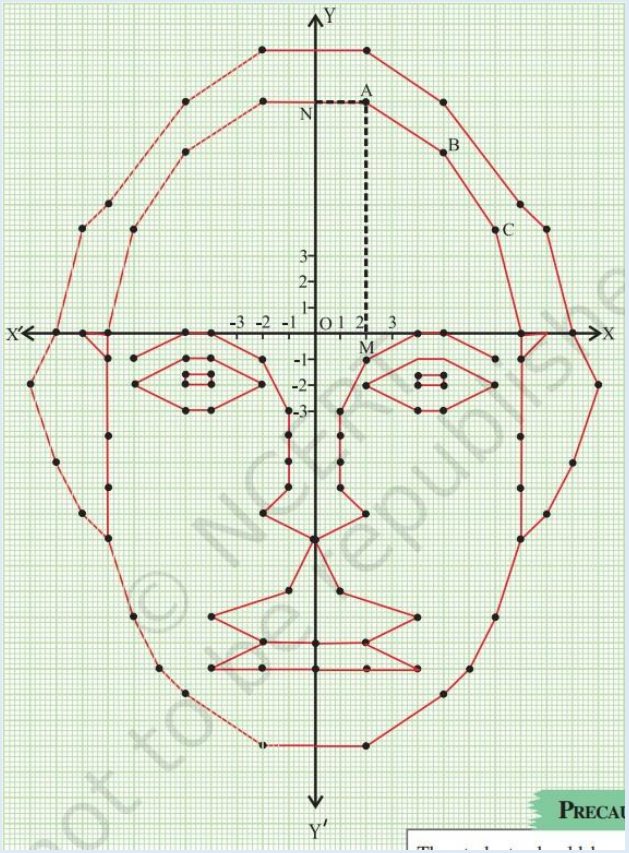
1. Take a cardboard of a convenient size and paste a white paper on it.
2. Paste the given graph paper along with various points drawn on it [see Fig. 1].
3. Look at the graph paper and the points whose abscissa and ordinates are to be found.

DEMONSTRATION

To find abscissa and ordinate of a point, say A, draw perpendiculars AM and AN from A to x-axis and y-axis, respectively.
Then abscissa of A is OM and ordinate of A is ON.
Here, OM = 2 and AM = ON = 9.
The point A is in first quadrant. Coordinates of A are (2, 9).

OBSERVATION

Point	Abscissa	Ordinate	Quadrant	Coordinates
B				
C				
...				
...				
...				
...				



APPLICATION

This activity is helpful in locating the position of a particular city/place or country on map.

ACTIVITY 2:- To find a hidden picture by plotting and joining the various points with given coordinates in a plane.

OBJECTIVE

To find a hidden picture by plotting and joining the various points with given coordinates in a plane.

MATERIAL REQUIRED

Cardboard, white paper, cutter, adhesive, graph paper/squared paper, geometry box, pencil.

METHOD OF CONSTRUCTION

1. Take a cardboard of a convenient size and paste a white paper on it.

2. Take a graph paper and paste it on the white paper.

3. Draw two rectangular axes X′OX and Y′OY as shown in Fig. 1.

4. Plot the points A, B, C, ..with given coordinates (a, b), (c, d), (e, f), .. respectively as shown in Fig. 2.

5. Join the points in a given order say A→B→C→D→.....→A [see Fig. 3].

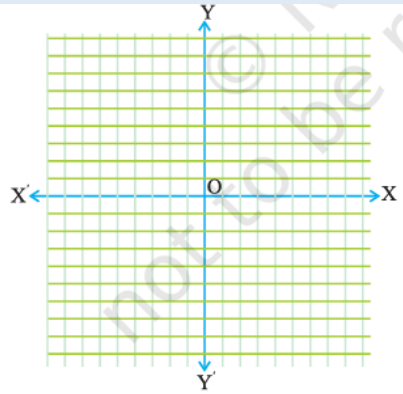


Fig. 1

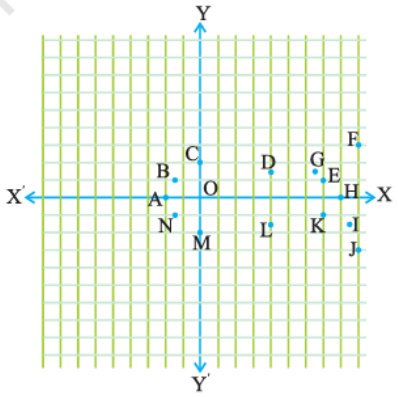


Fig. 2

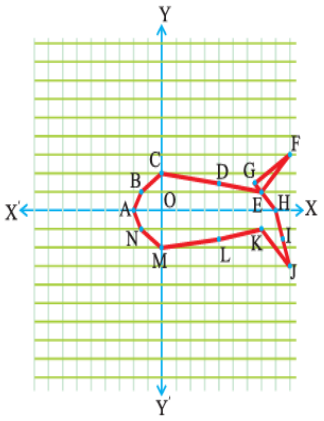


Fig. 3

Demonstration

By joining the points as per given instructions, a 'hidden' picture of an 'aeroplane' is formed.

OBSERVATION

In Fig. 3: Coordinates of points A, B, C, D, ...

are ....., ..., ..., ..., ..., ..., ...

Hidden picture is of _____.

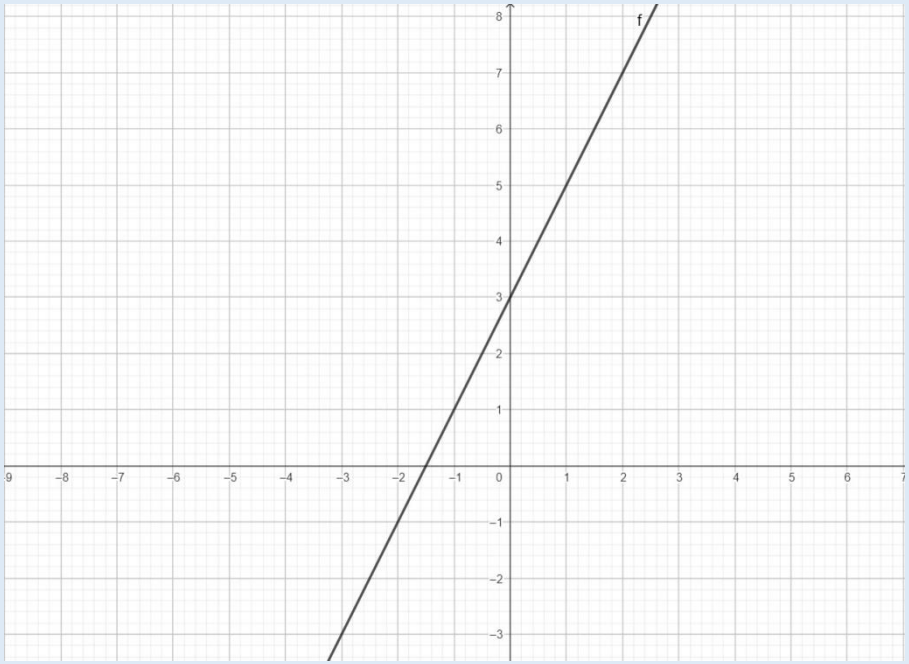
APPLICATION

This activity is useful in understanding the plotting of points in a Cartesian plane which in turn may be useful in preparing the road map, seating plan in the classroom etc.

Linear Equations In Two variables using Geo – Gebra

With the help of Geo-Gebra we can visualise the graphs of linear equations in two variables as straight lines. By taking various points on the lines we can draw out various co-ordinates of the points that satisfy the linear equations in two variables. For example

This is the graph of y= 2x+3



Like this we can draw the graph of any linear equation in two variables using Geo-Gebra

Geo Gebra is a dynamic mathematics software for all levels of education that brings together geometry, algebra, spreadsheets, graphing, statistics and calculus in one engine.

It has become the leading provider of dynamic mathematics software, supporting science, technology, engineering and mathematics (STEM) education and innovations in teaching and learning worldwide.

GeoGebra's math engine powers hundreds of educational websites worldwide in different ways from simple demonstrations to full online assessment systems. One can down load Geo-Gebra from Google and can start using it for teaching mathematics.

LINES AND ANGLES

ACTIVITY 1: Forming Different Angles using Geo-Board and Rubber Bands

OBJECTIVE

Identifying Acute angle, Right angle, Obtuse Angle,Linear Pairs and Vertically Opposite angles using geoboard.

PREREQUISITE KNOWLEDGE

i) Knowledge of geoboard
ii) Knowledge of different types of angles

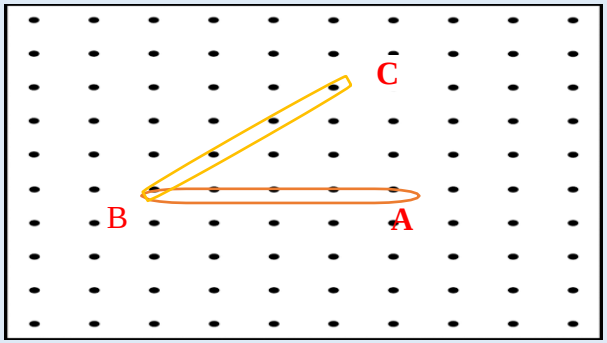
MATERIALS REQUIRED

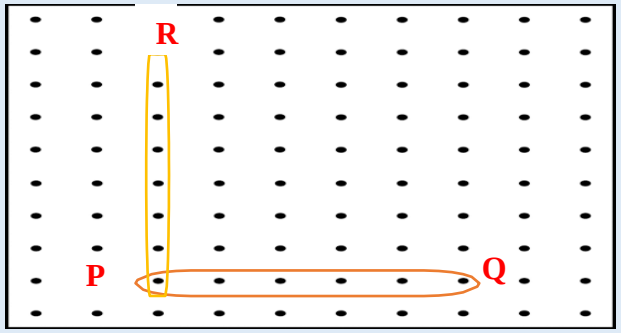
Geoboard and rubber bands (with different colours). Alternate to geoboard: dot paper, ruler and pencil.

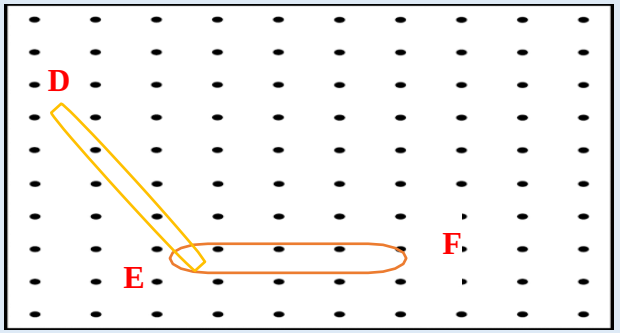
PROCEDURE

Acute angle

1) Mark the points A, B and C as shown in fig(i)
2) Join AB and BC using rubberbands.







3) ∠ ABC thus formed is Acuteangle. fig(I

Fig (i) Fig (ii) Fig (iii)

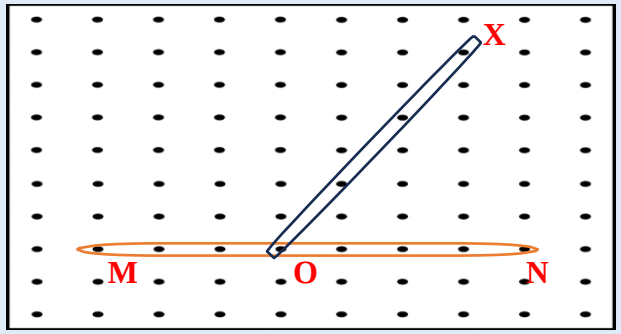
1) Mark the points P, Q and R as shown in fig(ii)
2) Join PQ and PR using rubber bands.
3) ∠ QPR thus formed is Right angle(=90°). ObtuseAngle

1) Mark the points D, E and F as shown infig(iii)
2) Join DE and EF using rubberbands.
3) ∠ DEF thus formed is Obtuseangle

Linear Pairs

1) Mark the points M, O , N and X as shown in fig(iv).

2) Join M, O and N using rubber band.∠ MON thus formed is a straight angle.



Fig(iv)

Vertically Opposite angles

1) Mark the points S, T, U, V and W as shown inFig(v).

2) Join S to V and U to T using two different Rubber bands so that line segments SV and UT are formed.

3) Name the intersection point of SV and UT as O.

4) ∠ SOT and ∠ UOV forms a pair of Vertically opposite angles.
Similarly, ∠ SOU and ∠ TOV forms a pair of vertically opposite angles.

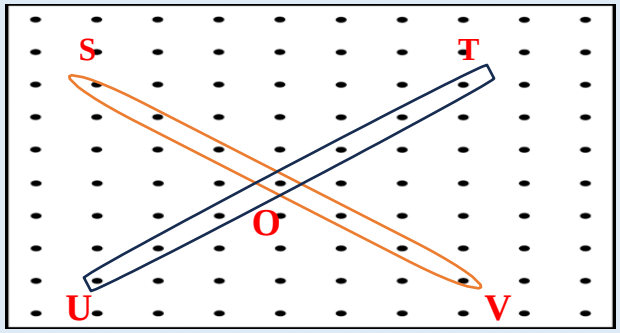


Fig (V)

OBSERVATION

We observed that the measure of acute angle is less than 90° and of obtuse angle is more than 90°.

If a ray stands on a line, then the sum of adjacent angles formed (linear pair) is180°.

If two lines intersect each other, then the vertically opposite angles are equal.

RESULT

On measuring, ∠ MOX + ∠NOX= 180° [Linearpair]

And ∠ SOT =∠UOV [Vertically opposite angles]

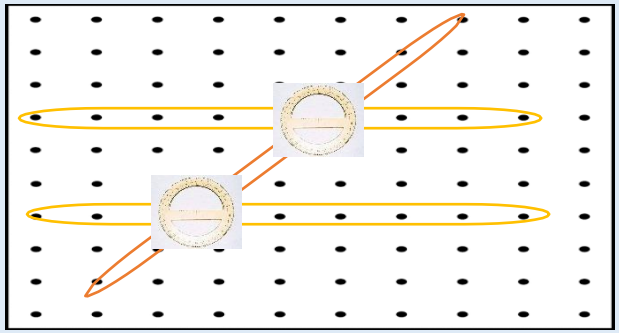
∠ SOU = ∠ TOV

ACTIVITY 2: Forming different lines and angles using geo board

Study of properties of parallel lines using geo board and rubber bands Procedure

Using the geo board in the mathematical kit of NCERT we can form a pair of intersecting lines and parallel lines using circular protractors we can study the properties of Parallel lines like

If a transversal intersects a pair of parallel lines then,



i) Corresponding angles so formed are equal

ii) Alternate Interior angles so formed are equal

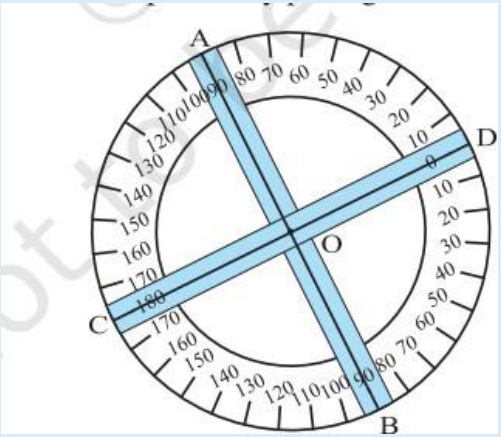
iii) Co-Interior angles so formed are supplementary

ACTIVITY 3 :- To verify experimentally that if two lines intersect,then

(i) the vertically opposite angles areequal
(ii) the sum of two adjacent angles is180º
(iii) the sum of all the four angles is360º.

MATERIAL REQUIRED

Two transparent strips marked as AB and CD, a full protractor, a nail, cardboard, white paper, etc.



PROCEDURE AND OBSERVATION:

- Observe the adjacent angles and the vertically opposite angles formed in different positions of thestrips.
- Compare vertically opposite angles formed by the twolines in the strips in differentpositions.
- Check the relationship between the vertically opposite angles

TRIANGLES

i) Congruent figures by using different congruent plane figures of plastic or cardboard.
ii) Study of various criteria of congruence of triangles.

ACTIVITY : Study of various criteria of congruence of Triangles using Triangle Cut outs.

OBJECTIVE

To verify the different criteria for Congruency of Triangles using Triangle cut outs.

PRE-REQUISITE KNOWLEDGE

Concept of congruent triangles(SSS, ASA, SAS, RHS criteria of congruence).

MATERIALS REQUIRED

- Cardboard
- White sheet ofpaper
- Pair ofscissors
- Glazed papers (differentcolours)
- Geometrybox
- Gum

Procedure

i) Take a cardboard of an appropriate size and paste a white sheet onit.

ii) Make a pair of triangles ABC and DEF from red glazed paper such that AB=DE, BC= EF , AC = DF and cut them out. (see Fig1)

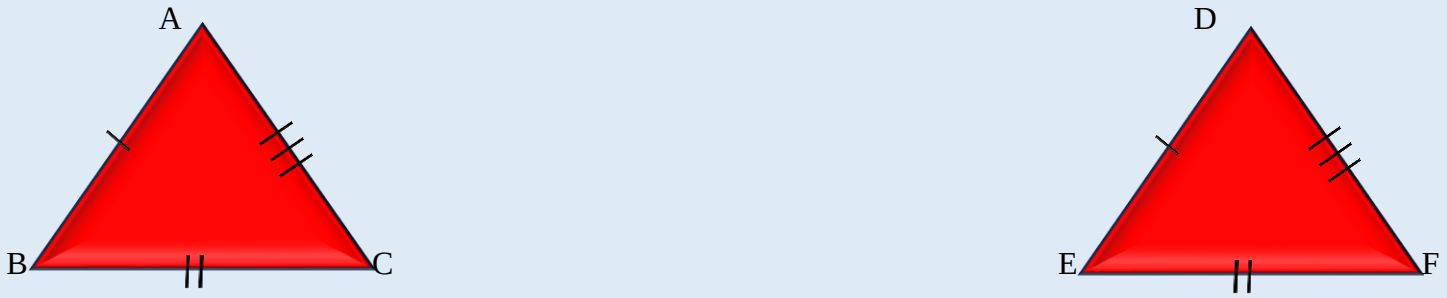
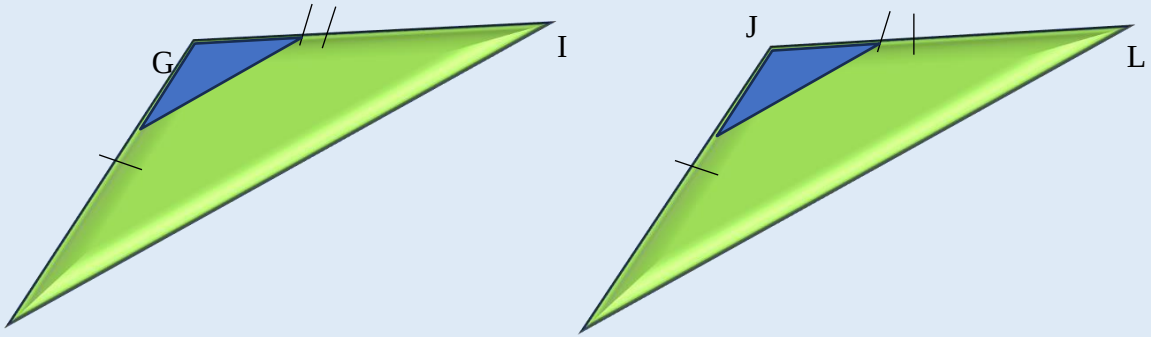


Fig 1

iii Make a pair of triangles GHI and JKL from green glazed paper such that GH= JK,



iv) Make a pair of triangles PQR and STU from blue glazed paper such that ∠Q = ∠T, QR = TU, ∠R = ∠ U and cut them out (See Fig 3)

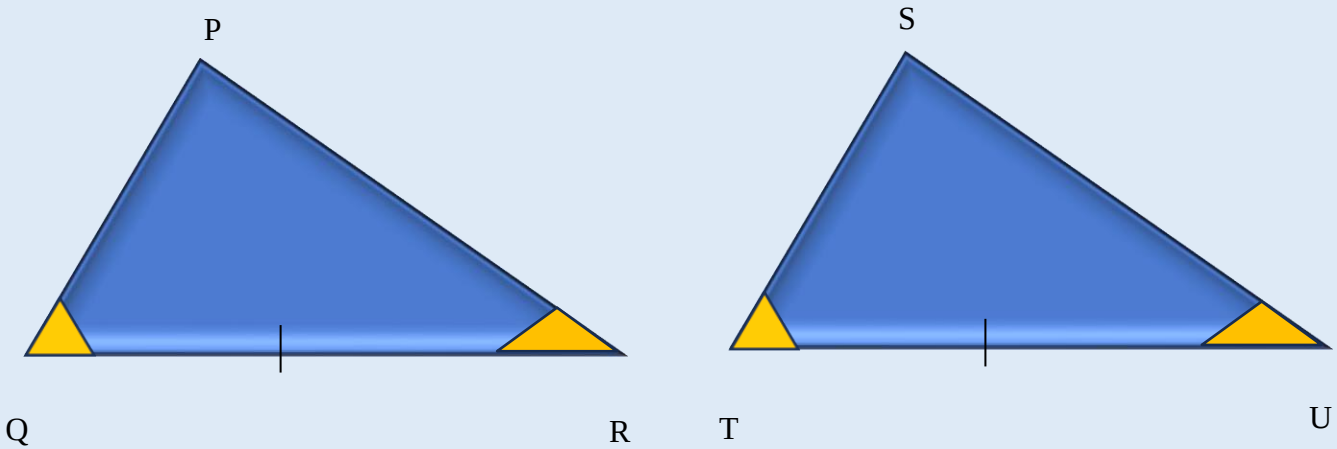


Fig 3

v) Make two right angles XYZ and LMN from yellow glazed paper such that hypotenuse YZ = hypotenuse MN and XZ =LN and cut them out (See Fig 4).

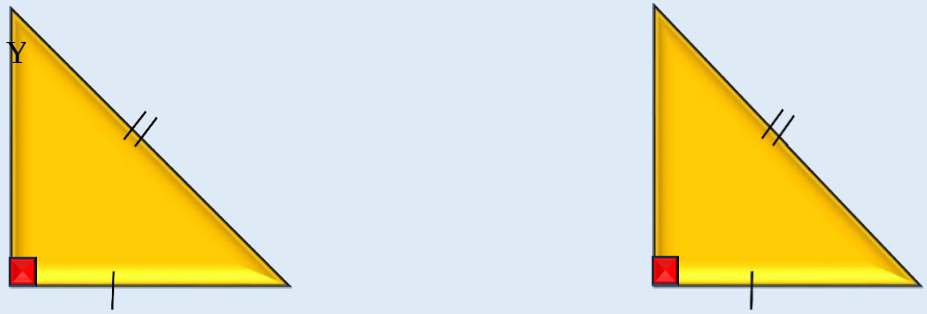


Fig 4

DEMONSTRATION

1. Superpose ΔABC on ΔDEF and see whether one triangle exactly covers the other triangle or not by suitable orientation. Observe that ΔABC covers ΔDEF completely under the correspondence A D,B E,C F.

So,ΔABC ≅ ΔDEF , if AB = DE, BC = EF and AC =DF.

This is SSS criterion for congruency.

2. Similarly, ΔGHI ≅ ΔJKL , if GH= JK, ∠G = ∠ J (angle between two equal sides) , GI = JL. This is SAS criterion forcongruency.
3. ΔPQR ≅ ΔSTU, if ∠Q = ∠T , QR = TU (side between two equal angles), ∠R = ∠ U. This is ASA criterion forcongruency.
4. In the same way, ΔXYZ ≅ ΔLMN , if hypotenuse YZ = hypotenuse MN and XZ = LN. This is RHS criterion of congruency for rightangles.

RESULT

We have verified experimentally the different criteria for congruency of triangles using triangle cut outs.

QUADRILATERALS

ACTIVITY : Area of a Parallelogram

OBJECTIVE

To show that the area of a parallelogram can be derived using the formula for area of rectangle.

PREREQUISITE KNOWLEDGE

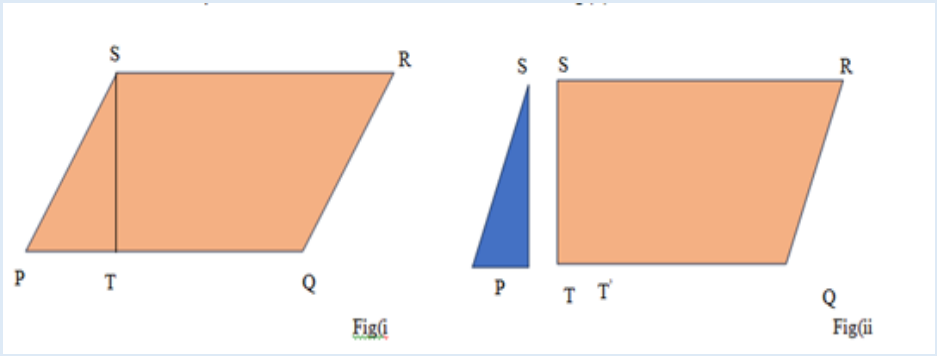
1. Construction of parallelogram by paper folding.
2. **Area of rectangle = length xbreadth**
3. Area of parallelogram = base x correspondingheight.

MATERIALS REQUIRED

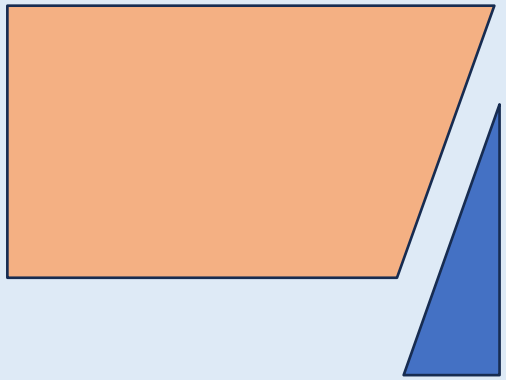
- Glazedpapers
- **Pencil**
- A pair of scissors
- **Gum**

PROCEDURE

1. Draw a parallelogram by paper folding using coloured glazed paper and name it as PQRS.
2. Cut the parallelogram with the help of scissors.
3. In the parallelogram, draw a perpendicular from a vertex S to its opposite side PQ of the parallelogram PQRS by folding thepaper.
4. We will get a crease along ST. Now cut it along ST, we will get two pieces, one triangle as PST and other one a trapezium named S᾽ T ᾽QR as shown inFig(ii).



5. Now paste this triangular piece PST on the other side of trapezium such that its side PS coincides with QR[Fig(iii)].



6. After pasting, we get a rectangle T ' T R S' with length as T 'Q + QT = T ' T= S'R = PQ offirstfigure and breadth asTR

OBSERVATION AND CALCULATION

We observe that new Fig(iii) is a rectangle.

Area of parallelogram PQRS = Area of rectangle T ' T R S'

= length x breadth

= T ‘ T x TR

= PQ x ST

Hence, Area of parallelogram = Base x Height **RESULT**

It is verified that the area of parallelogram is equal to the product of its base and corresponding height, and it can be derived by the formula ofareaofrectangleusingpapercuttingandpastingmethod.

OBJECTIVE:

To explore similarities and differences in the propertieswith respecttodiagonalsofthefollowing quadrilaterals – a parallelogram, a square, a rectangle and arhombus.

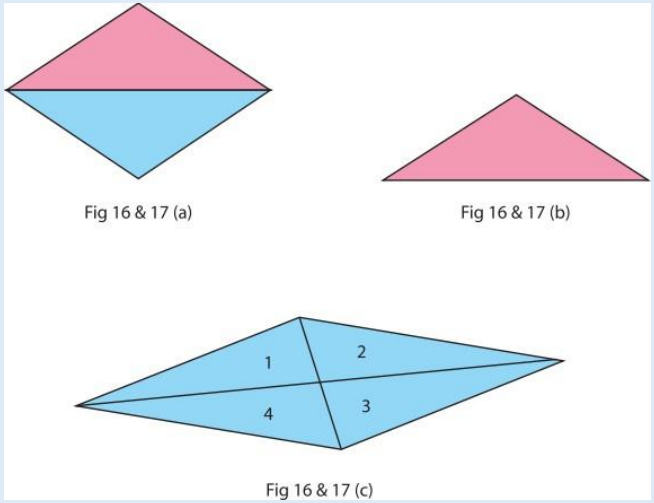


Fig 16 & 17 (a)

Fig 16 & 17 (b)

Fig 16 & 17 (c)

PRE-REQUISITE KNOWLEDGE:

1. Construction of the diagram of parallelogram, rhombus, square and rectangle.
2. Knowledge of properties of sides and angles of the above mentioned figure

MATERIAL REQUIRED:

Chart papers, pencil, compass, scale and a pair of scissors.

Property 1: A diagonal of a parallelogram divides it into two congruent triangles.

PROCEDURE:

1. Make a parallelogram on a chart paper and cut it.
2. Draw diagonal of the parallelogram [Fig16&17(a)].
3. Cut along the diagonal and obtain twotriangles.
4. Superimpose one triangle onto the other [Fig16&17(b)].

OBSERVATION:

Two triangles are congruent to each other.

LEARNING OUTCOME:

Students would be able to infer that diagonal always divides the parallelogram into two triangles of equal areas.

Remark: Repeat the same activity with the other diagonal of the parallelogram.

Property 2 : Diagonals of a parallelogram bisect each other.

PROCEDURE**:**

1. Draw the parallelogram and its both diagonals.
2. Cut the four triangles formed.Name them 1 ,2,3 and 4
3. Observe that triangle 2 is congruent to triangle 4 and triangle 1 is congruent to triangle 3 by superimposing them on each other
4. Students should summarize the results in the following Format

Sr. No.	Properties	Parallelogram	Square	Rectangle	Rhombus
1	Diagonals bisect each other	yes	yes	yes	yes
2	Diagonals are perpendicular to each other				
3	Diagonals have equal length				
4	Diagonal divides the given quadrilateral into two congruent triangles				

CIRCLES

Activity to study various theorems of circles using circular board given in the mathematical kit procured under PM SHRI scheme

ACTIVITY :Angle at Centre is double the angle subtended by same arc at any point on circumference of circle (CENTRAL ANGLE THEOREM OF CIRCLE)

OBJECTIVE

To demonstrate that the angle subtended by an arc at the centre of circle
is double the angle subtended at any point on the remaining part of the circle

PRE REQUISITE KNOWLEDGE

1. Basic terminology related to circle.
2. Concept of an angle subtended by an arc at the centre and at the circumference of the circle.

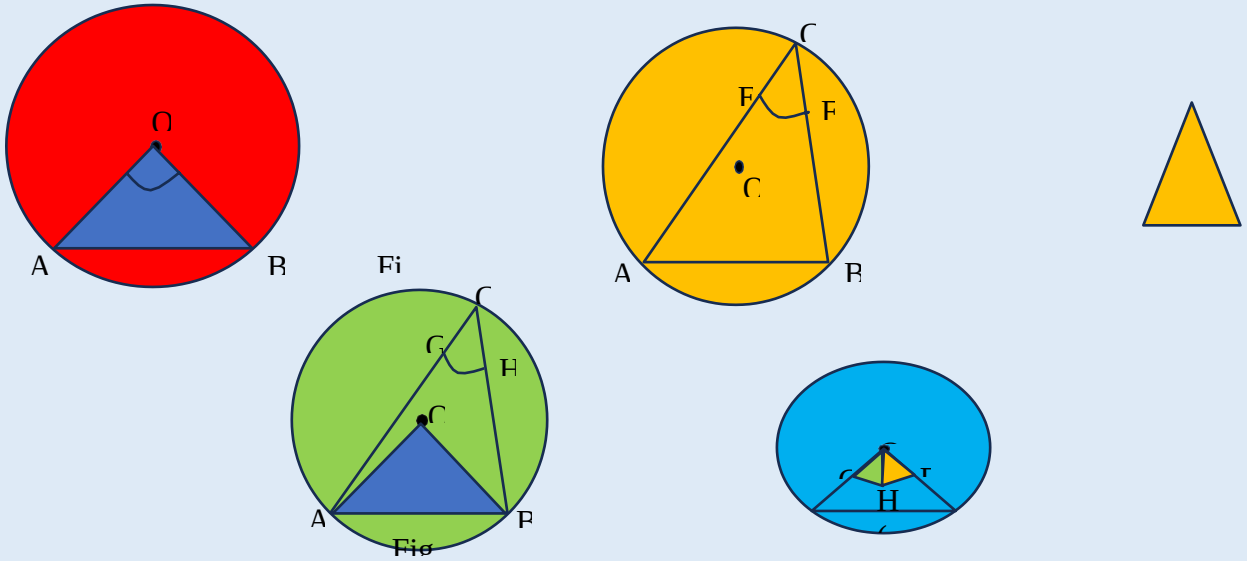
MATERIALS REQUIRED

- Glazed papers (four differentcolours)
- Whitesheet
- A pair ofscissors
- Gum

PROCEDURE TO DEMONSTRATE

1. Cut one circle of convenient radius with centre O from red glazed paper.
2. Cut three more circles of same radius from different coloured glazedpapers.
3. Keep all four circles one on the other. Now make chords of same length on each circle by folding and pressing them along any part to make acrease
4. Name the chord AB in first circle with centreO.
5. Join OA and OB with pencil. [See Fig(i)]

1. Take two other circles of yellow and green colour and put one on the other and fold it in such a way that angle on the circumference with the same chord ABisformed.[See Fig(ii) and Fig(iii)].
2. Name both of these angles as ∠ACB (but both with different colours) where AB is chord.
3. Cut angles ∠ACB from yellow circle [Fig(ii)] and ∠ACB from green circle[Fig(iii)].
4. Paste these two cut outs of [Fig(ii)] and [Fig(iii)] on the another circle (Blue Colour) [Fig(iv)] at centre O such that their arms lie on the radius OA and OB ofcircle.



OBSERVATION

We observed that two cut outs of angles ∠ACB fully covered ∠AOB in Fig(iv).

i.e ∠AOB = ∠ECF + ∠GCH

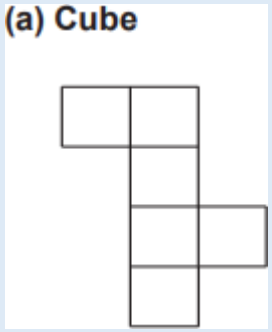
=2∠ACB (because ∠ECF =∠GCH =2 ∠ACB)

RESULT

Hence we verified that the angle subtended by an arc at the centre of circle is double the angle subtended by the same arc at any point on the remaining part of the circle.

SURFACE AREAS AND VOLUMES

i) Activity to find the surface area ofcube



Surface area of a cube may be found out with the help of nets of cube. As cube is made up of six identical square faces, it's total surface area = 6Xside^2 it's lateral surface area = 4Xside^2

ii) **To find the volume of acube**.

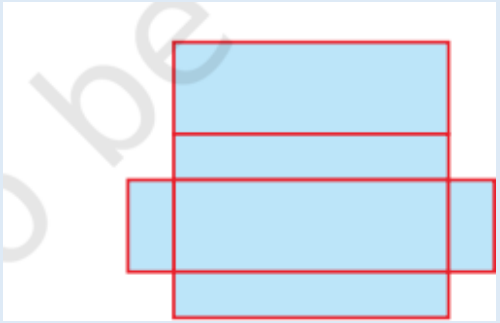
Every cube, cuboid is nothing butaprism.Cube is a square prism. Cuboid is a rectangular prism.
Volume of a prism is area of base X height As each face of a cube is a square, then
Volume of a cube = area of square X height of cube

= side X side X side

= side^3

iii) Activity to find the surface area of cuboid by papernets

The surface area of the cube may be found out using the 6 rectangular faces of different measurements like ‘l’ ‘b’‘h’



Total Surface area of cuboid = 2 (lb+bh+lh) Lateral Surface area of cuboid =2h(l+b)

Volume of cube = area of its base Xheight

= length X breadth

iv) Activity to find the curved surface area of cylinder using rectangular paper

A Cylinder can be formed by just folding a rectangular paper along it length. Then the breadth of the rectangle becomes the height of the cylinderandthelengthoftherectanglebecomesthecircumferenceofthe base of the cylinder.

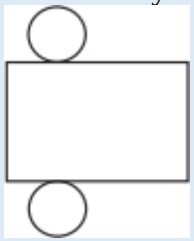
The Curved surface area of the Cylinder is nothing but the area of the rectangular sheet.

So the Curved surface area of Cylinder = Area of rectangle = length X breadth

= circumference of the base X height

= 2□r X h =2□rh

v) Activity to find the total surface area of cylinder using cylinder net ofpaper



Total surface area of the Cylinder = C.S.A. + Area of base +area of top
= C.S.A. of cylinder + 2 X area of circle
= 2□rh + 2□r^2
=2□r(h+r)

vi) Volume of a Cylinder:
Every Cylinder is a Prism. Actually, Cylinder is a circular Prism

Volume of any Prism = area of its base X its height

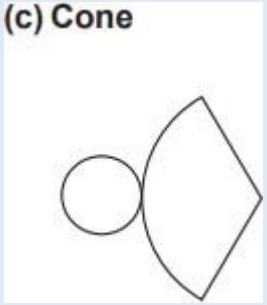
So, Volume of Cylinder = Area of base of Cylinder X height of Cylinder

= Area of circle X height of Cylinder

$= \pi r^2 \times h$

$= \pi r^2 h$

vii) Activity to find the curved surface area of cone using a sector



A cone can be formed by folding a sector along its radii.

When a sector is folded along its radii, then the length of arc of sector becomes circumference of base of cone

When a sector is folded along its radii, then the radius of the sector becomes slant height of the cone.

So, Curved surface area of cone = Surface area of sector

$$= \frac{\text{(length of arc of sector X radius of sector)}}{2}$$

$$= \frac{\text{Circumference of base of cone X slant height of cone}}{2}$$

$$= \frac{2\pi r \times l}{2}$$

$$= \pi r l$$ where ‘r’ is the radius and ‘l’ is slant height ofcone

Total surface areaofcone = CSA of Cone + Area ofbase

= CSA of Cone + Area of Circle

$= \pi rl + \pi r^2$

$= \pi r(l + r)$

viii) Activity to find the surface area of a sphere

The Surface area of sphere can be found out easily with the helpof an orange.

Take an orange which is almost spherical on an A-4 sheet

By keeping a thin pencil or pen along the surface of orange and perpendicular to the paper, draw four circles

Peel out the orange. Make very small peelings. If you adjust, all these peelings will adjust in all the four circles. This shows that the surface area of sphere is nothing but areas of four circles of same radius



ix) Activity to find the volume of asphere

A sphere is a perfectly round geometrical and circular object in three-dimensional space that resembles the shape of a completely round ball.

Diameter:

A Diameter is a straight line passing through the center of a circle or sphere and meeting the circumference or surface at each end.

Radius:

Radius of a sphere is a line segment between the center and a point on the circle or sphere.

Volume:

The volume of the sphere is defined as :$\mathbf{V = \frac{4}{3}\pi r^3}$.

In this equation, "**V**" represents volume and "**r**" represents the radius of the sphere.

A hollow sphere and two cylinders whose base diameter and height are equal to the diameter of the sphere, sand.

Procedure:

1. Fill the hollow sphere with sand once and empty it into one of the cylinders.
2. Fill the hollow sphere a second time with sand and empty it intothe secondcylinder.
3. Fill the hollow sphere a third time and empty it into the remaining spaces of the two cylinders.

ACTIVITY : Understanding Heron's Formula OBJECTIVES

- Define Heron'sformula
- Write and understand the formula for Heron'sformula
- Find the area of a triangle when height is not given- by Heron's formula.

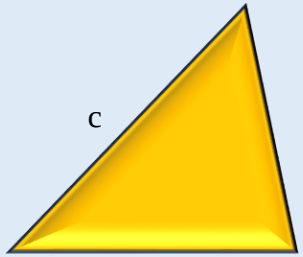
HISTORY , FORMULA AND PROCEDURE

History – Heron's formula is named after Heron of Alexandria, a GreekEngineerand Mathematician in 10AD – 75AD. We can use this formula to find the area of a triangle using the 3-side lengths. We do not have to rely on the formula for area that uses base and heigh

FORMULA –

1. Calculate 's' (half of the perimeter of triangle)using

A



$$s = \frac{a+b+c}{2}$$

Step-1 Calculate‘s’.

$$s = \frac{a+b+c}{2} = \frac{3+3+4}{2} = 5$$

Step -2 Calculate the area of park

Area of park = $\sqrt{(s-a)(s-b)(s-c)}$

$= \sqrt{5(5-3)(5-3)(5-4)}$

$= 2\sqrt{5}$ sq.km = 2 x 2.24 sq.km

= 4.48 sq. km Step-3 Cost of development

Cost of developing the park for 1 sq. km of area = Rs 2,00,000 Cost of developing the park

for 4.48 sq. km of area = Rs 2,00,000 x 4.48

= Rs 8, 96, 000

RESULT

Hence we have understood how to use heron's formula for finding area of triangles whose three sides are given but height is not given. We can use this formula for finding the area of quadrilaterals by splitting quadrilaterals into triangles.

CROSSWORD PUZZLE WITH MATHEMATICAL TERMS

DESIGN A CROSSWORD PUZZLE WITH MATHEMATICAL TERMS

OBJECTIVE: To review mathematics vocabulary, to give the opportunityfor creative expression in designing puzzles, to act as a means of motivating the study of a given unit and to giverecreation.

DESCRIPTION:

Takeasquaregrid(9×9)whereafewwordsareconnectedhorizontally and vertically. First compile a list of the terms. Then decide on the dimensions for the finished puzzle, preferably on squared paper with blocksmeasuringatleastahalf–inchoneachside.Adesignmayormay not be blocked out before inserting the terms. The words showed be connectedbutmaystandaloneiftheyfitintothepre–determinedspaces allowed for thepuzzle.

The puzzle, which is given may be used as guideline for framing of puzzles based on 1. Mathematical operations. 2. Terms based on geometrical shapes.

ACROSS:

2. Another word forinclination
3. The way a pathmoves

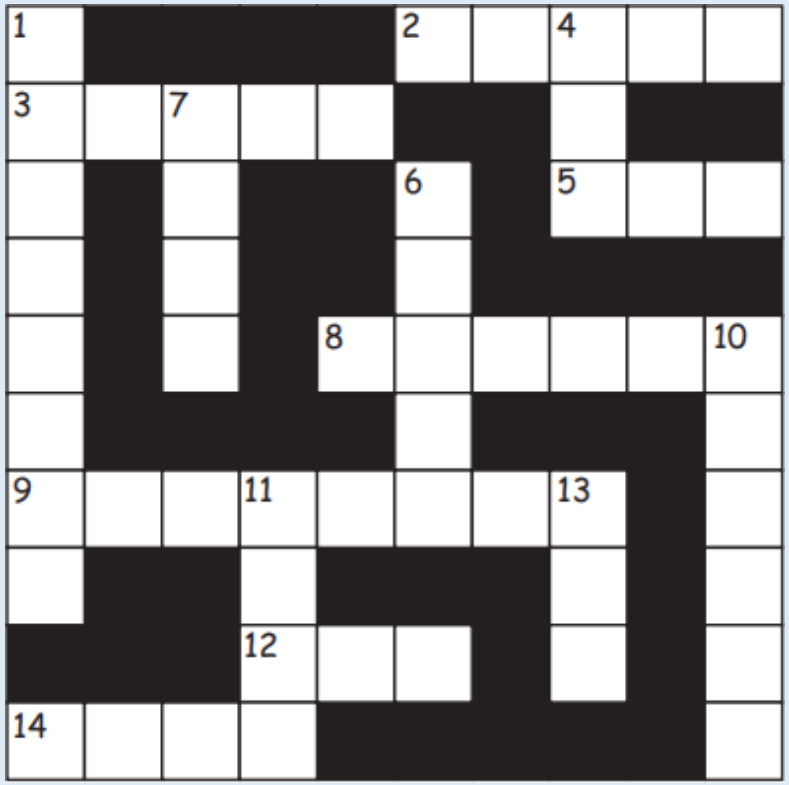
5. A cube numbered 1, 2, 3, 4, 5, and 6 on the faces

8. Average finding by using statisticaldata

9. The longest chord of acircle

12. Part of a circle is called

14. In set theory, the name of the diagram is called



DOWN:

1. Height of a triangle
4. Abbreviation of greatest common denominator
6. A dot on a piece of paper
7. A solid figure has six faces
10. Counting objects are called
11. Another measure of central tendency
12. Information can be used in statistics as

SUBJECT: SCIENCE

INDEX

CONTENT DEVELOPMENT TEAM

ACTIVITY 1.

MATTER IN OUR SURROUNDINGS

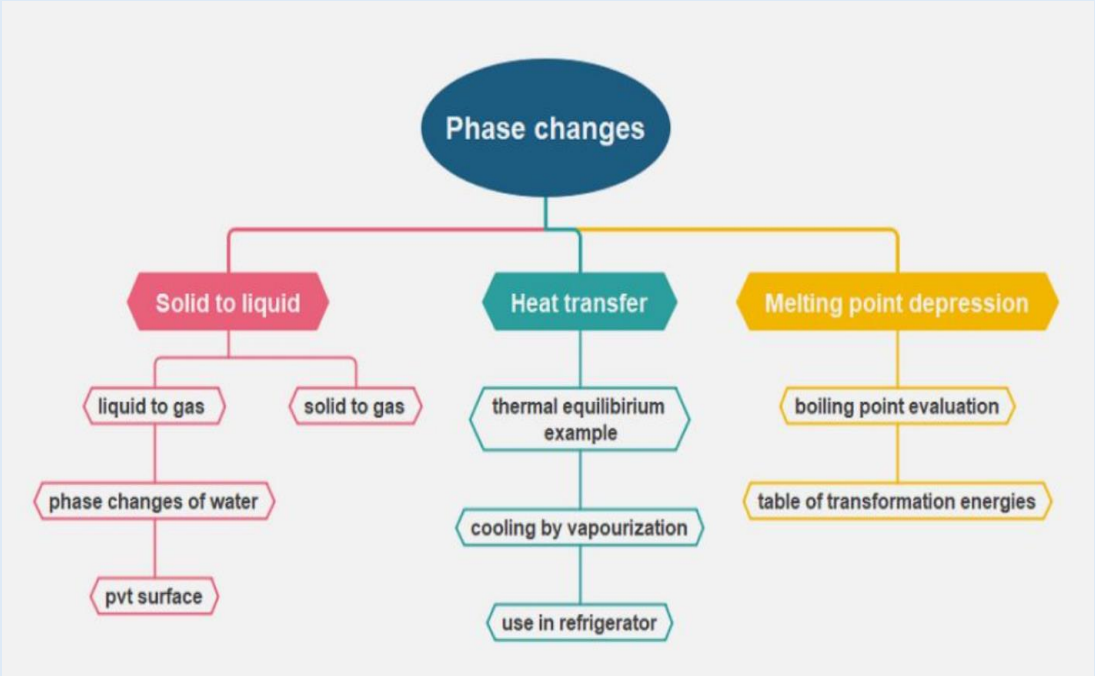
LEARNING OBJECTIVE: To understand the effect of temperature on change of state of matter.

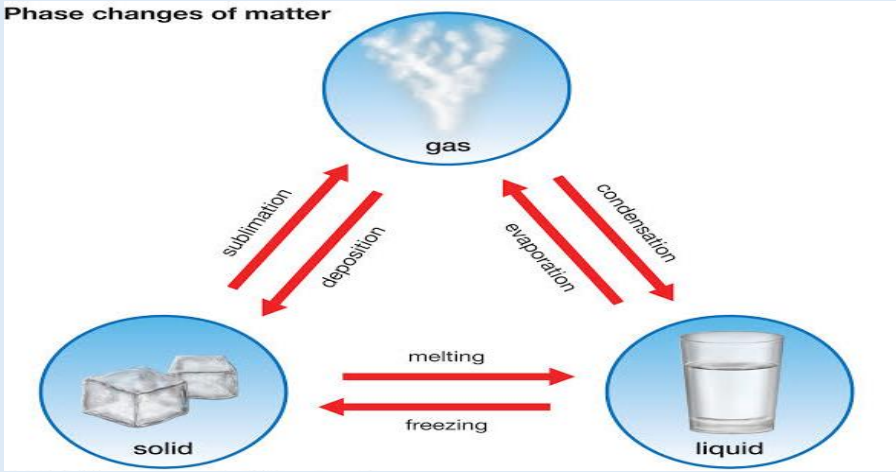
ART INTEGRATED ACTIVITY

Effect of temperature on change of state in Matter around Us

What is required?
Approximately 100g of ice, Beaker, Laboratory thermometer, Glass rod

How to proceed?
1.Take about 100g of ice and place it in a beaker. Insert the bulb of a laboratory thermometer into the ice in the beaker to measure the temperature accurately. Observe and note the initial temperature of the ice.
2.Begin heating the beaker slowly. Record the change in temperature at regular intervals, such as every 30 seconds, as the ice starts to melt and the water temperature increases.
3.Continue heating until all the ice has melted and turned into water.
4.Now, insert a glass rod into the beaker containing water. Continue heating the beaker until the water starts to boil and eventually all the water is vaporized into steam.
5.During the process of boiling, note the temperature at which the water remains constant for a while.
6.Illustrate the observations recorded in the form of concept map.


Phase changes
Solid to liquid
Heat transfer
Melting point depression
liquid to gas
solid to gas
thermal equilibirium example
boiling point evaluation
phase changes of water
cooling by vapourization
table of transformation energies
pvt surface
use in refrigerator


Phase changes of matter
gas
sublimation
deposition
evaporation
condensation
melting
freezing
solid
liquid

What have you learnt?

The temperature of the ice gradually increases as it is heated.
During the melting process, the temperature remains constant at 0°C until all the ice has completely melted.
After the ice has melted, the temperature starts to rise again as the water is heated.
When the water starts boiling, the temperature remains constant at the boiling point of water, which is 100°C at atmospheric pressure.
After all the water has vaporized, the temperature starts to increase again.
This experiment demonstrates the concept of changes in the state of matter due to the application of heat. It shows that during the change of state from solid to liquid and liquid to gas, the temperature remains constant until the entire substance has transformed.
This constant temperature during state change is known as the "melting point" and the "boiling point" for solid to liquid and liquid to gas transitions, respectively.

Precautions:
Handle the beaker and heated items with care to avoid any accidents or burns.
Ensure that the glass rod and the beaker are clean and free from any contaminants.
Use a laboratory thermometer with a suitable range for measuring both the low and high temperatures involved.

ACTIVITY 2.

IS MATTER AROUND US PURE?

LEARNING OBJECTIVE: To identify the given Mixtures into Homogenous and Heterogeneous.

EXPERIMENTAL LEARNING BASED ACTIVITY

How to prepare and identify a homogenous mixture and a heterogeneous mixture?

What is required?
Sodium chloride/sugar, sand/chalk powder, water, micro beaker, stirring rod, funnel, filter paper, tripod, starch powder and kerosene burner.

How to proceed?
Part A

How to prepare a homogenous mixture (solution)?
1.Take 5 mL of water in a 10 mL micro beaker and add one spatula full of sodium chloride/ sugar to it.
2.Stir it well and filter.
What do you observe on the filter paper?
Do you observe any particles settling down in the solution?

Part B

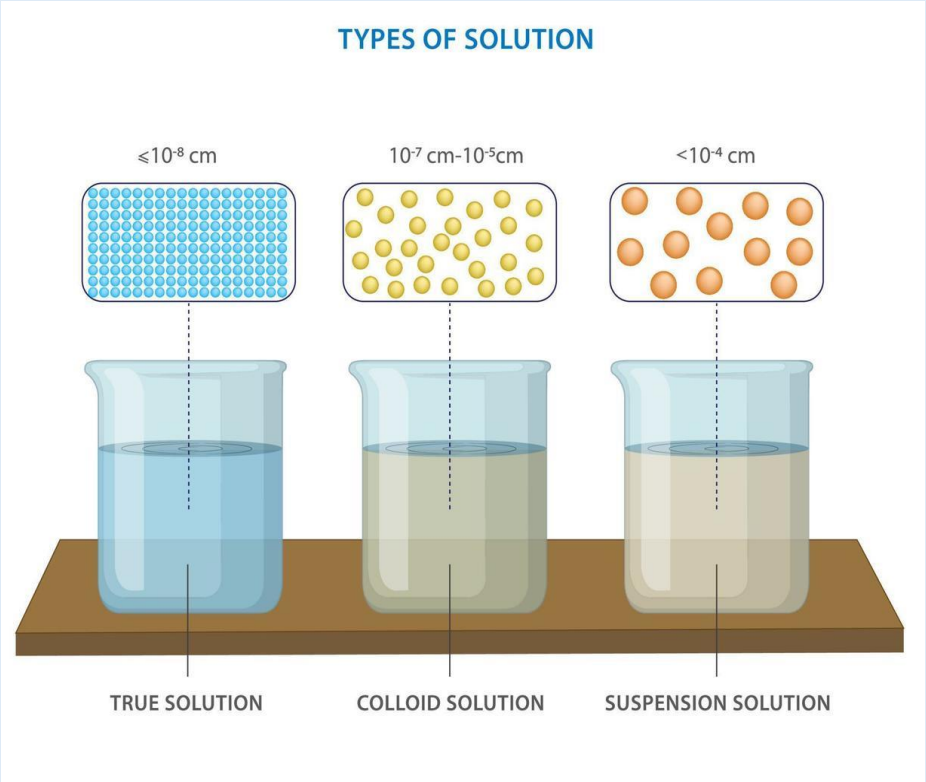
How to prepare a suspension?

1.Take 5 mL of water in a micro beaker and add one spatula of sand/chalk powder to it.
2.Stir it well and observe carefully.
3.Filter the solution through a filter paper.
What do you observe on the filter paper?

Part C

How to prepare a colloidal solution?

1.Take one spatula of starch powder in a 10 mL micro beaker and make its paste with water.
2.Add the paste gradually by constant stirring to another beaker containing 5 mL water.
3.Heat the mixture with constant stirring. Do not boil.
4.Cool it and filter.
What do you observe on the filter paper? Do you observe some turbidity in the filtrate?
5.In this colloidal solution, you cannot see the particles of starch, whereas you could see the particles of sand in the suspension. The particles in colloids are so small that you cannot see them with naked eyes. But you can prove them to be present when a beam of light is passed through the solution. These become visible by scattering the light.
Mixture in Part A is homogeneous mixture.
Mixture in Part B and Part C are heterogeneous mixtures.



What have you learnt?

1.Salt/sugar in water forms a homogenous mixture.
2.Sand/Chalk powder in water forms a heterogenous mixture.
3.The residue was seen on the filter paper in case of heterogenous mixture.
4.The homogenous solution is transparent.
5.Suspensions are opaque.
6.Suspended solid can be separated by filtration.
7.Colloidal solutions are translucent and make a heterogeneous mixture.
8.Solid particles of a colloidal solution cannot be separated by filtration.
9.The enamel paint is an example of heterogeneous mixture and colloidal solution.

ACTIVITY 3.

ATOMS AND MOLECULES

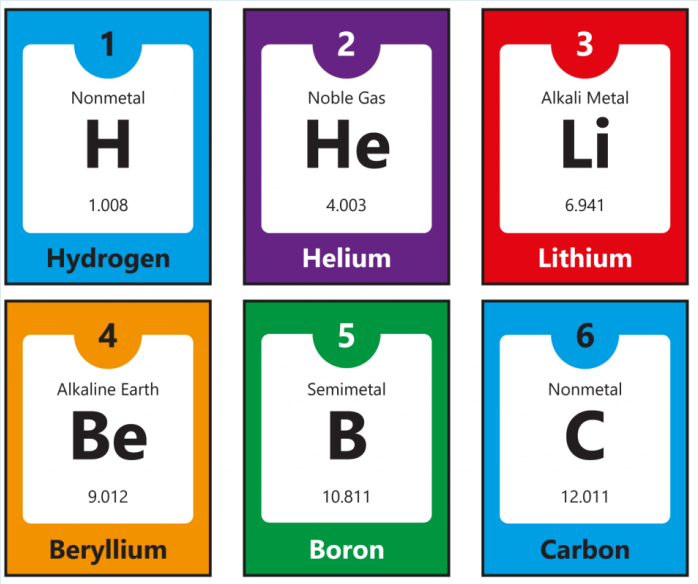
LEARNING OBJECTIVE: To know different elements, compounds and their symbols.

ART INTEGRATED ACTIVITY

To make Placards of different elements & compounds

What is required?
cardboard, white paper, sketch, scissor, gum, cardboard box.

How to proceed?
Cut the cardboard in size of 5''X5''cm and make 30 pieces. Each on them writes different elements & compounds symbol and names. Then put all in a closed box with lid. Now in a classroom randomly in a roll number wise ask the students to come forward and pick one pieces of cardboard from inside the box without looking directly. Before this doing so write the ELEMENTS/COMPOUNDS on a board. Students who correctly identify elements and compounds write on board. Soall the elements and compounds which were written can identify by the above said activities.



What have you learnt?
By doing this activity, students get engaged in activity based learning. They will identify the elements and compounds and their symbols.

From this activity, students get involve in activity. The monotonous theoretical learning can be minimized. Students become enthusiastic, energetic and learn more. Students learn elements/compounds, their name and symbols. They know the basic difference between elements and compounds.

ACTIVITY 4.

STRUCTURE OF ATOM

LEARNING OBJECTIVE: To demonstrate the nature of charged particles in matter.

EXPERIMENTAL LEARNING BASED ACTIVITY

What is required?
Comb, glass rod, balloon, silk cloth

How to proceed?
1.Comb dry hair. does the comb then attract a small piece of paper?
2.Rub a glass rod with a silk cloth and bring the rod near an inflated balloon.
3.Observe what happens.

What have you learnt?
The small piece of paper will be attracted to the comb.
The inflated balloon will be attracted towards the comb.
Initially, the comb is neutral but when we comb dry hair, it gets charged so charged comb attracts a piece of paper. When a glass rod is rubbed with a silk cloth, it gets charged and this charged rod attracts an inflated balloon.

On rubbing two objects together, they become electrically charged. An atom is divisible and consists of charged particles.

Activity 5.

STRUCTURE OF ATOM

LEARNING OBJECTIVE: To construct Atomic Models displaying electronic configuration of the first eighteen elements.

ART INTEGRATED ACTIVITY

Make static atomic models displaying the electronic configuration of the first eighteen elements.

What is required?

Thread, colour chalk, Ping pong balls or other small round objects of three different colours, Cardboard large enough to accommodate the model, Glue

How to proceed?

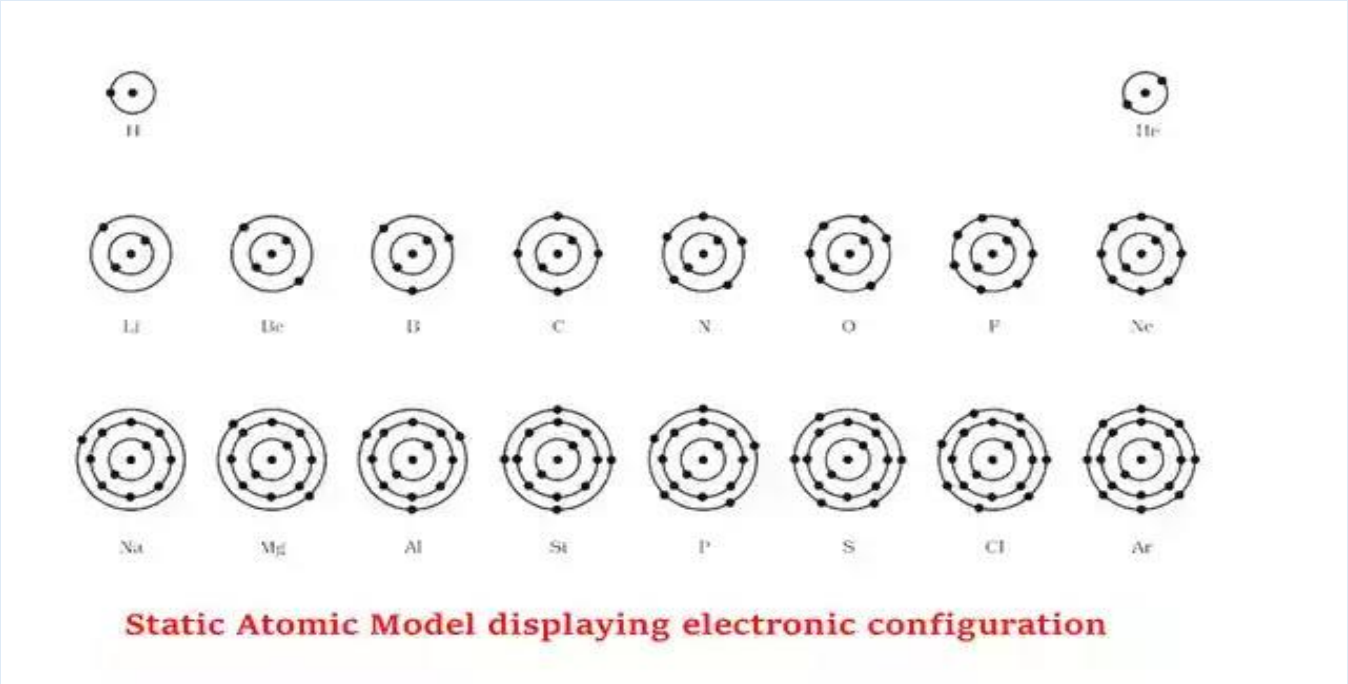
1.To make a model of an atom, first select an atom with an atomic number of at least 11 to ensure it has three energy levels, then gather materials such as coloured ping pong balls (for protons, neutrons, and electrons), string, cardboard and glue.

2.Construct the nucleus by gluing together balls representing protons and neutrons in an alternating pattern, then attach it to the centre of the cardboard.

3.Create energy level rings with string around the nucleus for the electrons, adhering to the maximum number of electrons each ring can hold (2 for the first ring, 8 for the second, etc.), and glue the electrons evenly spaced on the rings.

What have you learnt?

- Elements and their symbols.
- Compounds and their symbols
- Electronic configuration of the first eighteen elements.



Static Atomic Model displaying electronic configuration

ACTIVITY 6.

TISSUES

LEARNING OBJECTIVE: To Identify various types of plant tissues.

ART INTEGRATED CLAY MODELLING

Identification of various tissues in plants from prepared (permanent) slides and to construct their clay models.

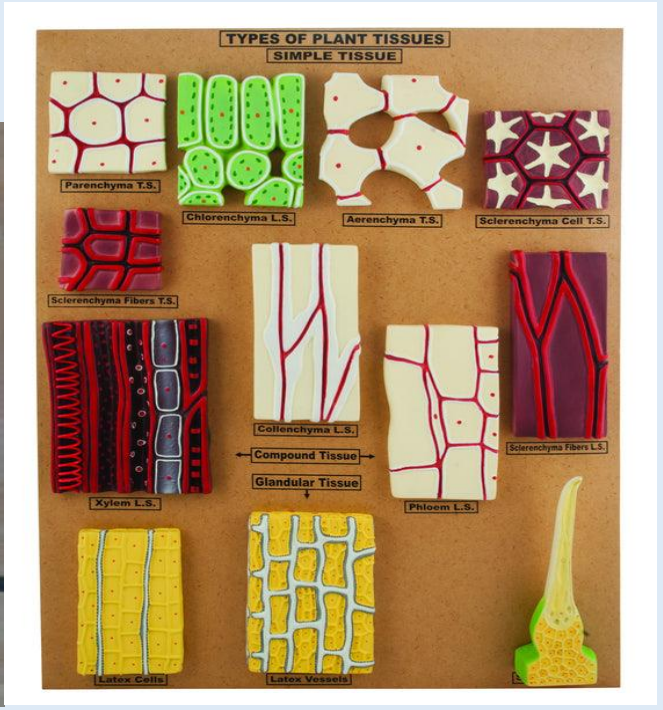
What is required?
Slides cover slips, needle, brush, blade, compound microscope, dicot and monocot tissues, safranin, glycerine.

How to proceed?

1.Cut a small piece of the plant tissues and place it on a slide in a drop of safranin, wash with water and mount in glycerine. Place a cover slip gently.

2.Observe the slide under low power microscope and record the observations.

3.Using clay, model the structure of the tissues based on your observations and understanding in group of 3-4 students



What have you learnt?

The tissues can be differentiated based on the thickness of their cell walls, number of vacuoles, etc.

Extension
Spread a thin layer of transparent nail polish/quick fix on the surface of leaves. Allow it to dry. Remove the dried layer gently. Put it on a slide and observe the impression of tissues under the microscope.

Precautions
1.The staining of the peel should be adequate.
2.Cover slip should be placed gently with the help of a needle so as to avoid air bubbles and folding of tissues.

ACTIVITY 7.

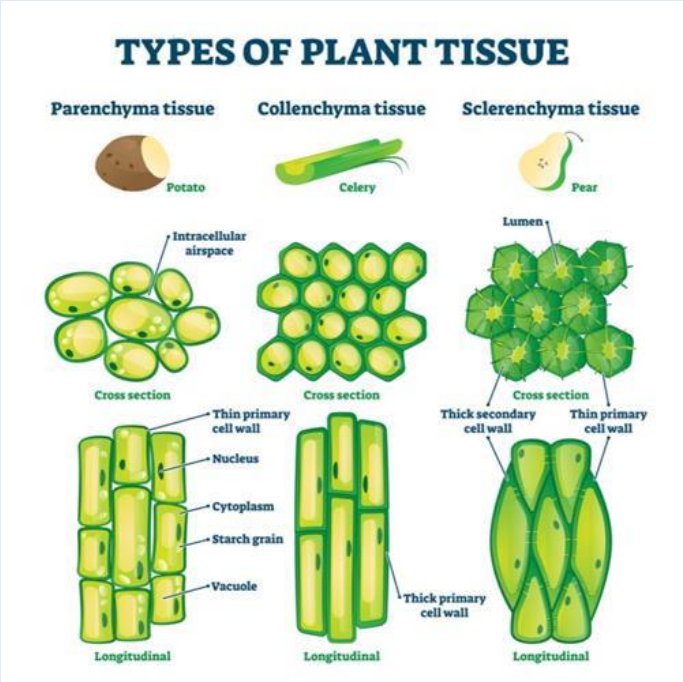
TISSUES

LEARNING OBJECTIVE: To classify various types of simple tissues in plants.

ART INTEGRATED ACTIVITY
Classification of various types of simple tissues in plants.

What is required?
Blade, tender stems of any plant, glass slides, cover slips, safranin, glycerine, dissecting needle, brush, blotting paper, watch glass and compound microscope

How to proceed?
1.Take a small piece of tender stem and hold it vertically.
2.Cut a number of thin sections using a blade.
3.Transfer the sections into a watch glass containing water.
4.Select a section which is complete, thin and uniform, and transfer it onto a slide with a drop of water, using a brush.
5.Add one drop of safranin solution (stain) and leave it for 3 minutes.
6.Remove the excess stain by washing.
7.Add 2 drops of glycerine and put the cover slip, using needle.
8. Blot out extra glycerine and focus the slide, first under low power and then under high power.



What have you learnt?

1.The group of cells with thin cell wall and intercellular space is called parenchyma.
2.The tissue which has thick cell wall and small lumen is called sclerenchyma.
3.Vascular bundles are made up of complex tissues called xylem and phloem.

Precaution

1Select tender herbaceous stem.
2.Sections should be kept in water

ACTIVITY 8.

MOTION

LEARNING OBJECTIVE: To distinguish between Distance and displacement.

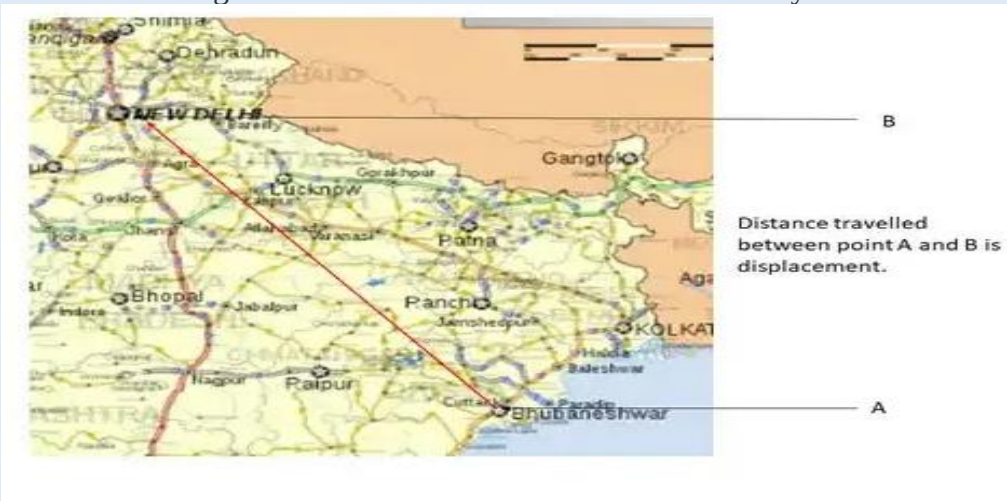
PROJECTS AND EXPERIMENT ACTIVITY

Illustrate the difference between distance and displacement.

What is required?
Automobiles are fitted with a device that shows the distance travelled. Such a device is known as an odometer.

How to proceed?
1.A car is driven from Bhubaneshwar to New Delhi. The difference between the final reading and the initial reading of the odometer is 1850km.
2.Find the magnitude of the displacement between Bhubaneshwar and New Delhi by using the Road map of India.

What have you learnt?
The difference between the final and initial reading is 1850km which is the distance travelled by car from Bhubaneshwar to New Delhi.



As in the diagram, we consider a straight line from Bhubaneshwar (point A) to New Delhi (point B), the distance between Point A and point B is displacement (1400km) which is shorter than the actual distance (1850km) travelled by car by road.

Through this activity, we can conclude that displacement is the shortest distance between the initial and final position of the object.

ACTIVITY 9.

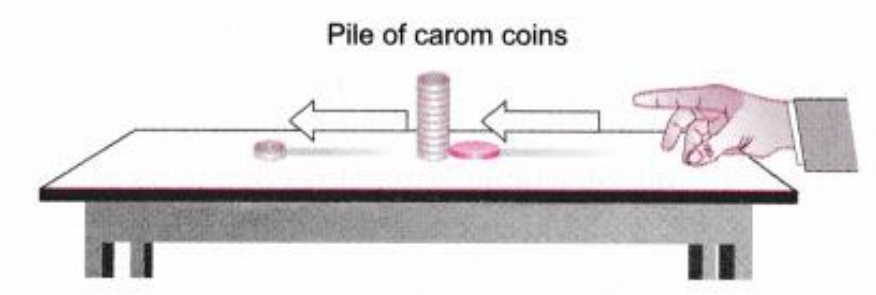
FORCE AND LAWS OF MOTION

LEARNING OBJECTIVE: To analyse the factthat a body will remain at rest unless acted upon by an unbalanced force.

SPORTS INTEGRATED ACTIVITY

What is required?
Carom coins and carom board.
How to proceed?

- Make a pile of similar carom coins on a table.
- Attempt a sharp horizontal hit at the bottom of the pile using another carom coin or the striker. If the hit is strong enough, the bottom coin moves out quickly.
- Once the lowest coin is removed, the inertia of the other coins makes them fall vertically on the table.



What have you learnt?
Only the carom coin at the bottom of a pile is removed when a fast moving carom coin (or striker) hits it.

A body will remain at rest unless acted upon by an unbalanced force.

ACTIVITY 10.

GRAVITATION

LEARNING OBJECTIVE: To understand the meaning of buoyancy.

EXPERIMENT BASED ACTIVITY

What is required?
An empty bottle, air tight stopper, bucket.
How to proceed?

- Take an empty plastic bottle. Close the mouth of the bottle with an airtight stopper. Put it in a bucket filled with water. You see that the bottle floats.
- Push the bottle into the water. You feel an upward push. Try to push it further down. You will find it difficult to push deeper and deeper. This indicates that water exerts a force on the bottle in the upward direction. The upward force exerted by the water goes on increasing as the bottle is pushed deeper till it is completely immersed.
- Now, release the bottle. It bounces back to the surface.

What have you learnt?

- Plastic bottles float on the water. We require some force to immerse it into the water; this force increases with the depth of the water.
- When we release the bottle it comes to the surface and floats there.
- Gravitation works on every object every time.
- The upward force exerted by a liquid on a body that is immersed in the liquid is known as the up thrust or buoyant force.

ACTIVITY 11.

Work and Energy

LEARNING OBJECTIVE: To explore whether Potential and Kinetic energies are interconvertible.

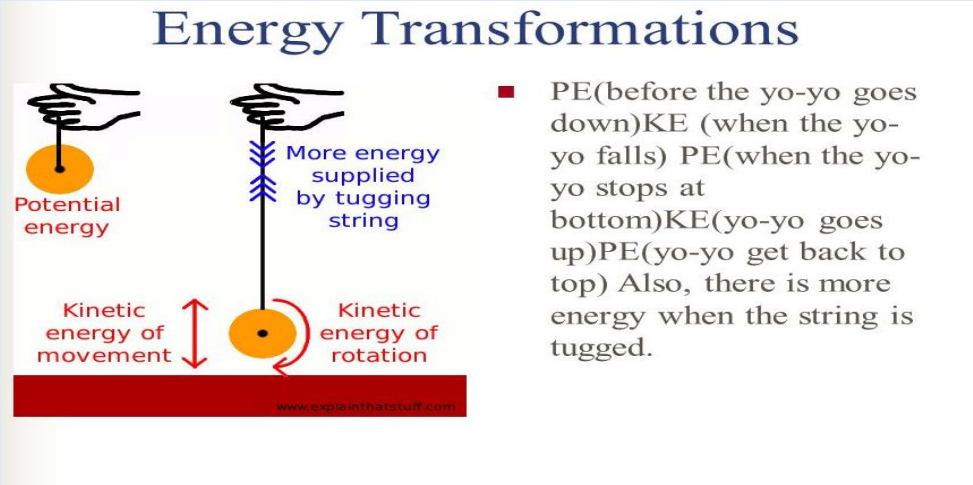
EXPERIMENT BASED ACTIVITY

What is required?
Large size Yo-Yo

How to proceed?
1.Wrap the thread on the axle of the Yo-Yo by rotating the wheel.
2.Hold the free end of thread in your hand and release the wheel.
3.What do you observe? You will find the wheel goes down and comes up repeatedly. Why does it happen?
4.At which position the potential energy stored in the wheel is maximum?
5.At which position to the kinetic energy of the wheel is maximum?
6.What happens when it is in between these two extreme positions? What do you infer from these observations?

What have you learnt?

- Potential and kinetic energies are interchangeable.



ACTIVITY 12.

SOUND

LEARNING OBJECTIVE: To show that sound is produced due to vibrating objects.

ACTIVITY BASED LEARNING

What is required?

Beaker, tuning fork.

How to proceed?

Fill water in a beaker or a glass up to the brim. Gently touch the water surface with one of the prongs of the vibrating tuning fork.

Next dip the prongs of the vibrating tuning fork in water.

Observe what happens in both cases.

Discuss with your friends why this happens.

What have you learnt?

•When the prongs of the vibrating tuning fork are touched the glass is filled with water, and we can see vibrations on the surface of the water.

•This activity shows that sound is produced due to vibrating objects.

ACTIVITY 13.

IMPROVEMENT IN FOOD RESOURCES

LEARNING OBJECTIVE: To representvarious states in terms of farming practices & major crops grown there.

ART INTEGRATED ACTIVITY

What is required?
chart paper, sketch pen, pencil, eraser, sharpener, scale, different types of pulses, cereals, spices, glue/ fevicol etc.

How to proceed?
1.Before giving project work/group activities, make a 6 heterogeneous group of students (5 students in each) with different regional basis.
2.Discuss with the students about different types of farming practices in India.
3. Now give each group a one type of farming, say to group 1 – Organic Farming, group 2- Shifting agriculture or Jhum cultivation, group 3-Dry farming, group 4- Intensive farming, group 5- Terrace agriculture group 6- Dry farming.
4.Give them 2 days to complete the chart making, prepare project report about the detail of farming. They prepare by asking local people through interview, visit actual places if possible or through using library or internet services.
5. After 2 days each of the group has to present through chart presentation or through using multimedia by making videos & audio.

What have you learnt?

Through this group activities, students contact the actual farmers working in fields, interview them.

Students become energetic to visit agricultural field and to present the information collected.

Students appreciate the diverse agricultural practices according to the climatic conditions and land forms. Learning is carried out by collaborative and cooperative methods.

SUBJECT: SOCIAL SCIENCE

INDEX

CLASS: IX

CLASS: IX HISTORY 1

CHAPTER/TOPIC	FRENCH REVOLUTION(THE OLD REGIME)
LEARNING OBJECTIVES	• French Revolution was one of the remarkable incidences of the world which gave the ideas of "equality, liberty, fraternity and a democratic system". • Students will be able to identify the major causes of the French revolution which will be related inequality, discriminations and injustice. • Students will be able to describe key events of the French revolution including the storming of the bastille and the Regime of terror. • Students will be able to analyze the long-term impact of the French revolution.
ACTIVITY DESCRIPTION	**1. Background:**Explain the concept of the Old Regime in France, highlighting the social classes (Estates) and the unequal distribution of power and wealth. You can use a diagram or images to illustrate the social pyramid. **2. Group Work:** Divide students into small groups and assign each group one of the Estates (First Estate, Second Estate and Third Estate). Have them research the characteristics, privileges, and grievances of their assigned Estate. **3. Discussion:** After group work, have each group present their findings to the class. Discuss how the social inequalities of the Old Regime contributed to the Revolution.
INSTRUCTIONS	• Divide students into pairs or small groups. • Assign each group a scene from the story one of the Estate • Class Discussion
LEARNING OUTCOMES	• Students can create a timeline of the French Revolution. • Students research a specific figure of the Revolution (e.g., Marie Antoinette, Robespierre, and Napoleon Bonaparte). • Students can write a persuasive essay arguing for or against the French Revolution.
METHODOLOGY	• Group discussion • Role play • Lecture method • Oral quiz group activity.(Teacher or students may prepare the activity) • Map work.

CHAPTER/TOPIC	FRENCH REVOLUTION/ Storming the Bastille(Storming the Bastille)
LEARNING OBJECTIVES	• Students will be able to identify the major causes of the Bastille Prison attack. • Students will be able to describe key events of the French revolution including the storming of the Bastille and the "Reign of Terror". • Students will be able to analyze the long-term impact of Storming the Bastille and the French revolution.
ACTIVITY DESCRIPTION	**1. Lead-in:** Briefly explain the growing discontent among the Third Estate and the rising tensions in France. **2. Video Clip or Image:** Show students a short video clip or image of the storming of the Bastille (ensure it is age-appropriate). **3. Analysis:** Discuss the significance of the storming of the Bastille. Why was it a turning point in the Revolution? **4. Primary Source Analysis (Optional):** If time allows, you can introduce a short primary source excerpt from a revolutionary document or eyewitness account. Have students analyze the source to understand the motivations and goals of the revolutionaries.
INSTRUCTIONS	• Divide students into pairs or small groups. • Assign each group a scene from the story one of the Estate • Class Discussion. • Oral quiz can be conducted based on the information's given in the chapter.
LEARNING OUTCOMES	• Students can create a timeline of the French Revolution and Storming the Bastille. • Students research a specific figure of the Revolution (e.g., Marie Antoinette, Robespierre, and Napoleon Bonaparte). • Students can write a persuasive essay arguing for or against the French Revolution and Storming the Bastille. • Children will be able to link India's feelings of nationalism with the ideas of the French Revolution.
METHODOLOGY	• Audio-visual aids • Group discussion • Role play • Lecture method

CLASS: IX HISTORY 2

CHAPTER/TOPIC	Russian Revolution/ Rise of Socialist Movements
LEARNING OBJECTIVES	•Students will be able to understand the root causes of the revolution we can compare the background of The French Revolution with Russian Revolution. Students will define socialism and understand its key principles. • Students will explain the rise of socialist movements in Europe during the Industrial Revolution. • Students will analyze the causes and consequences of the Russian Revolution. • Students will compare and contrast the goals of different socialist groups in Europe and Russia.
INSTRUCTIONS	• Divide students into pairs or small groups. • Assign each group some guiding question • Class Discussion
ACTIVITY DESCRIPTION	1. Divide the class into small groups.Ask them to compare The Russian Revolution with the French Revolution like causes, dynasties, Kings, slogan, impact and legacy to the world. 2. Briefly explain the working conditions and hardships faced by workers during the Industrial Revolution. You can use pictures or videos to illustrate this. 3. Ask each group to research a specific socialist thinker or movement in Europe (e.g., Karl Marx, Friedrich Engels, Utopian Socialism, and Fabian Society). 4. Provide them with some guiding questions: • What were the main ideas of this thinker/movement? • How did they propose to address the problems caused by industrialization? • What were their target audiences (workers, intellectuals)? 5. Each group presents their findings to the class, highlighting the different approaches within socialism.
LEARNING OUTCOMES	• Students will understand the idea of Russian Revolution and importance for the world. • Students will define socialism and understand its key principles. • Students will explain the rise of socialist movements in Europe during the Industrial Revolution. • Students will analyze the causes and consequences of the Russian Revolution. • Students will compare and contrast the goals of different socialist groups in Europe and Russia.
METHODOLOGY	• Group discussion • Lecture method • Mapping

CHAPTER/TOPIC	RussianRevolution
LEARNING OBJECTIVES	• Students will be able to identify the major causes of the Russian Revolution. • Students will be able to describe key events of the Russian revolution. • Students will be able to analyze the long-term impact of Russian Revolution. • Students will compare and contrast the goals of different socialist groups in Europe and Russia.
ACTIVITY DESCRIPTION	1. Briefly introduce the Tsar regime in Russia and the social inequalities that existed. 2. Show a map of Europe (optional) and locate Russia. Discussits lack of industrialization compared to Western Europe. 3. Hand out the worksheet with guiding questions about the Russian Revolution: • What were the key factors that led to the February Revolution of 1917? (WWI, Tsar's weaknesses, food shortages) • Who were the Bolsheviks and what were their goals? (Led by Lenin, communist variant of socialism) • How did the Bolsheviks come to power in the October Revolution? (Seized power from the Provisional Government) • What were some of the major changes implemented by the Bolsheviks after the French Revolution?
INSTRUCTIONS	• Divide students into pairs or small groups. • Class Discussion • Questionnaire
LEARNING OUTCOMES	• Students can create a timeline of the Russian Revolution. • Students research a specific figure of the Revolution and industrialization. • Students can write a persuasive essay arguing for or against the Russian Revolution. • Students can compare and contrast the goals of different socialist groups in Europe and Russia.
METHODOLOGY	• Group discussion • Mapping • Lecture method

CLASS: IX HISTORY 3

CHAPTER/TOPIC	**Nazism and the rise of Hitler**
	• Students will define Nazism and its core beliefs. • Students will analyses the conditions in Germany after world war-I that allowed Nazism to rise. • Students will evaluate Hitler tactics and propaganda use to gain power. • Students will understand the dangers of prejudice and scape and goating. • The birth of Weimar Republic.
ACTIVITY DESCRIPTION	• Show students a few examples of Nazism propaganda poster. • Divide students into small groups and have those analyses the visuals, slogans, and messaging. • Have each group presents their findings to the class, discussing how the propaganda appeals to emotions and promotes Nazi ideology.
INSTRUCTION	• Analyze the treaty of Versailles and analyze the causes of world war- II. • Examine the effects of WW-I
LEARNING OUTCOMES	• At the end of chapter students will able to understand - • Nazism view and Hitler's character and ideology. • Hitler's policy for the Nation. • Hitler's propaganda. • Common people view about Hitler before and after. • The post situation of world war-I and after impact on Germany.
METHODOLOGY	PPT, group discussion, questions - answer, flow chart video etc.

CLASS: IX HISTORY 4

CHAPTER/TOPIC	**Forest Society and colonialism**
LEARNING OBJECTIVES	• Understand the Rise of Deforestation. • Analyze the impact of colonial policies. • Students will define colonialism and its key characteristics. • Students will explain how forest Societies lived in harmony with their environment.
ACTIVITY DESCRIPTION	1.Presentation or discussion 2. Student Research - If time allows, divide students into small groups and assign them a specific forest Society (eg. Amazonian tribes, African pygmies) 3. Children living around forest areas can often identify fifty of species of trees and plants. How many species of trees can you name?
INSTRUCTIONS	• Students complete a short writing assignment on the following topics – • How did colonialism change the relationship between forest Societies and their environment? • What is some of the lasting impact of colonial deforestation? • How can we ensure sustainable forest management today?
LEARNING OUTCOMES	Students should be able to active the following learning outcomes – • Understanding forests and livelihoods. • Impact of colonialism on forest Societies. • Students will be able to understand the rise of Deforestation.
METHODOLOGY	Video, PPT, flow chart , discussion, Projector , example to rule method interdisciplinary project with the geography chapter Natural vegetation and Wildlife

	etc

CHAPTER/TOPIC	**Pastoralists in the Modern World**
LEARNING OBJECTIVES	• Understanding the historical evolution of pastoralist societies. • Analyzing the economic activities and traditional practices. • Examining the impact of colonialism. • Evaluating the role of technology and globalization in reshaping lives. • Appreciating the cultural diversity, social structures, and resilience of pastoralist groups across different regions of the world.Show the different processes through which agrarian transformation may occur in the modern world.
ACTIVITY DESCRIPTION	**Activities**: 1. **Debate Activity**: 1.1 Topics: (A) The Impact of Modernization on Nomadic Pastoralist Communities. (B)The Role of Government Policies in Supporting Pastoralist Livelihoods (C)Sustainable Grazing Practices vs. Environmental Conservation 2. Pen and Paper Activity.
INSTRUCTIONS	Debate Activity: 1. The teacher divides the class into three groups. 1.Each group will be assigned a topic. 2.Each group will research and prepare their arguments, and then present them in a formal debate format. 3.This activity will encourage students to think critically about the pros and cons of the Pastoralists in the modern world. 4.Moreover, it will also develop their persuasive speaking and listening skills.

	Activity: 2 PENS AND PAPER ACTIVITY. The teacher distributes a worksheet. Asks to solve in pairs. Time: 15 minutes 0r 30 minutes Note: students can use textbooks to find the answers: Worksheet: 1.Pastoral nomads are societies that primarily rely on _____ for their livelihoods. 2.The movement of pastoral nomads is often dictated by the search for _____ and _____ for their livestock. 3.Nomadic pastoralists often practice a form of agriculture known as _____, where they move their herds in search of fresh grazing land. 4.Colonial rule in many regions disrupted traditional pastoralist _____ and _____ patterns. 5.During colonial rule, pastoralist communities were often subject to policies that favored _____ and _____ interests over their traditional ways of life.
LEARNING OUTCOMES	• Students will be able to: 1.Gain a clear understanding of what pastoralism is and how it has been practiced historically. 2. Learn about the challenges and changes that modernization and globalization have brought to the traditional pastoralist way of life. 3.Understand how factors such as government policies, land use changes, and economic shifts have affected pastoralist communities. 4. Explore how pastoralist societies have adapted to the modern world while preserving elements of their traditional culture and social structures. 5.Gain insight into the on-going issues and conflicts faced by pastoralist communities in the context of the modern globalized world.

METHODOLOGY	1.Interdisciplinary learning: A. Geography and Environmental Science: Analyse the role of climate change in shaping the challenges faced by pastoralists in different regions. B. History and Sociology: Study the historical evolution of pastoralism and its role in the development of early human societies. 2.Groups Observation – Ask students to observe the movement of any pastoralist community in their respective regions.

CLASS: IX GEOGRAPHY CHAPTER - 1

CHAPTER/TOPIC	**India: size and location**
LEARNING OBJECTIVES	• To know about India. Its area size, location and concepts related peninsula, subcontinent, Straight, island etc. Total area, its share in total area of the world. • To understand the advantage of India's location.
ACTIVITY DESCRIPTION	**Activity:** Map work. • Oral quiz prepared by students into groups about various information's about India.
INSTRUCTIONS	❖ The teacher divides the class into five groups and gives 5 questions to each like i) Mark the desert states of India. ii) Two states which have a common capital. iii) Group of states called the seven sisters. iv) Name the states through which Tropic of Cancer passes. v) Name the Indian states which borders Nepal.
LEARNING OUTCOMES	Learners will be able to: - ➢ Children learn to identify the states. ➢ Children will know the location of Indian states.

METHODOLOGY	**Activity: - Group Activity/Pair/Individual Activity**

CHAPTER/TOPIC	**INDIA: SIZE AND LOCATION /NEIGHBORING COUNTRIES OF INDIA.**
LEARNING OBJECTIVES	❖ To know about neighboring countries of India. ❖ To understand the advantage of India's neighboring countries location.
ACTIVITY DESCRIPTION	**Activity)** Map work
INSTRUCTIONS	❖ The teacher divides the class into five groups and gives 5 questions to each like i) Mark the neighboring countries of India. ii) Mark the Radcliffe Line. iii) Mark the McMahon Line.
LEARNING OUTCOMES	Learners will be able to: - ➢ Children learn to identify the India's neighboring countries. ➢ Children will know the location of Indian neighboring countries.
METHODOLOGY	**Activity: - Group Activity,Pair/Individual Activity**

CLASS: IX GEOGRAPHY CHAPTER -2

CHAPTER/TOPIC	**PHYSICAL FEATURES OF INDIA/LANDFORMS**
LEARNING OBJECTIVES	• To understand the landforms of India and to explore the natural environment. • To identify the various natural beauty of india. • To encourage students to conserve and protect our landforms.

ACTIVITY DESCRIPTION	**Activity 1)** prepare models of landforms *Activity 2) seminar/map- locate the different islands of India*
INSTRUCTIONS	**Activity 1)**prepare models of landforms – Students are formed in groups and select the topics –mountain valley, mountain glacier, meanders, deserts-sand dunes, plateaus, coastal regions. Children can use clay, paper, and unused cardboards. Children to use colours of the landforms; label the model. One child will brief the model. Discussion sessions and explanation by the teacher. **Activity 2)**seminar/map presentation - The major islands groups of India are Andaman and Nicobar Archipelago (A chain of islands similar in origin) in Bay of Bengal and Lakshadweep islands in Arabian Sea. • Their formation • Divisions of islands • Corals and atolls • various types of vegetation and wildlife • Seminar Method using Power point Presentation
LEARNING OUTCOMES	Learners will be able to :- ➢ Realize the importance of natural environment. ➢ Students will explore, enjoy and learn to live in harmony with nature.
METHODOLOGY	**Activity 1)**Group activity **Activity 2)** Pair/Individual Activity

CLASS: IX GEOGRAPHY CHAPTER - 3

CHAPTER/TOPIC	DRAINAGE
LEARNING OBJECTIVES	**1 KNOWLEDGE**: Student gets knowledge about various terms and concepts like drainage basin, water divide, perennial, gorge, ox-bow lakes, meandering, braided streams, Inland drainage, dendritic pattern, trellis pattern, rectangular pattern, radial pattern, river system, different river system, lakes and the role of rivers in the economy. **2 UNDERSTANDING**: Student understands what is a drainage basin, infers the difference between Himalayan rivers and the Peninsular river, characteristics of Himalayan rivers and the Peninsular river. Formation of lakes and its characteristics, the important role of rivers in the socio-economic development of a region or nation, and the cause and effect of river pollution to the environment and to the

	mankind as a whole. **3 APPLICATION**: Student applies the acquired knowledge and understanding to infer the characteristics of drainage system in the locality and state. Develops strategies to protect lakes and river which are lifeline of a country. **4 SKILL**: Student develop skill to locate various rivers and lakes on the outline map of India. Sketches various types of drainage pattern in their locality.
ACTIVITY DESCRIPTION	**Teacher's Activity:** The teacher will arrange 40 ice –cream sticks. Each stick will have the following things – aname of river, a tributary of river, a distributary of river. Teacher will give instructionsregarding the activity. **Student's Activity:** a) Each Student will pick an ice-cream stick and read the name loudly. b) Then the entire class will write the name of river and its feature along with the direction in which the river flows in their observation table. c) In the end students will complete worksheet. d)Open book test can be conducted in the class.
INSTRUCTIONS	1. River map of India 2. Physical map of the World 3. Black board 4. Computer Aided teaching

	5. Newspaper cutting on river pollution
LEARNING OUTCOMES	• Student will be able to differentiate between Himalayan rivers and Peninsular River. • Infer different types of drainage system – • Dendritic, Trellis, Rectangular and Radial • Pattern. • Understands the Characteristics of Himalayan Rivers and Peninsular rivers. • Recognizes the relief features developed by Rivers along its course. • Elucidate the significance of rivers to the national economy • Understands the formation of Lake and its Significance to the national economy. • Grabs the seriousness of river pollution. • Develops values to conserve water and maintain Cleanliness of water sources.
METHODOLOGY	**Assessment:** 1, Class test and PWT 2. Map skill test 3. Quiz, by dividing the class into groups **Assignment:** 1. Collect information on cause and effect of river pollution in your Area. 2. Prepare an article of 'Namami Gange'. 3. Develop model of drainage basin, drainage pattern.

CLASS: IX GEOGRAPHY CHAPTER -4

CHAPTER/TOPIC	**CLIMATE**
LEARNING OBJECTIVES	• To understand the Climatic controls • To identify the factors affecting India's climate. • To acquire knowledge about mechanism of monsoon. • To recognize different season in India. • To learn about distribution of rainfall.
ACTIVITY DESCRIPTION	**By Teacher** • Engaged student by giving group activity – on the atmospheric • Changes noticed by them. • Map skills- Locating areas of RF 400cm,100-200cm,20-40cm • Assessing student's activities. • Evaluating students activities, • Motivating students to complete their task. **By student** • Active participation of students. • Eagerly listening to the tasks given. • Competitive spirit to complete the task.
INSTRUCTIONS	• Lecture method. • Demonstration method. • Activity method. • Inductive –Deductive method. • Delegator style method. • Comparative method of Himalayan Rivers and peninsular river.

LEARNING OUTCOMES	• Students will be able to define the terms • Weather, climate, Jetstream. • Students will be able examine the impact of temperature and • Precipitation on climate of a place. • Students will understand various climatic controls. • Students will analyses Factors affecting India's climate. • Students will be able to describe about Latitude, Altitude, Pressure • And Winds. • Students will describe the variation of the elements from season • To season and place to place. • Students will be able to assess the annual precipitation in • Different places in India.
METHODOLOGY	• Above average students • The relationship between the life of the people and climate- Essay. (skills developed-Analysis reasoning and research) • Average students Instruments used in finding about the temperature, atmospheric pressure, direction of wind and amount of rain-prepare a note on It. (skills developed- Knowledge, reasoning, research) • Supportive learners Prepare a scrap book on flood and drought by using news paper Cuttings. 1. Conducting test. 2. Organizing quiz. 3. Through surprise test. 4.Aasking questions 5. Map work.

CLASS: IX GEOGRAPHY CHAPTER - 5

CHAPTER/TOPIC	NATURAL VEGETATION AND WILDLIFE
LEARNING OBJECTIVES	• To understand the value of natural resources and wildlife. • The need for conservation of natural vegetation and wildlife. • To identify the endangered species of natural vegetation and wildlife.
ACTIVITY DESCRIPTION	**Activity1)** Group Discussion - Causes of deforestation **Activity2)** Power point Presentation- Methods of conservation. **Activity3)** visit to a zoo /National park or wildlife sanctuary.
INSTRUCTIONS	**Activity 1)** Group Discussion - Causes of deforestation and methods of conservation. • The students will be divided into groups and shall be given one article/picture to each related to the topic - causes of deforestation. • Impact of deforestation on environment for group discussion. • Make a collage with different shapes of trees/leaves-with explanation. • One member will be presenting the points in front of the whole class. • Two minutes for open discussion /left out points by other students and finally summarized by the teacher. • Multidisciplinary approach between Forest society and colonialism and Natural vegetation with wildlife. • Project method: On 1.Factors affecting the forest. 2. Types of Forest, 3.Distribution of Forest.4. Importance of forest, Conservation of forest etc. **Activity 2)** Power point Presentation- Methods of conservation. 10. Slides related to the topic to be prepared by the students and presented in the class room. (one topic each- Methods of conservation} **Activity 3)** visit to zoo /park

	Sharing their views and observations.-in the classroom
LEARNING OUTCOMES	Learners will be able to: - • Realize the importance of need for natural resources. • Sensitize measures to check wastage of resources & preserve for future. • Follow up judicious use conservation and preservation of resources. • Develop the respect towards nature and natural resources along with ideas of conservation.
METHODOLOGY	**Activity 1) Group Activity. oral quiz/group discussion.** **Activity 2) Pair/Individual Activity.Mapwork,Worksheets.** **Activity 3) Individual Activity**

CLASS: IX GEOGRAPHY CHAPTER - 6

CHAPTER/TOPIC	**POPULATION** **Population size and distribution**
LEARNING OBJECTIVES	• Students will understand the demographic aspects along with importance of human resources. • To make children understand the different concepts related to population of a country and its affect on national development. • To know about the population density of India. • Students will know the reason for the growth of population which is refers to the change in the number of inhabitants of a country/territory during a specific period of time.

ACTIVITY DESCRIPTION	• Map marking on density of population. • Drawing the Pi-.diagram on distribution of population. • Class presentation or project on Factors affecting effecting the concentration of population, population composition. population change, occupational structure, population density etc.
INSTRUCTIONS	• Students will be asked to do map marking individually. • Students will draw in their activity notebook.
LEARNING OUTCOMES	• The students will understand the size and distribution of population. • Almost half of India's population lives in just five states. • Students will analyze the Northern Plains and Kerala in the south have high to very high population densities because of the flat plains with fertile soils and abundant rainfall.
METHODOLOGY	Activity-1 Individual activity Activity-2 Individual activity

CHAPTER/TOPIC	**POPULATION** **Processes of population change/growth**
LEARNING OBJECTIVES	• Students will know that there are three main processes of change of population : birth rates, death rates and migration • Age composition is one of the most basic characteristics of a population. • To know the meaning of occupational structure

ACTIVITY DESCRIPTION	• Preparing a questionnaire, about the child, family members, their performance and health • On a map, each child will trace the migration of their grandparents and parents since their birth, and analyze the reasons for each movement
INSTRUCTIONS	• Students will be asked to do map marking individually.
LEARNING OUTCOMES	• The students will understand the reason for migration. Migration is the movement of people across regions and territories. Migration can be internal (within the country) or international (between the countries • Children will analyze how literacy is very important quality of a population
METHODOLOGY	Activity-1 Individual activity Activity-2 Individual activity

CLASS: IX CIVICS CHAPTER - 1

CHAPTER/TOPIC	**WHAT IS DEMOCRACY? WHY DEMOCRACY?**
LEARNING OBJECTIVES	• To develop the concepts of democracy and why it is the most preferred form of government in the world. • To enhance values to participate in democratic processes whenever they grow.
ACTIVITY DESCRIPTION	A) Ask students to choose this topic from the book and to prepare a debate which reflect vibrant characteristics of a democracy-A. In favour of democracy B.In against of democracy. B) Role Play Method to divide students to play active role of four pillars of Democracy i.e. Legislative, Executive, judiciary and The Press. C) Relate the election of our national leaders with the election of class monitor, student's pupil leader or nay local leader of their area allow the students to give their own examples.
INSTRUCTIONS	• Conduct democratic election in the class. • Conduct a debate on the topic "Democracy is the most ideal form of Government".
LEARNING OUTCOMES	Students will be able to differentiate between democratic countries and Non-democratic countries through their features.
METHODOLOGY	• Group activities. • Comparison method between democratic and non democratic countries.

CLASS: IX CIVICS CHAPTER - 2

CHAPTER/TOPIC	**Constitutional Design**
LEARNING OBJECTIVES	

	• To develop logical expressions on the importance of the constitution. • To make students aware about the framing of the constitution the process and challenges. • To understand the guiding values of the Indian constitution.
ACTIVITY DESCRIPTION	A) Role Play-Ask students to choose a character from the chapter and Prepare a monologue in which as that character. B) Display Method through Written Card-boards-Divide students in small groups, they reflect key features of the preamble of our Constitution i.e. Sovereign,Secular,DemocracticRepublic,Liberty,Equality,Fraternity etc. C) Collage or chart may be prepared on the guiding values of the Indian constitution Like key features of the preamble of our Constitution i.e. Sovereign,Secular, Socialist, Democratic Republic,Liberty,Equality,Justice, Fraternity etc
INSTRUCTIONS	• Divide students into Pairs or small groups. • Assign each group a role from the character through role play.
LEARNING OUTCOMES	Students Will be able to understand the Role/ contribution of the Constituent Assembly of India.
METHODOLOGY	Group.

CLASS: IX CIVICS CHAPTER - 3

CHAPTER/TOPIC	**ELECTORAL POLITICS**
LEARNING OBJECTIVES	• To develop the concept and importance of democratic elections. • To make students understand about electoral politics and its process. • To make students understand the importance of elections for democracy.
ACTIVITY DESCRIPTION	**Activity-** Choosing a class leader among the class. Two students are interested in becoming class leaders.
INSTRUCTIONS	Both students will give speeches and then voting
LEARNING OUTCOMES	• Students will be able to understand electoral politics and its process. • Students will be able to develop their understanding about electoral politics.
METHODOLOGY	Group

CHAPTER/TOPIC	**ELECTORAL POLITICS**
LEARNING OBJECTIVES	Students will be able to understand theimportance , methods and process of elections in politics.
ACTIVITY DESCRIPTION	**Active-Make a separate election commission from the students.** Ask them to prepare voters list, ballot paper, ballot box, Polling officers. counting officers etc to clarify the concept.
INSTRUCTIONS	All the students of the class will be included in the voter list.

LEARNING OUTCOMES	Students will be able to think practically about the process of electoral politics
METHODOLOGY	Group

CLASS: IX CIVICS CHAPTER -4

CHAPTER/TOPIC	**WORKING OF INSTITUTIONS**
LEARNING OBJECTIVES	To enhance the knowledge of students about the democratic institutions and their role in democracy.
ACTIVITY DESCRIPTION	**Activity-** Conducting classroom debate on Supreme Court's work and powers.
INSTRUCTIONS	• Explain the democratic institutions along with their functions and role to develop the system of checks and balances. • Explain the functions of different organs and their role in democracy.
LEARNING OUTCOMES	Students will be able to develop their understanding about the work and importance of the Indian parliament, Different levels of executive and Judiciary.
METHODOLOGY	• Explanation. • Question answer method. • Activity methods for parliamentary discussion. • Comparisons between Lok sabha and Rajya Sabha. • Comparisons between political and permanent executive.

CHAPTER/TOPIC	**WORKING OF INSTITUTIONS**

LEARNING OBJECTIVES	To enhance the knowledge of students about democratic institutions , their importance and role to run the country.
ACTIVITY DESCRIPTION	• **Activity:-** Divide the class into Ruling and opposition Groups and conduct the Proceeding of Lok Sabha or Rajya Sabha. • Conduct a court trial.
INSTRUCTIONS	Give the concepts and ideas about the democratic institutions conduct some group activities as mentioned above to clarify the concept.
LEARNING OUTCOMES	Students will be able to develop their understanding of the importance and need of thedemocratic institutions.
METHODOLOGY	Group

CLASS: IX CIVICS CHAPTER -5

CHAPTER/ TOPIC	**DEMOCRATIC RIGHTS**
LEARNING OBJECTIVES	• To develop the understanding the importance of rights for the citizens. • Students will understand the life without rights. • To enhance the dignity of every Individual through understanding the Rights by speaking from their perspective topic.
ACTIVITY DESCRIPTION	ACTIVITY: ROLE-PLAY: Students are asked to choose a topics from the given Democratic Rights in which they speak 1.Right to Equality

2.Right to Freedom

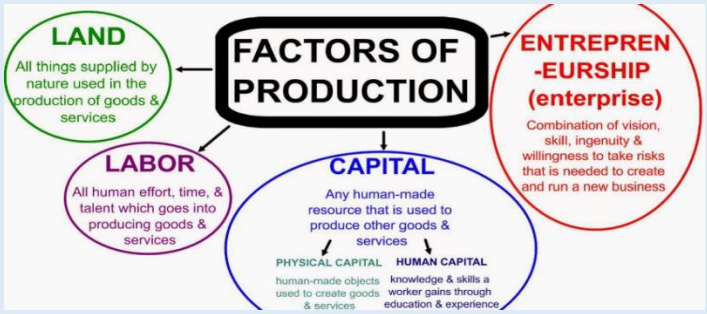
3. Right Against Exploitation

4. Right to Freedom of Religion

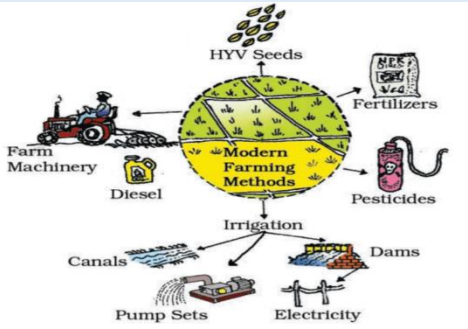
5. Cultural and Educational Rights

	 6. Right to Constitutional Remedies  Skit can be prepared on the topic what kind of problems people use to face where no rights are given to the citizens.
INSTRUCTIONS	• Divide Students in to pair or small groups. • Assign each group one , one Democratic Rights from the given topics enact through role play. •
LEARNING OUTCOMES	Students will able to speak confidently on a given topic. Students will be able to express the rights through their roles.
METHODOLOGY	Individual

CLASS: IX ECONOMICS CHAPTER - 1

CHAPTER/TOPIC	**THE STORY OF VILLAGE PALAMPUR**
LEARNING OBJECTIVES	• To make students aware about the basic concepts of economy like economic and non economic activities, Factors of production different kind of farming, farming inputs etc. • To make students understand about village Palampur which is well-connected with neighboring villages and towns? Many kinds of transport are visible on this road starting from bullock carts, tongas, bogeys (wooden cart drawn by buffalos) to motor vehicles like motorcycles, jeeps, tractors and trucks • village has about 450 families belonging to several different castes
ACTIVITY DESCRIPTION	 Activity -1 Students will be made into a group asked to write about factors of the production Activity: Group discussion on different steps to increase the crop production
INSTRUCTIONS	• Students will be divided into group asked to draw and discuss about the factors of production • Each student will come and speak , how to increase the production in a agriculture land
LEARNING OUTCOMES	• Students will be able to understand about economic activities and non economic activities. • Students will be able to understand that the aim of production is to produce the goods and services that we want. • There are four requirements for production of goods and services • Different types of farming in village palampur

METHODOLOGY	Activity-1 Group Activity Activity-2 Group activity

CHAPTER/TOPIC	**THE STORY OF VILLAGE PALAMPUR** **FARMING OF VILLAGE PALAMPUR**
LEARNING OBJECTIVES	Students to know about modern farming method and Non farming method
ACTIVITY DESCRIPTION	 Activity-1 students will draw modern farming method in activity notebook Activity-2 Students will fill data - facilities provided in village palampur
INSTRUCTIONS	• Students will be divided into four groups and discussion different modern farming method adopted • Students will be asked to draw diagram showing modern farming method
LEARNING OUTCOMES	• Students will understand ,different method followed in modern farming • Non-farming activities followed in village Palampur are Dairy farming, small-scale manufacturing. shop keeping, Cart pulling etc.Shop keeping , Transport played a major role which shows that Palampur is well developed town

METHODOLOGY	Activity-! Individual activity Activity-2 Group activity

CLASS: IX ECONOMICS CHAPTER - 2

CHAPTER/TOPIC	**PEOPLE AS A RESOURCE**
LEARNING OBJECTIVES	• Students to know about that People as Resource' is a way of referring to a country's working people in terms of their existing productive skills and abilities. • Role of health and education in Human capital formation.
ACTIVITY DESCRIPTION	Activity-1 students will have debate on case study given in chapter Sakal and Vilas. Activity-2 Students will fill data – three different economic and non-economic activities carried by the people in their locality. Activity-3 Case based questins can be prepared based on stories of Sakal and Vilas to explain the role of education in human capital formation.
INSTRUCTIONS	• Students will be divided into four groups and debate on case study . • Trigger the students to give their own examples on the importance of education and health education.
LEARNING OUTCOMES	• Students will understand, the various activities have been classified into three main sectors i.e., primary, secondary and tertiary. • Countries, like Japan, have invested in human resource. • Population need not be a burden for the economy. It can be turned into a productive asset by investment in human capital (for example, by spending resources on education and health for all)
METHODOLOGY	Activity-! Group activity Activity-2 Group activity

CHAPTER/TOPIC	PEOPLE AS A RESOURCE/QUALITY OF POPULATION
LEARNING OBJECTIVES	A student to know about education contributes towards the growth of society and the health of a person helps him to realize his/her potential and the ability to fight illness.
ACTIVITY DESCRIPTION	Activity-1 students will have survey visit a nearby hospital, either government or private and note down the following details. How many beds and doctors are there in the hospital Activity-2 Debate will be conducted "Why is educated unemployed, a peculiar problem of India'
INSTRUCTIONS	• Students will be divided into four groups and debate on case study. • Students will be asked make a group and do data collection in their locality.
LEARNING OUTCOMES	• Students will understand education contributes towards the growth of society • It enhances national income, cultural richness and increases the efficiency of governance • India has built a vast health infrastructure and has also developed the manpower required at primary, secondary and tertiary sector in government.
METHODOLOGY	Activity-! Group activity Activity-2 Group activity

CLASS: IX ECONOMICS CHAPTER - 3

CHAPTER/TOPIC	POVERTY AS A CHALLENGE
LEARNING OBJECTIVES	• Students will understand what is poverty, problems related poverty, analyze causes of poverty. • Students learn about how poverty is one of the biggest challenge for any country. • It helps the students to understand the concept of rural and urban poverty.

	• Different poverty eradication programs and their role to remove poverty.
ACTIVITY DESCRIPTION	• Debate whether education can remove poverty • PPT presentation using case study in NCERT text on the reasons of rural and urban poverty.
INSTRUCTIONS	• Divide students in to small groups. • Each group will be assigned for each activities
LEARNING OUTCOMES	• Student will be able to understand the concept of poverty • Students will be able to compare how poverty estimates have transformed from 1993-94 to 2011-12
METHODOLOGY	Groups.

CLASS: IX ECONOMICS CHAPTER - 4

CHAPTER/TOPIC	**FOOD SECURITY IN INDIA**
LEARNING OBJECTIVES	• Students will understand the ideas of food security,the concept and need of the food security. • Problems arise related to various natural and manmade disaster. • Role of government to ensure food security in India. • Role of different institutions and policies like Food corporation of India, Buffer stocks, Minimum support price and Public Distribution System to ensure food security in India. • Students will understand about the different schemes to ensure food security in India.

ACTIVITY DESCRIPTION	• Students will collect different informations about food security in India. • Students can visit nearby PDS shop. • Students write various government programs which are related to support food security.
INSTRUCTIONS	• Students will be divided in small group • Each student will discuss on food security
LEARNING OUTCOMES	• The students will be able to; • Familiarized with the problems in public distribution system and looking for alternative solutions. • To develop clear understanding about the role of government to protect the weaker section of society.
METHODOLOGY	Individual

SUBJECT: ARTIFICIAL INTELLIGENCE

INDEX

CLASS 9

ARTIFICIAL INTELLIGENC (417)

TOPIC 1

INTRODUCTION TO AI

TOPIC: Introduction to AI

Brief Idea about AI:

Artificial Intelligence (AI) refers to the development of computer systems that can perform tasks that typically require human intelligence. These tasks include understanding natural language, recognizing patterns, learning from experience, and making decisions. AI is revolutionizing various fields such as healthcare, transportation, finance, and entertainment by automating processes, improving efficiency, and enabling the creation of new technologies.

Learning Outcome:

- Understanding AI Concepts: Students will comprehend the basics of Artificial Intelligence, including its definition, applications, and importance.
- Critical Thinking: Students will develop critical thinking skills by examining the ethical and societal implications of AI.
- Basic Programming Skills: Introduce basic programming concepts related to AI through simple activities or tools.

Activity Plan 1:

Title: Exploring AI Applications

Objective:

- Introduce students to real-world applications of AI and encourage them to think critically about its implications.

Duration:

- 2 class periods (45 minutes each)

Materials Needed:

- Computers/tablets, projectors with internet access
- Pen and paper for brainstorming

Procedure:

Introduction to AI (15 minutes):

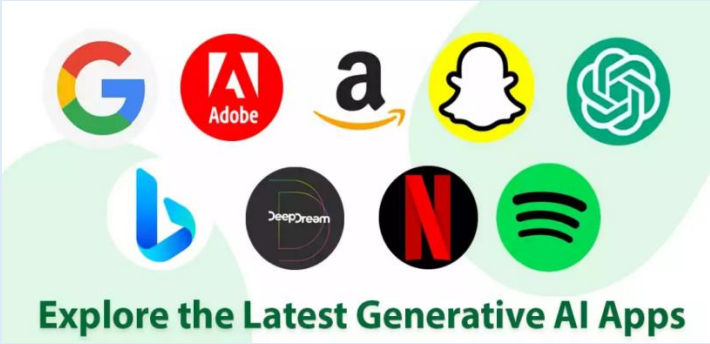
- Provide a brief overview of AI, explaining its definition and common applications.
- Use visuals or multimedia to illustrate key concepts.

Brainstorming Session (20 minutes):

- Divide students into small groups and provide them with paper and pens.
- Ask each group to brainstorm different areas where AI is used.
- Encourage creative thinking and generate a list of examples.

Research and Presentation (40 minutes):

- Assign each group one specific application of AI to research.
- Provide resources such as websites, articles, or videos for their research.
- Each group prepares a short presentation discussing their assigned application, including how it works, its benefits, and potential ethical considerations.



Reference -Explore the Latest Generative AI Apps and Their Impacts - Mridul.Tech

Group Presentations (20 minutes):

- Each group presents their findings to the class.
- Encourage discussion and questions from the audience after each presentation.

Reflection and Discussion (10 minutes):

- Lead a class discussion on the ethical implications of AI technologies discussed.
- Ask students to reflect on how AI is shaping our world and the responsibilities associated with its development and use.

Interactive Tools:

- Google's Teachable Machine: Allows students to create their own AI models without coding.
- AI Experiments by Google: Showcases various AI experiments that students can interact with.

Conclusion (5 minutes):

- Summarize the key points discussed during the class.
- Encourage students to continue exploring AI concepts and its applications outside the classroom.

Activity Plan 2

Ice Breaker Activity: Design Your Dream Smart Home

Objective: To engage students in a creative and interactive ice breaker activity that introduces the concept of a smart home and encourages imagination and critical thinking.

Duration: 30-45 minutes

Materials Needed:

- Drawing paper or grid paper
- Colored pencils, markers, or crayons
- Rulers and pencils

Procedure:

1. **Introduction (5 minutes):**
    - Begin by briefly explaining the concept of a smart home, highlighting how technology can be integrated into everyday life to enhance convenience, efficiency, and comfort.
    - Emphasize that smart homes use artificial intelligence and automation to control various devices and systems, such as lighting, heating, security, and entertainment.
2. **Brainstorming Session (10 minutes):**
    - Encourage students to brainstorm and jot down ideas for features and functions they would like to have in their dream smart home.
    - Prompt them to think about aspects such as security systems, energy efficiency, entertainment options, and home automation.
3. **Designing the Floor Plan (20 minutes):**
    - Provide each student with a piece of drawing paper or grid paper.
    - Instruct students to use pencils and rulers to sketch a rough layout of the floor plan for their dream smart home.
    - Encourage creativity and attention to detail as they design the layout, considering the placement of rooms, furniture, and smart devices.
    - Remind students to leave space for features like smart appliances, voice-controlled assistants, and sensors.

- Design a layout of a floor plan of your dream smart home.

Include any gadgets or devices that you think will make it unique or “smart”.

Floor Plan of My Dream Smart Home

4. **Presentation and Discussion (10 minutes):**

- After completing their floor plans, invite students to share their designs with the class.
- Encourage each student to explain their layout and highlight the smart features they included.
- Facilitate a discussion about the different ideas presented, asking students to discuss the advantages and potential challenges of implementing smart technologies in their homes.

5. **Reflection (5 minutes):**

- Conclude the activity by asking students to reflect on what they learned about smart homes and how they envision technology shaping their future living spaces.
- Encourage students to consider the potential impact of AI and automation on their daily lives and the broader implications for society.

Activity Plan 3

Rock, Paper, Scissors Game with AI

Objective: To introduce students to basic concepts of machine learning and data-driven decision-making through a hands-on activity playing the game of Rock, Paper, Scissors against an AI.

Duration: 1 class period (45 minutes)

Materials Needed:

- Computers or tablets with internet access
- Pen and paper for note-taking

Procedure:

1. **Introduction to the Activity (5 minutes):**

- Start the class by explaining the concept of machine learning and how it involves training algorithms to make decisions based on data.
- Introduce the game of Rock, Paper, Scissors and explain that students will be playing against an AI that has been trained using data.

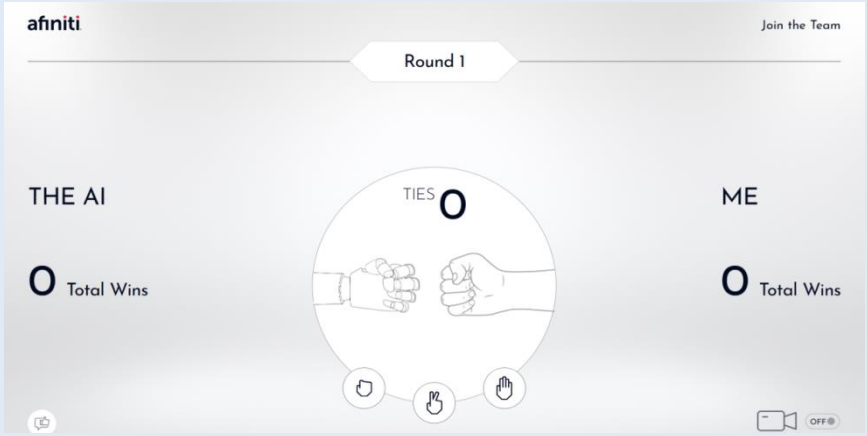
2. **Setup of the Game (5 minutes):**

- Divide the class into pairs or small groups.
- Assign one computer or tablet per group for playing the game.
- Instruct students to access the online Rock, Paper, Scissors game with AI.

3. **Gameplay (20 minutes):**

- Allow students to play several rounds of Rock, Paper, Scissors against the AI.

Encourage them to observe the AI's choices and patterns while playing.



Reference :[Rock, Paper, Scissors | Afiniti (rockpaperscissors.ai)]

1. **Data Collection (10 minutes):**
    1. After playing a few rounds, instruct students to record the outcomes of the games (win, lose, or draw) in a table or spreadsheet.
    2. Emphasize the importance of collecting data to understand the AI's decision-making process.
2. **Discussion (5 minutes):**
    1. Gather the class for a brief discussion on their observations during the game.
    2. Encourage students to share any patterns or strategies they noticed in the AI's choices.
    3. Discuss how the AI might be using data to make decisions and improve its performance over time.
3. **Reflection and Conclusion (5 minutes):**
    1. Conclude the activity by reflecting on the experience of playing against an AI.
    2. Discuss the role of data in training AI algorithms and how machine learning can be applied in various real-world scenarios.
    3. Encourage students to think about other applications of machine learning they encounter in their daily lives.

Activity Plan 4

AI Quiz: Introduction to Artificial Intelligence (Online Quiz)

Objective: To provide an engaging introduction to Artificial Intelligence (AI) concepts for students through an online quiz format.

Duration: 30-45 minutes

Tools Needed:

- Online quiz platform (e.g., Google Forms, Kahoot!, Quizizz)
- Computers or tablets with internet access for each student
- Projector or screen to display quiz questions (optional)

Procedure:

1. **Preparation (10 minutes):**
    - Select an online quiz platform and create a quiz with questions related to basic AI concepts suitable for class 9 students.
    - Ensure that the quiz covers topics such as definitions of AI, examples of AI applications, and the impact of AI on society.
    - Test the quiz to ensure functionality and clarity of questions.
2. **Introduction (5 minutes):**
    - Begin the class by introducing the topic of Artificial Intelligence and its significance in today's world.
    - Explain that students will be participating in an online quiz to assess their understanding of AI concepts.
3. **Quiz Session (20-30 minutes):**
    - Provide students with the link or access code to the online quiz.
    - Instruct students to log in to the quiz platform using their devices and enter their name or a unique identifier.
    - Display each quiz question on a screen using a projector or share the quiz link with students to access individually.
    - Allow students a specific amount of time (e.g., 30 seconds to 1 minute) to read each question and select their answer.

- Encourage students to answer to the best of their knowledge and not to worry if they are unsure of certain questions.

4. **Review and Discussion (10 minutes):**
   - After completing the quiz, review the answers and explanations with the class.
   - Discuss the correct answers and provide additional insights or examples to reinforce understanding.
   - Address any questions or misconceptions raised by students during the quiz.

Reference: https://keepo.me/techno/cara-membuat-kahoot/

1. **Scoring and Feedback (5 minutes):**
   1. Once the quiz is complete, provide immediate feedback to students on their performance.
   2. Share the overall class results and highlight areas where students performed well or may need further review.
   3. Encourage students to reflect on their quiz experience and ask any remaining questions they may have about AI concepts.

2. **Conclusion (5 minutes):**
   1. Conclude the quiz session by summarizing the key takeaways about Artificial Intelligence.

TOPIC 2

UN SUSTAINABLE DEVELOPMENT GOALS

UN Sustainable Development Goals (SDGs):

The UN Sustainable Development Goals (SDGs) are a set of 17 interconnected global objectives designed to address various social, economic, and environmental challenges by 2030. These goals aim to end poverty, protect the planet, and ensure prosperity for all. Each goal has specific targets that governments, organizations, and individuals work towards achieving.

Learning Outcome:

- Understanding the SDGs: Students will grasp the concept of the SDGs, their importance, and their relevance to global issues.
- Critical Thinking: Students will develop critical thinking skills by analyzing the interconnectedness of the goals and their impact on communities worldwide.
- Empathy and Global Citizenship: Students will cultivate empathy and a sense of global citizenship by exploring how the SDGs address issues affecting people around the world.

Activity Plan

Activity Title: Global Goals Bingo

Objective:

- To familiarize students with the UN Sustainable Development Goals (SDGs) and their targets through an engaging and interactive bingo game.

Duration: 1 class period (45 minutes)

Materials Needed:

- Global Goals Bingo cards (created in advance)

UN Sustainable Development Goals Bingo Card (bingobaker.com)

- Pen/pencil for each student
- SDG reference materials (posters, handouts, online resources)

Communications materials - United Nations Sustainable Development

- Prizes (optional)

Procedure:

- **Introduction (5 minutes):**
  - Begin the class by briefly introducing the UN Sustainable Development Goals and explaining their importance in addressing global challenges.
- **Explain the Bingo Game (5 minutes):**
  - Distribute the Global Goals Bingo cards to each student.
  - Explain the rules of the game: Each square on the bingo card represents one of the 17 SDGs. As students learn about each goal and its targets throughout the class, they mark off the corresponding square on their bingo card.
- **SDG Overview (10 minutes):**
  - Provide a brief overview of the 17 SDGs, highlighting their titles and symbols.
  - Display posters or handouts illustrating each goal and its associated targets.
- **Learning Stations (20 minutes):**
  - Set up learning stations around the classroom, with each station focusing on one or two SDGs.
  - At each station, provide materials such as articles, videos, or infographics related to the assigned goal(s).
  - Encourage students to rotate through the stations, spending 5-7 minutes at each station to learn about the goals and their targets.

- **Bingo Gameplay (5 minutes):**
  - As students learn about each goal at the learning stations, they mark off the corresponding square on their bingo card.
  - Emphasize the importance of actively listening and engaging with the materials to complete their bingo cards.

- **Review and Discussion (10 minutes):**
  - After completing the learning stations, gather the students and facilitate a discussion.
  - Review each SDG briefly, highlighting key information and targets.
  - Encourage students to share any insights or questions they have about specific goals.
- **Bingo Prize (optional) (5 minutes):**
  - Collect the completed bingo cards and randomly select one or more winners.
  - Award prizes to the winners (e.g., small treats, stickers, or school supplies).
  - **Conclusion (5 minutes):**
  - Conclude the activity by emphasizing the importance of the SDGs and the role students can play in contributing to their achievement.

Encourage students to continue learning about the goals and to consider ways they can take action to support sustainable development in their communities.

TOPIC 3

AI DOMAINS

Activity1

Activity 1: Exploring AI Domains

Objective: To introduce students to various domains of Artificial Intelligence (AI) through interactive exploration and discussion.

Duration: 1 class period (45 minutes)

Materials Needed:

- Posters or slides depicting different AI domains (machine learning, natural language processing, computer vision, robotics, expert systems)
- Pen and paper for note-taking
- Computers or tablets with internet access (optional)

Procedure:

1. **Introduction to AI Domains (10 minutes):**
    - Start the class by providing a brief overview of Artificial Intelligence and its significance in modern technology.
    - Introduce the concept of AI domains, explaining that AI is not a single technology but a collection of various domains focused on solving different types of problems.
2. **Domain Exploration Stations (25 minutes):**
    - Set up stations around the classroom, each representing a different AI domain.
    - Display posters or slides at each station providing information about the domain, its applications, and examples.
    - Divide students into small groups and assign each group to a different station.

- Instruct students to rotate through each station, spending 5-7 minutes at each one.
- At each station, students read the information provided and discuss among their group members.

3. **Hands-on Activity (10 minutes):**
   - After exploring each domain, engage students in a hands-on activity related to one of the domains.
   - For example, in the machine learning station, students could use an online tool like TensorFlow Playground to experiment with training a neural network.
   - In the natural language processing station, students could try using a chatbot or language translation tool.
4. **Group Discussion (10 minutes):**
   - Gather the class for a group discussion after completing the hands-on activity.
   - Encourage students to share their observations, experiences, and insights from exploring the different AI domains.
   - Facilitate a discussion on the potential impact of AI technologies in each domain and their significance in society.
5. **Conclusion and Reflection (5 minutes):**
   - Conclude the activity by summarizing the key points discussed during the class.
   - Encourage students to reflect on what they learned about AI domains and how these technologies are shaping the world around them.
   - Invite students to share any questions they have or topics they would like to explore further in future lessons.

   https://youtu.be/YhSeTEumjVA

Activity 2

Activity2: Visual Exploration of AI Domains

Objective: To familiarize students with various domains of Artificial Intelligence (AI) through interactive visual exploration.

Duration: 1 class period (45 minutes)

Materials Needed:

- Posters or slides depicting different AI domains (machine learning, natural language processing, computer vision, robotics, expert systems)
- Whiteboard or chalkboard
- Markers or chalk
- Computers or tablets with internet access (optional)

Procedure:

1. **Introduction (5 minutes):**
    - Begin the class by briefly explaining the concept of AI and its significance in today's world.
    - Tell students that AI encompasses various domains, each focusing on specific tasks and applications.
2. **Visual Presentation (15 minutes):**
    - Show posters or slides depicting different AI domains, one at a time.
    - For each domain, explain its definition, key concepts, applications, and examples using visuals and simple language.
    - Encourage students to take notes or ask questions as needed.
3. **Domain Identification Game (10 minutes):**

- Divide the class into small groups.
- Provide each group with a set of flashcards or images representing different AI domains.
- Ask groups to match each flashcard or image with the correct domain name on the whiteboard or chalkboard.
- The group that correctly identifies all the domains first wins the game.

4. **Group Discussion (10 minutes):**
    - Lead a discussion on each AI domain, focusing on its significance and real-world applications.
    - Encourage students to share examples they learned about during the visual presentation or from their own research.
5. **Hands-on Activity (5 minutes):**
    - Optionally, engage students in a brief hands-on activity related to one of the AI domains.
    - For example, if discussing computer vision, show a short video demonstration of object recognition technology.
6. **Conclusion (5 minutes):**
    - Summarize the key points discussed during the class.
    - Reiterate the importance of AI domains and their impact on various aspects of society.
    - Encourage students to continue exploring AI concepts and applications in their own time.

TOPIC 4

AI ETHICS

AI Ethics

LEARNING OUTCOMES:

Students will be able to:

1. Describe some ethical concerns of AI with respect to inclusion, bias and privacy

2. Be able to evaluate the cost and benefits of AI technology

RESOURCES REQUIRED:

For a class of 40 students [group activity – groups of 4]

ACTIVITY: **BALLOON DEBATE**

Debate about the boon and bane of various AI applications in the different industries
-This will be a 4 v 4 debate.
-Each theme will be given to two different teams.
-Now one team out of these two will be in affirmation with AI applications in their theme while the other one will be against AI applications in the same theme.
-The debate will go theme by theme wherein each member of the team will get a minute to speak. The first speaker of the affirmative team will start the debate after which the first speaker of the rebuttal team will put their points.
-In this manner, each speaker will get a minute to speak and finally one team will be chosen to be thrown out of the balloon debate depending upon how convincing their points were.
The speaker who speaks more than a minute will get his team disqualified.

TOPIC 5

AI PROJECT CYCLE – PROBLEM SCOPING

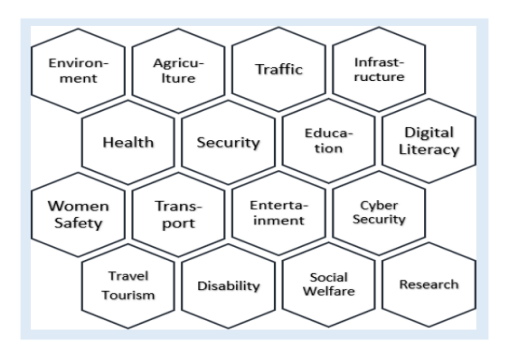
TOPIC: AI Project Cycle – Problem Scoping

LEARNING OUTCOMES:
Students will be able to:

1. Apply the problem scoping framework.
2. Frame a Goal for the project.

RESOURCES REQUIRED:
For a class of 40 students [group activity – groups of 4]

ACTIVITY:
Purpose: Understanding how to narrow down to a problem statement from a broad theme.
Look around you and select a theme which interests you the most. Suggested themes are:



Your selected theme is:

Why did you select this theme?

As we know, a theme is a broad term which covers all the aspects of relevance under it.

For example:

In Agriculture, there are pest issues, yield rates, sowing and harvesting patterns, etc. all being very different from each other but still a part of the Agriculture theme. Thus, to effectively understand the problem and elaborate it, we need to select one topic under the theme.

Some examples are:

Theme: Digital Literacy **Topics:** Online learning platforms, digital awareness, e-books, etc.

Theme: Health **Topics:** Medicinal Aid, Mobile Medications, Spreading of diseases, etc.

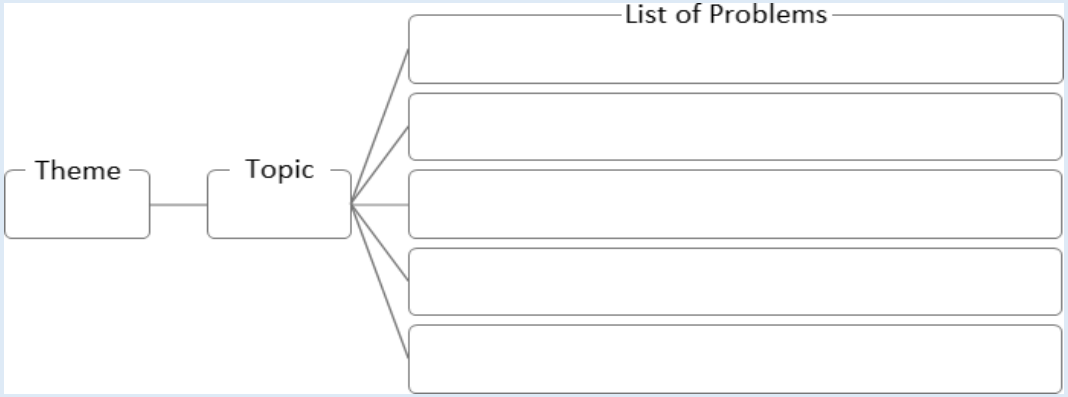
Theme: Entertainment **Topics:** Media, Virtual Gaming, Interactive AVs, Promotions etc.

Choose one **Topic** out of the ones mentioned in the rays of the Sun above, and fill it in below:

_____ .

Let us now list down the problems which come under our **Topic.** You can recall daily life scenarios where you may have witnessed problems related to the Topic of your choice. Also, you can go online and research around your chosen topic.

Fill up the problems that you find under your topic below.



Great! We now know that there exist lot of problems to be solved around us! Thus, to set up the **GOAL** of your project, select **one problem** out of the ones listed above which you want to solve using your AI knowledge. This **Problem** now becomes the target of your AI project and helps you getting a clear vision of what is to be achieved.

Let us now frame the selected problem as a goal. For example, a goal can be stated as *How might we help farmers determine the best times for seeding and for sowing their crops?*

It's your turn now! Write the **Goal** of your project below:

_____

_____

Since you have now determined the **Goal** of your project, let's start working around it using 4W Problem Canvas.

4Ws Problem Canvas

This canvas helps us in identifying 4 crucial parameters we need to know for solving a problem. So what are the 4Ws? It refers to Who, What, When and Why."

- Let's start with who. In this stage, we are looking at the person who is having the problem, they are also known as the stakeholders of the problem.
- Next we have what. In this stage, we consider the nature of the problem. What is the problem and how do we know that it is a problem? Is there evidence to support that it is a problem?
- Next we will ask Where does the problem arise? In this we describe the context of the problem

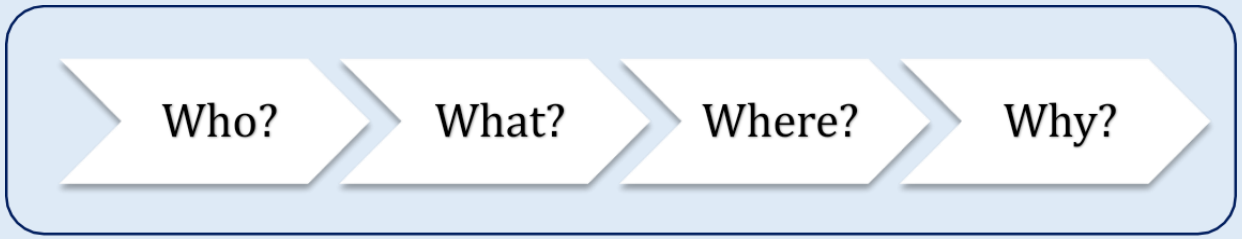
The 4Ws Problem canvas helps the students in identifying the key elements related to the problem. Let us go through each of the blocks one by one.

Who?

The "Who" block helps you in analysing the people getting affected directly or indirectly due to it. Under this, you find out who

the 'Stakeholders' to this problem are and what you know about them. Stakeholders are the people who face this problem and would be benefitted with the solution.

Let us fill the "Who" canvas!



Who?

- Who are the Stakeholders?

_____

_____

_____

- What do you know about them?

_____

_____

_____

What?

Under the "What" block, you need to look into what you have on hand. At this stage, you need to determine the nature of the problem. What is the problem and how do you know that it is a problem? Under this block, you also gather evidence to prove that the problem you have selected actually exists. Newspaper articles, Media, announcements, etc are some examples.

Let us fill the "What" canvas!

What?

- What is the problem?

_____

_____

_____

- How do you know that it is a problem? (Is there any evidence?)

_____

_____

Where?

Now that you know who is associated with the problem and what the problem actually is; you need to focus on the context/situation/location of the problem. This block will help you look into the situation in which the problem arises, the context of it, and the locations where it is prominent.

Let us fill the "Where" canvas!

Where?

- What is the context/ situation the stakeholders experience the problem?

- Where is the problem located?

Why?

You have finally listed down all the major elements that affect the problem directly. Now it is convenient to understand who the people that would be benefitted by the solution are; what is to be solved; and where will the solution be deployed. These three canvases now become the base of why you want to solve this problem. Thus in the "Why" canvas, think about the benefits which the stakeholders would get from the solution and how would it benefit them as well as the society.

Let us fill the "Why" canvas!

Why?

- Why will this solution be of value to the stakeholders?

- How will the solution improve their situation?

Problem Statement Template

It is used to frame the 4ws into a paragraph to describe your problem, the stakeholders involved and how solving the problem would benefit them."

The students will fill the problem statement template on the basis of how they have filled the 4Ws Problem canvas. In the end, they get a statement describing the problem which they wish to solve considering the stakeholders, context of the problem and benefit of its solution.

After filling the 4Ws Problem canvas, you now need to summarise all the cards into one template. The Problem Statement Template helps us to summarise all the key points into one

Our	[stakeholder(s)]	Who
has /have a problem that	[issue, problem, need]	What
when / while	[context, situation]	Where
An ideal solution would	[benefit of solution for them]	Why
An ideal solution would	[benefit of solution for them]	Why

TOPIC 6
DATA ACQUISITION

Topic: Data Acquisition
Learning Outcomes:

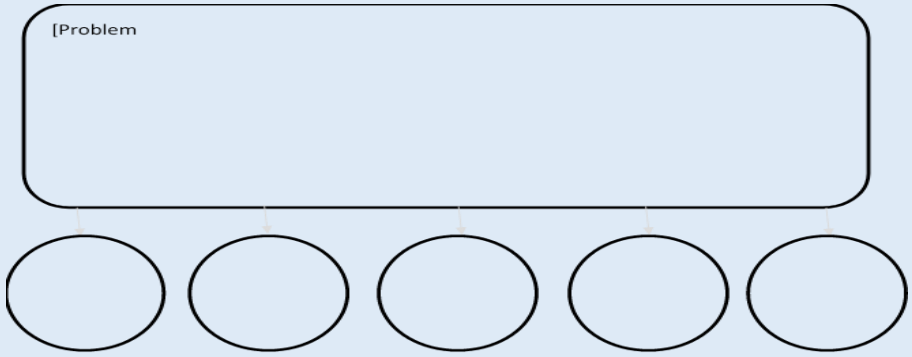
1. Identify data required regards a given problem.
2. Draw System Maps.

Requirements:

4 Groups of 10 students each [For a class of 40]

ACTIVITY:

- Try to identify the data features required for your problem statement:
  - Collect data from various sources like surveys, web scraping, cameras, observations, sensors etc.



  - Sometimes, you use the internet and try to acquire data for your project from some random websites. Such data might not be authentic as its accuracy cannot be proved.
  - Due to this, it becomes necessary to find a reliable source of data from where some authentic information can be taken.

- At the same time, we should keep in mind that the data which we collect is open-sourced and not someone's property. Extracting private data can be an offence.
- One of the most reliable and authentic sources of information, are the open-sourced websites hosted by the government. These government portals have general information collected in suitable format which can be downloaded and used wisely.

Some of the open-sourced Govt. portals are: *data.gov.in, india.gov.in*

List down ways you acquired data in:

1.
2.
3.
4.
5.
6.

System Maps

System Maps help us to find relationships between different elements of the problem which we have scoped. It helps us in strategizing the solution for achieving the goal of our project, Here is an example of a System very familiar to you – Water Cycle. The major elements of this system are mentioned here. Take a look at these elements and try to understand the System Map for this system. Also take a look at the relations between all the elements.

A system map shows the components and boundaries of a system and the components of the environment at a specific point in time. With the help of System Maps, one can easily define a relationship amongst different elements which come under a system. Relating this concept to our module, the Goal of our project becomes a system whose elements are the data features mentioned above. Any change in these elements changes the system outcome too. For example, if a person received 200% increment in a month, then this change in his salary would affect the prediction of his future salary. The more the increment presently, the more salary in future is what the system would predict.

For a class of 40 students [Group Activity – Groups of 4]

Materials Required:

ITEM	QUANTITY
Computers	10
Chart Paper	10
Sketch-Pens	40

Resources:

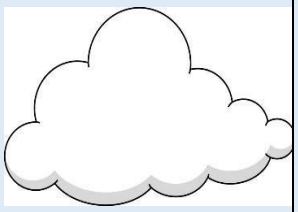
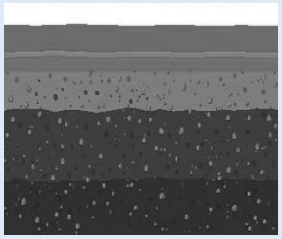
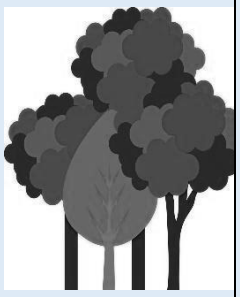
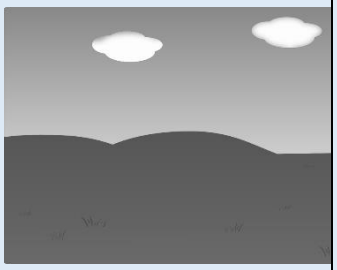
Link to make System maps Online using an Animated tool: https://ncase.me/loopy/

ACTIVITY:

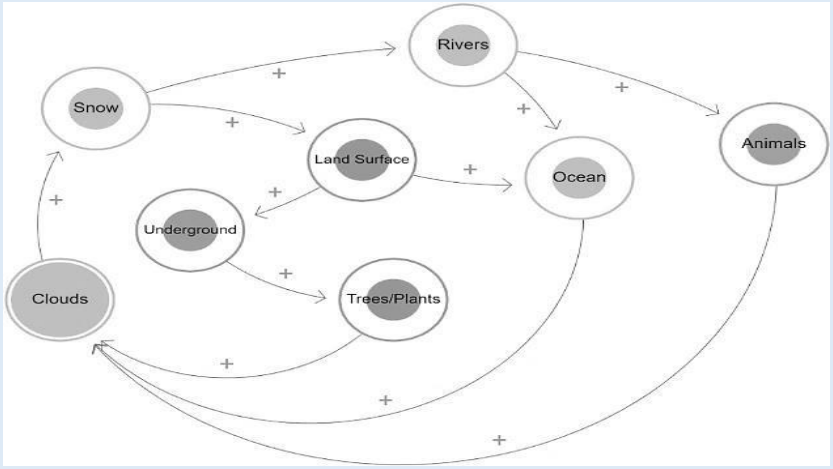
The Water Cycle

The concept of Water cycle is very simple to understand and is known to all. It explains how water completes its cycle transforming from one form to another. It also adds other elements which affect the water cycle in some way.

The elements which define the Water cycle system are:

			
Clouds	**Snow**	**Underground Soil**	**Rivers**
			
Oceans	**Trees**	**Land**	**Animals**

Let us draw the System Map for the Water Cycle now.



In this System Map, all the elements of the Water cycle are put in circles. The map here shows cause & effect relationship of elements with each other with the help of arrows. The arrow- head depicts the direction of the effect and the sign (+ or -) shows their relationship. If the arrow goes from X to Y with a + sign, it means that both are directly related to each other. That is, If X increases, Y also increases and vice versa. On the other hand, If the arrow goes from X to Y with a – sign, it means that both the elements are inversely related to each other which means if X increases, Y would decrease and vice versa.

Now, it's your turn to build your own System Map!

Considering the data features for your problem, draw a system map in the box provided.

(Hint: You can also use this animated tool for drawing and understanding system maps: https://ncase.me/loopy/)

TOPIC 7

DATA EXPLORATION-VISUALISING DATA

TOPIC: Data Exploration

Learning Outcomes:

1. Recognize different types of graphs used in data visualization.
2. Exploring various patterns and trends out of the data explored.

For a class of 40 Students. [Group Activity – Groups of 4]

Materials Required:

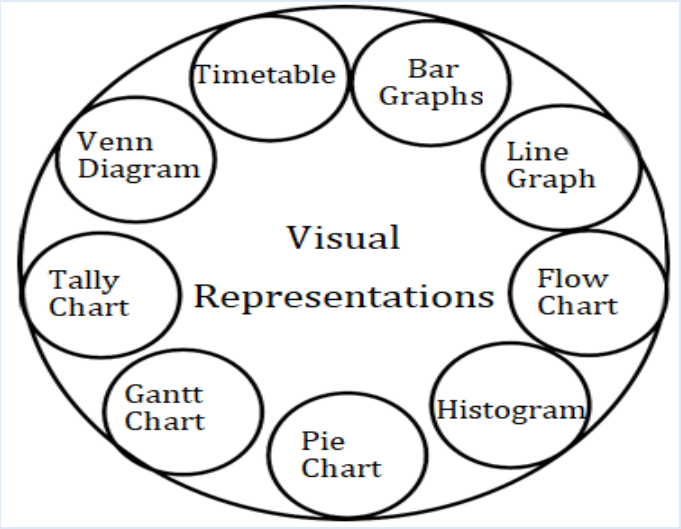
Resources:

ITEM	QUANTITY
Computers	10

Link to visualisation website: https://datavizcatalogue.com/

ACTIVITY:

- From the above website learn some visualization techniques.
- Pick a visualization technique from the wheel below:



- Fill the table given below for the data visualization technique that you selected:

Data Visualisation Technique that you have selected	
Name of the Representation	
One-line Description	
How to Draw Suitable for which data type?	

TOPIC 8

MODELLING RULE BASED/LEARNING BASED

Topic: Modelling

Modelling is process of creating a working structure of any notion.

AI models are based on two major approaches – Rule based and Learning based

In Rule based approach, from the input dataset rules will be created and used to arrive

at the desired output.

In Learning based approach, the input and desired output are fed into the machine to frame its own rules.

Learning Objectives:

1. Students are introduced to the decision tree as an example of rule-based models
2. Students are introduced to Pattern identification model.

Learning Outcomes:

1. Explain how decision trees work
2. Describe the process involved in pattern identification.

Activity 1:

To create rule using decision tree from a given dataset. – SPOT AN ELEPHANT ?

Requirement:

- Dataset, Cards,Chart

- Group of 10 to 15 students

Activity:

- Predictors in the dataset can be the name of the group and its value can be the members of the group
- One students can be assigned as a target and he/she is given with the dataset.
- In the top of the chart, the first predictor can be written for example: outlook.
- Now the member of the group should show the cards like rainy,sunny or overcast.
- The target after seeing the dataset, he has to show either yes or no or both.
- If there is clear yes or no, then it can be written in the chart else the members of this group should form a combination with members of next group and ask for yes or no from target and repeat the above two steps to arrive at the rules.

Note: If a predictor combination is not useful, the predictor need not be in the rule.

Discussion:

- From the completed decision tree, the parts of the decision tree and rules formed can be explained.
- Explain rule based approach in AI Modelling.

Sample dataset:

Outlook	Temperature	Humidity	Wind	Elephant Spotted?
Sunny	Hot	High	Weak	No
Sunny	Hot	High	Strong	No
Overcast	Hot	High	Weak	Yes
Rain	Mild	High	Weak	Yes
Rain	Cool	Normal	Weak	Yes
Rain	Cool	Normal	Strong	No
Overcast	Cool	Normal	Strong	Yes
Sunny	Mild	High	Weak	No
Sunny	Cool	Normal	Weak	Yes
Rain	Mild	Normal	Weak	Yes
Sunny	Mild	Normal	Strong	Yes
Overcast	Mild	High	Strong	Yes
Overcast	Hot	Normal	Weak	Yes
Rain	Mild	High	Strong	No

Decision Tree:

Rules identified:

Activity 2:

To identify pattern in a learning based approach

- Ask the students to decide the four different areas of interest.
- Frame 10 – 15 yes or no questions related to it
- Other students can be given with a strip containing 10 or 15 blocks
- They can shade the respective block no for the question if their answer is YES, else it can be left blank.
- Now collecting all the strips to check the pattern to find the area of interest for class.

Discussion:

- From the above activity, the teacher can explain that machine identifies the patterns created from previous experiences, data provided and feedbacks.
- Explaining the application of Machine learning like product recommendation we can see in the e-commerce Websites, Image recognition, weather prediction will be more helpful.

Activity 3:

Draw as I SAY! To understand the difference between two approaches.

Requirements:

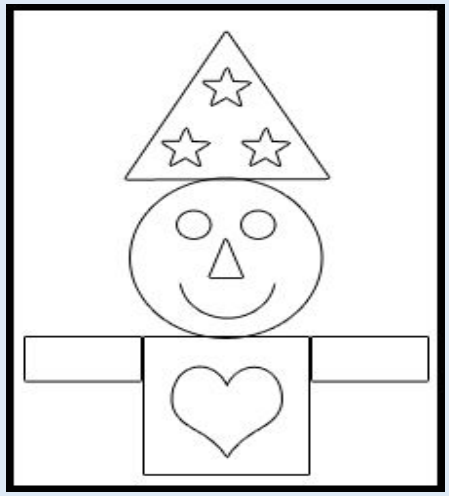
- Black board chalk, a reference picture.
- 6 students

Activity:

- The black board can be divided into two.
- Students also can be grouped two.
- Two students can get blindfolded with chalk near the board one on each side.
- For group A, the instructions to draw the picture will be given confirms the question asked by the blindfolded student with yes or no.
- For Group B, the picture will be given.
- Ask the other students to observe the scene.

Discussion:

- Now, the teacher can ask the observation made by the students and explains that in group A rules are given to arrive at the output but in group B , they can create their own instructions from the given output.
- Explain the advantage of Learning based to the rule based , that it is dynamic.(if we change something in the picture in between , the instructions can be made accordingly but in rule based change in the input cannot be incorporated immediately,again the decision tree has to formed to create the rule.It uses trial and error strategy to learn more appropriate,which can be observed from the above acitivity.



Rules:

TOPIC 9

INTODUCTION TO NEURAL NETWORK THROUGH GAMIFICATION

Topic: Neural network AI

Learning Objectives: Introduce students to the neural network

Learning Outcome: Describe how a neural network works

Activity 1:

Interactive AI Neural Network Model

Creating model of artificial neural networks with beads and threads and make it interactive as much as possible.

This video can be used for reference:
https://www.ozaria.com/play/level/1fhm1l1l2b?course=5d41d731a8d1836b5aa3cba1&codeLanguage=python

Activity 2: Human Neural Network

Ground Rules:

- No one is allowed to talk or discuss till the game ends. Fun of the game lies in playing it honestly.
- Each layer should sit distant to each other.
- The image should only be shown to the Input layer and no one else.
- The game is supposed to be played silently. This means that one has to write a word on the chit and pass on the chit without speaking out aloud.
- One needs to process the data as fast as possible, hence not take much time can be taken to write and pass on the chits.
- Input layer nodes cannot discuss the image shown with each other. Everyone has to use their own discretion.
- No sentences or multiple words are to be written on the chit. Only one word per chit is allowed.
- Once the task of a layer is finished, that layer needs to go and sit aside and not disturb others till the game ends.

Game Instructions:

Input Layer:

- 7 students will be standing as the nodes of an input layer.
- All of them will be shown an image. After looking at it, they need to write 6 different words on 6 different chits. They have to choose the words which describe the image in the best way possible. They can also repeat the words if needed.
- After making these chits, they need to pass on one chit to each of the nodes of hidden layer 1. That is, 1 chit will be given to one member.

Hidden Layer 1:

- 6 students will be standing as the nodes of hidden layer 1.
- Each of them will receive 7 chits from 7 different input nodes. Now they have to take a good look at the chits and then write down 4 different words on 4 different chits. For this, they can either use the same words as the input layer did, or they can make their own information (relevant to the context) and write it.
- Now these 4 chits are to be given randomly to any 4 nodes of Hidden Layer 2.
- Out of the 6 nodes of 2nd hidden layer, one can choose any 4 and give once chit to each. (For best results, each node of hidden layer 2 should get almost same number of chits thus the division should be done properly.

Hidden Layer 2:

- 6 students will be standing as the nodes of hidden layer 2.
- Each one of them will get some number of chits from the previous layer. Now they have to perform the same task as hidden layer 1 and have to write down 2 different words on 2 different chits and pass it on to the output layer.

Output Layer:

- Finally the output layer node will get 12 chits. Now s/he has to understand all the words and has to guess which image was shown to the input layer initially.
- Output layer will then write a summary out of all the words received to explain his/her deduction. The summary should not be more than 5 lines.
- Finally, the output layer presents this summary in-front of everyone and the real image is finally revealed to all.
- If the summary is accurate enough, the whole network wins else they lose.

TOPIC 10

INTRODUCTION TO PROGRAMMING USING ONLINE GAMING PORTALS

Topic: Introduction to Programming

Learning Objectives:

- To understand what is programming language.
- To know the importance of programming language.

Learning Outcomes:

- Understanding of need for programming language.
- Ability to write a programming algorithm.

Activity: Become a machine.

Requirement :

6 students

New Language chart

Walk	Taktak	Take	Zoop
Drop	Dapp	Sit	Chak
Sing	LaLa	calculate	Dooo
Write and Give it to the output	wow	Stand	Zaap

Activity :

- Teacher can display a chart containing words in English language and give any word which can be used instead of it.
- Now the teacher can write a sequence using the English word.
- One student can be a programmer who will write the same sequence using alternate words given in the chart.
- 3 or 4 students can act as a input whose name can be mentioned in the sequence, who can later say things relevant when their turn comes.
- 1 can act as Machine to do what the programmer had written
- 1 can act as output to whom machine will give any output.

Program:

1. zaap;
2. Taktak to the front;
3. Zoop Chalk;
4. Doo Hello;
5. Wow;

Likewise, many fun sequence can be created to involve all the students

Discussion:

- Now, the teacher can explain that communication between a machine and human needs an interpretation is what performed through the programming language.
- Given chart is like a syntax or keywords, function – rules or meaning of the language
- Student names given are variables or inputs from user which need not be the same always.

After introducing the need for programming language and how to create a program, the teacher make use of this link to have fun coding TOPICs from Code Combat, else the teacher can create their own TOPICs.

https://www.ozaria.com/play/level/1fhm1l1l2b?course=5d41d731a8d1836b5aa3cba1&codeLanguage=python

TOPIC 11

UNDERSTANDING LOOPING STRUCTURE

Topic: Looping structures in programming

Activity: Repeat the action.

Requirements: 10 to 15 cards.

Activity:

- Teacher can give 5 cards containing names /numbers and mention an action like say hello, give high five , calculate sum ,calculate product etc.
- Now the student will repeat the act by data in cards as input.

Discussion:

Now the teacher can explain, the repetition of action is what called looping and at each repetition where/on what/with whom (mentioned in the cards) the action performed can differ is called variable or values.

Difference Between For and While loop:

Requirements: Notebooks or other similar articles to stack up.

Activity:

- Now, the teacher the ask the students to stack up the 5 notebooks one by one.
- And teacher asks to create a stack of height 15cm and instructs that a student can use any number of notebook or any size of notebook.

Discussion:

- From the activity, the teacher can explain the difference between for and while loop
- In the first task all students will have 5 notebooks in it, which means the action is performed for same number of times by all of them.
- But, in the second task, the number of repetition varies from student to student(say 3,7,2),because they are committed to a condition(Height) rather the number of times.

Video for Loop Concept: https://youtu.be/wxds6MAtUQ0?si=57MrZf3NwfWZG0rM