SVKM J .V. Parekh International School

Long Term Plan/Medium Term Plan

Academic Year 2019-2020

Subject: English Language **GRADE- 9** **Name of the Teacher: Ms Sapna Nair**

Strand/ Topics	Learning Objectives (CAIE expectations)	Learning Experiences/ Engagements
Reading Writing	1. To be able to skim, scan, and select information thereby understanding the explicit and implicit meaning of the text. 2. able to identify implicit meanings and attitudes and explain how writers achieve effects and influence readers (characters)	students were able to read, comprehend, analyse the text Students were able to identify the writer's choice of words and explain the complex meaning and structure of the text.
	1. able to identify implicit meanings and attitudes and explain how writers achieve effects and influence readers. (settings) 2. To be able to write an effective descriptive writing thereby focusing on specific vocabulary and language techniques.	Students were able to identify the writer's choice of words and explain the complex meaning and structure of the text. Students were able to articulate and express ideas using range of vocabulary and sentence structures appropriate to the context

Reading Writing	1. To be able to use synonyms to explore and express meaning and use language precisely to explain the complex ideas in your own words. 2. to identify and explore the emotive and sensory techniques in the given text	students were able to read and annotate the text and identify the various linguistic devices thereby explaining the writers effect
Reading Writing grammar	1. To be able to understand explicit and implicit meaning and select and use information for specific purposes. 2. to be able to understand the functions of different types of words and sentences and use punctuation and tenses accurately and effectively	students are able to read, comprehend the text and differentiate between closed and open questions and answer them accordingly students were able to identify and understand the key grammar skills needed for effective sentence structure
	Term exam and Diwali holidays	
Reading Writing	1. To be able to organise and structure ideas for a deliberate effect that is appropriate to context.	Students were able to identify the basic structure of a narrative writing thereby using detailed description and appropriate vocabulary.

Reading Writing	1. To be able to read and differentiate between fact and opinion in a text and also analyse and understand the form and purpose of different texts. 2. To be able to understand and use reported speech in a paragraph and also be able to use paragraphing accurately.	Students were able to identify facts and opinions from a paragraph. They were also able to identify form, purpose and paragraphing of the text.
Reading Writing	1. to be able to understand the structure of a speech and diary entry 2. to be able to identify the structure and write a persuasive text using a single viewpoint and focusing on appropriate vocabulary	Students were able to understand the structure and the audience for writing a speech and diary entry. Students were able to write a persuasive paragraph focusing on emotive language and a strong viewpoint.
Reading Writing	1. to be able to understand the explicit and implicit meaning of the text; select, organise and structure a paragraph which is appropriate to the context 2. to be able to identify the structure and audience of a report writing	students were able to write identify and collate points to write an effective summary students were able to write a report using factual details and also giving a perspective

Writing	1. to be able to write an informative paragraph using clear and concise sentences and precise vocabulary	Students were able to write a report concisely focusing ion tenses and given references.
	Term exams	

Academic Year 2020-2021

Strand/ Topics	**Learning Objectives (CAIE expectations)**	**Learning Experiences/ Engagements**
Reading Writing	1. to be able to identify the structure of a magazine article and letter followed by writing one	Students were able to understand the structure of an article and report and write one using appropriate vocabulary and audience.
reading writing	1. to be able to write an argumentative writing using facts of both sides and working logically towards a conclusion 2. to be able to write a discursive writing focusing on clear explanation and exploring different viewpoints	Students were able to understand the structure and write an argumentative writing stating the writer's viewpoint. Students were able to understand the structure and write a discursive writing.

Reading Writing	1. to be able to read and analyse a text and evaluate, organise, structure and develop facts and articulate the experience in the given format	students were able to write a directed writing based on textual evidence
Reading Writing	1. to be able to read and analyse a text and evaluate, organise, structure and develop facts and articulate the experience in the given format	students were able to write a directed writing based on textual evidence
	past paper solving	
	term 1 exam	
	topic wise revision	
	past paper solving & Mock exams	

SVKM J .V. Parekh International School

Long Term Plan/Medium Term Plan

Academic Year 2019-2020

Subject: English Literature **GRADE- 9A/B**

Name of the Teacher: Ms Naveena Chaturvedi

Learning Objectives (CAIE expectations)	**Learning Experiences/ Engagements**	
Poetry Develop confidence in communicating beyond surface meanings to explore the poem's deeper implications. Explore how the poet uses language, form and structure to create and shape meanings and effects. Develop confidence in communicating a supported personal response	<u>POEM</u> 1.The Sea Eats the land at home 2. Afternoon with Irish Cow 3.London Snow Students will read the poem aloud from the text. In pairs they will consult the meanings of the difficult words in a dictionary .	<u>PROSE</u> <u>1.Secrets</u> The students will be divided in groups. They will be asked to do a brief research on the writer and the times/era. They will present the above before the lesson commences. Students will read the lesson aloud. They will mark the characters. Mind Mapping to understand the relationships amongst the characters. Each group will be allocated passages from the text to analyse the Mood, setting and theme. They will identify the evidence in support of the point they are making. They will create a QUOTATION + COMMENT table.

Prose To inculcate an understanding and appreciation of the set prose text among students. Move beyond surface meanings to explore deeper implications about character, how writer appeals to the senses to create settings ,how the narrative is told . The portrayal of character in the course of a prose text and the effect created by the author through the use of literary devices.	Students will discuss the meanings of words ,identify the literary devices and the poet's use of: rhythm ,rhyme ,enjambment sound: alliteration, assonance, onomatopoeia etc imagery: simile, personification etc rhetorical: , repetition, humour, irony. Etc. They will answer the questions to reach the deeper implication and support it with a personal response. PEE- point, evidence explanation will be stressed upon while analysing the poems.	Then students identify the following aspects of prose fiction form: • narration (moving the plot on) • description (of characters, setting) • dialogue (and how represented). Focus will be on the IGCSE style questions

Learning Objectives (CAIE expectations)	**Learning Experiences/ Engagements**	
Poetry Develop confidence in communicating beyond surface meanings to explore the poem's deeper implications. Explore how the poet uses language, form and structure to create and shape meanings and effects. Develop confidence in communicating a supported personal response. **DRAMA** To instil an understanding and appreciation of the drama and the distinctive features of a drama script among students. To understand the Renaissance Era with special	POEM The Buck in the Snow Students will read the poem aloud from the text. In pairs they will consult the meanings of the difficult words in a dictionary . Students will discuss the meanings of words ,identify the literary devices and the poet's use of: rhythm ,rhyme ,enjambment sound: alliteration, assonance, onomatopoeia etc imagery: simile, personification etc rhetorical: , repetition, humour, irony. Etc.	Drama Romeo & Juliet-Act 1 Scene 1,2&3 The Students will be asked to research and present the Era in which Shakespeare lived. They will also research on his famous tragedies. The students using copies of extracts from their set drama texts will annotate distinctive features of each literary form. This will help them to see the different ways characters, words are presented in the drama texts. They will identify the different types of stage direction in their set drama text: those which introduce character, those indicating tone of voice or silence, those stating key actions. They will role play the characters, analysing how the play begins, develops, shift in the tone and mood and the dramatic impact on the audience.

reference to Shakespeare. Implore the dramatic effect of the key moments of the play. Explore the precise ways in which language the writer uses language to portray characters and communicate themes	They will answer the questions to reach the deeper implication and support it with a personal response. PEE- point, evidence explanation will be stressed upon while analysing the poems.		
POEM Develop confidence in communicating beyond surface meanings to explore the poem's deeper implications. Explore how the poet uses language, form and structure to create and shape meanings and effects. Develop confidence in communicating a supported personal response PROSE	<u>POEM</u> Watching for Dolphins Students will read the poem aloud from the text. In pairs they will consult the meanings of the difficult words in a dictionary. Students will discuss the meanings of words ,identify the literary devices and the poet's use of: rhythm ,rhyme ,enjambment sound: alliteration, assonance, onomatopoeia etc imagery: simile, personification etc rhetorical: , repetition, humour, irony. Etc.	<u>PROSE -</u> Journey The Students will be asked to research on Colonialism. They will present the above before the lesson commences. Discussion on discrimination will be encouraged. Students will read the lesson aloud.They will mark the characters. Each group will be allocated passages from the text to analyse the -Mood,	<u>DRAMA</u> Romeo & Juliet-Act 1 Scene 4 The students using copies of extracts from their set drama texts will annotate distinctive features of each literary form. This will help them to see the different ways characters, words are presented in the drama texts. They will identify the different types of stage direction in their set drama text: those which introduce character, those indicating tone of voice or silence, those stating key actions. They will role play the characters, analysing how the play begins, develops, shift in the tone and mood

To inculcate an understanding and appreciation of the set prose text among students. Move beyond surface meanings to explore deeper implications about character, how writer appeals to the senses to create settings ,how the narrative is told . The portrayal of character in the course of a prose text and the effect created by the author through the use of literary devices. DRAMA Implore the dramatic effect of the key moments of the play. Explore the precise ways in which language the writer uses language to portray characters and communicate themes	They will answer the questions to reach the deeper implication and support it with a personal response. PEE- point, evidence explanation will be stressed upon while analysing the poems.	setting and theme focussing on the imagery, symbol ,and other literary devices. They will identify the evidence in support of the point they are making. They will create a QUOTATION + COMMENT table. Then students identify the following aspects of prose fiction form: • narration (moving the plot on) • description (of characters, setting) • dialogue (and how represented). Focus will be on the IGCSE style questions	and the dramatic impact on the audience.

DRAMA Implore the dramatic effect of the key moments of the play. Explore the precise ways in which language the writer uses language to portray characters and communicate themes <u>UNSEEN PAPER</u> To inculcate the understanding of unseen text both prose and poem. Knowledge of the content of the text by differentiating between surface meaning and deeper meaning. Understand the use of language, structure, literary devices to shape the meaning and create effect in poem and characters, situations, themes in prose.	<u>Unseen Paper</u> <u>Poem & Prose</u> An unseen poem/prose text will be given to the students. They will be asked to work in groups. Keeping in mind the learnings of set text they will annotate the unseen text by identifying the literary devices like sound, imagery, rhetorical etc and the effect they create. While analysing the prose text they will be asked to focus on character, situation, theme and dialogue. Building of suspense if any. Focus will be on the question asked based on the unseen. For example: in poetry: stanza, rhythm, rhyme,enjambment in prose: narration, description, dialogue.	<u>DRAMA</u> Romeo & Juliet Act 1 Scene 5 The students using copies of extracts from their set drama texts will annotate distinctive features of each literary form. This will help them to see the different ways characters, words are presented in the drama texts. They will identify the different types of stage direction in their set drama text: those which introduce character, those indicating tone of voice or silence, those stating key actions. They will role play the characters, analysing how the play begins, develops, shift in the tone and mood and the dramatic impact on the audience
Term Exam and Diwali holidays		

Poetry Develop confidence in communicating beyond surface meanings to explore the poem's deeper implications. Explore how the poet uses language, form and structure to create and shape meanings and effects. Develop confidence in communicating a supported personal response. **Prose** To inculcate an understanding and appreciation of the set prose text among students. Move beyond surface meanings to explore deeper implications about character, how writer appeals to the senses to create settings ,how the narrative is told .	POEM Ode to Melancholy Students will read the poem aloud from the text. In pairs they will consult the meanings of the difficult words in a dictionary. Students will discuss the meanings of words ,identify the literary devices and the poet's use of: rhythm ,rhyme ,enjambment sound: alliteration, assonance, onomatopoeia etc imagery: simile, personification etc rhetorical: , repetition, humour, irony. Etc. They will answer the questions to reach the deeper implication and support it with a personal response. PEE- point, evidence explanation will be stressed upon while analysing the poems.	PROSE There Will Come Soft Rains Students will read the lesson aloud. They will mark the characters. Each group will be allocated passages from the text to analyse the -Mood, setting and theme focussing on the imagery, symbol ,and other literary devices. They will identify the evidence in support of the point they are making. They will create a QUOTATION + COMMENT table. Then students identify the following aspects of prose fiction form: • narration (moving the plot on)	DRAMA Romeo & Juliet Act 2 Scene 1&2 The students using copies of extracts from their set drama texts will annotate distinctive features of each literary form. This will help them to see the different ways characters, words are presented in the drama texts. They will role play the characters, analysing how the play begins, develops, shift in the tone and mood and the dramatic impact on the audience.

The portrayal of character in the course of a prose text and the effect created by the author through the use of literary devices. **<u>DRAMA</u>** To instil an understanding and appreciation of the drama and the distinctive features of a drama script among students. Implore the dramatic effect of the key moments of the play. Explore the precise ways in which language the writer uses language to portray characters and communicate themes		• description (of characters, setting) • dialogue (and how represented).	
Poetry Develop confidence in communicating beyond surface meanings to explore the poem's deeper implications.	<u>POEM</u> Cetacean Students will read the poem aloud from the text. In pairs they will consult the meanings of the difficult words in a dictionary.	<u>PROSE</u> On Her Knees The Lemon Orchard Students will read the lesson aloud. They will mark the characters. Each group will be allocated passages from the text to analyse the -Mood, setting and theme	<u>DRAMA</u> Romeo & Juliet Act 2 Scene 3 The students using copies of extracts from their set drama texts will annotate distinctive features of each literary form. This will help them to see

Explore how the poet uses language, form and structure to create and shape meanings and effects. Develop confidence in communicating a supported personal response. **<u>Prose</u>** To inculcate an understanding and appreciation of the set prose text among students. Move beyond surface meanings to explore deeper implications about character, how writer appeals to the senses to create settings, how the narrative is told . The portrayal of character in the course of a prose text and the effect created by the author through the use of literary devices. **<u>DRAMA</u>** To instil an understanding and appreciation of the drama and the	Students will discuss the meanings of words ,identify the literary devices and the poet's use of: rhythm ,rhyme ,enjambment sound: alliteration, assonance, onomatopoeia etc imagery: simile, personification etc rhetorical: , repetition, humour, irony. Etc. They will answer the questions to reach the deeper implication and support it with a personal response. PEE- point, evidence explanation will be stressed upon while analysing the poems.	focussing on the imagery, symbol ,and other literary devices. They will identify the evidence in support of the point they are making. They will create a QUOTATION + COMMENT table. Then students identify the following aspects of prose fiction form: • narration (moving the plot on) • description (of characters, setting) • dialogue (and how represented).	the different ways characters, words are presented in the drama texts. They will role play the characters, analysing how the play begins, develops, shift in the tone and mood and the dramatic impact on the audience.

distinctive features of a drama script among students. Implore the dramatic effect of the key moments of the play. Explore the precise ways in which language the writer uses language to portray characters and communicate themes			
Poetry Develop confidence in communicating beyond surface meanings to explore the poem's deeper implications. Explore how the poet uses language, form and structure to create and shape meanings and effects. Develop confidence in communicating a supported personal response. **<u>Prose</u>**	<u>POEM</u> Kraken Students will read the poem aloud from the text. In pairs they will consult the meanings of the difficult words in a dictionary. Students will discuss the meanings of words ,identify the literary devices and the poet's use of: rhythm ,rhyme ,enjambment sound: alliteration, assonance, onomatopoeia etc imagery: simile, personification etc rhetorical: , repetition, humour, irony. Etc.	<u>PROSE</u> The Stoat Students will read the lesson aloud. They will mark the characters. Each group will be allocated passages from the text to analyse the -Mood, setting and theme focussing on the imagery, symbol ,and other literary devices. They will identify the evidence in support of the point they are making. They will create a QUOTATION + COMMENT table.	<u>DRAMA</u> Romeo & Juliet Act 2 Scene 4,5,6 The students using copies of extracts from their set drama texts will annotate distinctive features of each literary form. This will help them to see the different ways characters, words are presented in the drama texts. They will role play the characters, analysing how the play begins, develops, shift in the tone and mood and the dramatic impact on the audience.

To inculcate an understanding and appreciation of the set prose text among students. Move beyond surface meanings to explore deeper implications about character, how writer appeals to the senses to create settings,how the narrative is told . The portrayal of character in the course of a prose text and the effect created by the author through the use of literary devices. **DRAMA** To instil an understanding and appreciation of the drama and the distinctive features of a drama script among students. Implore the dramatic effect of the key moments of the play. Explore the precise ways in which language the writer uses language to portray characters and communicate themes	They will answer the questions to reach the deeper implication and support it with a personal response. PEE- point, evidence explanation will be stressed upon while analysing the poems.	Then students identify the following aspects of prose fiction form: • narration (moving the plot on) • description (of characters, setting) • dialogue (and how represented).	

Poetry Develop confidence in communicating beyond surface meanings to explore the poem's deeper implications. Explore how the poet uses language, form and structure to create and shape meanings and effects. Develop confidence in communicating a supported personal response. **Prose** To inculcate an understanding and appreciation of the set prose text among students. Move beyond surface meanings to explore deeper implications about character, how writer appeals to the senses to create settings,how the narrative is told . The portrayal of character in the course of a prose text and the effect created by the author through the use of literary devices.	POEM Coming Students will read the poem aloud from the text. In pairs they will consult the meanings of the difficult words in a dictionary. Students will discuss the meanings of words ,identify the literary devices and the poet's use of: rhythm ,rhyme ,enjambment sound: alliteration, assonance, onomatopoeia etc imagery: simile, personification etc rhetorical: , repetition, humour, irony. Etc. They will answer the questions to reach the deeper implication and support it with a personal response. PEE- point, evidence explanation will be stressed upon while analysing the poems.	PROSE The Bath Students will read the lesson aloud. They will mark the characters. Each group will be allocated passages from the text to analyse the -Mood, setting and theme focussing on the imagery, symbol ,and other literary devices. They will identify the evidence in support of the point they are making. They will create a QUOTATION + COMMENT table. Then students identify the following aspects of prose fiction form: • narration (moving the plot on)	DRAMA Romeo & Juliet Act 3 Scene 1 The students using copies of extracts from their set drama texts will annotate distinctive features of each literary form. This will help them to see the different ways characters, words are presented in the drama texts. They will role play the characters, analysing how the play begins, develops, shift in the tone and mood and the dramatic impact on the audience.

DRAMA To instil an understanding and appreciation of the drama and the distinctive features of a drama script among students. Implore the dramatic effect of the key moments of the play.Explore the precise ways in which language the writer uses language to portray characters and communicate themes			• description (of characters, setting) • dialogue (and how represented).	
Revision Poem Prose Drama Unseen	<u>Unseen</u> A past paper will be given to the students. They will annotate the poem, making concise comments about the effects of the words and phrases highlighted. Mark the different sections of the poem by drawing a line across the	<u>Poem</u> The students will draw lines to indicate the different sections of the poem. On the copy of each poem, they highlight key words, phrases and sounds and make concise notes on the effects the poem. Go through past essays and add the essay titles to the relevant poems and think how they will answer these questions now. Draw mind maps to help them gather ideas.	<u>Prose</u> Test how well they know the text by summarising what happens immediately before and after the extracts. They will be asked to highlight the key words and phrases from these extracts and think how you would answer the questions now. Draw mind maps to help you gather ideas.	<u>Drama</u> List past extract . The students will summarise what happens immediately before and after the extracts. They will highlight key words and phrases from these extracts and think how they would answer the questions now. Draw mind maps to help you gather ideas. The students will make lists of quotations together with brief comments on the writer's use of language for each main: • character • theme • setting.

	page and will comment how the writer uses structure ,and other devices to communicate his ideas.		Make lists of quotations together with brief comments on the writer's use of language for each main: • character • theme • setting	
Term Exams				

SVKM J .V. Parekh International School

Long Term Plan

Academic Year 2019-2020

Subject: French **GRADE-IX** **Name of the Teacher(s):Kejal Shah**

Strand/Topics	Learning Objectives (CAIE expectations)	Learning Experiences/Engagements	Formative/Summative Assessments
Speaking, Reading, Writing, Listening Everyday Activities Personal and Social life Grammar:Present tense, adjectives, reflexive verbs, possessive adjectives	Exchange information about daily life using time expressions and reflexive verbs in the present tense. Give and exchange personal information. Refer to different family members, revise present tense and use possessive adjectives. Describe physical characteristics, revise adjective agreements and regular verbs in the present tense. Discuss character traits. Discuss family relationships and use reflexive verbs in the present tense.	Tricolore 4 Total Audio Cd- Tricolore 4 General Questions worksheet	

	Talk about your favourite day.Discuss usage of internet.		
Speaking, Reading, Writing, Listening Transport Descriptions of Town City vs Country side Grammar: Pronoun Y, Give directions using Imperative, Negative expressions	Discuss different means of transport and use prepositions. Refer to different countries and nationalities and use prepositions with places. Describe a region and use the pronoun Y. Ask for and give directions and use the imperative. Describe a town and use negatives. Give directions in a town using imperative. Discuss advantages vs disadvantages of living in a city or countryside.	Tricolore 4 Total Audio Cd- Tricolore 4 General Questions worksheet	FORMATIVE- Speaking Assessment on Everyday life
Speaking, Reading, Writing, Listening Theme Park Weekend and Future plans Stay with French Family Journey Home Description	Describe your home, use prepositions and use *depuis* with the present tense. Discuss tourism abroad and use indefinite pronouns. Describe your stay with a French family- ask for permissions and activities to do with them. Describe a visit to a theme park using past tense. Discuss traveling plans in various tenses.	Tricolore 4 Total Audio Cd- Tricolore 4 General Questions worksheet	FORMATIVE- Listening Assessment on City vs Countryside SUMMATIVE ASSESSMENT-UNIT TEST

Grammar: Passé composé with avoir and être, futur proche, simple future, reflexive verbs in simple future, introduce conditional tense.			
Speaking, Reading, Writing, Listening Household Tasks Compare life in different countries Grammar: Emphatic pronouns, reflexive verbs in Passé composé	Discuss household tasks, use adverbs of frequency and use the perfect tense. Discuss and describe how life differs in different countries.	Tricolore 4 Total Audio Cd- Tricolore 4 General Questions worksheet	
Exams trip vacations			
Speaking, Reading, Writing, Listening School life- subjects, rules, day at school,	Use modal verbs *pouvoir* and *devoir* in the present tense to discuss daily routine. Describe school and school routine and use different tenses. Discuss school rules and use impersonal verbs to express obligation.	Tricolore 4 Total Audio Cd- Tricolore 4 General Questions worksheet	

compare school systems Shopping, Clothes, Fashion Grammar: Usage of il doit, il faut, il est interdit de, imparfait	Discuss clothes and accessories use adjectives to describe them. Discuss fashion choices for different occasions using different tenses. Express opinions on the importance of clothes and fashion		
Speaking, Reading, Writing, Listening Meals- Food, drink, healthy foods, vegetarianism, shops and services Discuss restaurants, café, menu, book a table Grammar – Pronoun En, Direct and Indirect Passé récent	Discuss food and meals and use the partitive article (*du, de la, and des*). Discuss healthy eating. Order food in a restaurant. Discuss healthy and unhealthy lifestyles. Make arrangements to go out and practise using the immediate future tense. Use disjunctive pronouns (*moi, toi, lui, elle*, etc.)	Tricolore 4 Total Audio Cd- Tricolore 4 General Questions worksheet	FORMATIVE ASSESSMENT- SPEAKING

Speaking, Reading, Writing, Listening Leisure Activities, Computers, Music Sports, television programs, books, films Grammar: Jouer and Faire rules, comparative and superlative degree	Discuss leisure activities and use the verbs *jouer* and *faire* correctly. Talk about sports. Express opinions about different sports and use the comparative. Discuss different sporting events. Discuss reasons for doing sports. Discuss television programmes, music books and films and use direct object pronouns Compare different TV programmes and use superlative adjectives	Tricolore 4 Total Audio Cd- Tricolore 4 General Questions worksheet	FORMATIVE ASSESSMENT- LISTENING
Speaking, Reading, Writing, Listening Holidays- location, activities, hotel, camping, weather, problems Grammar- Prepositions related to towns and cities, conditional tense, usage of various tenses to describe holidays	Discuss the climate and the weather and use different tenses in holiday destinations. Book a hotel room and make complaints. Use the pluperfect tense. Travel – book tickets and deal with travel problems. Discuss holiday plans using various tenses.	Tricolore 4 Total Audio Cd- Tricolore 4 General Questions worksheet	SUMMATIVE ASSESSMENT – UNIT TEST

Speaking, Reading, Writing, Listening Holiday Health, Chemist shop, body parts, accident Grammar: expressions with avoir, relative pronouns, gerondif	Discuss minor health problems- use expressions avoir mal and se faire mal. Discuss accidents and emergencies and use *en* + present participle. Narrate the story of a road accident and a breakdown and use *venir de* + infinitive. Talk about life online and use relative pronouns *qui, que, ce qui, ce que*	Tricolore 4 Total Audio Cd- Tricolore 4 General Questions worksheet	
			SUMMATIVE ASSESSMENT- FINAL EXAMS

SVKM J .V. Parekh International School

Long Term Plan

Academic Year 2019-2020

Subject: Hindi **GRADE-9**

Name of the Teacher(s): Mr. Uday Sawant.

Strand/Topics	**Learning Objectives (CAIE expectations)**	**Learning Experiences/Engagements**
Reading & Writing- Seen passage based on **Society and culture** Exercise 1 Exercise 2	R1: identify and select relevant information R2: understand ideas, opinions and attitudes R3: show understanding of the connections between ideas, opinions and attitudes R4: show understanding of the connections between ideas, opinions and attitudes R1: identify and select relevant information	Brain storming spoken interactions progressive reading reading and writing activities newspaper or magazine article reading **www.jagran.com** Brain storming spoken interactions

Exercise 3 **Art of writing-** Picture description	R2: understand ideas, opinions and attitudes R3: show understanding of the connections between ideas, opinions and attitudes R1: identify and select relevant information R2: understand ideas, opinions and attitudes R3: show understanding of the connections between ideas, opinions and attitudes R4: understand what is implied but not directly stated, e.g. gist, writer's purpose, intention and feelings W1: communicate information/ideas/opinions clearly, accurately and effectively W2: organise ideas into coherent paragraphs using a range of appropriate linking devices W3: use a range of grammatical structures and vocabulary accurately and effectively W4: show control of punctuation and spelling W5: use appropriate register and style/format for the given purpose and audience	progressive reading reading and writing activities newspaper or magazine article reading **www.jansatta.com** Brain storming spoken interactions progressive reading reading and writing activities newspaper or magazine article reading **www.evirtualguru.com** practice writing short pieces of writing- Exemplar writing workshop- Which involves uninterrupted, silent, sustained writing on a topic of their own choice for 30 minutes. Shared writing session. Activity-Complete the sentence…… Paired interviews Rocket writing

Reading & Writing- **Sports and Health Section** Exercise 1	R1: identify and select relevant information R2: understand ideas, opinions and attitudes R3: show understanding of the connections between ideas, opinions and attitudes R4: show understanding of the connections between ideas, opinions and attitudes	**www.jagran.com** Brain storming spoken interactions progressive reading reading and writing activities newspaper or magazine article reading.
Exercise 2	R1: identify and select relevant information R2: understand ideas, opinions and attitudes R3: show understanding of the connections between ideas, opinions and attitudes	Brain storming spoken interactions progressive reading reading and writing activities newspaper or magazine article reading.
Exercise 3	R1: identify and select relevant information R2: understand ideas, opinions and attitudes R3: show understanding of the connections between ideas, opinions and attitudes R4: understand what is implied but not directly stated, e.g. gist, writer's purpose, intention and feelings	**www.jansatta.com** Brain storming spoken interactions progressive reading reading and writing activities newspaper or magazine article reading.

Art of writing- Email writing **<u>Listening-</u>** Dialogue Story Article	W1: communicate information/ideas/opinions clearly, accurately and effectively W2: organise ideas into coherent paragraphs using a range of appropriate linking devices W3: use a range of grammatical structures and vocabulary accurately and effectively W4: show control of punctuation and spelling W5: use appropriate register and style/format for the given purpose and audience L1: identify and select relevant information L2: understand ideas, opinions and attitudes L3 show understanding of the connections between ideas, opinions and attitudes L4 understand what is implied but not directly stated, e.g. gist, speaker's purpose, intention and feelings S1 communicate ideas/opinions clearly, accurately and effectively	practice writing short pieces of writing- Exemplar writing workshop- Which involves uninterrupted, silent, sustained writing on a topic of their own choice for 30 minutes. Shared writing session. Activity-Complete the sentence…… Paired interviews Rocket writing **<u>www.evirtualguru.com</u>** Shravan sarita 9 (listening cd-paper 2) CD-ROMs-PaTvar Booklet 9.

Speaking Formative 1 Topic presentation	S2 develop responses and link ideas using a range of appropriate linking devices S3 use a range of grammatical structures and vocabulary accurately and effectively S4 show control of pronunciation and intonation patterns S5 engage in a conversation and contribute effectively to help move the conversation forward	two- to-three-minute presentation three-to-four minute conversation or discussion
Reading & Writing- **Entertainment section** **Note making-** Exercise 3 **Speaking** Formative 2	R1: identify and select relevant information R2: understand ideas, opinions and attitudes R3: show understanding of the connections between ideas, opinions and attitudes R4: understand what is implied but not directly stated, e.g. gist, writer's purpose, intention and feelings S1 communicate ideas/opinions clearly, accurately and effectively S2 develop responses and link ideas using a range of appropriate linking devices	Brain storming spoken interactions progressive reading reading and writing activities newspaper or magazine article reading. **www.jansatta.com** two- to-three-minute presentation

A three-to-four minute conversation with the examiner about general topics. **Art of writing-** Speech writing **<u>Listening-</u>** Dialogue Story Article	S3 use a range of grammatical structures and vocabulary accurately and effectively S4 show control of pronunciation and intonation patterns S5 engage in a conversation and contribute effectively to help move the conversation forward W1: communicate information/ideas/opinions clearly, accurately and effectively W2: organise ideas into coherent paragraphs using a range of appropriate linking devices W3: use a range of grammatical structures and vocabulary accurately and effectively W4: show control of punctuation and spelling W5: use appropriate register and style/format for the given purpose and audience L1: identify and select relevant information L2: understand ideas, opinions and attitudes L3 show understanding of the connections between ideas, opinions and attitudes L4 understand what is implied but not directly stated, e.g. gist, speaker's purpose, intention and feelings	three-to-four minute conversation or discussion practice writing short pieces of writing-Exemplar writing workshop- Which involves uninterrupted, silent, sustained writing on a topic of their own choice for 30 minutes. shared writing session. Activity-Complete the sentence…… Paired interviews Rocket writing Shravan sarita 9 (listening cd-paper 2) CD-ROMs-PaTvar Booklet 9.

Reading & Writing- **Science and technology** Exercise 1 Exercise 2 Exercise 3	R1: identify and select relevant information R2: understand ideas, opinions and attitudes R3: show understanding of the connections between ideas, opinions and attitudes R4: show understanding of the connections between ideas, opinions and attitudes R1: identify and select relevant information R2: understand ideas, opinions and attitudes R3: show understanding of the connections between ideas, opinions and attitudes R1: identify and select relevant information R2: understand ideas, opinions and attitudes R3: show understanding of the connections between ideas, opinions and attitudes	Brain storming spoken interactions progressive reading reading and writing activities Newspaper or magazine article reading. **www.jansatta.com** Brain storming spoken interactions progressive reading reading and writing activities Newspaper or magazine article reading. **www.jagran.com** Brain storming spoken interactions progressive reading reading and writing activities Newspaper or magazine article reading.

Listening- Dialogue Story Article	R4: understand what is implied but not directly stated, e.g. gist, writer's purpose, intention and feelings L1: identify and select relevant information L2: understand ideas, opinions and attitudes L3 show understanding of the connections between ideas, opinions and attitudes L4 understand what is implied but not directly stated, e.g. gist, speaker's purpose, intention and feelings	Shravan sarita 9 (listening cd-paper 2) CD-ROMs-PaTvar Booklet 9.
Art of writing- Film & Book review	W1: communicate information/ideas/opinions clearly, accurately and effectively W2: organise ideas into coherent paragraphs using a range of appropriate linking devices W3: use a range of grammatical structures and vocabulary accurately and effectively W4: show control of punctuation and spelling W5: use appropriate register and style/format for the given purpose and audience	practice writing short pieces of writing- Exemplar writing workshop- Which involves uninterrupted, silent, sustained writing on a topic of their own choice for 30 minutes. shared writing session. Activity-Complete the sentence…… Paired interviews Rocket writing **www.evirtualguru.com**

Exercise 4 Summary writing	R2: understand ideas, opinions and attitudes R3: show understanding of the connections between ideas, opinions and attitudes W1: communicate information/ideas/opinions clearly, accurately and effectively W2: organise ideas into coherent paragraphs using a range of appropriate linking devices W3: use a range of grammatical structures and vocabulary accurately and effectively W4: show control of punctuation and spelling W5: use appropriate register and style/format for the given purpose and audience	Brain storming spoken interactions progressive reading Reading out a report or short article and making brief notes of the main ideas under three or four separate headings, and write a summary based on their notes. Story writing in own words
Exams trip vacations		
<u>Reading & Writing-</u> <u>Seen passage based on</u> **Social values** Exercise 1	R1: identify and select relevant information R2: understand ideas, opinions and attitudes	spoken interactions progressive reading reading and writing activities

Exercise 2 Exercise 3 **Art of writing-** Letter writing(Formal & Informal)	R3: show understanding of the connections between ideas, opinions and attitudes R4: show understanding of the connections between ideas, opinions and attitudes R1: identify and select relevant information R2: understand ideas, opinions and attitudes R3: show understanding of the connections between ideas, opinions and attitudes R1: identify and select relevant information R2: understand ideas, opinions and attitudes R3: show understanding of the connections between ideas, opinions and attitudes R4: understand what is implied but not directly stated, e.g. gist, writer's purpose, intention and feelings W1: communicate information/ideas/opinions clearly, accurately and effectively	newspaper or magazine article reading. Brain storming **www.jansatta.com** spoken interactions progressive reading reading and writing activities newspaper or magazine article reading. Brain storming **www.jagran.com** spoken interactions progressive reading reading and writing activities newspaper or magazine article reading. Brain storming practice writing short pieces of writing- Exemplar

Speaking Formative 1 Topic presentation	W2: organise ideas into coherent paragraphs using a range of appropriate linking devices W3: use a range of grammatical structures and vocabulary accurately and effectively W4: show control of punctuation and spelling W5: use appropriate register and style/format for the given purpose and audience S1 communicate ideas/opinions clearly, accurately and effectively S2 develop responses and link ideas using a range of appropriate linking devices S3 use a range of grammatical structures and vocabulary accurately and effectively S4 show control of pronunciation and intonation patterns S5 engage in a conversation and contribute effectively to help move the conversation forward	writing workshop- Which involves uninterrupted, silent, sustained writing on a topic of their own choice for 30 minutes. shared writing session. Activity-Complete the sentence…… Paired interviews Rocket writing **www.evirtualguru.com** two- to-three-minute presentation three-to-four minute conversation or discussion
Reading & Writing- Seen passage based on **Nature and wildlife** Exercise 1	R1: identify and select relevant information R2: understand ideas, opinions and attitudes R3: show understanding of the connections between ideas, opinions and attitudes	spoken interactions progressive reading reading and writing activities

Exercise 2	R4: show understanding of the connections between ideas, opinions and attitudes R1: identify and select relevant information R2: understand ideas, opinions and attitudes R3: show understanding of the connections between ideas, opinions and attitudes	newspaper or magazine article reading. Brain storming **www.jansatta.com** spoken interactions progressive reading reading and writing activities newspaper or magazine article reading.
Exercise 3	R1: identify and select relevant information R2: understand ideas, opinions and attitudes R3: show understanding of the connections between ideas, opinions and attitudes R4: understand what is implied but not directly stated, e.g. gist, writer's purpose, intention and feelings	Brain storming **www.jagran.com** spoken interactions progressive reading reading and writing activities newspaper or magazine article reading. Brain storming
Art of writing- Essay writing and Diary writing	W1: communicate information/ideas/opinions clearly, accurately and effectively W2: organise ideas into coherent paragraphs using a range of appropriate linking devices	practice writing short pieces of writing-Exemplar writing workshop-

Listening- Dialogue Story Article	W3: use a range of grammatical structures and vocabulary accurately and effectively W4: show control of punctuation and spelling W5: use appropriate register and style/format for the given purpose and audience L1: identify and select relevant information L2: understand ideas, opinions and attitudes L3 show understanding of the connections between ideas, opinions and attitudes L4 understand what is implied but not directly stated, e.g. gist, speaker's purpose, intention and feelings	Which involves uninterrupted, silent, sustained writing on a topic of their own choice for 30 minutes. shared writing session. Activity-Complete the sentence…… Paired interviews Rocket writing **www.evirtualguru.com** Shravan sarita 9 (listening cd-paper 2) CD-ROMs-PaTvar Booklet 9.
Reading & Writing- **Seen passage based on** **Miscellaneous. section** Exercise 1	R1: identify and select relevant information R2: understand ideas, opinions and attitudes R3: show understanding of the connections between ideas, opinions and attitudes	**www.jansatta.com** spoken interactions progressive reading reading and writing activities newspaper or magazine article reading. Brain storming

Exercise 2 Exercise 3 **Listening-** Dialogue Story Article	R4: show understanding of the connections between ideas, opinions and attitudes R1: identify and select relevant information R2: understand ideas, opinions and attitudes R3: show understanding of the connections between ideas, opinions and attitudes R1: identify and select relevant information R2: understand ideas, opinions and attitudes R3: show understanding of the connections between ideas, opinions and attitudes R4: understand what is implied but not directly stated, e.g. gist, writer's purpose, intention and feelings L1: identify and select relevant information L2: understand ideas, opinions and attitudes L3 show understanding of the connections between ideas, opinions and attitudes L4 understand what is implied but not directly stated, e.g. gist, speaker's purpose, intention and feelings	spoken interactions progressive reading reading and writing activities newspaper or magazine article reading. Brain storming **www.jagran.com** spoken interactions progressive reading reading and writing activities newspaper or magazine article reading. Brain storming Shravan sarita 9 (listening cd-paper 2) CD-ROMs-PaTvar Booklet 9.

Art of writing- Blog Writing	W1: communicate information/ideas/opinions clearly, accurately and effectively W2: organise ideas into coherent paragraphs using a range of appropriate linking devices W3: use a range of grammatical structures and vocabulary accurately and effectively W4: show control of punctuation and spelling W5: use appropriate register and style/format for the given purpose and audience	**www.evirtualguru.com** practice writing short pieces of writing- Exemplar writing workshop- Which involves uninterrupted, silent, sustained writing on a topic of their own choice for 30 minutes. shared writing session. Activity-Complete the sentence…… Paired interviews Rocket writing
Reading & Writing- **Seen passage based on Miscellaneous. section** Exercise 1 Exercise 2	R1: identify and select relevant information R2: understand ideas, opinions and attitudes R3: show understanding of the connections between ideas, opinions and attitudes R4: show understanding of the connections between ideas, opinions and attitudes	**www.jansatta.com** spoken interactions progressive reading reading and writing activities newspaper or magazine article reading. Brain storming spoken interactions

Exercise 3 **Speaking** Formative 2 Elocution	R1: identify and select relevant information R2: understand ideas, opinions and attitudes R3: show understanding of the connections between ideas, opinions and attitudes R1: identify and select relevant information R2: understand ideas, opinions and attitudes R3: show understanding of the connections between ideas, opinions and attitudes R4: understand what is implied but not directly stated, e.g. gist, writer's purpose, intention and feelings S1 communicate ideas/opinions clearly, accurately and effectively S2 develop responses and link ideas using a range of appropriate linking devices S3 use a range of grammatical structures and vocabulary accurately and effectively S4 show control of pronunciation and intonation patterns	progressive reading reading and writing activities newspaper or magazine article reading. Brain storming **www.jagran.com** spoken interactions progressive reading reading and writing activities newspaper or magazine article reading. Brain storming two- to-three-minute presentation three-to-four minute conversation or discussion

Listening- Dialogue Story Article	S5 engage in a conversation and contribute effectively to help move the conversation forward L1: identify and select relevant information L2: understand ideas, opinions and attitudes L3 show understanding of the connections between ideas, opinions and attitudes L4 understand what is implied but not directly stated, e.g. gist, speaker's purpose, intention and feelings	Shravan sarita 9 (listening cd-paper 2) CD-ROMs-PaTvar Booklet 9.
Listening- Dialogue Story Article **Reading and Writing – Revision** **Final Exam**	L1: identify and select relevant information L2: understand ideas, opinions and attitudes L3 show understanding of the connections between ideas, opinions and attitudes L4 understand what is implied but not directly stated, e.g. gist, speaker's purpose, intention and feelings	Shravan sarita 9 (listening cd-paper 2) CD-ROMs-PaTvar Booklet 9.
Final Exam		

SVKM J .V. Parekh International School

Long Term Plan

Academic Year 2019-2020

Subject: Mathematics **GRADE-9**

Name of the Teacher(s): Mr. Pravin Yadav & Mr. Manish Sharma

Strand/Topics	Learning Objectives (CAIE expectations)	Learning Experiences/Engagements
1 Number 1.1: Arithmetic 1.2: Number facts and sequences 1.3: Approximations and estimation 1.4: Standard form 1.5: Ratio and proportion 1.6: Percentages 1.7: Speed, distance and me	Identify and use natural numbers, integers (positive, negative and zero), prime numbers, square numbers, common factors and common multiples, rational and irrational numbers, real numbers, reciprocals Includes expressing numbers as a product of prime factors. Finding the Lowest Common Multiple (LCM) and Highest Common Factor (HCF) of two numbers.	A useful starting point would be to revise positive and negative numbers using a number line and explain the difference between natural numbers and integers. Look at how to write any integer as a product of prime numbers. Give learners a definition of the terms rational, irrational and real numbers.
	Calculate with squares, square roots, cubes and cube roots and other powers and roots of numbers.	Using simple examples, illustrate squares, square roots, cubes and cube roots of integers. Show how to find the square root of an integer by repeated subtraction of consecutive odd numbers until you reach zero.

	Use directed numbers in practical situations, e.g. temperature changes, flood levels	Look at directed numbers in the context of practical situations such as temperature changes, flood levels, bank credits and debits.
	Use the language and notation of simple vulgar and decimal fractions and percentages in appropriate contexts. Recognise equivalence and convert between these forms. Includes the conversion of recurring decimals to fractions.	Give learners a definition of the relevant terms (e.g. numerator, denominator, equivalent fractions, simplify, vulgar fraction, improper fraction, mixed number, decimal fraction, and percentage). Use clear examples and questions to cover converting between fractions, decimals and percentages. Learners should understand how to use place value (units, tenths, hundredths, etc.) to change a simple decimal into a fraction.
	Order quantities by magnitude and demonstrate familiarity with the symbols =, ≠, >, <, ≥ , ≤	A good active learning approach to this topic is to give learners a set of cards with the symbols =, ≠, >, <, ≥, ≤. Ask them to choose which card should go in between pairs of quantities that you give them. Give learners a list of fractions, decimals and percentages. Ask them to order these by magnitude using the inequality signs.
	Continue a given number sequence. Recognise sequences of square, cube and triangular numbers. Recognise patterns in sequences including the term to term rule and relationships between different sequences; subscript notation might be used. Find and use the *n*th term of sequences in linear,	Give learners the definition of a sequence of numbers. Begin by asking them to work in groups to investigate some simple sequences, such as finding the next two numbers in a sequence of even, odd, square, triangle or Fibonacci numbers. Extend this to looking at finding the term-to-term rule for a sequence. Learners will need to have some appreciation of the limitations of a term-to-term rule, i.e. that they are not very useful for finding terms that are a long way down the sequence. This leads on nicely to finding the position-to-term rule for a sequence by examining the common

	simple quadratic and cubic sequences; for extended learners this is required for linear, quadratic, cubic and exponential sequences and simple combinations of these.	difference. For extended learners, extend the core work by looking at examples of finding the nth term of harder quadratic sequences. Finally, learners will need to look at exponential sequences with a common multiplier (or ratio) instead of a common difference.
	Understand the meaning of indices (fractional, negative and zero) and use the rule of indices Use the standard form A × 10n where n is a positive or negative integer, and 1 ≤ A < 10. Convert numbers into and out of standard form.	Start with by revising the meaning of positive indices and the basic rules of indices. Move on to negative, zero and fractional indices. You can move on to introducing fractional indices by relating them to roots (of positive integers). Introduce and work out examples and usage of the standard form.
	Use the four rules for calculations with whole numbers, decimals and fractions (including mixed numbers and improper fractions), including correct ordering of operations and use of brackets. Applies to positive and negative numbers.	Clarify the order of operations, including the use of brackets. Highlight common errors such as working from left to right instead of using the order of operations rule, BIDMAS (Brackets Indices Division Multiplication Addition and Subtraction). Give learners some examples that illustrate the rules for multiplying and dividing with negative numbers. Extend this to using the four rules with fractions (including mixed numbers) and decimals. It is important that learners can do these calculations both with and without the use of a calculator as they may be expected to show working.
	Make estimates of numbers, quantities and lengths, give approximations to specified numbers of significant figures and decimal places and round off answers to reasonable accuracy in the context of a given problem.	A simple starting point is to revise rounding numbers to the nearest 10, 100, 1000, etc., or to a set number of decimal places. Show learners how to round a number to a given number of significant figures, explaining the difference and similarities between significant figures and decimal places.
	Give appropriate upper and lower bounds for data given to a specified accuracy, e.g. measured lengths.	Start this topic with examples to determine upper and lower bounds for data. Use simple examples and then progressively harder ones.

	Obtain appropriate upper and lower bounds to solutions of simple problems given data to a specified accuracy, e.g. the calculation of the perimeter or the area of a rectangle.	For extended learners, move on to looking at upper and lower bounds for quantities calculated from given formulae.
	Demonstrate an understanding of ratio and proportion. Calculate average speed. Use common measures of rate. To include numerical problems involving direct and inverse proportion. Use ratio and scales in practical situations. Formulae for other rates will be given in the question e.g. pressure and density. Increase and decrease a quantity by a given ratio.	Learners will find it useful to have a definition of ratio with a practical demonstration. Look at examples illustrating how a quantity can be divided into a number of unequal parts. The next step is to look at ratio problems where you are not given the total. Extend this to examples where you are given the difference. Take up direct and inverse proportion, with real life examples. For extended learners provide some good examples and questions on increasing and decreasing a quantity by a given ratio. Check students' ability to apply ratio, percentages and fraction in context and also compound interest.
	Calculate a given percentage of a quantity. Express one quantity as a percentage Calculate a given percentage of a quantity. Express one quantity as a percentage	The best starting point is to revise converting between percentages and decimals. Use examples to show how to express one quantity as a percentage of another including where there is a mixture of units. Extend the work on finding percentages of quantities to looking at how to calculate percentage increases and

		decreases. For extended learners you will need to move on to calculations involving reverse percentages.
	Use a calculator efficiently. Apply appropriate checks of accuracy.	Start this topic by using examples to show how to estimate the answer to a calculation by rounding each figure in the calculation to 1 significant figure. Learners then check their estimates by doing the original calculation using a calculator.
	Calculate times in terms of the 24- hour and 12-hour clock. Read clocks, dials and timetables.	A basic starting point would be to revise the units used for measuring time, with examples showing how to convert between hours, minutes and seconds. It is useful to use television schedules and bus/train timetables to help with calculations of time intervals, and conversions between 12-hour and 24-hour clock formats. It is useful for learners to look at world time differences and the different time zones. You could ask them to research and annotate a world map with times in various cities assuming it is 12:00 pm where you live.
	Use given data to solve problems on personal and household finance involving earnings, simple interest and compound interest. Includes discount, profit and loss. Extract data from tables and charts. Includes discount, profit and loss. Knowledge of compound interest formula is required.	Look at simple problems on personal and household finance, using practical examples where possible. It would be useful for learners if you introduce a range of simple words and concepts to describe different aspects of finance, such as tax, percentage profit, deposit, loan. Introduce the formula $I = PRT$, where I = interest earned, P is the investment, R is the percentage rate and T is the time. Use this formula to solve a variety of problems involving simple interest, including those requiring learners to use rearranged versions of the formula. Learners are required to calculate compound interest, ideally in a single calculation, using the formula:

	Use exponential growth and decay in relation to population and finance, e.g. depreciation, growth of bacteria.	Use examples to introduce the topic of exponential growth and decay. Ask learners to compare the similarities between the exponential growth formula and the compound interest formula.
2 Algebra 1 2.1: Negative numbers 2.2: Directed numbers 2.3: Formulae 2.4: Brackets and simplifying 2.5: Linear equations 2.6: Problems solves by linear equations 2.7: Simultaneous equations 2.8: Problems solved by simultaneous equations 2.9: Factorising 2.10: Quadratic equations 2.11: Problems solved by quadratic equations 2.12: Non-linear simultaneous equations.	Use letters to express generalised numbers and express basic arithmetic processes algebraically. Substitute numbers for words and letters in formulae. Rearrange simple formulae. Construct simple expressions and set up simple equations. Substitute numbers for words and letters in complicated formulae.	An effective start to this topic is revising basic algebraic notation. Also look at simple examples with indices. Explain to learners how to substitute numbers into a formula, including formulae that contain brackets. Once the basics are secure move on to transforming simple formulae. Learners need to understand how to construct simple expressions and equations from word problems. For extended learners you will need to build on all of the work above. Moving on to more complicated formulae when substituting, for example those with many orders of operations to consider. You can link the work on transforming formulae to the work on solving equations, asking learners to think about the balance method used in both.
	Manipulate directed numbers. Use brackets and extract common factors. Expand products of algebraic expressions (two brackets only), for extended include products of more than two brackets.	An important starting point is to revise all aspects of directed numbers with all four operations and link this to positive and negative algebraic terms with the four operations. You will need to use examples, with both positive and negative numbers, to illustrate expanding brackets. Start simply with a single term being multiplied over a bracket containing two or more terms. Extend this technique to multiplying two simple linear brackets together. For extended learners, move on to examples where they will need to find the products of algebraic expressions.

	Factorise algebraic expressions of simple, quadratic and difference of two squares forms.	Include examples of simple difference of two squares. A really challenging topic is that of factorising quadratics. Finally, give learners example problems requiring them to factorise the difference of two squares.
	Derive and solve simple linear equations in one unknown. Derive and solve simultaneous linear equations in two unknowns.	Begin this work with revising how to solve simple linear equations, including those with negatives. You should also include examples showing how to solve linear equations with brackets. Simultaneous equations can be set up for a range of real life problems. A good introduction to simultaneous equations is to use a non-algebraic approach that builds on learners' informal approaches to these problems. You can start with concrete examples and visual images to build on learners informal understanding. It is important for learners to understand that to solve problems that involve two unknowns it is necessary for them to have two equations. The aim of solving simultaneous equations is to remove one of the unknowns, then they can approach the problem using what they already know about solving simple linear equations in one unknown. Extend this by looking at examples to illustrate how to solve simultaneous linear equations with two unknowns by elimination, substitution and finding approximate solutions using graphical methods. Extended learners need solve simultaneous equations involving one linear and one quadratic equation. They can also be asked to compare the two methods for solving simultaneous equations (elimination and substitution) and

	Derive and solve simultaneous equations, involving one linear and one quadratic. Derive and solve quadratic equations by factorisation, completing the square and by use of the formula.	discuss which methods they might use and why for specific examples. In many cases, substitution may be more appropriate when a quadratic equation is involved. Extended learners will then need to explore all the different methods for solving quadratic equations, namely by factorisation, using the quadratic formula and completing the square (for real solutions only). A more challenging activity involves learners needing to construct their own equations from information given and then solve them to find the unknown quantity or quantities. This could involve the solution of linear equations, simultaneous equations or quadratic equations.
5 Algebra 2 5.1: Algebraic fractions 5.2: Changing the subject of a formula	Manipulate algebraic fractions. Factorise and simplify rational expressions.	Building on the work on factorising in earlier topic, show learners how to factorise and simplify rational expressions. You will need to spend time revising adding and subtracting simple fractions with learners. Move on to algebraic fractions starting with numerical denominators, then extending this to algebraic denominators. Move on to examples demonstrating multiplying and dividing with numerical fractions, reminding learners that instead of dividing by a fraction you multiply by its reciprocal.
	Construct and transform complicated formulae and equations, e.g. transform formulae where the subject appears twice.	You can use a series of examples to illustrate how to transform formulae containing algebraic fractions. Explain to learners how to transform complex formulae, expressions involving square roots, etc. A challenging formula to transform, which deserves time spending on it, is where the subject appears twice.

4 Geometry 4.1: Fundamental results 4.2: Pythagoras' theorem	Use and interpret the geometrical terms: point, line, parallel, bearing, right angle, acute, obtuse and reflex angles, perpendicular, similarity and congruence. Use and interpret vocabulary of triangles, especially right angles triangle and the Pythagoras theorem.	Revisit the basic geometrical terminology. Explain the terminology in right-angled triangles and the Pythagoras theorem property for right-angled triangles. Solve various examples for the theorem, introduce such problems in context too.
6 Trigonometry 6.1: Right-angled triangles 6.2: Scale drawing 6.3: Three-dimensional problems 6.4: Sine, cosine and tangent for any angle 6.5: The sine rule 6.6: The cosine rule	Review right-angled triangles.	Revisit the terminology in right-angled triangles.
	Read and make scale drawings.	Use an example to revise the topic of scale drawing. Show how to calculate the scale of a drawing given a length on the drawing and the corresponding real length. Point out that measurements do not need to be included on a scale drawing and that many scale drawings usually have a scale written in the form 1 : *n*. Draw various situations to scale and interpret results.
	Interpret and use three-figure bearings; measured clockwise from the North, i.e. 000°–360°	Introduce three-figure bearings and use examples of measuring and drawing involving bearings. You may want to link this work to that on scale drawings in earlier topic. Use examples to show how to calculate bearings, e.g.

		calculate the bearing of B from A if you know the bearing of A from B.
	Solve trigonometric problems in two dimensions involving angles of elevation and depression. Know that the perpendicular distance from a point to a line is the shortest distance to the line	For extended learners define angles of elevation and depression. Use examples to illustrate how to solve problems involving angles of elevation and depression using trigonometry. Draw a sine curve and discuss its properties. Use the curve to show, for example, sin 150° = sin 30°. Repeat for the cosine curve.
	Recognise, sketch and interpret graphs of simple trigonometric functions. Graph and know the properties of trigonometric functions. Solve simple trigonometric equations for values between 0° and 360°.	You can build on the work learners did recognising and interpreting graphs of functions. Learners need to know the values of sin(θ), cos(θ) and tan(θ) for θ = 0, 30, 60, 90, and 180. Use the unit circle to help learners understand the relationship between different trigonometric equations, for example cos 30° and cos 150°.
	Solve problems using the sine and cosine rules for any triangle and the formula for area of triangle; include problems involving obtuse angles.	Rearrange the formula for the area of a triangle using trigonometric ratios. Explain that the letters in the formula may change from problem to problem, so learners should try to remember the pattern of two sides and the sine of the included angle. Extend this to see if learners can use the formula to work out other problems, e.g. 'calculate the area of a segment of a circle given the radius and the sector angle' or 'calculate the area of a parallelogram given two adjacent side lengths and any angle'. Use examples to show how to solve problems using the sine rule. Use examples to show how to solve problems using the cosine rule.
	Solve simple trigonometrical problems in three	Introduce problems in three dimensions by finding the

	dimensions including angle between a line and a plane.	length of the diagonal of a cuboid and determining the angle it makes with the base. Extend by using more complex figures, e.g. a pyramid.
4 Geometry 4.3: Symmetry 4.4: Similarity 4.5: Congruence 4.6: Circle theorems 4.7: Constructions 4.8: Nets	Use and interpret the geometrical terms: point, line, parallel, bearing, right angle, acute, obtuse and reflex angles, perpendicular, similarity and congruence. Use and interpret vocabulary of triangles, quadrilaterals, circles, polygons and simple solid figures including nets. Use and interpret vocabulary of triangles, quadrilaterals, circles, polygons and simple solid figures including nets. Review the idea of symmetry in planes and solids.	Introduce the terminology for bearings, similarity and congruence briefly as similar shapes and three-figure bearings will be studied in more detail in later topics. Illustrate common solids, e.g. cube, cuboid, tetrahedron, cylinder, cone, sphere, prism, pyramid. Define the terms vertex, edge and face. Revise the concept of symmetry.
	Calculate lengths of similar figures. Use the relationships between areas of similar triangles, with corresponding results for similar figures and extension to volumes and surface areas of similar solids.	Revise what is meant by 'similar' and provide examples. Practice calculating lengths in similar figures. For extended learners, expand on the work on calculating lengths of similar figures to using the relationships between areas, surface areas and volumes of similar shapes and solids.
	Recognise congruent shapes. Use the basic congruence criteria for triangles (SSS, ASA, SAS, RHS).	Discuss the conditions for congruent triangles. Point out that when naming triangles that are congruent, it is usual to state letters in corresponding order. For example, stating that ΔABC is congruent to ΔEFG implies that the angle at A is the same as the angle at E. Extend the work on congruent shapes to introduce similar triangles/shapes. Use the fact that corresponding sides are in the same ratio to calculate the length of an unknown side.

		Link this work to work on transformations since rotation, reflection and translation leave shapes congruent and enlargements form similar shapes.
	Recognise symmetry properties of the prism (including cylinder) and the pyramid (including cone). Use the following symmetry properties of circles: • equal chords are equidistant from the centre • the perpendicular bisector of a chord passes through the centre • tangents from an external point are equal in length.	For extended learners, define the terms plane of symmetry and order of rotational symmetry for three dimensional shapes. Use diagrams to illustrate the symmetries of cuboids (including a cube), prisms (including a cylinder), pyramids (including a cone). Look at diagrams for the symmetry properties of a circles paying attention to chords and tangents.
	• angle properties of irregular polygons • angle at the centre of a circle is twice the angle at the circumference • angles in the same segment are equal • angles in opposite segments are supplementary; cyclic quadrilaterals • alternate segment theorem.	For extended learners, move on to look at angle properties of irregular polygons. By dividing an n-sided polygon into several triangles, show that the sum of the interior angles is $180(n - 2)$ degrees and that the interior and exterior angles sum to 180°. Explain the theory that angles in opposite segments are supplementary. Investigate cyclic quadrilaterals. For example, explain why all rectangles are cyclic quadrilaterals. What other quadrilateral is always cyclic? Is it possible to draw a parallelogram that is cyclic?, etc. Use examples to show that the angle at the centre of a circle is twice the angle at the circumference and that angles in the same segment are equal. Introduce learners to the process of proof by demonstrating one of the circle theorems and then asking them to reproduce the proof independently, or by creating a proof and then cutting it up and asking learners to reconstruct it. This second approach can be made more challenging by leaving steps out of the proof for learners to identify and complete. You could also ask learners to provide feedback

		on exemplars. (I) Solve a variety of problems using all the circle theorems making sure that learners know the correct language for describing the reasoning for their answers
	Measure and draw lines and angles. Construct a triangle given the three sides using a ruler and a pair of compasses only. Review the idea of nets in the context of solids.	Reinforce accurate measurement of lines and angles through various exercises. Ask learners to draw any triangle and then measure the three angles and check that they add up to 180°. Revisit nets of various solids, and relation to surface area of those solids.
3 Mensuration 3.1: Area 3.2: The circle 3.3: Arc length and sector area 3.4: Chord of a circle 3.5: Volume 3.6: Surface area	Carry out calculations involving the perimeter and area of a rectangle, triangle, parallelogram and trapezium and compound shapes derived from these.	Begin this topic by reminding learners how to calculate the perimeter and area of a rectangle, square and a triangle. This can be extended to look at how to calculate the area of a parallelogram and a trapezium, and a variety of compound shapes.
	Carry out calculations involving the circumference and area of a circle; Answers may be asked for in multiples of π. Solve simple problems involving the arc length and sector area as fractions of the circumference and area of a circle; (for Core, where the sector angle is a factor of 360).	A useful starting point is revising how to calculate the circumference and area of a circle, using straightforward examples. Learners are expected to know the formulae. Extend this by looking at how to find compound areas involving circles. Use examples to illustrate how to calculate the arc length and the sector area by using fractions of full circles. Learners will need to combine their work on sector area with area of a triangle work to find segment areas.

	Carry out calculations involving the surface area and volume of a cuboid, prism and cylinder; answers may be asked for in multiples of π. Carry out calculations involving the surface area and volume of a sphere, pyramid and cone; formulae will be given for the surface area and volume of the sphere, pyramid and cone in the question	Review how to calculate the surface area of a cuboid and a cylinder, using the nets to help. Extend this to illustrating how to calculate the volume of a cuboid and a variety of prisms, including cylinders. Learners will find it useful to know the formula volume of prism = cross-sectional area × length. Move on to using nets to illustrate how to calculate the surface area of a triangular prism, a pyramid and a cone. You will also want to explain how to calculate the surface area of a sphere using formula. Use examples to illustrate how to calculate the volume of a pyramid (including a cone) using formula.
	Carry out calculations involving the areas and volumes of compound shapes; answers may be asked for in multiples of π.	The final section is all about extending all the work from earlier section to find the surface area and volume of a wide variety of composite shapes.
7 Graphs 7.1: Drawing accurate graphs 7.2: Gradients 7.3: The form y = mx + c 7.4: Plotting curves 7.5: Interpreting graphs 7.6: Graphical solution of equations 7.7: Distance-time graphs 7.8: Speed-time graphs 7.9: Differentiation	Demonstrate familiarity with Cartesian coordinates in two dimensions.	Revise coordinates in two dimensions. Draw a picture by joining dots on a square grid. Draw *x* and *y* axes on the grid and write down the coordinates of each dot. Ask other learners to draw these pictures from a list of coordinates only.
	Calculate the gradient of a straight line from the coordinates of two points on it.	Use examples to show how to calculate the gradient of a straight line from the coordinates of two points on it, firstly by drawing the line and then without drawing the line.

	Calculate the length and the coordinates of the midpoint of a straight line from the coordinates of its end points.	Revise Pythagoras' theorem from Unit 4. Use examples to show how to calculate the length of a straight line segment from the coordinates of its end points using a sketch. Use examples to show how to find the coordinates of the midpoint of a straight line from the coordinates of its end points.
	Interpret and obtain the equation of a straight line graph in the form $y = mx + c$. Problems will involve finding the equation where the graph is given.	Revise drawing a graph of $y = mx + c$ from a table of values. Interpret the meaning of m and c from the equation using the terms gradient and intercept. To interpret the meaning of an equation, explain how an equation simply gives the relationship between the x and y coordinates on the line, e.g. for the equation $y = 2x$ this means the y ordinate is always double the x ordinate. Use this to identify if a point lies on the line.
	Determine the equation of a straight line parallel to a given line.	Use examples to show how to find the equation of a straight line parallel to a given line.
	Find the gradient of parallel and perpendicular lines.	Use examples to show that parallel lines have the same gradient. Find the gradient of perpendicular lines by using the fact that if two lines are perpendicular the product of their gradients is –1.
	Draw graphs from given data. Construct tables of values for functions of the linear and quadratic form. Draw and interpret such graphs.	Begin this topic by drawing a series of lines with x = constant and y = constant. Ask learners to identify the equations of the lines that you have drawn. Move on to examples of drawing diagonal straight-line graphs from a table of values where the gradient and intercept are integers. Extend this to looking at drawing quadratic functions and simple reciprocal functions. Learners should be able to draw a variety of these graphs from a table of values. You can then discuss with learners the symmetry properties of a quadratic graph and how this is useful; knowledge of turning points is not required.

	Solve linear and quadratic equations approximately, including finding and interpreting roots by graphical methods. Recognise, sketch and interpret graphs of functions; linear and quadratic only. Knowledge of turning points is not required.	The next step is to show how the solutions to a quadratic equation may be approximated using a graph. Extend this work to show how the solution(s) to pairs of equations can be estimated using a graph. This work can be linked to the work on simultaneous equations from earlier topic.
	Interpret and use graphs in practical situations including travel graphs and conversion graphs, e.g. interpret the gradient of a straight line graph as a rate of change. Apply the idea of rate of change to simple kinematics involving distance– time and speed–time graphs, acceleration and deceleration; may include estimation and interpretation of the gradient of a tangent at a point. Calculate distance travelled as area under a speed–time graph.	For extended learners, you will want to provide examples of how to draw and use distance–time graphs to calculate average speed. Learners should be able to interpret the information shown in travel graphs and to be able to draw travel graphs from given data. Extend this work by looking at examples of speed–time graphs being used to find acceleration and deceleration and to calculate distance travelled as area under a linear speed–time graph.
	Construct tables of values and draw graphs for functions of the form ax^n (and simple sums of these) and functions of the form $ab^x + c$.; sums would not include more than three functions. Solve associated equations approximately, including finding and interpreting roots by graphical methods; Find turning points of quadratics by completing the square. Draw and interpret graphs representing exponential growth and decay problems. Recognise, sketch and interpret graphs of functions; linear, quadratic, cubic, reciprocal and exponential.	Learners should recognise common types of functions from their graphs, for example from the parabola, hyperbola, quadratic, cubic and exponential graphs. Move on to asking learners to draw the graphs from tables of values. Learners should be encouraged to sketch a range of graphs by recognising key points on these graphs. Questions that they could be encouraged to ask themselves should include: •What happens when x = 0? When y = 0? •What happens when x tends towards infinity? •Are there any asymptotes? Horizontal? Vertical? Oblique? •They could also link this to trigonometrical functions by considering whether the graph is going to be periodic. The final step is to look at examples of how to draw and interpret graphs representing exponential growth and decay problems.

	Estimate gradients of curves by drawing tangents.	Ensure learners have studied finding the gradient of a straight line, before beginning this topic. Learners should already be able to confidently find the gradient of a straight line. Give learners a definition of the term tangent. Move on to looking at examples that show how to find the gradient at a point on a curve by drawing a tangent at that point.
	Understand the idea of a derived function. Use the derivatives of functions of the form ax^n, and simple sums of not more than three of these, where a is a rational constant and n is a positive integer or 0. Apply differentiation to gradients and turning points (stationary points), e.g. $2x^3 + x - 7$ Discriminate between maxima and minima by any method.	Link this work to work learners have already done on the gradient of a straight line graph and distance–time graphs. Remind them about the equation for finding the gradient of a straight line. Introduce learners to this general formula and use this to explore what happens to functions of the form ax^n as the change in x tends towards zero.
5 Algebra 2 5.3: Variation 5.4: Indices 5.5: Inequalities 5.6: Linear programming	Manipulate algebraic fractions. Factorise and simplify rational expressions.	Building on the work on factorising in earlier topic, show learners how to factorise and simplify rational expressions. You will need to spend time revising adding and subtracting simple fractions with learners. Move on to algebraic fractions starting with numerical denominators, then extending this to algebraic denominators. Move on to examples demonstrating multiplying and dividing with numerical fractions, reminding learners that instead of dividing by a fraction you multiply by its reciprocal.
	Construct and transform complicated formulae and equations, e.g. transform formulae where the subject appears twice.	You can use a series of examples to illustrate how to transform formulae containing algebraic fractions. Explain to learners how to transform complex formulae, expressions involving square roots, etc.

		A challenging formula to transform, which deserves time spending on it, is where the subject appears twice.
	Express direct and inverse proportion in algebraic terms and use this form of expression to find unknown quantities.	Learners will need to be able to solve a variety of problems involving direct or inverse variation. Encourage efficient notation that moves from the question to each step in turn. Emphasise the common error of reversing direct and inverse variation. Once the formula has been established ask learners to use given values to work out the value of the constant, k, and then use the formulae with the evaluated k.
	Use and interpret positive, negative and zero indices. Use the rules of indices. Use and interpret fractional indices.	A good starting point is to give learners examples that revise the rules of indices work from earlier topic. Extend this to using and interpreting positive, negative and zero indices and using the rules of indices with algebraic terms. For extended learners, move on to looking at fractional indices and solving exponential simple equations.
	Derive and solve linear inequalities, including representing and interpreting inequalities on a number line; interpretation of results may be required.	To introduce the topic of solving linear inequalities, it is a good idea starting with just numbers, for example $7 > 5$, showing that that multiplying or dividing an inequality by a negative number reverses the inequality sign, i.e. $-7 < -5$. Use examples to illustrate how to solve simple linear inequalities including representing the inequality on a number line. Interpretation of results may be required. The most challenging inequalities for learners to solve are those where the inequality needs to be split into two parts and each part solved separately.
	Represent inequalities graphically and use this representation to solve simple linear programming problems.	A good starting point is to begin by asking learners to draw several straight lines on a set of axes, possibly on mini white boards, for example $y = 2$, $x = -5$, $y = 3x$ and $x + 2y = 10$. Ask learners to consider a point on one side of each of

	The conventions of using broken lines for strict inequalities and shading unwanted regions will be expected.	these lines, the origin if possible, and use substitution to see if the inequalities $y < 2$, $x > -5$, $y < 3x$ and $x + 2y > 10$ are true for their chosen point. Ask learners to work in groups to do their own examples. Extend this work by asking learners to look at examples illustrating how to solve linear programming problems by graphical means, highlighting the convention of using broken lines for strict inequalities < and > and solid lines for the inequalities ≤ and ≥. Finally, learners will need to understand how to construct inequalities from constraints given, showing that several possible solutions to a problem exist, indicated by the unshaded region on a graph. Provide learners with examples and questions.

SVKM J .V. Parekh International School

Long Term Plan

Academic Year 2019-2020

Subject: Physics **GRADE- IX**

Strand/Topics	Learning Objectives (CAIE expectations)	Learning Experiences/Engagements
1.1Length and time	Use and describe the use of rules and measuring cylinders to find a length or a volume Use and describe the use of clocks and devices, both analogue and digital, for measuring an interval of time Obtain an average value for a small distance and for a short interval of time by measuring multiples(including the period of a pendulum)	A circus of simple measuring experiments can work well here. When measuring the period of a pendulum, it may be pointed out that the pendulum is travelling at its fastest as it passes through the centre of the oscillation. Consequently, this moment is more precisely defined than the moment that it reaches a maximum displacement. Timing should begin and end at the centre point. The only difficulty is that learners might count half oscillations rather than full ones. Pendulums are easy to set up and learners may see the effect of changing the length, changing the mass and changing the amplitude on the period. The idea of a fiducial marker may also be suggested for this experiment.

		Simple activities such as wrapping a length of thread ten times round a boiling tube, measuring the length of thread and then calculating the circumference of the tube, working out the thickness of paper by the thickness of the stack and timing 20 swings of a pendulum to find the period
1.1 Length and time	Understand that a micrometer screw gauge is used to measure very small distances	oth electronic and mechanical micrometer screw gauges can be used. Using a micrometer:www.youtube.com/watch?v=O8vMFFYNIfo
1.2 Motion	Define speed and calculate average speed from $\frac{\text{total distance}}{\text{total time}}$ Plot and interpret a speed-time graph or a distance-time graph Recognise from the shape of a speed-time graph when a body is at rest moving with constant speed moving with changing speed	Work with trolleys using ticker tape, light gates or ultrasound sensors and data-loggers to produce speed-time graphs for constant speed and constant acceleration.**(I)** **Resource Plus** **Experiment:** Speed-time graphs This experiment focuses on a speed-time experiment. Learners should be able to define the speed and calculate an average speed using the equation total distance / total time. Although not specifically part of the syllabus, work on thinking distance and braking distance of cars related to safety is useful and relevant here.

	Calculate the area under a speed-time graph to work ut the distance travelled for motion with constant cceleration Demonstrate understanding that acceleration and deceleration are related to changing speed including qualitative analysis of the gradient of a speed-time graph State that the acceleration of free fall for a body near to the Earth is constant	There is a great deal that can be done here with a few simple experiments which will help learners to understand what graphs tell us. Definition of velocity: **www.youtube.com/watch?v=cE-bGnwTbTU** What is acceleration:**www.youtube.com/watch?v=l7W5pH0AKSI** **www.youtube.com/watch?v=_O0l3hWs5gM** Stopping distances can be found from: **www.bbc.co.uk/schools/gcsebitesize/science/add_gateway_pre_2011/forces/motionrev3.shtml** A fun investigation involving ideas around terminal velocity: **www.bbc.co.uk/schools/gcsebitesize/science/add_aqa/forces/forcesvelocityrev1.shtml** **http://hyperphysics.phy-astr.gsu.edu/hbase/airfri2.html**

1.2Motion	Distinguish between speed and velocity Define and calculate acceleration using $\frac{\text{change of velocity}}{\text{time taken}}$ Calculate speed from the gradient of a distance-time graph Calculate acceleration from the gradient of a speed-time graph Recognise linear motion for which the acceleration is constant Recognise motion for which the acceleration is not constant Understand deceleration as a negative acceleration Describe qualitatively the motion of bodies falling in a uniform gravitational field with and without air resistance (including reference to terminal velocity)	Extension activity: extend the trolley work to analyse the graphs further and calculate the acceleration.(I) Learners find it difficult to distinguish between a decreasing speed and a speed that is increasing at a decreasing rate and so this point is worth emphasising. Terminal velocity:www.bbc.co.uk/schools/gcsebitesize/science/add_aqa/forces/forcesvelocityrev1.shtml http://hyperphysics.phy-astr.gsu.edu/hbase/airfri2.html
1.3Mass and weight	Show familiarity with the idea of the mass of a body State that weight is a gravitational force Distinguish between mass and weight	It is useful to ensure that learners have a feeling for the sizes of forces (in N) by asking them to estimate, e.g. weight of a laboratory stool, force required to open a drawer, and then to measure using a spring (newton) balance. Similarly, estimation and measurement of masses (in g and kg).

	Recall and use the equation W = mg Demonstrate understanding that weights (and hence masses) may be compared using a balance	Gravity (for more able learners):**www.qrg.northwestern.edu/projects/vss/docs/space-environment/1-what-is-gravity.html** Gravitational fields:**www.youtube.com/watch?v=T8nLTwIWplo**
1.3Mass and weight	Demonstrate an understanding that mass is a property that 'resists' change in motion Describe, and use the concept of, weight as the effect of a gravitational field on a mass	Use some 'novelty' demonstrations, e.g. pulling a sheet of paper from under a mass, without moving the mass, to show the idea of inertia. What is inertia:www.physicsclassroom.com/class/newtlaws/Lesson-1/Inertia-and-Mass Demonstrations of inertia:www.youtube.com/watch?v=T1ux9D7-O38
.4 Density	Recall and use the equation $\rho = \frac{m}{V}$ Describe an experiment to determine the density of a liquid and of a regularly shaped solid and make the necessary calculation	Simple experiments measuring mass and volume of a liquid and calculating density. Using a solid, finding volume from height, width and depth.**(I)** Determine the density of cooking oil by putting a measuring cylinder on an electronic balance. Take the readings as more and more oil is added. Plot a graph of mass against volume; gradient can be used to obtain the density.

	Describe the determination of the density of an irregularly shaped solid by the method of displacement Predict whether an object will float based on density data	**Extension activity:** extend to the displacement method, e.g. modelling clay of different shapes in a measuring cylinder with water. **Resource Plus** Experiment: Determining density This experiment focuses on determining the density of solids and liquids. Density:**www.youtube.com/watch?v=Q5Sh_-pW6ho** Calculate the density of an unknown solid:**www.youtube.com/watch?v=nGJ_uWTmQZI** Determining density of liquids – an experiment:**www.youtube.com/watch?v=RnSJSSCfgPc**

1.5.1 Effects of forces	Recognise that a force may produce a change in size and shape of a body Plot and interpret extension-load graphs and describe the associated experimental procedure Describe the ways in which a force may change the motion of a body Find the resultant of two or more forces acting along the same line Recognise that if there is no resultant force on a body it either remains at rest or continues at constant speed in a straight line Understand friction as the force between two surfaces which impedes motion and results in heating Recognise air resistance as a form of friction	Use a simple experiment to stretch a steel spring. Further experience could be gained with a similar experiment to stretch a rubber band. Compress trapped gases in syringes; change the shape of malleable objects. Use force sensors and newton meters to add and subtract the forces acting on bodies. Friction: **www.bbc.co.uk/bitesize/ks2/science/physical_processes/friction/read/1/** **www.fearofphysics.com/Friction/frintro.html** Air resistance:**www.universetoday.com/73315/what-is-air-resistance/**

1.5.1Effects of forces	State Hooke's Law and recall and use the expression F = kx, where k is the spring constant Recognise the significance of the 'limit of proportionality' for an extension-load graph Recall and use the relation between force, mass and acceleration (including the direction), F = ma Describe qualitatively motion in a circular path due to a perpendicular force (F = mv*2*/r is not required)	Use a home-made copper spring or stretch a length of copper wire between two pencils and feel, measure or show the limit of proportionality. An air track can be used to show momentum effects using collisions and 'explosions'extended to investigate model rockets and Newton's cradle. Circular motion can be shown using a smooth turntable (old record player) and a marble to illustrate behaviour without centripetal force and then an object attached to the axis with cotton to provide the centripetal force. Thread a piece of string through a short length of glass tubing and attach a weight to one end of the string. Set the weight rotating by holding the glass tube vertically and rotating it in a small circle. The weight pulls the string up out of the tube. Attach another weight to the bottom end of the string; this weight can be used to exert a force on the other weight in a centripetal direction. Equilibrium can be achieved. Hooke's Law: **www.youtube.com/watch?v=fYLec9q3oSw** Centripetal force: **www.youtube.com/watch?v=oFiXtcXRpVE**

1.5.2Turning effect	Describe the moment of a force as a measure of its turning effect and give everyday examples Understand that increasing force or distance from the pivot increases the moment of a force Calculate moment using the product force × perpendicular distance from the pivot Apply the principle of moments to the balancing of a beam about a pivot	Experiments involving balancing a rule on a pivot with a variety of different weights should be used here. Talk about everyday examples, e.g. see-saws, steelyards, crane jibs. Moment of force:**www.bbc.co.uk/bitesize/ks3/science/energy_electricity_forces/forces/revision/8/** Levers:**http://physics.about.com/od/simplemachines/f/HowLeverWorks.htm**
1.5.2Turning effect	Apply the principle of moments to different situations	This can be extended quantitatively for extension learners and further extended to using a weight to balance the rule on a pivot away from the centre to introduce the concept of centre of mass. Determine the mass of a rule by balancing it away from its centre of mass with a known laboratory mass at one end. Replace the mass with an apple and determine its mass. Check by balancing the mass and the apple.

		Principle of moments:**www.cyberphysics.co.uk/topics/forces/principleOfMoments.htm**
1.5.3Conditions for equilibrium 1.5.3Conditions for equilibrium	Recognise that, when there is no resultant force and no resultant turning effect, a system is in equilibrium Perform and describe an experiment (involving vertical forces) to show that there is no net moment on a body in equilibrium	Recognise that, when there is no resultant force and no resultant turning effect, a system is in equilibrium
1.5.4Centre of mass	Perform and describe an experiment to determine the position of the centre of mass of a plane lamina Describe qualitatively the effect of the position of the centre of mass on the stability of simple objects	Avoid the term centre of gravity except to explain that at IGCSE it can be thought of as an alternative name for centre of mass. A variety of shapes of lamina should be used in experiments to find the centre of mass. Standard shapes (circle, square, etc.) can be used first and then 'non-standard' shapes, e.g. the outline of a country, where the position of the centre of mass is not so obvious. Is the point found really the centre of the country? What about mountains, islands, lakes, etc.? Extension learners can be challenged with a lamina that has its centre of mass in space, e.g. a hole in the lamina or an L-shape. Find the stability of glasses with stems, thick bases and wide bases on an inclined plane of variable slope. At what angle does the glass topple? What happens when the glass is full?

		Centre of mass:**www.youtube.com/watch?v=hqDhW8HkOQ8** Stable and unstable objects:**www.youtube.com/watch?v=muM4hhwqEwE**
1.5.5Scalars and vectors	Understand that vectors have a magnitude and direction Demonstrate an understanding of the difference between scalars and vectors and give common examples Determine graphically the resultant of two vectors	This important concept can be illustrated by a few learners attempting to pull a block of wood along the bench with strings, but pulling in a variety of directions at the same time. This could be a large-scale outdoor activity. Use a forces table with weights or newton meters and draw a scale diagram of equilibrium arrangements. Can a cable car hang from a perfectly horizontal cable? Adding vectors:**www.physicsclassroom.com/class/vectors/Lesson-1/Vector-Addition** **www.youtube.com/watch?v=bPYLWjcY9wA**

		This website, about Leonardo da Vinci, provides a different approach to stimulate learners: **www.mos.org/leonardo** click on 'Exploring Leonardo' click on 'Inventor's Workshop' click on 'The Elements of Machines
1.6Momentum	Understand the concepts of momentum and impulse Recall and use the equation momentum = mass × velocity, p = mv Recall and use the equation for impulse Ft = mv – mu Apply the principle of the conservation of momentum to solve simple problems in one dimension	Momentum can be thought of as a measurement of the difficulty of stopping a moving object. A bullet is difficult to stop because of its velocity, whereas a ship is difficult to stop because of its mass. The term impulse is usually restricted to situations where a large force is acting for a very small time. This includes a football being kicked or rocket engine firing for just a few seconds. Dynamics trolleys can be used to demonstrate the conservation of momentum and there are other more familiar examples such as colliding railway trucks, billiard balls and dodgem cars at the funfair. Momentum:

		www.physicsclassroom.com/class/momentum/Lesson-1/Momentum **www.bbc.co.uk/schools/gcsebitesize/science/add_aqa_pre_2011/forces/kineticenergyrev3.shtml** **www.youtube.com/watch?v=2FwhjUuzUDg** Impulse:**www.physicsclassroom.com/class/momentum/u4l1b.cfm** Conservation of momentum
1.7.3Work	Demonstrate understanding that work done = energy transferred Relate (without calculation) work done to the magnitude of a force and the distance moved inthe direction of the force	In this and the following sections it may be useful to calculate (although only required for the extension paper) personal work done and power. For example, by walking up steps, recording the learner's weight, the vertical height climbed and the time taken. When rolling barrels up inclined planes the same work is done as when lifting the barrel vertically but the distance is greater and so the force is less.

		Humans get tired holding heavy weights at a constant height but no work is done. Humans make poor shelves. Work and energy: **www.youtube.com/watch?v=2WS1sG9fhOk**
1.7.3Work	Recall and use $W = Fd = \Delta E$	Work and energy – a pulley with two weights:**www.youtube.com/watch?v=vIOgL7jmz78** Examples on work done:**www.tutor4physics.com/examplesworkdone.htm**
1.7.4Power	Relate (without calculation) power to work done and time taken, using appropriate examples	Learners find rates quite hard at this stage; it is worth considering a few other examples, e.g. the rate of filling a bath and the time taken to fill it to a certain volume. Work done:**http://hyperphysics.phy-astr.gsu.edu/hbase/work.html** Work energy and power (for the teacher):**www.tap.iop.org/mechanics/work_energy_power/index.html**

1.7.4Power	Recall and use the equation **P = ∆E/t** in simple systems	
1.8Pressure	Recall and use the equation 1.7.4Power p = F/A Relate pressure to force and area, using appropriate examples Describe the simple mercury barometer and its use in measuring atmospheric pressure Relate (without calculation) the pressure beneath a liquid surface to depth and to density, using appropriate examples	Show and discuss examples such as: drawing pins, stiletto heeled shoes, sharpened knives, cheese wire, snow shoes/skis and furniture leg cups. Demonstrate a mercury barometer (Torricelli used water). Show that the pressure under water increases with depth and if possible use a less dense liquid to show that the pressure increases at a slower rate. Use a water manometer to measure the excess pressure of the gas supply (if safe). Use a U-tube with water in one limb and ethanol in the other; the two surfaces are not level. **Resource Plus** **Experiment:**Pressure and the imploding can This experiment focuses on pressure and the imploding can experiment. Links to 1.5 Forces, 2.1.1 States of matter and 2.1.4 Pressure changes.

	Use and describe the use of a manometer	Pressure:**www.youtube.com/watch?v=6UC2P8Ovg_0** **www.youtube.com/watch?v=fq54lpfoh80** Liquid pressure:**www.youtube.com/watch?v=oUK7agBG4KA** Manometer problems:**www.youtube.com/watch?v=zeNQOqr63cc** Making a barometer:**www.youtube.com/watch?v=GgBE8_SyQCU**
1.8Pressure	Recall and use the equation $p = h\rho g$	Use the formula $P = F/A$in specific cases and determine the pressure exerted on the ground by an elephant and by someone wearing stiletto heeled shoes. Calculate the pressure due to 1.0 m of mercury and show that it exceeds the atmospheric pressure; the mercury has to flow out of a barometer and leaves a vacuum above the surface in the tube.
2.1.1States of matter	State the distinguishing properties of solids, liquids and gases	Simple experiments can show that liquids and gases flow and that solids and liquids are distinctly less compressible than gases.**(I)** Liquids are frequently described as incompressible or as having a fixed volume. This is, of course, only true to some

		limited extent. The use of the expansion of a liquid in a thermometer is a clearly contradictory example. Solids, liquids and gases:**www.bbc.co.uk/bitesize/ks2/science/materials/solids_liquids_gases/read/1/** Solids
2.1.2Molecular model	Describe qualitatively the molecular structure of solids, liquids and gases in terms of the arrangement, separation and motion of the molecules Interpret the temperature of a gas in terms of the motion of its molecules Describe qualitatively the pressure of a gas in terms of the motion of its molecules Show an understanding of the random motion of particles in a suspension as evidence for the kinetic molecular model of matter	Use examples of phenomena that are explained by the particle theory to build up understanding, e.g. diffusion in liquids, diffusion of gases (bromine in air – fume cupboard required), crystal structure, etc. Learners should observe Brownian motion, e.g. using the 'smoke cell' experiment.**(I)** Get the learners to explain randomness in both speed and direction of motion but without using the word random. Models using large spheres, e.g. table tennis balls, should be used to illustrate as much as possible, e.g. crystal model. Molecules in solids, liquids and gases:**www.youtube.com/watch?v=guoU_cuR8EE**

	Describe this motion (sometimes known as Brownian motion) in terms of random molecular bombardment	Pressure due to molecules:**www.grc.nasa.gov/WWW/k-12/airplane/pressure.html**
2.1.2Molecular	Relate the properties of solids, liquids and gases to the forces and distances between molecules and to the motion of the molecules Explain pressure in terms of the change of momentum of the particles striking the walls creating a force Show an appreciation that massive particles may be moved by light, fast-moving molecules	The ordinary experiments may be explained using a more exact approach and by talking about how theforces between the molecules act at different distances. It is not necessary to relate the pressure to the momentum change quantitatively, but the change in momentum of the colliding molecule can be seen to cause a force and hence a pressure. Pressure and molecular momentum: **www.saburchill.com/physics/chapters/0099.html**
2.1.3 Evaporation	Describe evaporation in terms of the escape of more-energetic molecules from the surface of a liquid	This is how a refrigerator works. Learners should experience the cooling effect of evaporation using a non-toxic volatile substance. The shivering sensation experienced when leaving a swimming pool is also caused by this effect and perspiration is a biological cooling mechanism that relies on it.

	Relate evaporation to the consequent cooling of the liquid	Cooling by evaporation: **www.bbc.co.uk/schools/gcsebitesize/science/aqa/heatinganddcooling/heatingrev5.shtml** **www.youtube.com/watch?v=dt8KFgqs2A4**
	Demonstrate an understanding of how temperature, surface area and draught over a surface influence evaporation Explain the cooling of a body in contact with an evaporating liquid	Leave water in different Leave water in different vessels overnight and observe the rate at which evaporation occurs.**(I)**
2.1.4Pressure changes	Describe qualitatively, in terms of molecules, the effect on the pressure of a gas of: change of temperature at constant volume change of volume at constant temperature	A direct measuring Boyle's Law apparatus can be used here. Useful graph plotting and interpretation skills are included.**(I)** Place a partially inflated balloon in a bell-jar and reduce the pressure in the jar.

		Extension activity: extend this work by using the practical experiment about thetemperature andpressure of a gas: **www.youtube.com/watch?v=BxUS1K7xu30** Boyle's law:**www.youtube.com/watch?v=N5xft2fIqQU** Charles' law:**www.youtube.com/watch?v=HxSPdmvqstQ**
2.1.4Pressure changes	Recall and use the equation pV = constant for a fixed mass of gas at constant temperature	Values from the graph can be used to illustrate the constancy of the product pV. Also use phrases such as 'doubling the pressure halves the volume'. An interesting interactive experience for a more able learner to explore the ideas around the gas laws – Welcome to the Pressure Chamber:**www.jersey.uoregon.edu/vlab/Piston/index.html**
2.2.1Thermal expansion of solids, liquids and gases	Describe qualitatively the thermal expansion of solids, liquids, and gases at constant pressure Identify and explain some of the everyday applications and consequences of thermal expansion	Experiments to show expansion of a metal rod and the 'bar breaker' demonstration. A large round bottom flask filled with (coloured) water and fitted with a long glass tube shows expansion of the water when heated gently. The 'fountain' experiment shows the expansion of air and brings in good discussion of the effect of pressure difference to stretch the abler learners.

		Thermal expansion:**www.youtube.com/watch?v=EkQ2886Sxpg** The fountain experiment:**www.youtube.com/watch?v=AX5eVxxQgPc**
2.2.1Thermal expansion of solids, liquids and gases	Explain, in terms of the motion and arrangement of molecules, the relative order of the magnitude of the expansion of solids, liquids and gases	Take a flask full of coloured water connected to a tube and immerse in hot water. The initial decrease in level of the water shows the expansion of the glass; the subsequent expansion of the liquid is greater and the water rises up the tube. Thermal expansion:**www.bbc.co.uk/bitesize/ks3/science/chemical_material_behaviour/behaviour_of_matter/activity/**
2.2.2Measurement of temperature	Appreciate how a physical property that varies with temperature may be used for the measurement of temperature, and state examples of such properties Recognise the need for and identify fixed points	Different types of thermometer can be used e.g. resistance thermometer, thermocouple pressure of a copper sphere of gas. Calibrate an unmarked thermometer (mark 0°C and 100°C with rubber bands using an ice bath and a steam bath) and use it to measure an unknown temperature.

	Describe and explain the structure and action of liquid-in-glass thermometers	Thermometric properties:**www.miniphysics.com/thermometric-property.html**
	Demonstrate understanding of sensitivity, range and linearity Describe the structure of a thermocouple and show understanding of its use as a thermometer for measuring high temperatures and those that vary rapidly Describe and explain how the structure of a liquid-in-glass thermometer relates to its sensitivity, range and linearity	thermometer over a liquid-in-glass thermometer. Sensitivity for a liquid-in-glass thermometer is measured in mm/°C. This makes it clear that it does not mean the speed of response or anything similar. A simple thermocouple can be constructed and used. State the advantages of a thermocouple
2.2.3 Thermal capacity (heat capacity)	Relate a rise in the temperature of a body to an increase in its internal energy Show an understanding of what is meant by the thermal capacity of a body	Blocks of different metals and of different masses can be heated using identical immersion heaters to show their different thermal capacities. Many texts use the term heat capacity, and learners should also be made familiar with this term. The syllabus uses the term thermal energy for energy transferred by heating. This energy will cause an increase in the internal energy of the blocks. This is a good point to remind learners of thedifference between internal energy and temperature.

2.2.3Thermal capacity (heat capacity)	Give a simple molecular account of an increase in internal energy Recall and use the equation thermal capacity = mc Define specific heat capacity Describe an experiment to measure the specific heat capacity of a substance Recall and use the equation change in energy = mcΔT	This can be extended to a quantitative determination of specific heat capacity. The word specific, when used in physics, often means per kilogram. Specific heat capacity:**www.bbc.co.uk/schools/gcsebitesize/science/aqa/heatingandcooling/buildingsrev3.shtml** Measuring specific heat capacity:**www.youtube.com/watch?v=vMvSYlY_PxU**
2.2.4 Melting and boiling	Describe melting and boiling in terms of energy input without a change in temperature State the meaning of melting point and boiling point Describe condensation and solidification in terms of molecules	Heating and cooling curves can be plotted from experimental readings, e.g. timed temperature readings when heating ice until the water boils and during the solidification of stearic acid. Show that ice and water can only co-exist at the melting point, steam and water only at the boiling point. Cooling curve using data logger:**www.youtube.com/watch?v=RVlf6jhVl3U**

	Distinguish between boiling and evaporation Use the terms latent heat of vaporisation and latent heat of fusion and give a molecular interpretation of latent heat Define specific latent heat Describe an experiment to measure specific latent heats for steam and for ice Recall and use the equation energy = ml	Simple and direct experiments to determine specific latent heat, e.g. using a low voltage immersion heater. Evaporation and vapour pressure (for the teacher):**www.pkwy.k12.mo.us/west/teachers/anderson/pack7/boil/boil.html** Specific latent heat: **www.youtube.com/watch?v=gDbo_vGOycU** **www.youtube.com/watch?v=EO1-yb25hYM**
Thermal processes 2.3.1Conduction	Describe experiments to demonstrate the properties of good and bad thermal conductors	There are many simple experiments that can be performed here. Some simple experiments can be used to compare thermal conductivity, e.g. using metal conductivity rods. There are poor conductors of heat but no true insulators; all materials conduct to some noticeable extent. **Resource Plus** **Experiment:**Heat conduction in metal rods

		This experiment focuses on measuring relative rates of thermal conductivity.
2.3.1Conduction	• Give a simple molecular account of conduction in solids including lattice vibration and transfer by electrons	Extend to a molecular account – a row of learners can be used to model the idea of increased vibration of particles as the process of conduction. It is important to distinguish between the vibration of atoms which only pass energy to their neighbours and the translational motion of the electrons which can transfer energy to very large distant ions provided there are no collisions on the way. How does heat travel?www.bbc.co.uk/schools/gcsebitesize/science/aqa_pre_2011/energy/heatrev1.shtml www.s-cool.co.uk/category/subjects/gcse/physics/energy-transfers
2.3.2Convection	Recognise convection as an important method of thermal transfer in fluids Relate convection in fluids to density changes and describe experiments to illustrate convection	Use simple experiments to illustrate convection, e.g. dissolving a crystal of potassium manganite (VII) at the bottom of a large beaker that is heated by a candle flame.**(I)**Show convection in air using, for example, a mine ventilation model. Discuss heaters at ground level and air-conditioning units at ceiling level. **Resource Plus** **Experiment:** Convection currents This experiment focuses on a convection current experiment using potassium permanganate.

		Remember that convection is the main mechanism by which the central heating equipment (which is usually called a radiator) passes thermal energy around a room. Convection:**www.edumedia-sciences.com/en/a639-thermal-convection**
2.3.3Radiation	Identify infra-red radiation as part of the electromagnetic spectrum Recognise that thermal energy transfer by radiation does not require a medium Describe the effect of surface colour (black or white) and texture (dull or shiny) on the emission, absorption and reflection of radiation	The word radiation is used in many contexts in science and even in IGCSE there are two or three significantly different uses. In this topic, radiation means the infra-red radiation that is emitted by all objects at all temperatures but is emitted at the largest rate by the hottest bodies. It is worth emphasising that the boundary between infra-red radiation and microwaves is an arbitrary line drawn at a particular wavelength/frequency for convenience. Learners should be able to distinguish emission from absorption. These two features are commonly taught at the same time. When offering an explanation, learners need to be clear whether a particular behaviour is observed because of absorption or emission. What is infra-red radiation? **www.bbc.co.uk/schools/gcsebitesize/science/aqa/heatingandcooling/heatingrev1.shtml** **www.youtube.com/watch?v=_WP2XwBhmAk**

		www.gemini.edu/public/infrared.html
2.3.3Radiation	• Describe experiments to show the properties of good and bad emitters and good and bad absorbers of infra-red radiation • Show understanding that the amount of radiation emitted also depends on the surface temperature and surface area of a body	Leslie's cube type experiments show the effect of the colour of a surface on the emission of radiation. (I) A thick (3–5 mm) sheet of copper, covered with lamp-black (powdered carbon) on one side, if heated strongly with a Bunsen burner on the other side, will emit noticeably more heat from the blackened side when the Bunsen burner is removed. Absorption of infra-red radiation can be shown easily by arranging two thermometers at equal distances from a working 12 V headlamp bulb. One thermometer has a blackened bulb (use a felt-tip pen or poster paint). Leslie's cube:www.youtube.com/watch?v=D1PJQMXYiH8
2.3.4 Consequences of energy transfer	Identify and explain some of the everyday applications and consequences of conduction, convection and radiation	A good opportunity to carry out some investigative experiments involving rate of cooling and insulation.**(I)** Discussion of the vacuum flask is a useful way to revise conduction, convection and radiation, as is discussion about the domestic refrigerator. Obtain two identical stainless steel vacuum flasks; drill a hole in the outside of one so that air enters the vacuum. Compare by data-logging the rates of fall of temperature.

		Vacuum flask:**www.youtube.com/watch?v=mT4qZA3BAji**
3.1 General wave properties	Demonstrate understanding that waves transfer energy without transferring matter Describe what is meant by wave motion as illustrated by vibration in ropes and springs and by experiments using water waves Use the term wave front Give the meaning of speed, frequency, wavelength and amplitude Distinguish between transverse and longitudinal waves and give suitable examples Describe how waves can undergo: reflection at a plane surface refraction due to a change of speed diffraction through a narrow gap	Begin with waves on ropes and a 'slinky' spring to illustrate transverse and longitudinal waves. A ripple tank can then be used to show reflection, refraction and diffraction of water waves. Sound undergoes diffraction easily but light needs special apparatus to show this property. Use 3 cm (micro) wave equipment to illustrate reflection, refraction (beeswax blocks or Perspex cubes filled with paraffin) and diffraction. A narrower slit can actually increase the intensity at some off-centre positions as the weaker signal reaches places that the stronger one (wider slit) did not diffract to. **Resource Plus** **Experiment:** Demonstrating wave phenomena This experiment focuses on demonstrating wave phenomena. Links to 3.2.1 Reflection of light and 3.2.2 Refraction of light.

	Describe the use of water waves to demonstrate reflection, refraction and diffraction	Demonstrations of transverse and longitudinal waves:**www.youtube.com/watch?v=7cDAYFTXq3E** The ripple tank:**www.youtube.com/watch?v=JXaVmUvwxww** Reflection:**www.youtube.com/watch?v=HFckyHq594I** Refraction:**www.youtube.com/watch?v=stdi6XJX6gU** Diffraction:**www.youtube.com/watch?v=ZSF9CFsjQKg**
3.1General wave properties	Recall and use the equation $v = f \lambda$ Describe how wavelength and gap size affects diffraction through a gap Describe how wavelength affects diffraction at an edge	Find the wavelengths and frequencies for local radio stations and calculate *c*. Use a set of ripple tank projection slides to reinforce the ripple tank work and focus on more detailed discussion. Wave equation:

		www.youtube.com/watch?v=jEEPp0mBCdg Wave speed: **www.bbc.co.uk/schools/gcsebitesize/science/aqa_pre_2011/radiation/anintroductiontowavesrev3.shtml** **www.gcse.com/waves/vfl.htm**
3.3Electro-magnetic spectrum	Describe the main features of the electromagnetic spectrum in order of wavelength State that all e.m. waves travel with the same high speed in a vacuum Describe typical properties and uses of radiations in all the different regions of the electromagnetic spectrum including: radio and television communications (radio waves) satellite television and telephones (microwaves) electrical appliances, remote controllers for televisions and intruder alarms (infra-red) medicine and security (X-rays)	Include plenty of examples to show learners that they already have much general knowledge regarding the uses of electromagnetic waves. Quote frequency and wavelength values and show that as f increases, λ decreases. Identify the radio wave, microwave, infra-red and X-ray regions of the e.m. spectrum. Explain that the first three can be encoded with digital or analogue signals to transmit messages remotely. Explain that X-rays can be used both diagnostically and therapeutically in medicine and discuss the risks of using and of not using X-rays in medicine.

	Demonstrate an awareness of safety issues regarding the useof microwaves and X-rays	Discuss the likely dangers of using mobile phones and problems that arise when microwaves escape from faulty microwave ovens. Electromagnetic spectrum: **www.schooltube.com/video/6ea0d020a582f8d6b1c1/The-Electromagnetic-Spectrum** **www.youtube.com/watch?v=UzI1z0u_700** **www.vimeo.com/16996376**
3.3 Electro-magnetic spectrum	State that the speed of electromagnetic waves in a vacuum is 3.0 × 10*8* m/s and is approximately the same in air	There is no particular reason for not quoting the exact (to 2 significant figures) value 3.0×10^8 m/s here. Calculate how long it takes for an intercontinental phone call to travel to a satellite (height ~35 000 km) and back and then for the reply to make the same journey.

3.4 Sound	Describe the production of sound by vibrating sources Describe the longitudinal nature of sound waves State that the approximate range of audible frequencies for a healthy human ear is 20 Hz to 20 000 Hz Show an understanding of the term ultrasound Show an understanding that a medium is needed to transmit sound waves Describe an experiment to determine the speed of sound in air Relate the loudness and pitch of sound waves to amplitude and frequency Describe how the reflection of sound may produce an echo	Use a variety of musical instruments/vibrating rulers/pieces of card in the spokes of a bicycle wheel, etc. to introduce this section. A signal generator and loudspeaker can be used to investigate the range of audible frequencies. The usual range is considered to be ~20 Hz to ~20 kHz. Few teachers will hear frequencies as high as most of their learners and the upper limit is reduced as one gets older. A bell in a bell jar that can be evacuated can be used to show that a medium is required for the transmission of sound (at the same time showing that light travels through a vacuum). Sound can still pass through the structure holding the bell in place. Use of a c.r.o. and microphone gives a visual picture of amplitude and frequency. Extension learners can analyse the c.r.o. traces in more detail. **Resource Plus** **Experiment:**Use of a CRO to visualise sound waves This experiment focuses on an experiment to visualise sound waves using a cathode ray oscilloscope (CRO).

		Interesting work on resonance including a video of the Tacoma Narrows Bridge disaster:**www.youtube.com/watch?v=j-zczJXSxnw** This website about sound waves is informative and includes audio:**www.youtube.com/watch?v=usHtqr0_HXU**
3.4Sound	Describe compression and rarefaction State typical values of the speed of sound in gases, liquids and solids	A large-scale, outdoor echo method to determine the speed of sound in air can be used. Where a long metal fence is available, it is possible to strike the fence with a hammer and for a distant observer to hear the sound twice, once through the air and once through the fence. Compressions and rarefactions: **www.bbc.co.uk/schools/gcsebitesize/science/add_gateway_pre_2011/radiation/ultrasoundrev1.shtml** **www.youtube.com/watch?v=HlSCwV8d5qM** Speed of sound in differing media: **http://hyperphysics.phy-astr.gsu.edu/hbase/tables/soundv.html**

SVKM J .V. Parekh International School

Long Term Plan

Academic Year 2019-2020

Subject: EMS **GRADE-9**

Name of the Teacher(s): Shobha Menon

Strand/Topics	Learning Objectives (CAIE expectations)	Learning Experiences/Engagements
EMS/Rocks and minerals and their exploitation *1.1 Formation of rocks*	• state and explain the formation and characteristics of named igneous, sedimentary and metamorphic rocks • describe and interpret the rock cycle	Introduce the topic by looking at samples of igneous, sedimentary and metamorphic rock for learners to observe the key characteristics and differences. samples of granite and basalt, limestone, sandstone, shale, marble and slate. This could be small samples of rock or buildings in the local neighbourhood. Learners could be given a key to the characteristics of each type of rock and then categorise the samples into rock type **(I)**.

		Chocolate rock cycle: using chocolate to 'create' sedimentary, metamorphic and igneous chocolate.
1.2 Extraction of rocks and minerals from the Earth	describe the following methods of extraction of rocks and minerals from the Earth: – surface mining - opencast / open-pit / open-cut / strip mining – subsurface mining - deep mining / shaft mining • discuss the factors that affect the decision to extract rocks and minerals	Learners research the two types of mining **(I)**. A possible resource is **www.greatmining.com/** – search for 'Surface mining' and 'Underground mining'. Learners study images of surface and subsurface mines and further categorise the images as opencast, open-pit, open-cut, strip mines, deep mines, shaft mines. Learners develop their map interpretation skills by describing the distribution of coal mines shown on a map, using **www.gov.uk/government/organisations/the-coal-authority** – search for 'Coal Authority interactive map viewer' or**www.mapsofworld.com/** – search for 'world coal deposits'. Learners look at a photograph of the location of a quarry or quarries and identify the pros and cons of its site and possible mineral extraction. Possible resources are **www.alamy.com/** – search for 'quarry'

		Extension: Learners summarise the key factors in issues related to mining for Kazakhstan. In **www.un.org/development/desa/en/** search for 'The report on mining for UNCSD 18'. In **http://pubs.usgs.gov/sir/2012/5188/sir2012-5188.pdf** look at the graphs of metal prices and the significant events that affect the prices over a 40-year period. Learners summarise the results for one metal, for the annual average price over the 40-year period shown, and explain the changes in price as a result of the significant events suggested for the metal.
1.3 Impact of rock and mineral extraction	• describe and explain the environmental, economic and social impacts of rock and mineral extraction – loss of habitat – noise, water, land, air, visual pollution – management of waste – employment opportunities – improvements in local/national economy	Learners investigate environmental impacts of mining in **www.miningfacts.org** – click on 'Environment'. Learners look at questionnaires on local people's views on mining. Analyse the questionnaire to summarise the key findings. Suggested resource: **www.csrm.uq.edu.au/docs/Hunter_Valley.pdf** – page 9 questionnaire on perceptions on mine–community relations. Summarise the positive and negative social aspects of mining found on pages 15–16 of the .pdf resource. **Extension:** Devise a suitable questionnaire that finds out local people's views on a proposed sulfur mine.

	– improvements in facilities and infrastructure	Learners produce a mind map of the possible impacts of rock and mineral extraction.
1.4 Managing the impact of rock and mineral extraction	• describe and evaluate strategies for restoring landscapes damaged by rock and mineral extraction – safe disposal of mining waste – land restoration: soil improvement, bioremediation, tree planting – making lakes and nature reserves – using as land fill sites.	**www.youtube.com/** – search for 'Education-reclamation and rehabilitation-videos-06'. Learners investigate a case study of a successfully reclaimed mining site, such as in **http://cornerstonemag.net** – search for 'Ereen Mine, Mongolia'. **Extension:** Learners write a development plan for a rock extraction mine that is due to close in three years.
1.5 Sustainable use of rocks and minerals	• define sustainable resource and sustainable development • describe and evaluate strategies for the sustainable use of rocks and minerals – increased efficiency of the extraction of rocks and minerals	Learners produce a PowerPoint presentation on sustainable resources and sustainable development. **www.bbc.co.uk/schools/gcsebitesize/** – search for 'sustainable use of resources'. Work in groups or individually. Introduction: learners watch short YouTube clip on glass recycling. Summarise why we should recycle glass.

	– increased efficiency of the use of rocks and minerals – the need to recycle rocks and minerals • legislation	**www.youtube.com** – search for 'Sibleco glass recycling film'. Learners produce a mind map on how to recycle different materials. A useful resource is **www.recycling-guide.org.uk/** Class debates the pros and cons of recycling – learners are 'given' an opinion that they have to argue the case for. Resources: **www.conserve-energy-future.com/** – search for 'advantages and disadvantages of recycling'. **Extension:** Write a case study looking at the development, impact and management of a mine. Resources: **www.oxfam.org.au/what-we-do/mining/impacts-of-mining/** – scroll for 'Oxfam reports' and select one of the mining reports or news article about limestone quarrying **http://news.bbc.co.uk/1/hi/england/derbyshire/4856654.stm**
EMS/ Energy and the environment	• describe the formation of the fossil fuels: coal, oil and gas	Introduction: learners watch a short video clip: 'Why are fossil fuels important?'

2.1 Fossil fuel formation		**http://bpes.bp.com** – search for 'Fossil fuels resources'. Learners draw labelled diagrams to highlight similarities and differences between the formations of coal and oil/natural gas. Possible resource: YouTube video introducing fossil fuels and their formation. **www.youtube.com** – search 'Formation of fossil fuels. Earth: the operators' manual'. Learners write down one reason on wipe boards or paper why fossil fuels are important and then share with whole class. Use the internet/textbooks to research why burning fossil fuels is an environmental concern, e.g. **www.epa.gov/ghgemissions/global-greenhouse-gas-emissions-data**
2.2 Energy resources and the generation of electricity	• classify the following energy resources as non-renewable or renewable: – non-renewable: fossil fuels, nuclear power using uranium – renewable: biofuels (bioethanol, biogas and wood), geothermal power, hydro-electric power, tidal power, wave power, solar power, wind power	Learners annotate and label a diagram of an electricity power plant for each type of energy resource and summarise in a flow chart the key stages in the generation of electricity using each resource. Possible resource: **www.electrical4u.com** – search 'electrical power generation'. Learners watch the clip and then compare values of energy use, recycling and carbon footprints from Poland and the UK or other EU countries. Learners present their findings in an information leaflet **(I)**.

	• describe how each of these energy resources is used to generate electricity • describe the environmental, economic and social advantages and disadvantages of each of these energy resources	**www.bbc.co.uk/education** – search 'Environmental problems in Poland'. In groups, learners compare and contrast one renewable and one non-renewable resource and present their findings to the class. Possible resources: **http://nationalgeographic.org** – search 'Hydroelectric and geothermal: benefits and drawbacks' **www.bbc.co.uk/education** – search 'Wind power vs nuclear power'. **Extension:** Learners imagine that the use of non-renewable resources has been made illegal. They write a 'day in the life of…' to describe the ways it would affect them **(I)**.
2.3 Energy demand	• describe and explain the factors affecting the demand for energy – domestic demand – industrial demand – transport – personal and national wealth	Learners summarise the data for energy consumption by source and sector from a suitable data source, such as **www.eia.gov** – search 'Energy explained, your guide to understanding'. **www.nap.edu/** – search 'What you need to know about energy'. Learner pairs role play by pretending to be: • from a MEDC and LEDC

	– climate	• from a country in a hot and cold climate • living in a rural and urban location Explain to each other their energy needs. At the end they should produce a summary of the differences and similarities for each role play **(I)**.
2.4 Conservation and management of energy resources	• describe and explain strategies for the efficient management of energy resources – reducing consumption, such as using insulation, turning electrical devices off and using energy efficient devices and vehicles – energy from waste cooking oil – exploiting existing energy sources – education of people for energy conservation – transport policies • research and development of new energy resources	Learners produce a development plan for a small town on strategies for efficient management of energy resources. Possible resource: **www.carbontrust.com/media/7385/ctv045_an_introduction_to_energy_management.pdf** Learners undertake a survey of energy efficiency in their own homes and report back their findings. **Extension:** Learners estimate how much the school could save if all the lights in the building were energy efficient. Learners answer the following question: 'Fracking is the answer to our energy needs.' To what extent do you agree with this statement? **(F)**

	– fracking	Possible resource: **www.bbc.co.uk** – search 'What is fracking and why is it controversial?'
2.5 Impact of oil pollution	•describe the causes and impacts of oil pollution on marine and coastal ecosystems – causes: off-shore oil extraction, pipelines and shipping – impacts on ecosystems: birds, marine mammals, coral reefs, beaches	Learners do an experiment on what happens during an oil spill. This could include dipping feathers into the 'oil spill' to see the potential effect on birds. *Care should be taken when dealing with any oil products and an appropriate risk assessment must be carried out.* Possible resource: **http://weirdsciencekids.com** – search for 'Oil spill experiment'. Give the learners a food chain and ask them: 'How would an oil spill affect this food chain?' This could be extended to: 'How would an oil spill affect a named ecosystem?' Learners could be given photographs of the ecosystem or organisms in the food chain as a stimulus. Learners write an article for a children's science magazine on the impact of a major oil spill **(I)**. Possible resources: **http://alaskafisheries.noaa.gov/oil** **www.environmentalpollutioncenters.org/oil-spill/**.

2.6 Management of oil pollution	• discuss strategies for reducing oil spills in marine and coastal ecosystems • discuss strategies for minimising the impacts of oil spills on the marine and coastal ecosystems – MARPOL (International Convention for the Prevention of Pollution from Ships) – double-hulled oil tankers – dealing with oil spills (booms, detergent sprays, skimmers)	Learners do an experiment on how to clean up an oil spill. This could be using a jug or spoon to act as a skimmer, a piece of string or chord to represent a boom and detergent to break the spill into smaller particles. Possible resource: **www.amsa.gov.au/** – search 'Experiment to clean up an oil spill'. *Care should be taken when dealing with any oil products and an appropriate risk assessment must be carried out.* Learners look at data for the number of major oil tanker spills compared with the quantity of seaborne oil trade and describe the data. Learners look at a graph of causes of large oil spills and summarise the data. Learners draw a bar graph of the top 20 major oil spills and the quantity of oil spilt. Possible data: **www.itopf.com/knowledge-resources/data-statistics/statistics** Learners imagine that they run an oil-spill clean-up company. They have just been told that an oil spill has occurred 20 miles off the coast of their country. What will they do? Possible resources: **www.imo.org/en/Pages/Default.aspx** – search 'MARPOL'

		http://oilspillboom.co.uk – search 'oil booms' **www.itopf.com** – search 'dispersants'. **Extension:** Study the impact and management of an oil pollution event. Watch YouTube documentary at **www.youtube.com** – search 'The Exxon Valdez oil spill'.
EMS/Agriculture and the environment 3.1 Soil composition	• describe and explain the composition of soils – composition: mineral particles, organic content (living plants, animals, microorganisms and their dead remains), air and water – particle size: sand, silt, clay	Watch a YouTube clip on the composition of soil: **www.youtube.com/** – search 'Soil and soil dynamics' (Bozeman Science). Learners study examples of different samples of soil **(I)**. Possible resource: **www.rhs.org.uk** – search 'soil types'. Learners do simple experiment of composition of soils. Possible resource: **www.youtube.com/** – search 'The soil profile – kids science experiments' (Champak World). Use pie graphs or divided bar graphs to show the different percentages of sand, clay and silt for soils of different textures. Possible resources: **www.fao.org** – search 'soil composition'

		http://organiclifestyles.tamu.edu – search 'soil'. **Extension:** Investigate an exposed soil horizon in local area and include a labelled sketch of its main features.
3.2 Soils for plant growth	• describe soils as a medium for plant growth • describe the differences between a sandy and clay soil – mineral ions: nitrogen as nitrate ions (NO3-), phosphorus as phosphate ions (PO43-), potassium as potassium ions (K+) – organic content – pH – air content – water content – drainage – ease of cultivation	Learners conduct soil pH testing using pH probe or indicator paper. Possible resource: **www.rhs** – search for 'Soil: understanding pH and testing soil'. Create a 'Tarsia jigsaw' for learners on the differences between a sandy and clay soil **(F)**. Note: Tarsia is a free download available at: **www.ideaseducation.co.uk/resources/Tarsia-guide.pdf** Possible resource: **http://agriculture.vic.gov.au** – search 'How do the properties of soils affect plant growth?'
3.3 Agriculture types	• describe the different types of agriculture	Learners view images of different types of agriculture and classify them into arable, pastoral and mixed and then further classify into subsistence

	– arable, pastoral and mixed – subsistence and commercial	and commercial **(F)**. Possible resources: **www.bbc.co.uk/education** – search for 'farming in rural environments' **www.shutterstock.com/** for images of farming. Learners look at their local area and identify the type(s) of farming that takes place closest to their home **(I)**.
3.4 Increasing agricultural yields	• describe techniques used to increase agricultural yields – rotation – fertilisers – irrigation – insect control (insecticide and biological control), weed control (herbicide), fungi control (fungicide) – mechanisation – selective breeding of animals and plants – genetically modified organisms	Learners look at population growth statistics and discuss the question: 'What does the population growth data mean in terms of agricultural needs?' Possible resource: **www.fao.org** – search for 'Global agriculture towards 2050'. In groups, learners present a briefing document entitled 'How to feed the world in 2050' **(I)**. **www.fao.org** – search for 'How to feed the world in 2050'.

	– controlled environments: greenhouses and hydroponics.	
3.5 Impact of agriculture	• describe and explain the impact of agricultural practices on the environment and people – overuse of insecticides and herbicides – overuse of fertilisers – mismanagement of irrigation causing salinisation and waterlogging – overproduction and waste – exhaustion of mineral ion content – soil erosion – cash crops replacing.	Select one negative impact of agricultural mismanagement to introduce this topic. Possible resource on Aral Sea: **www.bbc.co.uk/news** – search for 'The disappearing Aral Sea' and the short clip 'Aral Sea – Duzbay's story'. Learners then write a 'day in the life' of a farmer living in an area where the land has been mismanaged. **Extension:** Learners could read *Silent Spring* by Rachel Carson about the impact of overuse of the pesticide DDT **(I)**.
3.6 Causes and impacts of soil erosion	• describe the causes of soil erosion – removal of natural vegetation by over cultivation and overgrazing – water and wind erosion	Watch a YouTube video explaining desertification. **www.youtube.com/** – search for 'Desertification' (GoodPlanet).

	• describe and explain the impacts of soil erosion – loss of habitats – desertification – silting of rivers – displacement of people – malnutrition and famine	Show learners photographs of several different rural areas (for relief and land uses) and ask them to estimate how high the risks of soil erosion and desertification are. Possible resource: **www.shutterstock.com/** for images of rural areas. Learners use a map to describe the distribution of hyper-arid land (very dry lands) that are at risk of desertification. Possible resource: **www.greenfacts.org/en/index.htm** – search for 'Present-day drylands and their categories'. Learners use resources to produce notes on what causes desertification. They could compile a list of key glossary words for this topic to help with later revision, which form part of a 'peer quick quiz' the following lesson **(F)**. Possible resources: **www.un.org** – search for 'desertification day' **http://pubs.usgs.gov/gip/deserts/desertification/** **Extension:** Prepare five interview questions to ask a soil expert that enable her to explain the causes of desertification. Learners should also prepare suitable answers **(I)**.
3.7 Managing soil erosion	• describe and explain strategies to reduce soil erosion	Learners do experiments in soil erosion.

	– terracing – contour ploughing – bunds – windbreaks – maintaining vegetation cover – addition of organic matter to improve soil structure – planting trees, mixed cropping, intercropping and crop rotation	Possible resources: **www.lapappadolce.net/en** – search 'soil erosion experiment' **www.juliantrubin.com** – search 'soil erosion experiments'. Show learners images of soil erosion. Ask them to identify strategies for managing soil erosion and explain how these work **(F)**. Possible resource: **www.shutterstock.com/** for images of soil erosion strategies. **Extension:** Study an example where agriculture has had severe environmental consequences, including soil erosion, and strategies for the conservation of the soil. Possible resources: **www.dartmoor.gov.uk** – search 'Erosion case study – Haytor' **www.mhhe.com/Enviro-Sci/CaseStudyLibrary/Topic-Based/CaseStudy_DustBowlDays.pdf** on the Dust Bowls of 1930s America. **www.youtube.com/** – search for '1950s documentary on the Dust Bowl'.
3.8 Sustainable agriculture	• describe and explain strategies for sustainable agriculture	Learners could be given the task: 'You are an elder in your village council and you have been asked to explain to your community how the village's farming methods could become more sustainable. Prepare a

	– organic fertiliser (crop residue, manure) – managed grazing (livestock rotation) – crop rotation – use of pest resistant and drought resistant varieties of crops – trickle drip irrigation – rainwater harvesting	presentation to explain to the village farmers how to adopt sustainable framing practices.' **(I)** Possible resources: **http://asi.ucdavis.edu/** – search 'Sustainable agriculture activity guides' **www.leafuk.org/leaf/home.eb** – search 'Simply sustainable soils'. **Extension:** Learners research how to create a composter for household food waste. **http://asi.ucdavis.edu/** – search 'Sustainable agriculture activity guides – compost'.
EMS/Water and its management 4.1 Global water distribution	• describe the distribution of the Earth's water – oceans – fresh water: ice sheets and glaciers, ground water, atmosphere, lakes and rivers	Learners are given data of the percentage distribution of the Earth's water and asked to draw bar graphs or divided bar graphs of the data and also to complete a suitable key. Possible resource: **www.usgs.gov** – search 'Where is Earth's water?'
4.2 The water cycle	• describe and interpret the water cycle	Learners view animated diagram of water cycle. Possible resources: **http://earthguide.ucsd.edu/** – search 'water cycle'

	– precipitation, surface run-off, interception, infiltration, through-flow, ground water flow, transpiration, evaporation and condensation	**https://pmm.nasa.gov/education/interactive/animated-water-cycle** Learners complete a diagram of the water cycle, either by filling in the process gaps or creating their own **(F)**. Possible resource: **www.metoffice.gov.uk** – search 'Water cycle for kids'.
4.3 Water supply	• describe the sources of fresh water used by people – aquifers, wells, rivers, reservoirs, desalination plants.	Show images of each type of fresh water source. Learners categorise the images into the correct type of source
4.4 Water usage	• describe the different ways in which fresh water can be used – domestic, industrial, agricultural	Learners view the quantity of water consumed this year at **www.worldometers.info** – search 'water'. Learners make a list of all the ways they use water at home. Are there any ways they think they could reduce the amount of water they use **(I)**? Possible resource: **www.gracelinks.org/** – search 'Indoor water use at home'. Learners look at water uses in the three sectors per country and use the data to produce pie charts or compare two countries' usage.

		Possible resource: **www.watersaving.com/en/** – search for 'World map for water'. **Extension:** Learners read 'The hidden water in everyday products' at **www.gracelinks.org/**. What would their day be like if there was no water?
4.5 Water quality and availability	• compare the availability of safe drinking water (potable water) in different parts of the world – between water-rich and water-poor regions and the potential for water conflict – access to safe drinking water in urban and rural areas	Learners view the number of deaths caused by water-related diseases this year and the number of people with no access to a safe drinking water source: **www.worldometers.info** – search 'water'. Learners look at a safe drinking water availability map and describe the distribution of non-potable water across the world. Possible resources: **http://growingblue.com/** – search 'The growing blue tool', which shows data for water availability and water use.

		Extension: A report by the World Health Organisation and UNICEF, 2015, said that 'more people in the world have a mobile phone than a toilet'. Learners should use this statement to comment on the availability of potable water around the world **(I)**.
4.6 Multipurpose dam projects	• describe and evaluate multipurpose dam projects – choice of site – environmental, economic and social impacts – sustainability	Learners should look at the structure of a dam and label the parts on a diagram. Possible resource: **www.klickitatpud.com/** – search 'Packwood Lake Hydro Project'. Case study: Learners study the impact of a multipurpose dam scheme. Possible resources: **www.water-technology.net/** – search 'The dams of the world technology' and look for 'Top 10 biggest dams'. **www.arch.mcgill.ca/prof/sijpkes/arch374/winter2001/dbiggs/aswan.html** – case study on the Aswan Dam **www.internationalrivers.org/** – search for 'A case study on the Manantali Dam Project', Senegal. **Extension:** A newspaper report says, 'Dams are always good for local communities'.

		To what extent do you agree with this statement
4.7 Water pollution and its sources	• describe the sources of water pollution – domestic waste, including sewage from urban and rural settlements – industrial processes – agricultural practices	Learners produce a mind map on the sources of water pollution. This can be achieved on paper or electronically on a free app, such as **http://mindmapfree.com/** or **www.edrawsoft.com/freemind.php** or other suitable software or app **(I)**. Possible resource: **www.water-pollution.org.uk** – search 'types of water pollution' and 'causes of water pollution'.
4.8 Impact of water pollution	• describe and explain the impact of pollution of fresh water on people and on the environment – global inequalities in sewage and water treatment – risk of infectious bacterial diseases, typhoid and cholera – accumulation of toxic substances from industrial processes in lakes and rivers	Learners split into groups to produce a fact sheet on one aspect of safe drinking water and the possible risks of pollution on water. They should then present their findings to the class. Possible resources: **www.who.int/en** – search 'factsheets/drinking water' and choose the 'Drinking water health topic' link **www.bbc.co.uk/education** – search for 'Water pollution and deforestation', which has good information on eutrophication and indicator species for the levels of water pollution. Learners create revision cards for the impact of water pollution **(F)**.

	– bioaccumulation of toxic substances in food chains – the effect of acid rain on organisms in rivers and lakes – nutrient enrichment leading to eutrophication.	
4.9 Managing pollution of fresh water	• describe and explain strategies for improving water quality – improved sanitation – treatment of sewage – pollution control and legislation	Case study: Learners study the causes, impact and management of pollution in a named body of water. Possible resources: Case studies of the Ganga, India: **http://www.who.int/water_sanitation_health/resourcesquality/wpccasestudy1.pdf** **http://wwf.panda.org/about_our_earth/about_freshwater/rivers/irbm/cases/ganges_river_case_study/** **http://www.greenpeace.org.uk** – search 'Hidden consequences: The unseen price of water pollution'.
4.10 Managing water-related	• describe the life cycle of the malaria parasite	Learners annotate a malarial parasite life cycle diagram.

disease	• describe and evaluate strategies to control malaria – antimalarial drugs, vector control, eradication • describe strategies to control cholera – safe drinking water (potable water) supply – boiling and chlorination	Possible resources: **https://www.cdc.gov/** – search 'malaria' **http://www.mmv.org/sites/default/files/uploads/images/malaria_and_medicines/posters_parasitelife.pdf** **http://www.who.int/malaria/data/en/** – search 'Malaria'. Learners study maps of countries susceptible to malaria and describe the global distribution of malaria. Possible resources: **http://www.who.int/malaria/data/en** – search 'World Malaria Report 2016' **http://www.who.int/malaria/data/en** – search 'malaria: country profiles'. Learners watch a WHO video clip on 'Cholera – questions and answers': **http://www.who.int/mediacentre/factsheets/fs107/en/** Learners produce a health leaflet to advise people on how to avoid cholera **(I)**.

		Extension: Approximately 10,000 people were killed by an outbreak of cholera following the 2010 Haiti earthquake. Read a news article about the causes of the outbreak, concerns about it and solutions to dealing with it. Summarise the report in 150 words or less. Possible resource: **http://www.bbc.co.uk/** – search 'Haiti after Hurricane Matthew: can a cholera epidemic be avoided?'
EMS / Oceans and fisheries 5.1 Oceans as a resource	• outline the resource potential of the oceans – food, chemicals, building materials – wave/tidal energy – tourism – transport – potential for safe drinking water	Learners should brainstorm ideas for the resource potential of the oceans. The class can be split into groups to produce a PowerPoint presentation on an aspect of the oceans as a resource **(I)**. Possible resources: **www.oceanresource.co.uk/** **www.oceansatlas.org/uses/en/**

5.2 World fisheries	• outline the distribution of major ocean currents – identify the position of major cold and warm ocean currents (names are not required) • explain the distribution of major marine fish populations – shallow water of continental shelves – cold and warm ocean currents • describe the El Niño Southern Oscillation (ENSO) phenomenon and its effects on fisheries along the Pacific coast of South America	Learners use a world map to identify the world's major ocean fisheries and also identify the major ocean currents **(I)**. The relationship between the major ocean fisheries and the presence of continental shelves and ocean currents can then be examined. This work could be presented as a large poster. Possible resources: **www.weather.gov/srh/** – search 'jetstream ocean currents' **http://arizonaenergy.org/Home/nea-esco_page.htm** – search 'Water energy/The major ocean currents' **www.seaaroundus.org/** – search for interactive graphs and maps **www.theglobaleducationproject.org/earth/fisheries-and-aquaculture.php** Watch animation of the ENSO phenomenon. Possible resources: **http://oceanservice.noaa.gov/** – search 'ninonina' **www.pmel.noaa.gov/elnino/fish-distribution**

		Learners produce ‘true or false’ quiz cards on the ENSO phenomenon **(F)**. Learners look at the current status of the ENSO phenomenon and comment on when the next ENSO event is predicted. Possible resource: **www.climate.gov/** – search ‘El Nino status’. **Extension:** Imagine you catch fish for a living. Write a diary entry during an El Niño year and explain how your fishing has been affected **(I)**. Possible resource: **www.climate.gov/** – search ‘What is El Nino in a nutshell?’
5.3 Impact of exploitation of the oceans	• describe and explain the impact of exploitation of fisheries – overfishing of marine species – effect on target and bycatch species	Introduce the topic by reading an article on the exploitation of fisheries or watch a short clip on overfishing. Possible resources: Articles: **www.bbc.com/future/story/20120920-are-we-running-out-of-fish** **www.ft.com/** – search ‘World fish stocks declining faster than feared’

		http://wwf.panda.org/ – search ‘unsustainable fishing’. Video clips: **www.youtube.com/** – search ‘will the ocean run out of fish?’ **www.bbc.co.uk/education** – search ‘Why have fish stocks decreased in the North Sea?’ Look at data for fish catches. Learners could describe the trend in over-exploited stocks or top producer countries based on catch or how the world fish catch has changed over 50 years. Possible resources: **http://worldoceanreview.com/en/** – search ‘State of fisheries worldwide’ **www.earth-policy.org/indicators/C55/fish_catch_2002** – search ‘Eco-economy indicators/Fish catch’. Learners create their own marine food chain that includes fish. What will happen to the food chain if the fish population decreases because of overfishing? Watch a YouTube clip on fish farming as an introduction.

	• describe how farming of marine species reduces the exploitation of fisheries	**www.youtube.com/** – search 'indoor fish farming in Bangladesh' or 'Fish farming in California' or 'How it's made: fish farming' (the latter clip looks at how fish farmers use artificial fertilisation on their farms). **Extension:** Learners write a short report on the pros and cons of fish farming **(I)** by studying an example of farming of a marine species, including the source of food, pollution from waste and impact on the natural habitat. Possible resource: **http://advocacy.britannica.com/blog/advocacy/** – search 'pros and cons of fish farming'.
5.4 Management of the harvesting of marine species	• describe, explain and evaluate strategies for management of the harvesting of marine species – net types and mesh size – other species-specific methods: pole and line – quotas	Learners watch a short video clip on sustainable fish stocks. Possible resources: **www.msc.org/healthy-oceans/sustainable-fishing** – search 'Ensuring sustainable fish stocks' and 'What is the MSC?' **www.youtube.com/** – search 'Partnering for sustainable fishing: Gambia red and black sole fishery' or 'Celebrating Fiji Albacore Tuna, an MSC certified sustainable fishery'.

	– closed seasons – protected areas and reserves – conservation laws – international agreements (implementation and monitoring)	Learners discuss the question: 'How can the authorities prevent unsustainable fishing activities?' Each group should argue why their strategy is the most effective. Possible resources: **www.bbc.co.uk/education** – search 'The impact of fishing in the Philippines' **www.sustainablefish.org/** **www.msc.org/healthy-oceans/sustainable-fishing** – search 'Combating illegal fishing'. Case study: Learners draw on their study of topic 5 to produce a report on the resource potential, exploitation, impact and management of a marine fishery of their choice. **Extension:** Learners explain why the sustainable management of harvesting marine species is a global problem
EMS/Managing natural hazards 6.1 Earthquakes and volcanoes		

	• describe the structure of the Earth – crust, mantle and core • describe and explain the distribution and causes of earthquakes and volcanoes – global pattern and structure of plates – plate movement: constructive, destructive and conservative • understand magnitude and the Richter scale	Learners watch an introductory video clip on the structure of the Earth. Possible resource: **www.youtube.com/** – search 'Layers of the Earth' by fozzils1, which sets the topic to a 'layers of the Earth' song. Introduce the topic by looking at clips or photographs of volcanoes. Possible resource: **www.volcanodiscovery.com/** – search 'live volcano webcams'. Learners create their own earthquakes and volcanoes. Possible resources: Earthquakes: **www.geo.mtu.edu/UPSeis/why.html** **www.iris.edu/hq/** – search 'How can you model earthquakes in the classroom?' Volcanoes: **http://weirdsciencekids.com/** – search 'Make a volcano'.

		Learners look at a map of current active volcano locations and describe their distribution. Possible resource: **www.volcanodiscovery.com/** – search 'volcano map'. Learners label plate movement diagrams of constructive, destructive and conservative plates. **http://earthquake.usgs.gov/** – search 'Learn'. Learners research the meaning of 'magnitude' and 'Richter scale' **(I)**. **http://earthquake.usgs.gov/** – search 'Measuring the size of an earthquake'. Learners look at data for significant earthquakes that have been recorded over the past 30 days. Use a map with plate boundaries shown to plot the location of these earthquakes. Possible resource: **http://earthquake.usgs.gov** – click on one of the events on the 'Latest earthquakes' map and then click on the event title at the bottom left of the map to see more information. Finally, click on the 'Regional information' map for a link to a 'Map of tectonic summary region'.

6.2 Tropical cyclones	• describe and explain the distribution and causes of tropical cyclones (storms, hurricanes and typhoons) – between 5 ° and 20 ° north and south of the Equator, ocean surface temperature of at least 27 °C and ocean depth of at least 60 m	Learners research what causes a cyclone and produce an information factsheet for primary school students **(I)**. Possible resource: **www.ga.gov.au/** – search 'what causes a cyclone?' Create your own 'virtual' hurricane. Possible resource: **www.nhc.noaa.gov/outreach/games/canelab.htm** Change the course of a 'virtual' hurricane by changing conditions. **www.nhc.noaa.gov/outreach/games/movncane.htm**
6.3 Flooding	• describe and explain the causes of flooding – heavy rainfall, prolonged rainfall, snowmelt – land relief – saturated soil, compacted soil – deforestation, cultivation and urbanisation	Watch a YouTube clip on flash flooding. **www.youtube.com/** – search 'Boscastle, flash flood', which hit a small town in Cornwall, UK, in 2004. **www.bbc.co.uk/news** – search '17/08/2004', click on 'BBC Six O'Clock News' and then click on the clip 'Why did Boscastle flood?' Watch a news report on the Japanese earthquake that caused the devastating tsunami in 2011.

	– storm surges, tsunamis – rise in sea level through climate change	**www.bbc.co.uk/news** – search 'Japan earthquake: tsunami hits north-east'. Learners produce a mind map on the possible causes of flooding. This can be achieved on paper or electronically on a free app, such as **http://mindmapfree.com/** or **www.edrawsoft.com/freemind.php** or other suitable software or app **(F)**. Possible resource for up-to-date flooding issues: **http://floodlist.com/**
6.4 Drought	• describe and explain the causes of drought – lack of rain caused by prolonged high pressure – effect of El Niño Southern Oscillation (ENSO) and La Niña on ocean temperatures and evaporation – effect of climate change	In groups, learners create a quiz on the causes of drought **(F)** and then swop their quiz with another group. Possible resources: **http://drought.unl.edu/** **http://weather.about.com/od/drought/f/droughts.htm** **www.weatheronline.co.uk/reports/wxfacts/Drought.htm** **www.bbc.co.uk/education** – search 'Human activities causing drought' **http://drought.unl.edu/** – search 'ENSO and forecasting'.

6.5 The impacts of natural hazards	• describe and explain the impacts of natural hazards on people and the environment – tectonic events: damage to buildings and infrastructure, fire, tsunamis, landslides, loss of farmland and habitats, water- related disease, loss of life, trauma, financial losses – tropical cyclones: flooding, loss of life, financial losses, damage to buildings and infrastructure, loss of crops and habitats, water-related disease – flooding: loss of life, loss of livestock, loss of crops, damage to buildings and infrastructure, contamination of drinking water supplies, water-related disease, financial losses – drought: death of organisms, water sources dry up, decline in crop yields, starvation, increased soil erosion, desertification, decrease in air quality, increased risk of wildfires.	Learners compare two earthquakes and the impact they had on people and the environment. **http://earthquake.usgs.gov** – search 'A comparison of two Bay Area earthquakes: 1989 v. 1906'. Learners summarise the impact of droughts for a community. **www.bbc.co.uk/education** – search 'Living without water in the Sahara Desert'. Learners compare the death rates from cyclones in different countries and suggest reasons for these differences. **www.who.int/bulletin/volumes/90/2/11-088302/en/** features data on death rates from Bangladesh and compares the death rate with other countries. Learners should create mind maps for the impact of each natural hazard. This can be achieved on paper or electronically on a free app, such as **http://mindmapfree.com/** or **www.edrawsoft.com/freemind.php** or other suitable software or app **(F)**. **Extension:** Write a diary entry entitled 'The day after the floods'.

		Possible resource: **http://gideonmendel.com/** – click on 'Drowning world' and then on 'The water chapters' or 'Floodlines'. Watch Gideon Mendel's 'The water chapters' video or 'Floodlines', which feature snapshots of communities from around the world and people affected by flooding.
6.6 Managing the impacts of natural hazards	• describe and evaluate the strategies for managing the impacts of natural hazards before, during and after an event – tectonic: monitoring and warning, land use zoning, structure of buildings, disaster preparation (plans, drills, emergency supplies and emergency rescue teams), evacuation, rebuilding of damaged areas, international aid – tropical cyclones: monitoring and warning, structure of buildings, disaster preparation (plans, drills, emergency supplies and emergency rescue teams), evacuation, emergency shelters, rebuilding of damaged areas, international aid	Case study: Compare and contrast the strategies for managing the impacts of tectonic events between a named more economically developed country (MEDC) and a named less economically developed country (LEDC). Possible resource: **http://nationalgeographic.org/** – search 'natural disasters' for an overview of the topic. Learners select either a tropical storm, flood or drought and summarise the possible strategies that could be used to manage the impact of this natural disaster. **Extension:** Learners could extend this summary by producing a report on how successful they think these strategies were for a named natural disaster **(I)**.

	– flooding: monitoring and warning, use of storm hydrographs (run-off, through-flow, ground water flow), shelters, rescue, rebuilding of damaged areas, flood management techniques – drought: monitoring, emergency water supplies, water conservation, increase water supply (dams and reservoirs, wells, use of aquifers, water transfer, desalination, rainwater harvesting), international aid	
6.7 Opportunities presented by natural hazards	• describe and explain the opportunities presented by natural hazards to people – flooding: deposition of silt on farmland – volcanoes: fertile soils, extraction of minerals, geothermal energy resources	Introduce the benefits of living near a volcano by watching a short video clip. Possible resource: **www.youtube.com/** – search 'What's it like living near a volcano?' (New China TV) or 'Mexico's biodiversity: "living near the Tacaná"' (DW). Introduce the benefits of living near a volcano by watching a short video clip. Possible resource:

		www.youtube.com/ – search ‘Fertility of the Nile – Nile – BBC’ (BBC Earth). Learners could present the case ‘for and against’ flooding and living near a volcano and link topic 6.7 with topic 6.5 **(I)**. Possible resources: Flooding **http://nationalgeographic.org/encyclopedia/silt/** – search ‘silt’ **www.worldwildlife.org/ecoregions/pa0904** Volcanoes **www.geography-site.co.uk/** – click on ‘Physical/Volcanoes and volcanics’ and ‘Why live near a volcano?’

SVKM J .V. Parekh International School

Long Term Plan

Academic Year 2019-2020

Subject: Biology **GRADE- IX & X**

Name of the Teacher(s): Gursimran kaur

Strand/Topics	Learning Objectives (CAIE expectations)	Learning Experiences/Engagements
Cells and cell processes 1.1 Characteristics of living organisms 1.2 Concept and use of a classification system 1.3 Features of organisms	Describe the characteristics of living organisms by defining the terms: Movement, Respiration, sensitivity, growth, reproduction, excretion, and nutrition. State that organisms can be classified into groups by the features that they share Define species as a group of organisms that can reproduce to produce fertile offspring Define and describe the binomial system of naming species as an internationally agreed system in which the scientific name of an organism is made up of two parts showing the genus and species.	The comparison of the characteristics of living organisms with those of non-living things – for example, what are the characteristics of life shown by a petrol engine. The comparison is clear when written in a table. The mnemonic, MRS GREN is useful to remember the seven characteristics. Learners should understand that single-celled organisms, plants and animals all have these characteristics. Activity: Presentation will be shown to students and they will be asked to list down the characteristics of living organism. And later discuss the answers with the class.

1.4 Dichotomous keys	List the features in the cells of all living organisms, limited to cytoplasm, cell membrane and DNA as genetic material List the main features used to place animals and plants into the appropriate kingdoms List the main features used to place organisms into groups within the animal kingdom List the main features used to place all organisms into one of the five kingdoms: Animal, Plant, Fungus, Prokaryote, Protoctist List the main features used to place organisms into groups within the plant kingdom, limited to ferns and flowering plants (dicotyledons and monocotyledons) List the features of viruses, limited to protein coat and genetic material Construct and use simple dichotomous keys based on easily identifiable features. State that the cytoplasm of all cells contains structures, limited to ribosomes on rough endoplasmic reticulum and vesicles Describe and compare the structure of a plant cell with an animal cell, as seen under a light	Teacher will show the images to make students understand why classification is important How species diversity is there Binomial nomenclature of naming. Bird images: www.allaboutbirds.org/Page.aspx?pid=1189 Teacher will also pass handout for studenst to recognise genus and species name . Images of the representative groups, preserved specimens will be shown to students To identify some of the main features and classify animals into their respective groups. Images of the representative groups, preserved specimens will be shown to students to observe some of the main features and classify plants into their respective groups. Specimens from each group of arthropod will be observed Observe and list out the characteristics of each one them in a tabular form. Video on difference between Dicot and monocot plants. Students will list down all the characteristics in a chart form

2.1 Cell structure and organisation 2.2 Levels of organisation	microscope, limited to cell wall, nucleus, cytoplasm, chloroplasts, vacuoles and location of the cell membrane State that almost all cells, except prokaryotes, have mitochondria and rough endoplasmic reticulum Identify mitochondria and rough endoplasmic reticulum in diagrams and images of cells State that aerobic respiration occurs in mitochondria State that cells with high rates of metabolism require large numbers of mitochondria to provide sufficient energy. Define all level of orginisation	Group activity: learners will make models of a plant cell and/or an animal cell to gain an idea of the orientation of the main structures of each type of cell. Lab Activity: Students will be taken to lab to make and observe their own onion cell and animal cell slides and observe the main parts of the cells under the microscope Students will learn to observe and draw diagram by observing through the microscope Presentation will be shown to students with structure and function of each specialized cell. Students will make a table with all the specialized function of the cells.

Size of specimens 3 Movement in and out of cells 3.1 Diffusion 3.2 Osmosis	Calculate magnification and size of biological specimens using millimetres and micrometres as units. Define diffusion as the net movement of particles from a region of their higher concentration to a region of their lower concentration down a concentration gradient, as a result of their random movement Describe the importance of diffusion of gases and solutes. Define osmosis as the net movement of water molecules from a region of higher water potential (dilute solution) to a region of lower water potential (concentrated solution), through a partially permeable membrane Explain the effects on plant tissues of immersing them in solutions of different concentrations by using the terms turgid, turgor pressure, plasmolysis and flaccid	Practice sheet on calculating magnification and the actual size. Teacher Will show demonstration in the lab using a simple demonstration of diffusion, for example a potassium manganate(VII) crystal in a gas jar of water or a drop of methylene dye on gelatine solidified in a test-tube (diffusion of a solute) Bromine in a gas jar (carried out in a fume cupboard) can quickly show diffusion (gaseous diffusion). Emphasise the random motion of particles. Lab activity : Investigation of changes in mass or length of potato chips and dried raisins placed in a range of different concentrations of sugar solution provides a good opportunity for quantitative treatment of results, as well as enhancing understanding of osmosis. Discuss differences in the effects of water uptake and loss on animal cells that lack a cellulose cell wall and plant cells that have a cellulose cell wall. Turgor as an important mechanism of support in plants could be discussed.

	Explain the importance of water potential and osmosis in the uptake of water by plants and animal cells. Explain how plants are supported by the turgor pressure within cells, in terms of water pressure acting against an inelastic cell wall. Discuss the importance of active transport as a process for movement across membranes: – e.g. ion uptake by root hairs and uptake of glucose by epithelial cells of villi and kidney tubules Explain how protein molecules move particles across a membrane during active transport. List the chemical elements that make up: – carbohydrates – fats – proteins State that large molecules are made from smaller molecule Describe the use of: – iodine solution to test for starch – Benedict's solution to test for reducing sugars – biuret test for proteins – ethanol emulsion test for fats and oils – DCPIP test for vitamin C. Describe the structure of DNA.	Relate water uptake by osmosis to the structure of root hair cells covered earlier in this unit. Lab activity: Observation of Plasmolysed onion cell under the microscope Presentation for theory A simple explanation is climbing uphill. Presentation to make students understand better about the working of transport channel proteins. Using a powerpoint presentation A simple definition of an organic substance is one whose molecules contain carbon and hydrogen. Beads that string together will be used to illustrate the idea of small molecules joining together to make larger ones.

3.3 Active transport 4 Biological molecules	Define the term catalyst as a substance that increases the rate of a chemical reaction and is not changed by the reaction Define enzymes as proteins that function as biological catalysts Explain enzyme action with reference to the active site, enzyme-substrate complex, substrate and product Explain the specificity of enzymes in terms of the complementary shape and fit of the active site with the substrate Explain the effect of changes in temperature on enzyme activity in terms of kinetic energy, shape and fit, frequency of effective collisions and denaturation. Explain the effect of changes in pH on enzyme activity in terms of shape and fit and denaturation	Structure of DNA will be explained using presentation and animated video for complementary base pairing Lab tetst : Benedicts, biurrette, Emulsification test, Vit, c test Students will make a structure of DNA using various things available. Teacher will explain enzyme and substrate reaction using lock and key model

4.1 Biological molecules		Learners will draw conclusion on optimum temperature and pH after watching a presentation. Leaners will interpret the data given in the form of graph and analyse the optimum temperature and pH range.
Plant Nutrition 6.2 Leaf structure 6.3 Mineral requirements 6.1 Photosynthesis	Explain how the internal structure of a leaf is adapted for photosynthesis Explain the effects of nitrate ion and magnesium ion deficiency on plant growth. State the balanced chemical equation for photosynthesis 6CO2 + 6H2O light chlorophyll C6H12O6 + 6O2 Explain that chlorophyll transfers light energy into chemical energy in molecules, for the synthesis of carbohydrates	Images of the representative groups, preserved specimens will be shown to students to identify some of the main features and classify animals into their respective groups. Images of the representative groups, preserved specimens will be shown to students to observe some of the main features and classify plants into their respective groups. Specimens from each group of arthropod will be observed

	Outline the subsequent use and storage of the carbohydrates made in photosynthesis Define the term limiting factor as something present in the environment in such short supply that it restricts life processes Identify and explain the limiting factors of photosynthesis in different environmental conditions Describe the use of carbon dioxide enrichment, optimum light and optimum temperatures in glasshouses in temperate and tropical countries Use hydrogencarbonate indicator solution to investigate the effect of gas exchange of an aquatic plant kept in the light and in the dark. State the functions of xylem and phloem Identify the position of xylem and phloem as seen in sections of roots, stems and leaves, limited to non-woody dicotyledonous plants Identify root hair cells, as seen under the light microscope, and state their functions • State the pathway taken by water through root, stem and leaf as root hair cell, root cortex cells, xylem and mesophyll cells	Observe and list out the characteristics of each one them in a tabular form. Video on difference between Dicot and monocot plants. Students will list down all the characteristics in a chart form Powerpoint presentation will be used to explain structure and function of root , xylem and phloem. Adaptation of xylem for transport of water will also be explained in detail Learners will find the path taken by the

8 Transport in plants 8.1 Transport in plants 8.2 Water uptake 8.3 Transpiration	Investigate, using a suitable stain, the pathway of water through the above-ground parts of a plant. State that water is transported from the roots to leaves through the xylem vessels Define transpiration as loss of water vapour from plant leaves by evaporation of water at the surfaces of the mesophyll cells followed by diffusion of water vapour through the stomata.	Simple diagrams can be made of the transport system of a root and of a stem, showing the position of the xylem and phloem Lab activity: Large and semi-transparent stems, such as the leaf petioles of celery, can be placed with their bases in a solution of a water-soluble dye (ink or food colouring). After a few days, the dye can be seen in. Slide observation of Xylem and phloem through the permanent slides. Powerpoint presentation to explain transpiration and transpiration pull. Students will draw pathway of water from the absorption to water through roots to the leaves including the vascular bundle.

		Group activity: Students will be listing down the factors affecting the rate of transpiration. ATP paper solving for investigation
8.4 Translocation Animal Nutrition 7.1 Diet	Investigate and describe the effects of variation of temperature and humidity on transpiration rate Define translocation in terms of the movement of sucrose and amino acids in phloem: – from regions of production (source) – to regions of storage OR to regions where they are used in respiration or growth (sink) Explain that some parts of a plant may act as a source and a sink at different times during the life of a plant. State what is meant by the term balanced diet for humans Explain how age, gender and activity affect the dietary needs of humans including during pregnancy and whilst breast-feeding Describe the effects of malnutrition in relation to starvation, constipation, coronary heart disease, obesity and scurvy List the principal sources of, and describe the dietary importance.	PowerPoint presentation and video to explain the concept of source and sink. Students will understand detail about the requirement of the principle sources using a presentation. Activity Students will note down a diet plan of their own for a week.

	Explain the causes and effects of vitamin D and iron deficiencies Explain the causes and effects of protein-energy malnutrition, e.g. kwashiorkor and marasmus. Define ingestion, digestion,absorption, assimilation,egestion, Identify and state the functions of main regions of the alimentary canal and associated organs, limited to mouth, salivary glands, oesophagus, stomach, small intestine (duodenum and ileum), pancreas, liver, gall bladder and large intestine (colon, rectum, anus) Identify the types of human teeth (incisors, canines, premolars and molars) Describe the structure of human teeth, limited to enamel, dentine, pulp, nerves and cement, as well as the gums Describe the functions of the types of human teeth in mechanical digestion of food State the causes of dental decay in terms of a coating of bacteria and food on teeth, the bacteria respiring sugars in the food, producing acid which dissolves the enamel and dentine Describe the proper care of teeth in terms of diet and regular brushing State the significance of	And discuss the nutrients they are taking and ones which are missing Students will come a conclusion about the balanced diet Malnutrition and deficiency disorder's through a video and presentation Students will note down the summary of all the nutrients with their function and deficiency disorder in a table. Teacher will show a picture of alimentary canal to make students understand the position of organs in the body. Teacher will also discuss the 5 stages of nutrition and define each one of them with help of the diagram.

7.2 Structure of teeth 7.3 Mechanical diges	chemical digestion in the alimentary canal in producing small, soluble molecules that can be absorbed. Describe the digestion of starch, pepsin, lipase in the alimentary canal. Explain the functions of the hydrochloric acid in gastric juice, limited to the low pH. Outline the role of bile in neutralising the acidic mixture of food and gastric juices entering the duodenum from the stomach, to provide a suitable pH for enzyme action Outline the role of bile in emulsifying fats to increase the surface area for the chemical digestion of fat to fatty acids and glycerol by lipase. Identify the small intestine as the region for the absorption of digested food. Explain the significance of villi and microvilli in increasing the internal surface area of the small intestine Describe the structure of a villus	Teacher will show the image of different types of teeth along with their function Students will also be shown the model of structure of teeth to make them understand different areas of teeth. Teacher will discuss how teeth and buccal cavity helps in mechanical digestion. Student will also be shown the model of structure of teeth to make them understand different areas of teeth. Teacher will discuss about the reason and occurrence of tooth decay. Learners will draw a spider diagram of the alimentary canal which will include where the enzymes are secreted and where they act on specific substrates.

7.4 Chemical digestion 7.5 Absorption		Teacher will discuss the importance of optimum pH and temperature should be emphasised, as well as the importance of enzymes in the whole process of digestion using presentation. Students will also list down in a table all the enzymes along with their products. Students will also discuss the working of enzyme at various pH. Teacher will display a picture of structure of villi and discuss the function of the same in process of absorption. Teacher will also discuss the detail structure of ciliated epithelial cells and mucus secreting cells. Students will list down the adaptation of villi for the process of absorption.
	Exams	**Exams**
EXCRETION 13.1 Excretion in humans	Explain how the structures of arteries, veins and capillaries are adapted for their functions State the function of arterioles, venules and shunt vessels	Students will discuss and note down the definition of excretion. Teacher will display the excretory system and will ask students to identify the parts of the same. Teacher will also discuss the function of all organs with the students.

	Explain the need for excretion, limited to toxicity of urea and carbon dioxide Outline the structure of the kidney, limited to the cortex, medulla and ureter Outline the structure and functioning of a kidney tubule. Explain dialysis in terms of salt balance, the maintenance of glucose concentration and the removal of urea Describe the use of dialysis in kidney machines Discuss the advantages and disadvantages of kidney transplants, compared with dialysis List the components of blood as red blood cells, white blood cells, platelets and plasma Identify red and white blood cells, as seen under the light microscope, on prepared slides and in diagrams and photomicrographs Describe the circulatory system as a system of blood vessels with a pump and valves to ensure one-way flow of blood. Describe the double circulation of a mammal	Teacher will explain the structure of kidney , nephron in detail along with the major steps of excretion in detail using a PowerPoint presentation and a video, Using a video teacher will discuss the process of dialysis. Class activity: Students will discuss and note down advantages and dis advantages of dialysis and organ transplant. Lab activity: Dissection of sheep kidney to observe parts of kidney.

9 Transport in animals 9.4 Blood 9.1 Transport in animals 9.2 Heart	Explain the advantages of a double circulation. Name and identify the structures of the mammalian heart, limited to the muscular wall, the septum, the left and right ventricles and atria, one-way valves and coronary arteries State that blood is pumped away from the heart into arteries and returns to the heart in veins State that the activity of the heart may be monitored by ECG, pulse rate and listening to sounds of valves closing Investigate and state the effect of physical activity on the pulse rate Describe coronary heart disease in terms of the blockage of coronary arteries and state the possible risk factors as diet, stress, smoking, genetic predisposition, age and gender Explain how the structures of arteries, veins and capillaries are adapted for their functions State the function of arterioles, venules and shunt vessels Outline the lymphatic system in terms of lymphatic vessels and lymph nodes	Structure of heart will explained to students using a diagram where the heart will be divided into four parts . Teacher will explain the structure of heart and along with the circulation of blood to the student using a video Lab activity: Dissection of a lamb heart .

9.3 Blood and lymphatic vessels	Describe the function of the lymphatic system in the circulation of body fluids and the protection of the body from infection.	Teacher will discuss the reasons of coronary heart diseases. Students will be asked to do mini research on the various reasons of heart failure and the causing them. Students will observe from the image and note down the difference between arteries, veins and capillaries. Teacher will display the image of the circulatory system and lymphatic system to make students understand the flow of lymph. students will also understand formation of blood clots with the help of a video.
11 Gas exchange in humans	List the features of gas exchange surfaces in humans, limited to large surface area, thin surface, good blood supply and good ventilation with air	Teacher will display the image of respiratory system and ask students to label parts of the same.

11.1 Gas exchange in humans	Name and identify the lungs, diaphragm, ribs, intercostal muscles, larynx, trachea, bronchi, bronchioles, alveoli and associated capillaries State the differences in composition between inspired and expired air, limited to oxygen, carbon dioxide and water vapour Use limewater as a test for carbon dioxide to investigate the differences in composition between inspired and expired air Investigate and describe the effects of physical activity on rate and depth of breathing. Explain the differences in composition between inspired and expired air Explain the link between physical activity and rate and depth of breathing in terms of the increased carbon dioxide concentration in the blood, detected by the brain, causing an increased rate of breathing Explain the role of goblet cells, mucus and ciliated cells in protecting the gas exchange system from pathogens and particles State the uses of energy in the body of humans: muscle contraction, protein synthesis, cell division, active transport, growth, the passage of	Students will be shown a video on inspiration and expiration and will be asked to list down movement of parts of the system during inspiration and expiration. Teacher will discuss in detail about the structure, function and adaptation of alveoli for exchange of gases. Giving reference of circulatory system. Lab activity: Exhaled air contained CO_2 turns lime water milky. With the help of a video learners will understand and discuss the movement of change in all the parts during inspiration and expiration.

12 Respiration 12.1 Respiration	nerve impulses and the maintenance of a constant body temperature State that respiration involves the action of enzymes in cells. nutrient molecules to release energy State the word and chemical equation for aerobic respiration as glucose + oxygen → carbon dioxide + water Investigate the uptake of oxygen by respiring organisms, such as arthropods and germinating seeds Investigate the effect of temperature on the rate of respiration of germinating seeds. Define anaerobic respiration as the chemical reactions in cells that break down nutrient molecules to release energy without using oxygen State the word equations for anaerobic respiration in muscles during vigorous exercise (glucose → lactic acid) and the microorganism yeast (glucose → alcohol + carbon dioxide) State that lactic acid builds up in muscles and blood during vigorous exercise causing an oxygen debt	Teacher will also discuss the role of goblet cells in producing mucus and how is it important. With the help of presentation teacher will discuss and derive equation for aerobic respiration.

12.2 Aerobic respiration 12.3 Anaerobic respiration 10 Diseases and immunity 10.1 Diseases and immunity	Outline how the oxygen debt is removed during recovery, Define pathogen as a disease-causing organism Define transmissible disease as a disease in which the pathogen can be passed from one host to another State that the pathogen for a transmissible disease may be transmitted either through direct contact, e.g. through blood or other body fluids, or indirectly, e.g. from contaminated surfaces or food, from animals, or from the air State that the body has defences: – mechanical barriers, limited to skin and hairs in the nose – chemical barriers, limited to mucus and stomach acid – cells, limited to phagocytosis and antibody production by white blood cells – which can be enhanced by vaccination Supplement State that antibodies lock on to antigens leading to direct destruction of pathogens, or marking of pathogens for destruction by phagocytes Explain how each pathogen has its own antigens, which have specific shapes, so specific antibodies which fit the specific shapes of the antigens are needed • Define active immunity as defence against a pathogen by antibody production in the body	Group activity: Students will observe and investigate the rate of change in breathing patterns Depending on the physical activit Teacher will discuss the process of respiration: anaerobic respiration. Students will understand the production of lactic acid in muscles and the reason for cramps. As a continuation to investigation breathing rate students will also observe the rate of formation of lactic acid while physical activity. Students will plot a graph and not down the observation Teacher will discuss with students in group about transmissible diseases and non-transmissible diseases. Students will also discuss the types of vectors and how do they spread disease.

	Explain that active immunity is gained after an infection by a pathogen, or by vaccination Explain the process of vaccination: Explain the role of vaccination in controlling the spread of diseases Explain that passive immunity is short-term defence against a pathogen by antibodies acquired from another individual, e.g. mother to infant State that memory cells are not produced in passive immunity Explain the importance of passive immunity for breast-fed infants State that some diseases are caused by the immune system targeting and destroying body cells, limited to Type 1 diabetes	Teacher will discuss with students in group about transmissible diseases and non-transmissible diseases. Students will also discuss the types of vectors and how do they spread disease. Teacher with the help of video will make students understand the antigen antibody interaction and how antibodies destroys an antigen.

		Teacher will also explain the different types of lymphocytes along with their function. Students will list down the difference between active and passive immunity with their examples after watching a video Teacher will explain the concept of vaccination with the help of the presentation. Teacher also discussed the concept of autoimmunity by explain example of diabetes
14 Coordination and response 14.1 Nervous control in humans	Describe a nerve impulse as an electrical signal that passes along nerve cells called neurones Describe the human nervous system in terms of: – the central nervous system consisting of brain and spinal cord – the peripheral nervous system – coordination and regulation of body functions Identify motor (effector), relay (connector) and sensory neurones from diagrams Describe a simple reflex arc in terms of receptor, sensory neurone, relay neurone, motor neurones and effector Describe a reflex action as a means of automatically and rapidly integrating and coordinating stimuli with the responses of effectors (muscles and glands)	Students will differentiate between voluntary and involuntary action based on their prior knowledge. Teacher will explain the structure of a neurone along with its function with the help of an image displayed. Teacher will Demonstrate reflex actions – pupil/iris reflex, blinking, etc. and explain how reflex arc is formed. Students will make diagram of the reflex arc including sensory and motor neurone.

	Define a synapse as a junction between two neurones Distinguish between voluntary and involuntary actions Describe the structure of a synapse, including the presence of neurotransmitter containing vesicles, the synaptic cleft and neurotransmitter receptor molecules • Describe how an impulse triggers the release of a neurotransmitter from vesicles into the synaptic gap and how the neurotransmitter diffuses across to bind with receptor molecules, in the membrane of the neurone after the synaptic gap, causing the impulse to continue • State that in a reflex arc the synapses ensure that impulses travel in one direction only State that many drugs, e.g. heroin, act upon synapses • Define sense organs as groups of receptor cells responding to specific stimuli: light, sound, touch, temperature and chemicals Identify the structures of the eye, limited to cornea, iris, pupil, lens, retina, optic nerve and blind spot • Describe the function of each part of the eye, limited to: – cornea – refracts light – iris – controls how much light enters pupil – lens – focuses light onto retina – retina – contains light receptors,	Teacher will explain with the help of video the working of synapse, conduction of a nerve impulse , role of neurotransmitter. With the help of a presentation and the model, teacher will explain different parts and function of an eye.

14.2 Sense organs	some sensitive to light of different colours – optic nerve – carries impulses to the brain • Explain the pupil reflex in terms of light intensity and pupil diameter only Supplement Explain the pupil reflex in terms of light intensity and antagonistic action of circular and radial muscles in the iris Explain accommodation to view near and distant objects in terms of the contraction and relaxation of the ciliary muscles, tension in the suspensory ligaments, shape of the lens and refraction of light State the distribution of rods and cones in the retina of a human Outline the function of rods and cones, limited to greater sensitivity of rods for night vision and three different kinds of cones absorbing light of different colours for colour vision •Identify the position of the fovea Cambridge • Define a hormone as a chemical substance, produced by a gland and carried by the blood, which alters the activity of one or more specific target organs Identify specific endocrine glands and their secretions, limited to adrenal glands and adrenaline, pancreas and insulin, testes and testosterone and ovaries and oestrogen •Describe	Teacher with the help of video and presentation will explain how the image is formed. Teacher will explain the reflex in pupil and accommodation of lens in detail.

14.3 Hormones in human	adrenaline as the hormone secreted in 'fight or flight' situations and its effects, limited to increased breathing and pulse rate and widened pupils •Give examples of situations in which adrenaline secretion increases • State the functions of insulin, oestrogen and testosterone Supplement • Discuss the role of the hormone adrenaline in the chemical control of metabolic activity, including increasing the blood glucose concentration and pulse rate • Compare nervous and hormonal control systems in terms of speed and • Define homeostasis as the maintenance of a constant internal environment Name and identify on a diagram of the skin: hairs, hair erector muscles, sweat glands, receptors, sensory neurones, blood vessels and fatty tissue Describe the maintenance of a constant internal body temperature in humans in terms of insulation, sweating, shivering and the role of the brain (limited to blood temperature receptors and coordination) Explain that homeostasis is the control of internal conditions within set limits Explain the concept of control by negative feedback Describe the control of the glucose concentration of the blood by the liver and the roles of insulin and glucagon from the pancreas	Teacher will discuss the secretion and role of hormones with the help of a body model. Students will make a differentiating table between hormonal and nervous system.

14.4 Homeostasis	Outline the symptoms and treatment of Type 1 diabetes (detail of β cells is not required) Describe the maintenance of a constant internal body temperature in humans in terms of vasodilation and vasoconstriction of arterioles supplying skin surface capillaries • Define gravitropism as a response in which parts of a plant grow towards or away from gravity • Define phototropism as a response in which parts of a plant grow towards or away from the direction from which light is coming • Investigate gravitropism and phototropism in shoots and roots Supplement • Explain phototropism and gravitropism of a shoot as examples of the chemical control of plant growth • Explain the role of auxin in controlling shoot growth, limited to: – auxin made in shoot tip (only) – auxin spreads through the plant from the shoot tip – auxin is unequally distributed in response to light and gravity – auxin stimulates cell elongation • Describe the use in weedkillers of the synthetic plant hormone 2,4-D 15	Teacher will discuss the tropism shown by plants. And behaviour on growth of plant in presence of auxin. Teacher will display and discuss the various parts of the skin along with its function.

14.5 Tropic responses		Students will understand and not down various impacts and changes in our body to maintain the internal temperature under different external temperatures Negative feedback mechanism will be explained to students using a flow chart of pancreas and insulin **Videos, presentation, Demonstration** **Flow chart** Teacher will discuss how plants responds to tropism with example. Learners will also understand growth of plant with respect to auxin**.**
15.1 Drugs	Define a drug as any substance taken into the body that modifies or affects chemical reactions in the body 15.2 Medicinal drugs Core Describe the use of antibiotics for the treatment of bacterial infection	Teacher will discuss uses of medicinal drugs

15.3 Misused drugs	State that some bacteria are resistant to antibiotics which reduces the effectiveness of antibiotics State that antibiotics kill bacteria but do not affect viruses Supplement Explain how development of resistant bacteria such as MRSA can be minimised, limited to using antibiotics only when essential and ensuring treatment is completed Explain why antibiotics kill bacteria, but do not affect viruses • Describe the effects of excessive alcohol consumption and abuse of heroin, limited to: – powerful depressant drugs – effect on reaction times and self-control – addiction and withdrawal symptoms – negative social implications, e.g. crime State that injecting heroin can cause infections such as HIV State that excessive alcohol consumption can cause liver damage State that tobacco smoking can cause chronic obstructive pulmonary disease (COPD), lung cancer and coronary heart disease Describe the effects on the gas exchange system of tobacco smoke and its major toxic components, limited to carbon monoxide, nicotine and tar	Teacher will also discuss the use of antibiotic for treatment and how resistance is observed by demonstration of antibiotic resistant practical. Teacher with the help of presentation will discuss effect of depressant on the nervous system and synapse.

20 Biotechnology	•State that the liver is the site of break down of alcohol and other toxins Explain how heroin affects the nervous system, limited to its effect on the function of synapses Discuss the evidence for the link between smoking and lung cancer Discuss the use of hormones to improve sporting performance, limited to testosterone and anabolic steroids. State that bacteria are useful in biotechnology and genetic engineering due to their rapid reproduction rate and their ability to make complex molecules Supplement Discuss why bacteria are useful in biotechnology and genetic engineering, limited to: – lack of ethical concerns over their manipulation and growth – genetic code shared with all other organisms – presence of plasmids Describe the role of anaerobic respiration in yeast during production of ethanol for biofuels Describe the role of anaerobic respiration in yeast during bread-making Investigate and describe the use of pectinase in fruit juice production	Teacher with the help of the video discuss various types of drug abuse and its withdrawal symptoms. With the help of the presentation teacher will discuss the complication and various lung diseases due to smoking. Teacher discuss the effect of alcoholism with the learners. Learners will list down the effect of alcohol on liver, kidney and other body parts.

and genetic engineering 20.1 Biotechnology and genetic engineering	Investigate and describe the use of biological washing powders that contain enzymes Investigate and explain the use of lactase to produce lactose-free milk • Describe the role of the fungus Penicillium in the production of the antibiotic penicillin • Explain how fermenters are used in the production of penicillin Define genetic engineering as changing the genetic material of an organism by removing, changing or inserting individual genes • State examples of genetic engineering: – the insertion of human genes into bacteria to produce human insulin – the insertion of genes into crop plants to confer resistance to herbicides – the insertion of genes into crop plants to confer resistance to insect pests – the insertion of genes into crop plants to provide additional vitamins Supplement • Outline genetic engineering using bacterial production of a human protein as an example, limited to: – isolation of the DNA making up a human gene using restriction enzymes, forming sticky ends – cutting of bacterial plasmid DNA with the same restriction enzymes, forming complementary sticky ends – insertion of human DNA into bacterial plasmid DNA using DNA ligase to form a recombinant plasmid – insertion of plasmid into bacteria (specific detail is not required) – replication of bacteria containing	Learners will also discuss the effect of anabolic steroids increases the efficiency of athletes by researching on case studies. Teacher will discuss and explain the students various uses of enzymes and bacteria in biotechnology. Students will discuss how bacteria and yeast helps in production of various products using a presentation.

	recombinant plasmids which make human protein as they express the gene • Discuss the advantages and disadvantages of genetically modifying crops.	With the help of image of fermenter learners will understand the production of enzyme or penicillin using fungus. Learners will also understand about the working of a fermenter and how various factors might alter the rate of production. Teacher will explain the genetic modification involves numerous stages, using animation.

		Teacher will explain that DNA can be cut in certain places using different restriction enzymes to select the correct gene. If the same restriction enzyme is used to cut the bacterial DNA then the ends of the human and bacterial DNA will stick together Using a clay model.
	Revision	
	EXAMS	
19 Organisms and their environment	Define a food chain as showing the transfer of energy from one organism to the next, beginning with a producer State that energy is transferred between organisms in a food chain by ingestion Construct simple food chains. Describe how energy is transferred between trophic levels	Students will explore a natural area locally and identify the feeding relationships of the organisms which can be seen and construct food chains depending on it.

	Define trophic level as the position of an organism in a food chain, food web, pyramid of numbers or pyramid of biomass Explain why the transfer of energy from one trophic level to another is inefficient Explain why food chains usually have fewer than five trophic levels Define a food web as a network of interconnected food chains Define producer as an organism that makes its own organic nutrients, usually using energy from sunlight, through photosynthesis Define consumer as an organism that gets its energy by feeding on other organisms State that consumers may be classed as primary, secondary and tertiary according to their position in a food chain Define herbivore as an animal that gets its energy by eating plants Define carnivore as an animal that gets its energy by eating other animals Define decomposer as an organism that gets its energy from dead or waste organic material	With help of various ecosystem examples students will make foodchains and foodwebs. Teacher will explain using the food chain examples pyramids of number and biomass to the students.

19.3 Food chains and food webs	Interpret food chains and food webs in terms of identifying producers and consumers Use food chains and food webs to describe the impacts humans have through over-harvesting of food species and through introducing foreign species to a habitat Draw, describe and interpret pyramids of numbers Supplement Explain why there is a greater efficiency in supplying plants as human food, and that there is a relative inefficiency in feeding crop plants to livestock that will be used as food Identify producers, primary consumers, secondary consumers, tertiary consumers and quaternary consumers as the trophic levels in food webs, food chains, pyramids of numbers and pyramids of biomass Draw, describe and interpret pyramids of biomass Discuss the advantages of using a pyramid of biomass rather than a pyramid of numbers to represent a food Describe the carbon cycle, limited to photosynthesis, respiration, feeding, decomposition, fossilisation and combustion	Teacher will also discuss the reason for the shape of the pyramid and how energy is being transferred from on trophic level to the other. Teacher will also discuss how and where energy is wasted in the environment. Teacher will also discuss how and where energy is wasted in the environment .

19.3 Nutrient cycle	Discuss the effects of the combustion of fossil fuels and the cutting down of forests on the carbon dioxide concentrations in the atmosphere • Describe the water cycle, limited to evaporation, transpiration, condensation and precipitation Describe the nitrogen cycle in terms of: – decomposition of plant and animal protein to ammonium ions – nitrification – nitrogen fixation by lightning and bacteria – absorption of nitrate ions by plants – production of amino acids and proteins – feeding and digestion of proteins – deamination – denitrification State the roles of microorganisms in the nitrogen cycle, limited to decomposition, nitrification, nitrogen fixation and denitrification (generic names of individual bacteria, e.g. Rhizobium, are not required) Core • Define population as a group of organisms of one species, living in the same area, at the same time • Identify and state the factors affecting the rate of population growth for a population of an organism, limited to food supply, predation and disease • Discuss the increase in human population size over the past 250 years and its social and environmental implications • Interpret graphs and diagrams of human population growth	Students will draw a carbon cycle using flash cards . Students will also discuss various impact on carbon cycle in context to pollution. Students will draw a water cycle using flash cards.

19.4 Population size	Define community as all of the populations of different species in an ecosystem Define ecosystem as a unit containing the community of organisms and their environment, interacting together, e.g. a decomposing log, or a lake Identify the lag, exponential (log), stationary and death phases in the sigmoid population growth curve for a population growing in an environment with limited resources • Explain the factors that lead to each phase in the sigmoid curve of population growth, making reference, where appropriate, to the role of limiting factors.	Learners will be given cards or statements describing stages of the nitrogen cycle and will be asked to arrange them into a complete cycle. Students will define population, species based on their previous knowledge. The class will discuss how populations grow. Simple sketch graphs should be drawn to illustrate population growth, and discuss the possible factors that might cause a levelling off in population growth should be considered.

		Students will make and understand the growth curve and various factors affecting the rate of population Students also understand sigmoid curve in terms of fungi growth in fermenter and factors affecting them. Learners will understand the sigmoid curve.
16 Reproduction 16.1 Asexual reproduction	Difference between sexual and asexual reproduction. Conditions that affect germination of seeds	Teacher will explain students using presentation asexual reproduction in bacteria, yeast and in plants Based on the knowledge of the methods learners can make a table to list the main points to compare asexual and sexual reproduction. Teacher will define and explain the process of sexual reproduction and fusion of gametes. A table can be drawn up to compare asexual with sexual reproduction. Learners will look closely at the structure of a simple, radially symmetrical, insect-pollinated flower by dissecting a shoe flower

16.2 Sexual reproduction 16.3 Sexual reproduction in plants 16.4 Sexual reproduction in humans	The structure and function of the parts of a flower. Pollination and fertilisation in flowers Process of fertilization Self-pollination and cross pollination. Adaptation of plants for insect and winf pollinated flowers. The structure and function of the male and female reproductive system. Fertilization and development of the Embryo. The roles of the placenta Ante natal care	to identify the different parts, using a light microscope or a hand lens. Annotate the diagrams to understand how the structure is adapted to its function. Learners will discuss the function of each part in the class and list them down. With the help of a video learners will able to differentiate between the insect and wind pollinated flowers Learners will observe and note down the difference in flowers in a tabular form. formation of pollen tube and fertilization process. Teacher will also discuss the structure of seed and requirements of germination of seeds. With the help of a presentation and a video teacher will explain the process of pollination. Diagrams and models to illustrate the structure of the male and female reproductive systems. Learners should be able to interpret either front or side views. With the help of the presentation and video teacher will explain the process of fertilization, implantation, foetal development,

16.5 Sex hormones in humans 16.6 Methods of birth control in humans	The menstrual cycle Oestrogen, progesterone, and testosterone functions Changes at puberty Methods of Birth control Outline the use of hormones in contraception and fertility treatments • Outline artificial insemination (AI) Outline in vitro fertilisation (IVF) Discuss the social implications of contraception and fertility treatments. Define sexually transmitted infection as an infection that is transmitted via body fluids through sexual contact State that human immunodeficiency virus (HIV) is an example of an STI	Amniotic sac development With the help of presentation and image teacher will discuss in detail about the formation of placenta and exchange through placenta and umbilical cord. Learners will be able to explain Puberty is when the sex organs become mature and start to produce hormones as well as gametes. Based on their previous knowledge Learners will make a table to compare the secondary sexual characteristics as shown by males and females Teacher will explain the role of various hormones during menstrual cycle with the help of a graph. With the help of a video and presentation teacher will explain various staged of the menstrual cycle and feedback mechanism of the hormones. Teacher will discuss various types of birth control measures with the help of the images and presentation Teacher will discuss the use of contraceptive pills and hormonal changes in the body. Teacher will explain Artificial insemination and IVF with the help of the presentation and video.

16.7 Sexually transmitted infections (STIs)	Explain how the spread of STIs is controlled Describe the methods of transmission of HIV State that HIV infection may lead to AIDS	With the help of presentation teacher will discuss various STI, how one can prevent ad control it. Detail about HIV, its spread will also be discussed.
17 Inheritance 17.1 Inheritance 17.2 Chromosomes, genes and proteins	Define inheritance as the transmission of genetic information from generation to generation The structure of DNA Definition of gene. Chromosome, proteins. the same genes, but many genes in a particular cell are not expressed because the cell only makes the specific proteins it needs Define a haploid nucleus as a nucleus containing a single set of unpaired chromosomes, e.g. in gametes Define a diploid nucleus as a nucleus containing two sets of chromosomes, e.g. in body cells	Learners will come upto the definition of inheritance by discussion. Teacher will explain with the help of a chart the formation of chromosome from DNA,DNA packaging, Define gene. With the help of a video teacher will explain the process of meiosis and how chromosomes split to form a haploid nucleus. Teacher with the help of cross will explain sex by showing the possibilities.

17.3 Mitosis 17.4 Meiosis 17.5 Monohybrid inheritance	State that in a diploid cell, there is a pair of each type of chromosome and in a human diploid cell there are 23 pairs Define mitosis as nuclear division giving rise to genetically identical cells (details of stages are not required) • State the role of mitosis in growth, repair of damaged tissues, replacement of cells and asexual reproduction Define meiosis as nuclear division giving rise to cells that are genetically different (details of stages are not required) State that meiosis is involved in the production of gametes Explain co-dominance by reference to the inheritance of ABO blood groups – phenotypes being A, B, AB and O blood groups and alleles being IA , IB and IO Define a sex-linked characteristic as a characteristic in which the gene responsible is located on a sex chromosome and that this makes it more common in one sex than in the other Describe colour blindness as an example of sex linkage	Using video and presentation mitosis will be explained to the students. Using video and presentation meiosis will be explained to the students.

	Use genetic diagrams to predict the results of monohybrid crosses involving co-dominance or sex linkage and calculate phenotypic ratios Continuous and discontinuous variation Mutation and what causes it. Describe the symptoms of sickle-cell anaemia Explain how a change in the base sequence of the gene for haemoglobin results in abnormal haemoglobin and sickle-shaped red blood cells Use genetic diagrams to show how sickle-cell anaemia is inherited State that people who are heterozygous (HbS HbA) for the sickle-cell allele have a resistance to malaria Explain the distribution of the sickle-cell allele in human populations with reference to the distribution of malaria Define adaptive feature as the inherited functional features of an organism that increase its fitness	Teacher will explain the important term using a monohybrid cross of a pea. Learners will make their own monohybrid crosses taking up the traits. Using the genetic diagram Learners will predict the phenotype and genotype results of the crosses. Learners will understand the use of test cross by a making a genetic diagram. Learners will learn to use punnett square and criss cross method while making a genetic cross. Learners will construct various genetic crosses taking different example of sex linked disorders and understand the concept of carrier and diseased Learners will use genetic diagrams to predict the results of monohybrid crosses involving co-dominance or sex linkage and calculate phenotypic ratios Teacher with the help of various examples will differentiate between continuous and discontinues variation. With the help of video teacher will introduce the concept of mutations and how its alters the DNA

18 Variation and selection 18.1 Variation 18.2 Adaptive features	Define fitness as the probability of an organism surviving and reproducing in the environment in which it is found Explain the adaptive features of hydrophytes and xerophytes to their environments Natural selection Selective breeding	Teacher will discuss the genetic reason of sickle cell anaemia using string model and a video. Learners will study various data and understand the relationship between occurrence of sickle cell and malaria resistance. Teacher will also discuss the genetic defect leading to down syndrome.

18.3 Selection		Learners will be shown a video and based on it they will asked to list down the adaptive features of a range of animals and plants living in a variety of habitats In case of xerophytes and hydrophytes. Learners will play a game to understand the laws of natural selection. Learners will discuss and understand various concept of evolution. Teacher will explain with examples of adaptation plays a major role in the evolution and variation. Teacher will explain the process of selective breeding. Learners will discuss the reasons, advantages and disadvantages of selective breeding.
21 Human influences on ecosystems 21.1 Food supply	State how modern technology has resulted in increased food production. Describe the negative impacts to an ecosystem of large-scale monocultures of crop plants Describe the negative impacts to an ecosystem of intensive livestock production. Describe the reasons for habitat destruction, limited to: – increased area for food crop growth,	Learners will research and discuss about the various techniques used to increase the food production. Learners will also discuss and list down the negative impact on the ecosystem.

	livestock production and housing – extraction of natural resources – marine pollution State that through altering food webs and food chains, humans can have a negative impact on habitats	
21.2 Habitat destruction	List the undesirable effects of deforestation as an example of habitat destruction, to include extinction, loss of soil, flooding and increase of carbon dioxide in the atmosphere. land and water, e.g. rivers, lakes and the sea, by insecticides, herbicides and by nuclear fall-out State the sources and effects of pollution of water (rivers, lakes and the sea) by chemical waste, discarded rubbish, untreated sewage and fertilisers State the sources and effects of pollution of the air by methane and carbon dioxide, limited to the enhanced greenhouse effect and climate change.	Teacher will show videos and learners will be asked to list down various reasons of habitat destruction . Learners will also understand the adverse effect of deforestation on habitat destruction, catastrophic effect on foodchain and food web.
21.3 Pollution	Define a sustainable resource as one which is produced as rapidly as it is removed from the environment so that it does not run out Explain the need to conserve non-renewable resources, limited to fossil fuels	Learners will be shown videos on water pollution, air pollution of different types of pollution and their effects. L

21.4 Conservation	State that some resources can be maintained, limited to forests and fish stocks State that products can be reused or recycled, limited to paper, glass, plastic and metal Outline how sewage is treated to make the water that it contains safe to return to the environment or for human use Explain why organisms become endangered or extinct, limited to climate change, habitat destruction, hunting, pollution and introduced species Describe how endangered species can be conserved, limited to monitoring and protecting species and habitats, education, captive breeding programmes and seed banks.	Learners will be divided into groups to list down the effects of pollution in terms of eutrophication, destruction of habitat, coral ecosystem. Learners will make a presentation on how air pollution leads to global warming, acid rain and explain it in the class. Learners will form groups and make presentation on conservation techniques. They will discuss each of their techniques in the class. Learners will outline and understand the stages of sewage treatment with the help of an image. Learners will discuss various methods of conserving bio diversity by researching on the topic.
	Revison, past paper solving.	

SVKM J .V. Parekh International School

Long Term Plan

Academic Year 2019-2020

Subject: Accounting **GRADE- 9 A & B**

Name of the Teacher(s): Laveena Francis

Strand/Topics	Learning Objectives (CAIE expectations)	Learning Experiences/Engagements
The purpose of accounting The double entry system of book-keeping	State the purposes of learning accounts as a future career prospects. understand and explain the difference between book-keeping and accounting explain the meaning of assets, liabilities and owner's equity explain and apply the accounting equation	Use of PPT to explain the accounting terminologies. Asking students to inform what are the general requirement to start up a business. Interactive session(action song) to learn the accounting rules.

Double Entry Bookkeeping	outline the double entry system of book-keeping process accounting data using the double entry system prepare ledger accounts post transactions to the ledger accounts balance ledger accounts as required and make transfer to financial statements interpret ledger accounts and their balances	Outlining the format of ledger account for Sales Ledger ,Purchase Ledger and Nominal Ledger accounts. Solving & explaining how entries are posted in the ledger accounts. Analyse what each balance state of the respective ledger accounts. Solving textual and few past paper problems.
Trial Balance	A table format to learn the concept in detail. Types of errors to be introduced.	Helping learners engage by giving abbreviation to remember the accounting concepts applied. Types of Errors not affecting trial balance explaining and solving textual problems. Asking learners to give examples to verify their understanding of the concepts.

Petty Cash Book	Imprest system to be explained. Analysis column to be explained with reference to cash book. Learning the format of petty cash.	Visiting the accounts department of the school to help students understand and get analyse how are accounts maintained. And also gives them a brief understanding of petty expenses done in an education organisation.
Business Documents **Books of Prime Entry**	complete pro-forma business documents understand the use of business documents as sources of information: Explain the advantage of using various books of prime entry explain the use of and process accounting data in the books of prime entry	Teacher and learners brainstorm on the documents which may be issued during the purchase and sale of goods. Encourage learners to bring documents they or their family may have obtained during the course. Explain any business documents which are not familiar to learners

Financial Statements	explain the importance of preparing income statements and statements of financial position	Specially Statement of account and Credit note. Explain any business documents which are not familiar to learners. Explaining Income statement in form of a story of an visitor to your home and how does mom does arrangement for him to provide him with hospitality. Learn the format in short by writing it on the white board.
Financial Statements	explain the difference between a trading business and a service business prepare income statements for trading businesses businesses and for service	Solving problems from the text and past papers for clear understanding. Revising all the chapters. Assessing students knowledge by asking questions while doing revision.

Revision		Solving MCQ questions from worksheet. Clearing students doubts and solving past paper questions. .
Exams		**Exams**
Accounting Rules	Understand and explain Accounting rules& Accounting objectives to the learners. Business Entity, Historical Cost, prudence, Accruals ,Consistency etc. understand the basis of the valuation of inventory at the lower of cost and net realisable value Capital & Revenue Expenditure recognise the important of matching costs and revenues prepare ledger accounts and journal entries to record accrued and prepaid expenses	With reference to the text students will read each accounting rule during the class. Discuss and explain all the accounting rules and objectives with help of respective examples. check learners understanding by asking them to brainstorm on different examples of their own. Demonstrate the ledger entries to record a prepaid expense and an accrued expense. Repeat using a similar exercise but inviting individual learners to make entries on the board.

Other Payables & Receivables	prepare ledger accounts and journal entries to record accrued and prepaid incomes	Demonstrating short cuts for remembering the outline of accruals & prepayments. Following a similar pattern for a prepaid and an accrued item of income and ask learners to complete exercises to record accrued and prepaid income and expenses in the ledger.
Depreciation & Disposal of NCA.	define depreciation explain the reasons for accounting for depreciation name and describe the straight-line, reducing balance and revaluation methods of depreciation prepare ledger accounts and journal entries to record the sale of non-current assets, including the use of disposal accounts	Brainstorming with learners on why non-current assets lose value and compile a list on the board. Asking the learners which accounting rule will match the topic. Introduce the main methods of calculating depreciation and demonstrating it with all the three methods on the board. Demonstrating and explaining the journal entries and ledgers affecting depreciation and problem solving .

Depreciation & Disposal of NCA. **Bad Debts & Provision for Doubtful Debts**	prepare ledger accounts and journal entries to record the sale of non-current assets, including the use of disposal accounts understand the meaning of irrecoverable debts and recovery of debts written off prepare ledger accounts and journal entries to record irrecoverable debts prepare ledger accounts and journal entries to record recovery of debts written off explain the reasons for maintaining a provision for doubtful debts prepare ledger accounts and journal entries to record the creation or, and adjustments to, a provision for doubtful debts	Solving problems from text and past paper for all the methods explanation of the meaning of the term irrecoverable debts. Demonstrating and explaining the journal entries and ledgers affecting baddebts and provision for doubtful debts. Solving MCQ & Problems from the text.
Bank Reconciliation Statement.	understand the use and purpose of a bank statement update the cash book for bank charges, bank interest paid and received correction of errors, credit transfers, direct debits, dividends and standing orders understand the purpose or and prepare a bank reconciliation statement to include bank errors, uncredited deposits and unpresented cheques understand the purposes of purchases ledger and sales ledger control accounts identify the books of prime entry as sources of information for the control account entries	exercises involving updating the cash book and preparing a bank reconciliation statement. These can get progressively more difficult such as including overdrawn balance Complete a brainstorming session with learners about the purposes of control accounts. Build up a list on the board. Prepare cards containing items which may be found in a control account. In pairs or small groups learners name

Control Accounts	prepare purchases ledger and sales ledger control accounts to include credit purchases and sales, receipts and payments, cash discounts, returns	the control account in which the item would appear and whether it is a debit or a credit entry. The information on the cards and the learners' lists can then be used to demonstrate the preparation of a purchases ledger and a sales ledger control account. Individual learners can be invited to make entries on the board. Re-visit the preparation of books of prime entry. Discuss with the class the advantages of obtaining the information from these books rather than the ledger accounts
Revision		Revising all the chapters. Assessing students knowledge by asking questions while doing revision. Solving MCQ questions from worksheet. Clearing students doubts and solving past paper questions.
Exams		**Feedback of Term Paper**

Long term Plan – Accounting- (2020-2021)

Strand/Topics	Learning Objectives (CAIE expectations)	Learning Experiences/Engagements
Manufacturing Accounts	distinguish between direct and indirect costs understand direct material, direct labour, prime cost and factory overheads prepare manufacturing accounts, income statements and statement of financial position make adjustments to financial statements explain the advantages and disadvantages of forming a partnership outline the importance and contents of a partnership agreement prepare income statements, appropriation accounts and statements of financial positon explain the uses of and difference between capital and	Introduce the topic by asking learners to name any manufacturing businesses they have heard of Learners brainstorm in groups various expenses to be incurred by a manufacturing business. Explaining the format of manufacturing accounts and different types of Inventory a manufacturing business has. Solving the MCQ and problems from the textt Discussion & Solving problems of manufacturing from past papers.

Partnership Accounts	current accounts draw up partners' capital and current accounts in ledger account form and as part of a statement of financial positon	Learners are asked to list the advantages & Disadvantages of partnership on the board. Solving the MCQ and problems from the text. Discussion & Solving problems of Partnership based on Current Account from past papers.
Incomplete Records	explain the disadvantages of not maintaining a full set of accounting records prepare opening and closing statements of affairs calculate profit or loss for the year from changes in capital over time calculate sales, purchases, gross profit, trade receivables and trade payables and other figures from incomplete information	Learners are given an example of Grocery shop business who does not maintain any accounting documents apart from few bills and credit customers and suppliers. Learners are asked how would you help the owner to maintain his record

Limited Company	prepare income statements and statements of financial position form incomplete records make adjustments to financial statements as detailed in 5.2 (sole traders) apply the techniques of mark-up, margin and inventory turnover to arrive at missing figures explain the advantages and disadvantages of operating as a limited company understand the meaning of the term limited liability understand the meaning of the term equity understand the capital structure of a limited company comprising preference share capital, ordinary share capital, general reserve and retained earnings understand and distinguish between issued, called-up and paid-up share capital understand and distinguish between share capital (preference shares and ordinary shares) and loan capital (debentures) prepare income statements, statements of changes in equity and statements of financial positon	and know the estimated profit or Loss of the business. After brainstorming , learners understand and answer few ways to find out the performance. Asking one student to complete the capital account format by outlining t on the white board. Students note down all the formulas & format of statement of affairs. Solving textual & Past paper problems. Presentation of financial statement of Limited companies from news paper by the learners. Preparing of Flash card of format of financial statement& learners stick it on the chart paper in the classroom. Discussing about share & stock market in short.

	make adjustments to financial statements as detailed	Explaining the equity of the company Brainstorming session on different ways a company raises finance and introducing Debentures & type of shares held. Solving textual & Past paper problems.
Analysis & Interpretation of Data	Calculation and understanding of accounting ratios • Gross margin • Profit margin • Return on capital • employed (ROCE) Current ratio • Liquid (acid test) ratio • Rate of inventory turnover (times) • Trade receivables	With use of PPT explaination of all the Profitability & Liquidity Ratios Analysis of ratios to be explained in detail. Brainstorming on the uses of financial data to all the stakeholders of a business.

Clubs & Society	distinguish between receipts and payments accounts and income and expenditure accounts prepare receipts and payments accounts prepare accounts for revenue-generating subscriptions prepare income and expenditure accounts and statements of financial position	Discussing on the CHS the learners is based and to collect any data of the records by their residential localities. Explanation of NPO and Subscription account in detail.
Correction of Journal Entries **Revision**	explain the use of a suspense account as a temporary measure to balance the trial balance correct errors by means of suspense accounts adjust a profit or loss for an accounting period after the correction of errors understand the effect of correction of errors on a statement of financial position	Introducing the chapter through reference to earlier chapter of Types of errors and Joural. Solving problems logically with help of working to be done. MCQ questions to be discussed.
	EXAMS	
	Feedback of First term Papers & Revision of past papers	

SVKM J .V. Parekh International School

Long Term Plan

Academic Year 2019-2020

Subject: Business Studies **GRADE- IX**

Name of the Teacher(s): Ms. Dimple Kapadia

Strand/Topics	Learning Objectives (CAIE expectations)	Learning Experiences/Engagements
1.1 Business activity 1.2 Classification of business 1.3 Enterprise, business growth and size	Demonstrate an understanding the purpose and nature of business activity. Understand the basis of business classification. Give reasons for the changing importance of business classification. Classify business enterprises between private sector and public sector in a mixed economy. Describe characteristics of successful entrepreneurs.	**Class Activities and presentation** **Textual Activities (sorting business into different economic sectors)** **Group Project on Entrepreneurs**

1.4 Types of business organisation	Learners should be able to identify and explain what is included in a business plan and be able to explain how business plans can assist entrepreneurs. Identify methods that Governments might use to help business start–ups and explain why they help such businesses. Apply knowledge and understanding of the methods and problems of measuring the size of business. Learners should be able to explain reasons why some businesses grow and others remain small. Learners should be able to explain why some (new or established) businesses fail. Explain the main features of different forms of business organisation. Recommend and justify a suitable form of business organisation for a given situation. Identify the need for business objectives, explain the different objectives that businesses might have as well as explain the importance of them. Identify the objectives of social enterprises. Demonstrate an awareness of the aims and objectives of enterprises in both private and public sectors.	Presentations and group Activity

1.5 .5 Business objectives 1.5 stakeholder objectives	Identify the main stakeholders, and their different objectives. Explain reasons why their objectives might conflict.	Group Activity Group Activity with a case study
2. People in The Business / 2.1 Motivating employees 2.2 Organisation and management	Understand the importance of a well-motivated workforce. Recommend and justify appropriate method(s) of motivation in given situation. Explain the functions of management. Understand the importance of delegation and the difference between trust versus control. Draw, interpret and explain simple organisational charts and understand the roles, responsibilities and relationships between people in organisations. Learners should be able to identify and explain the features of the main leadership styles and be able to recommend an appropriate leadership style in a given situation.	Group Activity and presentations. Learners, in groups, draw and label an organisational chart for our school/college.

	Understand what a trade union is and the effects of employees being union members.	PPt on different functions of management with examples of school and other different BS Ppt on Organisational structure Org structure of school **PPt on Leadership** **Discussion of exam style questions from Peter Stimson and Karen Borrington.** **Discussion of auto rickshaw strike and advantage disadvantage of TU**
People in The Business **2.4. Internal and external communication** **2.3 Recruiting and selecting employees**	Understand why effective communication is important and the methods used to achieve it. Demonstrate an awareness of communication barriers. Learners should be able to identify and explain the main stages of recruitment and understand the difference between internal and external recruitment. Identify and explain the benefits and limitations of part-time and full-time workers. Importance of training to a business and employees.	**PPt on communication,** **Examples of day – day communication in school.** **PPt and activities from Text book** **Exam style questions – Paper 1 style**

	Benefits and limitations of induction training, on-the-job and off-the-job training. Learners should be able to explain the difference between dismissal and redundancy. Learners should be able to identify and explain situations when downsizing may be necessary. Learners should be able to identify factors and be able to explain and justify which workers should be recruited/made redundant in given circumstances. Explain the main types of legal control relating to employment issues and understand their impact on employers and employees.	
3.1 Marketing, competition and the customer	**Marketing** Understand the role of marketing and why it is important for businesses to satisfy the needs of both existing and new customers. Learners should be able to identify and explain the benefits and limitations of each approach to marketing (niche and mass). Learners should be able to identify how and why market segmentation is undertaken. They should be able to select and justify an appropriate method of segmentation in given circumstances.	**Videos, textual activities** **Text Peter Stimpson Karen Borington 5th edition – Activities** **Unit Test on Unit 1 and 2** **Exam style questions – Paper 1 style**

3.2 Market research	Learners should understand the need for market research and the methods used. Learners should be able to present and use market research results.	**Case Study on need for market research** **PPT on ways of Research** **Its advantages and limitation**
3.3 Marketing mix / Product	**EXAMS** **Feedback of Term Paper** Learners should be able to identify and explain the costs and benefits of developing new products. Learners should be able to explain the concept of brand image and its impact on sales and customer loyalty.	**PPT** **Group Activities**
3.3 Marketing mix / Product	Identify and explain the role of packaging. Learners should be able to draw and interpret a product life cycle diagram. They should be able to identify and explain the main stages of the product life cycle, including extension strategies; and explain how stages of the product life cycle can influence marketing decisions.	**PPT** **Textual activities and case studies** **PPT on different forms of packaging.Showing few products physically with variety of packaging like coke, cadburys** **Textual activities and graph**

3.3 Marketing mix / Price , Place,	Learners should be able to identify and explain the main pricing methods and be able to select and recommend an appropriate pricing method in given circumstances. Learners should understand the significance of price elasticity of demand. Learners should be able to Identify and explain the advantages and disadvantages of different channels and be able to select and justify an appropriate distribution channel in given circumstances Learners should be able to identify and explain the aims of promotion. They should be able to identify the advantages and disadvantages of different methods of promotion and explain how they influence sales. Learners should be able to explain the importance of a marketing budget, and the need for cost effectiveness in spending the marketing budget.	**Mindmap on pricing strategies with examples.** Ppt on PED Group Activity on different channels used for different products Group activity Textual activities and past paper questions
Marketing Mix 3.4 Marketing strategy	Learners should be able to identify and explain the concept of e-commerce and the opportunities and threats of e-commerce for businesses and consumers. Learners should be able to explain how the internet and social networks are used for promotion. Justify appropriate marketing strategies in a given situation.	**Group activity – discussion of various e-commerce business or other BS that can start ecommerce**

FINANCE 5.1 Business finance: needs and sources 5.2 Cash-flow forecasting and working capital	Learners should be able to identify and explain the impact of legal controls on marketing. Learners should be able to identify and explain the opportunities and problems of entering new markets abroad and understand the benefits and limitations of methods to overcome such problems. Explain the need for business finance. Explain the main sources of capital and be able to select, recommend and justify appropriate source(s) of finance in given circumstances Explain the importance of cash and of cash-flow forecasting. Understand the concept and importance of working capital.	**Textbook** **Group discussion on a global business like Mcdonalds, Walmart** **Group activity Peer tutoring, Mind maps** **PPT** **Tutor2u.net**
FINANCE 5.3 Income statements	Learners should understand what profit is and why it is important. Learners should be able to identify and explain the main features of an Income statement, and be able to use simple Income statements in decision making.	**Textual Activity** **Constructing an Income Statement**

	UNIT TEST	
FINANCE 5.4 Statement of financial position 5.5 Analysis of accounts	Learners should be able to identify and explain the main elements of a statement of financial position, and be able to interpret a simple statement of financial position and make deductions from it. Learners should be able to explain the concept and importance of profitability. Learners should be able to interpret financial statements by calculating and analysing profitability and liquidity ratios. Learners should be able to explain the concept of liquidity Learners should understand why and how accounts are used. REVISION OF Categorised past papers.	**Interpreting a balance sheet from textual format** **Jigsaw puzzle on formulas for ratio** **Textual activities**
	EXAMS Feedback of Term Paper.	
4.4 Location decisions	Learners should be able to identify and explain the main factors influencing the location and relocation decisions of a business.	**Group activity and students ppt on different BS** **Textual activities**

Business Studies

Long Term Plan (2020-2021)

Strand/Topics	Learning Objectives (CAIE expectations)	Learning Experiences/Engagements
Location	Learners should be able to recommend and justify an appropriate location for a business in given circumstances.	**Textual Activities**
Operations / Production **The meaning of production**	Explain the importance managing resources effectively to produce goods and services. Explain the difference between production and productivity. Explain the benefits of increasing efficiency and how to increase it. Explain why businesses hold inventories. Explain the concept of lean production, how to achieve it and the benefits of lean production. Learners should be able to explain the main features, benefits, and limitations of job, batch and flow production, and recommend and justify an appropriate production method for a given situation. Learners should be able to identify and classify costs and use cost data to help make simple cost-based decisions	**PPTS** **Video on Mc Donald's** **Production process** **PPT** **Textual activities**
Production	Explain how technology has changed production methods.	

Main methods of production 4.2 Costs, scale of production and break-even analysis 4.3 Achieving quality production	Learners should understand why quality is important and how quality production might be achieved.	**Group Activity on identification and classification of different types of costs.** **Textual activities & worksheet on past paper questions.**
6.1 Economic issues: Business cycle 6.1 How government control over the economy affects business activity and how businesses may respond	Understand the main stages of the business cycle. Identify government economic objectives, e.g. increasing Gross Domestic Product (GDP). Explain the impact on business of changes in employment levels, inflation and Gross Domestic Product. Explain the impact of changes in taxes and Government spending. Explain the impact of changes in interest rates can affect business activity. Explain how businesses might respond to these changes.	**PPT** **Textual activities**

6.2 Environmental and ethical issues 6.3 Business and the international economy 6.3 Impact of exchange rate changes	Environmental concerns and ethical issues as both opportunities and constraints for businesses. Learners should be able to understand the importance of globalisation and explain the opportunities and threats of globalisation for businesses. Learners should be able to identify and explain the reasons for the importance and growth of multinational companies (MNCs). Depreciation and appreciation of an exchange rate. **How exchange rate changes can affect businesses** **as importers and exporters of products,** **e.g. prices, competitiveness, profitability.** **REVISION of Paper 2**	Video on Coco – Cola Textual Activities
	FINAL EXAMIATION	

SVKM J .V. Parekh International School

Long Term Plan

Academic Year 2019-2020

Subject: Global Perspectives **GRADE- IX**

Name of the Teacher(s): Divya Karkera

Strand/Topics	Learning Objectives (CAIE expectations)	Learning Experiences/Engagements
Global Perspectives **Topic: Law and Criminality**	Analyse and evaluate the process of law making Collaboration	Group activity to understand the need of laws Work with students from different grades to understand the laws that affect teenagers
Global Perspectives **Topic: Law and Criminality**	Explore and Reflect on personal perspectives about law Analyse the causes of crime and the effectiveness of measures to protect people Collaboration	Read and discuss the article at www.bbc.co.uk/news/uk-15574189 Investigate the incidence of a particular crime in two different countries and evaluate responses to it. Conduct a survey for the causes of crime figures for particular offences in your locality and devise strategies to reduce it

Global Perspectives **Topic: Education**	Analyse and evaluate different views about the purpose and benefits of education Collaboration	Watch inspirational teacher movie clips on www.youtube.com/watch?v=crGnmbILQFQ Compare people's experience of school in different countries via internet
Global Perspectives **Topic: Education**	Explore and Reflect on personal perspectives about law Analyse and evaluate local, national and global attitude towards education and preferred learning styles Collaboration	Use a life map, outlining the view of own future life and reflect on how far education can support these goals. www.vark-learn.com/english/page.asp?=questionaire to know examples of learning styles. Investigate barriers to education in different countries and evaluate different policies to improve access to education
Global Perspectives **Topic: Demographic changes**	Analyse and evaluate the role of aging population in the country Collaboration	Conduct and interview with elderly people to understand their contribution to the community Work with students of different grade to compare the effect of more single people in the country
Global Perspectives **Topic: Demographic Changes**	Analyse and evaluate local, national and global consequence of demographic health and fewer children Collaboration	Research and interpret census data on local families and present information on maps and graphically Work with students of different grades to understand the to understand the issues around population explosion in developing countries

Global Perspectives **Topic: Demographic Changes**	Reflect on local ,national global perspective about the effects of demographics on global trade	Investigate and compare different developing countries to understand the effect of demographics on global trade
Global Perspectives **Topic: Employment**	Analyse and evaluate the role of fairness and equality in employment Collaboration	Research and interpret data on the working population of the different countries and compare it with your own country's data Conduct and interview with working people in your society to understand the attitude of people as How job serves as an identity to their life?
Global Perspectives **Topic: Employment**	Reflect on local, national global perspective about the causes for unemployment and globalisation on job creation. Research and understand the concept of job creation and how job serves as an identity to an individual worldwide. Analyse and evaluate the local, national and global perspective about the causes for unemployment	Compare the nature and impacts of and perspectives of unemployment and job creation in own country with that of another. Produce a presentation on similarities and differences Prepare a mind map of your findings on the concept of job creation and job as an identity at global level. Compare the nature and impacts of and perspectives of unemployment in own country with that of another. Produce a presentation on similarities and differences
Global Perspectives **Topic: Fuel and Energy**	Analyse and evaluate the importance of fossil fuels and renewable energy Collaboration	Group activity to understand the importance of fossil fuels and renewable energy Work with students from different grades to provide possible solutions for infinite demands and finite resources

Academic Year 2020-21

Subject: Global Perspectives

Strand/Topics	Learning Objectives (CAIE expectations)	Learning Experiences/Engagements
Global Perspectives **Topic: Fuel and Energy**	Explore and Reflect on personal perspectives about Climate Change, Fuel Poverty and access to energy Analyse the concept of sustainability and inequity	Carry out a survey and interview people about their attitudes on climate change, fuel poverty and access to energy and prepare a presentation on different findings Compare via internet the approach of more and less economically developed countries on the issue of sustainability and inequity
Global Perspectives **Topic: Globalisation**	Analyse and evaluate different views economic, cultural, political and social globalisation Collaboration Explore and Reflect on personal perspectives about law Analyse and evaluate the concept of core and periphery countries in globalisation	Compare people's views via internet about the effect of globalisation on their culture, society, politics and economy Produce a documentary about the situation in developing and developed countries about globalisation and inequality Interview a local representative to understand the role of national governance on trade due to globalisation PPT presentation on core and periphery globalisation

Global Perspectives **Topic: Migration**	Analyse and evaluate the types of migration and its effects on host and departure country	Conduct and interview with people who are residing in your locality to find out the number of families migrate from different part of the country Work with students of different grade to compare the effect anti-migration sentiment in the community Research and interpret data on migration and criminality and present information on maps and graphically Conduct a survey in teams to derive possible solutions for managing migration
Global Perspectives **Topic: Transport System**	Reflect on local ,national global perspective on aging transport system Reflect on local ,national global perspective about the environmental issues in connection to transportation	Investigate and compare different developing countries to understand the causes and effects of aging transportation Present a brief summary about the effects of effects on transportation on environment and produce a reflection paper on it

SVKM J .V. Parekh International School

Long Term Plan

Academic Year 2019-2020

Subject:-Information and Communication Technology **GRADE-IX**

Name of the Teacher(s): Ms Premila Murugan

Strand/Topics	Learning Objectives (CAIE expectations)	Learning Experiences/Engagements
1. Types and components of computer systems 1.1 Hardware and software	• Define hardware as consisting of physical components of a computer system • Identify internal hardware devices (e.g. motherboards, random access memory (RAM), read-only memory (ROM), video cards, sound cards and internal hard disk drives) • Identify external hardware devices and peripherals (such as monitors, keyboards, mice, printers as input and output devices and external storage devices in general) • Identify and define the two types of software – applications software and systems software	Ask learners to look around the classroom and observe as many external hardware devices that they can. They could compete to see who can note down the most correct external hardware device in one minute. Demonstrate the use of an operating system to crate folders, save work, sort files. Demonstrate different types of application software such as word-processor, database, spread sheet and DTP

1.2 The main components of computer systems	• Describe the central processing unit (CPU) including its role • Describe internal memory, i.e. ROM and RAM and the differences between them • Define input and output devices and describe the difference between them • Define secondary/backing storage	Ask learners to produce a diagrammatic representation of the workings of a computer. They must research the roles of the CPU, ROM, RAM and represent how data is processed and stored.
1.3 Operating systems	Describe the differences, including the benefits and drawbacks, between operating systems which contain a CLI and those which contain a GUI	. It would be best to represent this through the use of Windows for a GUI and the command line in Windows for CLI.
1.4 Types of computer	Describe the characteristics of a personal/desktop computer, laptop and tablet and its uses, both as a standalone and networked computer	Ask learners to think of tasks they perform everyday on their smartphones. Ask them to think about how these tasks were carried out before we had smartphones, then expand this to before we had mobile phones. **(I)**
1.5 Impact of emerging technologies	Describe how emerging technologies are having an impact on everyday life (e.g. artificial intelligence biometrics, vision enhancement, robotics, quantum cryptography, computer-assisted translation, 3D and holographic imaging, virtual reality)	Give learners a case study about the benefits and drawbacks of 3D printing and discuss as a whole class, e.g. prosthetic/artificial limbs. **Extension activity:** Ask learners to research the Edward Snowdon case and the exposure of encryption keys being forced to be revealed. Ask them to discuss in groups how they feel about this and do they agree with it.
2. Input and output devices 2.1 Input devices and their uses	Identify input devices and their uses, e.g. keyboard, numeric keypad, pointing devices (such as mouse, touchpad, tracker ball), remote control, joystick/driving wheel, touch screen, scanners, digital cameras, microphone, sensors (general), temperature sensor,	As an introduction and to elicit the devices from the learners, ask learners (in pairs) to make a list of as many input and output devices they can think of. Learners talk to other pairs of learners to compare their lists. Alternatively, mix up the two lists and ask the

	pressure sensor, light sensor, graphics tablet, video camera, web cam	learners to list which ones are input and which are output devices.
2.2 Output devices and their uses	Identify output devices and their uses, e.g. CRT monitor, TFT/LCD monitor, IPS/LCD monitor, LED monitor, touch screen (as an output device), multimedia projector, laser printer, inkjet printer, dot matrix printer, wide format printer, 3D printer, speakers, motors, buzzers, heaters, lights/lamps	Learners can start by listing the advantages and disadvantages of four or five devices per group. Each group then presents their findings to the whole class.
2.3 Direct data entry and associated devices	Describe direct data entry and associated devices, e.g. magnetic stripe readers, chip and PIN readers, Radio Frequency Identification (RFID) readers, Magnetic Ink Character Reader (MICR), Optical Mark Reader (OMR), Optical Character Reader (OCR), bar code reader Identify the advantages and disadvantages of any of the above devices in comparison with others	Ask learners to discuss why the speed of data entry is important and how each of the given devices improves data entry. Ask learners to think about what would be the alternative if that device did not exist.
4. Networks and the effects of using them 4.1 Networks	Understand how a router works and its purpose	Explore TCP/IP routers: www.dummies.com/how-to/content/exploring-tcpip-routers.html **Extension activity:** Using a trace route (there are various websites that allow you to demonstrate this), show learners how routers pass data packets toward their destination. One of the best examples is to see how many routers a packet would go through between the UK and a destination in the USA. This is a site that can be used for doing a trace route: http://tracert.com/
	Understand the use of other common network devices, including: network interface cards, hubs, bridges, switches, modems	Give learners a set of flash cards with network components and definitions on them. Ask them to match the definition to the component.

	Understand the use of WiFi and Bluetooth in networks	Comparison of Bluetooth and Wifi: www.diffen.com/difference/Bluetooth_vs_Wifi
	Understand how to set up and configure a small network, including: access to the internet, the use of a browser, the use of email, access to an ISP	Learners should follow the instructions and are then asked to put to use what they have learned and create a network. (This is a freely available simulation.)
	Understand the characteristics and purpose of common network environments, such as intranets and the internet.	**Extension activity:** Ask learners to create a diagram of their own school LAN and how it connects to a WAN. **(I)**
4.2 Network issues and communication	Security issues regarding data transfer	How biometric devices work: www.howstuffworks.com/biometrics.htm
	• Network communication	• Ask learners to compare and contrast the use of fax and email and consider how they are similar and how they differ. • Ask learners to consider what pros and cons are of email and video conference each method. • How biometric devices work: www.howstuffworks.com/biometrics.htm
5. The effects of using IT 5.1 Effects of IT on employment	• Describe how there has been a reduction of employment in offices, as workers' jobs have been replaced by computers in a number of fields (e.g. payroll workers, typing pools, car production workers) • Describe how there has been an increase in employment in other fields (e.g. website designers, computer programmers, delivery drivers in retail stores)	BBC Bitesize pages on impact of ICT on work patterns: www.bbc.co.uk/education/guides/z9fbkqt/revision

5.2 Effects of IT on working patterns within organisations	• Describe how the use of computers has led to a number of employees changing their working patterns (e.g. part-time working, flexible hours, job sharing, compressed hours) • Describe what is meant by part-time working, flexible hours, job sharing, compressed hours	Ask learners to imagine they want to set up a company and have a choice between having an office or working from home. Ask learners to draw up a table of pros and cons of working from home and how might the pros /cons be different if they were in an office.
5.3 Microprocessor-controlled devices in the home	• Describe the positive effects microprocessors have on aspects of lifestyle (e.g. the amount and use of leisure time, the degree of social interaction, the ability to leave the home) • Describe the negative effects microprocessors have on aspects of lifestyle (e.g. lack of exercise)	Ask learners to name 10 devices in their home that contain a microprocessor. Pick out a few different devices that learners identify and ask them what tasks these devices would be able to perform without the microprocessor.
5.4 Potential health problems related to the prolonged use of IT equipment	• Describe repetitive strain injury (RSI) and what causes it • Identify other health issues (e.g. back problems, eye problems, headaches) • Describe some simple strategies for preventing these problems • Evaluate the use of IT equipment and develop strategies to minimise the health risks	Ask learners in pairs (or individually) to create a guide that could be given to staff in an organisation for avoiding health issues when using a computer – this could be a leaflet or by using presentation software. Learners present to the whole class. **(I)**
6. ICT applications 6.1 Communication applications	• Describe a range of communication applications (e.g. newsletters, websites, multimedia presentations, music scores, cartoons, flyers and posters) • Describe the use of mobile phones for communication (e.g. text messaging, phone calls, accessing the internet)	Learners research what applications are available and how they are used.

	• Describe the use of internet telephony, including Voice Over Internet Protocol (VOIP) • Describe applications for publicity and corporate image publications (e.g. business cards, letterheads, flyers and brochures)	
6.2 Data handling applications	• Describe the use of a range of data handling applications (e.g. surveys, address lists, clubs and society records, school reports and school libraries)	**Extension activity:** Learners research what data handling applications are used in their school environment, e.g. in the school library or administration office. **(I)**
6.3 Measurement applications	• Describe a range of measurement applications (e.g. scientific experiments, weather stations) • Explain the difference between analogue data and digital data • Explain the need for conversion between analogue and digital data • Describe the use of microprocessors and computers in a number of applications (e.g. pollution monitoring, intensive care units in hospitals) • Discuss the advantages and disadvantages of using computers in measurement rather than humans	Ask learners to produce a diagram or table that represents data being obtained through the use of an analogue device and the process it goes through to become digital data. **(I)** Ask learners to accompany the above diagram with a description of why this process is needed.
6.7 School management systems	• Describe how systems are used to manage learner registration and attendance • Describe how systems can be used to record learner performance	Discuss with learners what content linked to them goes into a school management system and what that data is used for.

	• Describe how systems can be used for organising examinations, creating timetables and managing teaching cover/substitution	
6.8 Booking systems	• Identify areas where booking systems are used (e.g. travel industry, theatre and cinemas) • Describe the online processing involved in booking tickets	Ask learners to try using an online booking system to the point of making a payment (there are a few that will ask for payment last). Ask learners to make a note of the features of the booking system that they come across.
6.9 Banking applications	• Describe the computer processing involved in Electronic Funds Transfer (EFT) • Describe the computer processing involved in using automatic teller machines (ATM) (e.g. withdrawing cash, depositing cash or cheques, checking account balance, mini statements, mobile/cell phone recharge/top up, bill paying, money transfers, ordering paper-based goods) • Describe the use of processing credit/debit card transactions • Describe the clearing of cheques • Describe phone banking • Describe internet banking, and discuss the advantages and disadvantages of it	Ask learners to produce a flowchart to illustrate how an ATM machine works. **(I)** Discuss with learners how banking was done before ATM machines, telephone banking and internet banking existed. Discuss issues such as how cash was withdrawn and how bills were paid.
6.11 Computers in libraries	• Describe the files used in libraries (e.g. records of books and borrowers) • Describe the computer processing involved in the issue of books, including the use of direct data entry methods	Ask learners to identify how many different processes can be performed just through scanning a barcode on a book in a library. They should identify process such as it inputs the details of the book, it can then say that book is now unavailable as it is checked out if another person

	• Describe the automatic processing involved in issuing reminders for overdue books	comes in for it, it can record how many times that book is checked out.
6.12 Expert systems	• Identify a range of applications which use expert systems (e.g. mineral prospecting, car engine fault diagnosis, medical diagnosis, chess games)	Ask learners to use an example of an experts system e.g. WebMD and ask them to identify how it is giving a diagnosis. Ask them to identify the different elements that allow this to happen.
6.15 Monitoring and tracking systems	• Describe how a workforce or member of the public can be monitored or logged • Describe how the use of cookies can be used to monitor a person's internet activity • Describe the use of key-logging • Describe how worker/employee call monitors can be used Describe the use of automatic number plate recognition q	A class debate could be set up to discuss the how tracking systems benefit and intrude in people's lives.
6.16 Satellite systems	• Describe the use of different satellite systems (e.g. Global Positioning Systems (GPS), satellite navigation, Geographic Information System (GIS), media communication systems)	Learners research how car satellite navigation systems work (through Global Positioning Systems (GPS)). Why might they go wrong? (Cars going into rivers etc.) **Extension activity:** Discuss a news story about a missing plane or boat, e.g. Malaysian missing plane in 2014. Ask learners to research this case and write a report on how it was tracked through GPS and other satellite data.
8. Safety and security 8.1 Physical safety	• Describe common physical safety issues and what causes them, e.g. electrocution from spilling drinks, fire from sockets being overloaded or equipment overheating, tripping over trailing cables	Ask learners to produce a poster for classroom display to warn other learners about the safety hazards that can arise when using ICT. **(I)**

	• Describe some simple strategies for preventing these issues	Look at the classroom code of conduct or rules, if they are available, and ask learners if any of the safety issues that they have included on their poster are identified in that.
8.2 e-safety	• Explain what is meant by personal data • Explain why personal data should be confidential and protected • Explain how to avoid inappropriate disclosure of personal data including: own name, address, school name, a picture in school uniform • Discuss why e-safety is needed • Describe measures which should be taken when playing games on the internet (including not using real names)	Display a fictitious mock-up profile, from a social networking site, that includes seemingly innocent information. Ask learners what they can find out about this person just through matching up information on their profile. Ask learners to now identify how the profile could be made safer.
8.3 Security of data	• Effective security of data ○ define the term hacking and describe its effects ○ explain what is meant by the term hacking and the measures that must be taken in order to protect data. ○ explain what is meant by the terms user id and password stating their purpose and how they are used to increase the security of data explain what is meant by the terms biometric data and why biometric data is used	Ask learners to visit a password checker site e.g. www.passwordmeter.com and see how secure their passwords really are. If they find that they are not that secure, ask learners to consider what they could do to increase the security of their password. Ask learners to consider the privacy issues involved in biometric data. How do they feel about biological information being stored about their body for identification purposes? Why are biometrics become so popular? What are the alternatives?
8.3 Security of data	• Security of data online ○ explain what is meant by the term digital certificate and its purpose ○ explain what is meant by the term Secure Socket Layer (SSL)	• Show learners a sample phishing email. Ask them to determine why it is a phishing email: Dear customer (as opposed to your name), spelling/punctuation mistakes, asking you to click on

	○ the subject of fraud when using a credit card online ○ explain the issues related to security of data in the cloud ○ explain the concept of a firewall and why it is used ○ discuss the effectiveness of different methods of increasing security	a link to verify your account, links that are not related to the supposed sender, etc. • A quiz or true/false activity can summarise and consolidate knowledge and understanding of terms. Learners may provide questions to ask other learners in the class. • Learners should add key terms and make notes to their glossary of terms so that they can refer to them easily. **Extension activity:** Learners create a poster, presentation or leaflet about internet security. Alerting people to the threats and suggesting how to avoid them. **(I)**
9. Audience 9.1 Audience appreciation	• Show a clear sense of audience when planning and creating ICT solutions • Analyse the needs of an audience • Explain why solutions must meet the needs of the audience	Ask learners to compare two different news websites, e.g. Newsround, BBC or CNN news. Ask them to look at what makes them different and if this is done for audience purposes.
9.2 Legal, moral, ethical and cultural appreciation	• Explain the need for copyright legislation and the principles of copyright relating to computer software (e.g. software piracy) • Describe methods that software producers employ to prevent software copyright being broken • Discuss the legal, moral, ethical and cultural implications of creating an ICT solution	Copyright definition: the legal protection given to the creators of text, images, music and software to prevent their work being used illegally. Present the rules of software copyright and discuss as a class or in small groups. 'Should the internet by policed?' – Class discussion or learners could produce a table or advantages and disadvantages

	• Create ICT solutions that are responsive to and respectful of the needs of the audience • Discuss why the internet is not policed (although legislation is enforced in some countries) and the effects of this, including the existence of inappropriate sites	
File management 11.1 Manage files effectively	• Identify different file types and their use/s, for example: css, csv, gif, htm, jpg, pdf, png, rtf, txt, zip • Locate stored files • Open and import files of different types • Save files in a planned hierarchical directory/folder structure • Save files using appropriate file names • Save and print files in a variety of formats, including: a draft document, final copy, email, file attachment, screen shots, database reports, data table, graph/chart, a web page in browser view, a web page in HTML view • Save and export data into file formats for your applications packages, e.g. .doc, .docx, .xls, .sdb, .sdc, .rtf, .ppt	Create a task for learners that requires them to do the following: • locate an image from a shared area. The image should be in one type of image format and called pic1 • ask learners to import the image into an image program and then compress the image and save it as a different file extension, one appropriate for viewing the image in many different image programs • the image also needs to be given a sensible name based on its content • the image should then be saved back into a certain folder in a shared area.
11.2 reduce file sizes for storage or transmission	• Explain the need to reduce file sizes for storage or transmission • Identify where it will be necessary to reduce file sizes for storage or transmission	Discuss with learners why an image file would be compressed.

	• Reduce file sizes using file compression	
12 Images	• Use software tools to place and edit an image to meet the requirements of its intended application and audience • Know when it is necessary to edit an image and can appropriately: ○ place an image with precision ○ resize an image ○ maintain or adjust the aspect ratio of an image, or distort an image where appropriate ○ crop an image ○ rotate an image ○ reflect an image (flip an image horizontally and/or vertically) ○ adjust the colour depth of an image ○ adjust the brightness of an image ○ adjust the contrast of an image ○ understand the need to reduce image resolution to increase transmission speed ○ reduce the resolution of an image to reduce file size	Give learners a brief that requires them to edit an image using all of the editing points listed in the learning objectives column opposite.
13. Layout	• Use software tools to prepare a basic document to match the purpose and target audience ○ create a new document or, where appropriate, open an existing document ○ enter text and numbers ○ use editing techniques to manipulate text and numbers, including: highlight, delete, move, cut, copy, paste, drag and drop ○ place objects into the document from a variety of sources, including: text, image,	Use a previously prepared excerpt of text (which is two or three A4 pages in length) saved as a .txt file and image file. It would be best if this were based around a topic such as the solar system. Ask the learners to: • open a word processor and import the text • identify the main title and make it bold and size 14 • identify the subtitles and make them bold and size 12 • make sure the main body of text is size 11 • all text should be Arial

	screen shot, spreadsheet extract, database extract, clip art or chart ○ create a table with a specified number of rows and columns ○ format a table and its contents ○ place text or objects in a table • wrap text around a table, chart or image, including: above, below, square and tight • Use software tools to use headers and footers appropriately within a range of software packages • Create headers and footers • Align consistently within a document the contents of the header and footer including: to left margin, right margin and centre of the page • Place automated objects in headers and footers, including: automated file	• move the second paragraph of text to the end of the document • convert a section e.g. a list of facts about the solar system, into a table with the correct number of columns and rows • make sure the table column headings are bold • insert the image into the text and wrap a section of text around it.
14. Styles	• Understand the purpose of a corporate house style and ensure that all work produced matches this ○ produce documents which conform to a corporate house style • explain what is meant by corporate branding/house style • Apply styles to ensure consistency of presentation ○ explain why consistent styles are required ○ apply consistent styles using a variety of application packages ○ ensure that page/slide layout is consistent, including: font styles, text alignment, spacing between lines, spacing between paragraphs, spacing before and after headings ○ create and apply an appropriate style, including: font type (serif, sans-serif), point size, font colour,	Look at various company leaflets and documents and ask learners to focus on house style differences, e.g. use of caps, spelling, colours, font style and size, text justification. Using the document created in Unit 13, provide learners with a house style brief and ask learners to edit the document to conform to the house style brief. Ask learners to design a house style for a given organisation.

	alignment, line spacing, style of bullets, text alignment to the left, right, centre or fully justified ○ select an appropriate font style for a task, taking into account the audience ○ use text enhancement, including: bold, underline, italic, highlight • create and apply paragraph style(s) with a new style name to match the corporate house style.	
15. Proofing 15.1 Software tools	• Use software tools to ensure that all work produced contains as few errors as possible ○ explain why the automated suggestions given by spell check software do not always give the correct response ○ use automated tools, including spell check facilities, to remove errors ○ use validation routines to minimise errors • explain why validation checks must be appropriate to the data that is being checked	Learners list proofing software tools that they have used and know about, e.g. spell-check software, Research what is available.
15.2 Proofing techniques	• Accuracy of data entry ○ describe the importance of accuracy and the potential consequences of data entry errors ○ correct errors in data entry, including: transposed numbers, spelling, consistent character spacing, consistent case and factual errors (following proofreading by a third party) • check to ensure consistent line spacing, to remove blank pages/slides, remove widows/orphans, ensure that tables and lists are not split over columns or pages/slides	Prepare documents containing both spelling errors which the spell-check will locate and errors which could only be corrected through proofreading. Ask learners to identify all the errors. Provide learners with a table of fields that are to be entered into a database. Ask them to identify any appropriate validations that can be assigned to them.
	• Verification ○ define the term verification ○ describe visual verification (i.e. visual comparison of data entered with a data source)	Discuss with learners the need for verification as well as validation.

	○ describe double data entry (i.e. entering data twice and the computer compares the two sets of data, either by comparing them after data has been entered or by comparing them during data entry) •	
16. Graphs and charts	• Produce a graph or chart from the given data ○ select data to produce a graph/chart, including: using continuous data, non-continuous data, and specified data ranges where necessary ○ select the graph or chart type to match the required purpose and meet the needs of the audience ○ label the graph or chart, including: chart title, legend, sector labels, sector values, segment labels, segment values, percentages, category axis title, value axis title, category axis labels, value axis labels, scales ○ add a second data series to a chart, as necessary ○ add a second axis to a chart, as necessary ○ change the maximum and minimum values of an axis scale to appropriate values • enhance the appearance of a graph or chart, including: changing the colour scheme or fill patterns, extracting a pie chart sector to meet the needs of the audience	Provide learners with a set of sales figures for a computer company. The sales figures should show the sales of their best product over the last 12 months. Ask learners to carry out the following tasks: • copy the sales figures into a spread sheet • select a suitable graph/chart to represent the trend for sales for a sales report • add a second data series to the graph/chart to show last year's sales figures too • make sure all elements of the graph are formatted correctly and are appropriate for the purpose.
17. Document production	Document production • Format text and organise page layout ○ set page size ○ set page orientation ○ set page and gutter margins ○ set the number of columns	Prepare a new document with about two pages of text (preferably about hardware and software). Save this as a .txt for the learners to access. Ask learners to carry out the following: • set the page size to A4 and the orientation to portrait • set the top and bottom margins to 2.5 cm • make the right and left margins fully justified

	○ set the column width and spacing between columns ○ define the terms widow and orphan ○ explain why it is necessary to use page, section and column breaks, to adjust pagination and to avoid widows and orphans ○ set and remove page, section and column breaks ○ set line spacing, including: single, 1.5 times, double, multiple, spacing before and after paragraphs ○ set tabulation settings, including: indented paragraphs, hanging paragraphs ○ format text as bulleted or numbered lists to meet the needs of the audience • use software tools to edit tables ○ edit a table structure, where necessary, to include: insert row(s), delete row(s), insert column(s), delete column(s), merge cells ○ set horizontal cell alignment: left, right, centre, fully justified ○ set vertical cell alignment: top, centre, bottom ○ format cells and the cell contents, including: show gridlines, hide gridlines, wrap text within a cell, shading/colouring cells • mail merge a document with a data source ○ explain why mail merged documents are created ○ edit a master document to insert appropriate fields from a data source ○ insert special fields such as date ○ select records to merge ○ merge a document with selected fields ○ save and print merge master document • save and print selected merged documents as appropriate	• insert page numbers at the foot of the page. These should start at number one and be printed from the first page. The page numbers should be aligned to the right • the font size should be set at 14 point • set line spacing to 1.5 • key in the following text at the end of the document:

18. Data manipulation
 	
18.1 Create a database structure
	• Design and use suitable software tools to create an appropriate database record structure
	  ○ define the terms flat-file database and relational database
	  ○ explain where it would be appropriate to select a flat-file database or a relational database
	  ○ assign appropriate data types to fields, including: text, numeric, (integer, decimal, percentage, currency), date/time, Boolean/logical (–1/0, yes/no, true/false)
	  ○ explain that other field types like placeholders for media, including images, sound-bites and video clips are used in commercial databases
	  ○ use short, meaningful file and field names
	  ○ format fields and identify sub-types, including: specifying the number of decimal places, specifying a particular currency
	  ○ identify the structure of external data with different file types, including: .csv, .txt, .rtf
	  ○ locate, open and import data from an existing file
	  ○ define and understand the terms primary key and foreign key and their role in a relational database
	  ○ create a relationship between two or three tables
	• discuss the advantages and disadvantages of using relational tables rather than a flat file database
		Ask learners to import the.csv file into a database.
		
		Ask learners to assign appropriate data types to the given fields.
		
		Ask learners to create a primary key for the table

	• Design and use suitable software tools to create a data entry form appropriate to purpose and audience.
	  ○ understand the key features of form design
	  ○ create a data entry form to meet the needs of the audience
	  ○ create a data entry form with all fields included to match the purpose of the task
		Ask learners to create two data entry forms. One to enter new staff into the staff table and one to enter new products into the product tables. Existing staff and products should also be able to be viewed through the forms.

	• create an appropriate data entry form, including: appropriate font styles and sizes, spacing between fields, character spacing of individual fields, use of white space, radio buttons, drop down menus, highlighting key fields	
18.2 Manipulate data	• Use arithmetic operations or numeric functions to perform calculations within a database ○ create a calculated field ○ perform calculations at run time using formulae and functions, including: addition, subtraction, multiplication, division, sum, average, maximum, minimum, count • Use suitable software tools to sort data appropriately in a database ○ sort data using a single criterion and using multiple criteria where necessary, into ascending or descending order • Use suitable software tools to search a database to select subsets of data ○ perform suitable searches using a single criterion and using multiple criteria, on different field types like alphanumeric, numeric, Boolean ○ perform searches using a variety of operators including: AND, OR, NOT, LIKE, >, <, =, >=, <=, <> • perform searches using wildcards, as appropriate	ask learners to search and select all the staff older than 30 (if this isn't too sensitive subject). Within the query, learners should add a calculated field called TOTAL which is the COST multiplied by SOLD. Within the query, learners should be able to search a staff member by surname too.
18.3 Present data	• Use suitable software tools to produce reports to display data appropriate to purpose and audience	Ask learners to produce a report on the staff query created in topic 18.2. The report should count the number of people in the report, calculate the maximum, minimum and average cost and sort the staff in ascending order of age.

19. Presentations	• Use a master slide to appropriately place objects and set suitable styles to meet the needs of the audience
	  ○ identify the need for consistency of presentation, in terms of styles, point sizes, colour schemes, transitions and animations
	  ○ use the master slide to place objects appropriately, including: images, text, logos, slide footers, automated slide numbering
	  ○ use the master slide to set font styles, heading styles and colour schemes as required by the audience
	• manipulate and use specified areas for headings, subheadings bullets, images, charts, colours, text boxes, presenter notes, audience notes as appropriate
	• Use suitable software tools to create presentation slides to meet the needs of the audience
	•
		Learners should follow the brief given to create a presentation.
		
		Ask learners to set up a master slide for the presentation. The master slide should include a logo, a navigation bar with links for the home page, a resorts and locations general page (there are links off this page to each resort and location learners wish to add.) and a contact us page.
		
		Learners should look to insert a chart into the resorts and location page to show which are their most popular reports and locations.
		
		Learners should look to add slide transitions between each slide and animated elements where appropriate on the slides.

20. Data analysis
 	
20.1 Create a data model
	• Create and edit a data model
	  ○ define the terms: cells, rows, columns, sheets, tabs, pages, charts
	  ○ explain the importance of accurate data entry in spreadsheets
	  ○ enter data with 100% accuracy
	  ○ edit the structure of an existing model, including: inserting cells, deleting cells, inserting rows, deleting rows, inserting columns, deleting columns
	  ○ define the terms: formula, function, absolute reference, relative reference, ranges, named cell, named range, nested formulae/functions explain the difference between a formula and a function
		learners will set up a model for a product.

	○ explain the order in which mathematical operations are performed and use brackets to make sure that formulae work ○ use mathematical operators, including: add, subtract, multiply, divide, indices, where necessary ○ explain the function of, and use, absolute and relative referencing, as appropriate, when formulae are to be replicated ○ use absolute and relative references, named cells, named ranges and nested formulae, as appropriate • use functions, including: sum, average, maximum, minimum, integer, rounding, counting, LOOKUP, VLOOKUP, HLOOKUP, IF and nested functions, when necessary	
20.2 Test the data model	• Devise suitable test plans and test the data to demonstrate that the model works ○ define the terms: testing, test data, expected outcome, actual outcome, normal data, abnormal data, extreme data ○ explain the need to test a model before it is used ○ select appropriate test data to thoroughly test a data model ○ justify the choice of test data ○ calculate the expected outcomes before testing the model ○ test the model, correcting errors and re-testing, where appropriate • test the model by the use of what it is	
20.3 Manipulate data	• Use search tools in spreadsheet software to select subsets of data ●	Use function to find the total the sales value Use formatting features to enhance the spreadsheet.

20.4 Present data	• Use software tools to adjust the display features in a spreadsheet	Create a sample data spread sheet with a variety of column and width sizes for the learners to format and present in a more attractive fashion.
Strand :-Web Authoring. 21.1 Web development layers	• Identify and describe the three web development layers • Understand the function of: content layer to enter the content and create the structure of a web page; presentation layer to display and format elements within a web page; behaviour layer to enter scripting language to elements within a web page	Select a suitable website and ask learners to view the source code. Ask learners to identify which parts of the code are the content layer, the presentation layer and the behaviour layer. create a website for a local shop. Your website needs to have at least three different pages, and should advertise the shop and the products that they sell. Create styles for headings, paragraphs and bulleted lists.
21.2 Create a web page	• Use software tools to create the content layer of a web page to meet the needs of the audience	Learners should look to pick out things like the title is placed in the header along with any attached style sheets and identification of the use of a scripting language. Apply the style sheet to all pages as you create them. Make sure it is placed in the correct section. Tag the text on each page with the appropriate text style, e.g. h1, h2, h3, h, li. Learners could look to include the following content and styling to their website, to exercise the extent of the skills they need to be able to demonstrate
	• Use software tools to appropriately place the content in a web page •	Learners need to look to add at least one movie clip and one sound clip into their website. They could look to include an audio welcome message, or jingle for the website, and use this as a sound clip.

	• Use software tools to create navigation within a web page and between web pages •	Discuss with learners that webpages can be set up in different ways. Show learners a webpage that has individual pages that are linked using navigation links. Create links on this page back to the index page and the second page.
21.3 Use style sheets	• Use software tools to create the presentation layer of a web page	• . Demonstrate to learners how to apply formatting to text using the style attribute within the tag, and then how to apply the same formatting using a style sheet and classes. Ask learners if they can see any benefits and drawbacks of each method.
7. System Life Cycle 7.1 Analysis	• Methods of researching an existing system • identify and describe methods of researching an existing system (e.g. observation, interviews, questionnaires and examination of existing documents) discuss the disadvantages and advantages of the different methods.	Provide a flow chart to show the stages in systems analysis, starting with analysis and finishing with evaluation and review. This will provide a clear picture of systems analysis and design.
7.2 Design	• Describe how it is necessary to design documents, files, forms/inputs, reports/outputs and validation • Produce designs to solve a given problem • Design data capture forms and screen layouts • Design report layouts and screen displays • Design validation routines (including length check, type check, format check, presence check, check digit) • Design the required data/file structures (e.g. field length, field name, data type)	• Ask learners to design a data capture form for signing up to a social networking site. Ask them to consider a logical layout and validation methods in their design. • Present the most common methods of validation to the class, with descriptions and examples – learners should make notes and add these to their glossary of terms.

7.2 Development and testing	• Describe how it is necessary to design documents, files, forms/inputs, reports/outputs and validation • Produce designs to solve a given problem • Design data capture forms and screen layouts • Design report layouts and screen displays • Design validation routines (including length check, type check, format check, presence check, check digit) • Design the required data/file structures (e.g. field length, field name, data type)	Present the most common methods of validation to the class, with descriptions and examples – learners should make notes and add these to their glossary of terms.
7.3 Development and testing	• Testing designs describe how data/file structures are created and tested describe how validation routines are created and tested describe how input methods are created and tested describe how output formats are created and tested • Testing strategies describe the need to test each module describe the need to test the whole system describe testing using normal data including definition and examples describe testing using live data including definition and examples describe testing using abnormal data including definition and examples describe testing using extreme data including definition and examples	The designers will have to be sure that they have designed appropriate validation routines that will test the data input to a system. Review the range of validation checks.

	• Improvements needed as a result of testing • describe how it may be necessary to improve the system and make changes (e.g. data/file structures, validation routines, input methods, output formats may need to be amended/improved)	
7.4 Implementation	• Different methods of system implementation • describe the four methods of implementation (direct changeover, parallel running, pilot running, phased implementation)	. Ask learners to choose an appropriate method of installation for each and justify their choice. Learners can discuss the advantages and disadvantages for the four methods of implementation and when it would be appropriate to use them. Learners make notes of their thoughts and share them with the rest of the class.
7.5 Documentation	• Technical documentation for an information system explain the need for technical documentation • identify the components of technical documentation	Ask learners to identify what they would expect to find in a user manual for a system. Learners may look at different types of technical documentation used.
7.6 Evaluation	Describe the need to evaluate a solution in terms of the efficiency of the solution, the ease of use of the solution, and the appropriateness of the solution	Give learners a list of requirements and a solution e.g. a spreadsheet model. Ask learners to evaluate how closely (or not) the model meets the requirements.
Storage devices and media	• Identify storage devices and their uses, ○ optical backing storage media ○ solid state backing storage: solid state drives, memory sticks/pen drives, flash • Describe the advantages and disadvantages of the above devices	Give learners a table with storage devices in and ask them to compare them for use, size, advantages and disadvantages. Students will present a PowerPoint
Communication	• Describe the constraints that affect the use of email, including: the laws within a country, acceptable language, copyright, local guidelines set by an	• Discuss software copyright laws and why they are required. Learners will know of issues concerning the music industry and how they are affected by

Communicate with other ICT users using email	employer, the need for security, netiquette, password protection • Define the term spam • Explain why spam needs to be prevented • Describe the methods which can be used to help prevent spam Explain why email groups are used	illegal downloads (online piracy). Internet streaming music software, e.g. 'Spotify' can be researched and discussed. • Learners may create a glossary of terms where they can write their own definitions and information about each term which is listed in the learning objectives column and learners are required to learn. **(I)** • Learners compile a list of advantages and disadvantages of using the internet.
10.2 Effective use of the internet	• Fundamentals of the internet • Advantages and disadvantages of using the internet	• Learners may create a glossary of terms where they can write their own definitions and information about each term which is listed in the learning objectives column and learners are required to learn. • Learners list the uses of social networking and describe their own experiences of using it. Issues may be discussed.
ICT applications 6.4 Microprocessors in control applications	• Describe the role of a microprocessor or computer in control applications, including the role of the pre-set value • Describe the use of computer control in applications (e.g. turtle graphics, automatic washing machines, automatic cookers, computer controlled central heating systems, burglar alarms, computer controlled glasshouse)	Ask learners to create a flowchart to represent the control system involved in a burglar alarm.

6.5 Modelling applications	• Describe the use of computer modelling in spreadsheets (e.g. for personal finance)	Ask learners to consider the impact of not modelling the budget for an event e.g. a concert, on a spreadsheet. They should be raising issues such as not knowing what to effectively charge as a ticket price.
6.6 Applications in manufacturing industries	• Describe a range of computer controlled applications (e.g. robotics in manufacture and production line control) • Discuss the advantages and disadvantages of using computer controlled systems rather than humans	**Extension activity:** Learners in small groups investigate a range of computer controlled applications and report to the rest of the class.
6.10 Computers in medicine	• Describe the contents of information systems in medicine (including patient records, pharmacy records, monitoring and expert systems for diagnosis) • Describe how 3D printers can be used in producing medical aids (e.g. surgical and diagnostic aids, development of prosthetics and medical products, tissue engineering, artificial blood vessels and the design of medical tools and equipment)	**Extension activity:** Ask learners to research a news story about 3D printing in medicine. Ask learners as a group to give a presentation about what they have discovered.
6.12 Expert systems	• Identify a range of applications which use expert systems (e.g. mineral prospecting, car engine fault diagnosis, medical diagnosis, chess games) • Identify the components of an expert system (e.g. interactive user interface, inference engine, rules base, knowledge base) • Describe how an expert system is used to suggest diagnoses	Ask learners to use an example of an experts system e.g. WebMD and ask them to identify how it is giving a diagnosis. Ask them to identify the different elements that allow this to happen.
6.13 Computers in the retail industry	• Describe the use of point of sale (POS) terminals, how the stock file is updated automatically, and how new stock can be ordered automatically	. Ask learners to then investigate an online supermarket to see if what they thought matches up to what they find.

	• Describe the use of electronic funds transfer at point of sale (EFTPOS) terminals (e.g. the checking of the validity of cards, the use of chip and PIN, the communication between the supermarket computer and the bank computer) • Describe internet shopping • Discuss the advantages and disadvantages of internet shopping	
6.14 Recognition systems	• Describe how recognition systems work (e.g. Magnetic Ink Character Recognition (MICR), Optical Mark Recognition (OMR) and Optical Character Recognition (OCR), Radio Frequency Identification Device (RFID)) • Describe how number plate recognition systems work • Describe the processing of cheques • Describe the processing of OMR media (e.g. school registers, multiple choice examination papers) • Describe how RFID is used in a range of applications (e.g. tracking stock, passports, automobiles, contactless payment)	• Provide a list of types of recognition systems and ask the learners to think about where they would be used, e.g. Magnetic Ink Character Recognition (MICR) is commonly used in the banking industry. • Learners list and discuss applications for Optical Mark Recognition (OMR), and feedback to the rest of the class. • Discuss with learners about how MICR is used in a bank. • Discuss with learners about how Radio Frequency Identification Device (RFID) tags are used in an airport.

SVKM J .V. Parekh International School

Long Term Plan

Academic Year 2019-2020

Subject: Economics **GRADE- IX**

Name of the Teacher(s): Ms. Dimple Kapadia

Strand/Topics	Learning Objectives (CAIE expectations)	Learning Experiences/Engagements
Basic Economic Problem 1.1 The nature of the economic problem 1.2 The factors of production 1.3 Opportunity cost	1.1.1 finite resources and unlimited wants 1.1.2 economic and free goods 1.2.1 definitions of the factors of production and their rewards 1.2.2 mobility of the factors of production 1.2.3 quantity and quality of the factors of Production 1.3.1 definition of opportunity cost	Probe students discussion with a case study “Government printing unlimited money” Supported with ppt on basic eco problem. Yoga activity and classification PPT , Textbook – Susan Grant Examples, ppt

1.4 Production possibility curve diagrams (PPC)	1.3.2 the influence of opportunity cost on decision making 1.4.1 definition of PPC 1.4.2 points under, on and beyond a PPC 1.4.3 movements along a PPC 1.4.4 shifts in a PPC	Video on Dinesh Bakshi Textual Activities, MCQ, four part questions.
2.2 The role of economic system 2.9 Market economic system 2.11 Mixed economic system 2.11.1 definition of the mixed economic system The role of markets in allocating resources 2.3 Demand	2.2.1 the market system 2.2.2 key resources allocation decisions 2.2.3 introduction to the price mechanism 2.3.1 definition of demand 2.3.2 price and demand 2.3.3 individual and market demand 2.3.4 conditions of demand 2.4.1 definition of supply 2.4.2 price and supply 2.4.3 individual and market supply 2.4.4 conditions of supply	PPT , Textbook – Susan Grant **Students debate on the best type of economic system** **PPT and textbook activities** **PPT and textbook activities**

2.4 Supply 2.5 Price determination 2.6 Price changes	2.5.1 market equilibrium 2.5.2 market disequilibrium 2.6.1 causes of price changes 2.6.2 consequences of price changes	
2.7 Price elasticity of demand (PED) 2.8 Price elasticity of supply (PES)	2.7.1 definition of PED 2.7.2 calculation of PED 2.7.3 determinants of PED 2.7.3 determinants of PED 2.7.4 PED and total spending on a product/revenue 2.7.5 significance of PED 2.8.1 definition of PES 2.8.2 calculation of PES	Ask learners to decide how they would react if the price of all chocolate bars (or equivalent product) were to increase by 30%. How would they react if their favourite type of chocolate bar were to increase by 30% whilst all other chocolate bars stayed unchanged? **PPT & TEXT BOOK**

	2.8.3 determinants of PES 2.8.4 significance of PES	
2.10 Market failure	2.10.1 definition of market failure 2.10.2 causes of market failure 2.10.3 consequences of market failure	**PPT & Textbook** **Case study on COST BENEFIT Analysis**
3.1 Money and banking	**EXAMS** 3.1.1 money 3.1.2 banking	
3.2 Households	3.2.1 the influences on spending, saving and borrowing	**Group Activity & Group Discussison** **Case Study**

3.3 Worker	3.3.1 factors affecting an individual's choice of occupation 3.3.2 wage determination (including part of 2.11.2) 3.3.3 reasons for differences in earnings 3.3.4 division of labour/specialisation	Group Activity Graph representation
3.4 Trade unions	3.4.1 definition of a trade union 3.4.2 the role of trade unions in the economy 3.4.3 the advantages and disadvantages of trade union activity.	**PPT**
3.5 Firms 3.6 Firms and production	3.5.1 classification of firms 3.5.2 small firms 3.5.3 causes and forms of the growth of firms 3.5.4 mergers 3.5.5 economies and diseconomies of scale 3.6.1 demand for factors of production 3.6.2 labour-intensive and capital-intensive Production 3.6.3 production and productivity	**PPT** **Textual Activities**
3.7 Firms' costs, revenue and objectives	3.7.1 definition of costs of production 3.7.2 calculation of costs of production	**PPT**

3.8 Market structure	3.7.3 definition of revenue 3.7.4 calculation of revenue 3.7.5 objectives of firms 3.8.1 competitive markets 3.8.2 monopoly markets	
	REVISION EXAMS	
4.1 The role of government 4.2 The macroeconomic aims of government 4.3 Fiscal policy	4.1.1 the role of government 1 the macroeconomic aims of government 4.2.2 possible conflicts between macroeconomic aims 4.3.1 definition of the budget 4.3.2 reasons for government spending 4.3.3 reasons for taxation 4.3.4 classification of taxes 4.3.5 principles of taxation 4.3.6 impact of taxation 4.3.7 definition of fiscal policy 4.3.8 fiscal policy measures 4.3.9 effects of fiscal policy on government macroeconomic aims	**PPT** **Group Discussion on Government Budget**

Economics (2020-2021)

Strand/Topics	Learning Objectives (CAIE expectations)	Learning Experiences/Engagements
4.4 Monetary policy 4.5 Supply-side policy 4.6 Economic growth	4.4.1 definition of money supply and monetary policy 4.4.2 monetary policy measures 4.4.3 effects of monetary policy on government macroeconomic aims 4.5.1 definition of supply-side policy 4.5.2 supply-side policy measures 4.5.3 effects of supply-side policy measures on government macroeconomic aims 4.6.1 definition of economic growth 4.6.2 measurement of economic growth 4.6.3 causes and consequences of recession 4.6.4 causes of economic growth 4.6.5 consequences of economic growth 4.6.6 policies to promote economic growth	**PPT** **PPT**

4.7 Employment and unemployment	4.7.1 definition of employment, unemployment and full employment 4.7.2 changing patterns and level of employment 4.7.3 measurement of unemployment 4.7.4 causes/types of unemployment 4.7.5 consequences of unemployment 4.7.6 policies to reduce unemployment	**Students Activity** **Examples of unemployed from Dan Moniyan Book**
4.8 Inflation and deflation	4.8.1 definition of inflation and deflation 4.8.2 measurement of inflation and deflation 4.8.3 causes of inflation and deflation 4.8.4 consequences of inflation and deflation 4.8.5 policies to control inflation and deflation	**Group Activity on students' Family's monthly expenditure** **Group Project**
5.1 Living standards	5.1.1 indicators of living standards 5.1.2 comparing living standards and income Distribution	
5.2 Poverty	5.2.1 definition of absolute and relative poverty 5.2.2 the causes of poverty 5.2.3 policies to alleviate poverty and redistribute income.	

5.3 Population	5.3.1 the factors that affect population growth 5.3.2 reasons for different rates of population growth in different countries 5.3.3 the effects of changes in the size and structure of population on different countries 5.4.1 differences in economic development between countries	Group Activity and Discussion on researching different indicators in few developed and developing countries.
5.4 Differences in economic development between countries 6.1 International specialisation	6.1.1 specialisation at a national level 6.1.2 advantages and disadvantages of specialisation at a national level	Group Activity – students Research on Major exports of few countries that they researched in Activity 1
6.2 Globalisation, free trade and protection 6.3 Foreign exchange rates	6.2.1 definition of globalisation 6.2.2 role of multinational companies (MNCs) 6.2.3 the benefits of free trade 6.2.4 methods of protection (including part of 2.11.2) 6.2.5 reasons for protection 6.2.6 consequences of protection 6.3.1 definition of foreign exchange rate 6.3.2 determination of foreign exchange rate in foreign exchange market	**Case study** **Debate on Free Trade and Protectionism**

6.4 Current account of balance of payments	6.3.3 causes of foreign exchange rate fluctuations 6.3.4 consequences of foreign exchange rate fluctuations 6.3.5 floating and fixed foreign exchange rates (including part of 2.11.2) 6.4.1 structure 6.4.2 causes of current account deficit and surplus 6.4.3 consequences of current account deficit and surplus 6.4.4 policies to achieve balance of payments stability **REVISION through structured papers.**	**Graph and ppt on Exchange Rate** **Case study and Group Activity**
	EXAMS	

SVKM J .V. Parekh International School

Long Term Plan

Academic Year 2019-2020

Subject: Chemistry **GRADE- 9**

Name of the Teacher: Ms Sejal Vasarkar

Strand/Topics	Learning Objectives (CAIE expectations)	Learning Experiences/Engagements
The particulate nature of matter	State the distinguishing properties of solids, liquids and gases •• Describe the structure of solids, liquids and gases in terms of particle separation, arrangement and types of motion •• Describe changes of state in terms of melting,boiling, evaporation, freezing, condensation and sublimation •• Describe qualitatively the pressure and temperature of a gas in terms of the motion of its particles •• Show an understanding of the random motion of particles in a suspension (sometimes known as Brownian motion) as evidence for the kinetic particle (atoms, molecules or ions) model of matter •• Describe and explain diffusion **2 Experimental techniques**	•• Explain changes of state in terms of the kinetic theory •• Describe and explain Brownian motion in terms of random molecular bombardment •• State evidence for Brownian motion •• Describe and explain dependence of rate of diffusion on molecular mass •• Interpret simple chromatograms, including the use of *R*f values

Experimental techniques	**2.1 Measurement** •• Name appropriate apparatus for the measurement of Demonstrate knowledge and understanding of paper chromatography •• Interpret simple chromatograms •• Identify substances and assess their purity from melting point and boiling point information •• Understand the importance of purity in substances in everyday life, e.g. foodstuffs and drugs Describe and explain methods of purification by the use of a suitable solvent, filtration, crystallisation and distillation (including use of a fractionating column). (Refer to the fractional distillation of petroleum in section 14.2 and products of fermentation in section 14.6.) •• Suggest suitable purification techniques, given information about the substances involved	•• Outline how chromatography techniques can be applied to colourless substances by exposing chromatograms to substances called locating agents. (Knowledge of *specific* locating agents is **not** required.) 2.2.2 Methods of purification •• Describe and explain methods of purification by the use of a suitable solvent, filtration, crystallisation and distillation (including use of a fractionating column). (Refer to the fractional distillation of petroleum in section 14.2 and products of fermentation in section 14.6.) •• Suggest suitable purification techniques, given information about the substances involved Understand that isotopes have the same properties because they have the same number of electrons in their outer shell
Atoms, elements and compounds	**Atoms, elements and compounds** •• State the relative charges and approximate relative masses of protons, neutrons and electrons •• Define *proton number* (atomic number) as the number of protons in the nucleus of an atom •• Define *nucleon numbe*r (mass number) as the total number of protons and neutrons in the nucleus of an atom •• Use proton number and the simple structure of atoms to explain the basis of the Periodic Table (see section 9), with special reference to the elements of proton number 1 to 20	•• Describe the formation of ionic bonds between metallic and non-metallic elements •• Describe the lattice structure of ionic compounds

Atomic structure and the Periodic Table continued **Structure and bonding**	•• Define *isotopes* as atoms of the same element which have the same proton number but a different nucleon number •• State the two types of isotopes as being radioactive and non-radioactive **Atomic structure and the Periodic Table continued** •• State one medical and one industrial use of radioactive isotopes •• Describe the build-up of electrons in 'shells' and understand the significance of the noble gas electronic structures and of the outer shell electrons. (The ideas of the distribution of electrons in s and p orbitals and in d block elements are **not** required.) **3.2 Structure and bonding** 3.2.1 Bonding: the structure of matter •• Describe the differences between elements, mixtures and compounds, and between metals and non-metals •• Describe an alloy, such as brass, as a mixture of a metal with other elements 3.2.2 Ions and ionic bonds •• Describe the formation of ions by electron loss or gain •• Describe the formation of ionic bonds between elements from Groups I and VII	as a regular arrangement of alternating positive and negative ions 3.2.3 Molecules and covalent bonds •• Describe the formation of single covalent bonds in H2, C*l*2, H2O, CH4, NH3 and HC*l* as the sharing of pairs of electrons leading to the noble gas configuration •• Describe the differences in volatility, solubility and electrical conductivity between ionic and covalent compounds •• Describe the electron arrangement in more complex covalent molecules such as N2, C2H4, CH3OH and CO2 •• Explain the differences in melting point and boiling point of ionic and covalent compounds in terms of attractive forces •• Describe the macromolecular structure of silicon(IV) oxide (silicon dioxide) •• Describe the similarity in properties between diamond and silicon(IV) oxide, related to their structures 3.2.5 Metallic bonding •• Describe metallic bonding as a lattice of positive ions in a 'sea of electrons' and use this to describe the electrical conductivity and malleability of metals

	3.2.4 Macromolecules •• Describe the giant covalent structures of graphite and diamond •• Relate their structures to their uses, e.g. graphite as a lubricant and a conductor, and diamond in cutting tools	
Stoichiometry	**Stoichiometry** •• Use the symbols of the elements and write the formulae of simple compounds •• Deduce the formula of a simple compound from the relative numbers of atoms present •• Deduce the formula of a simple compound from a model or a diagrammatic representation •• Construct word equations and simple balanced chemical equations •• Define *relative atomic mass*, *A*r, as the average mass of naturally occurring atoms of an element on a scale where the 12C atom has a mass of exactly 12 units •• Define *relative molecular mass*, *M*r, as the sum of the relative atomic masses. (*Relative formula mass* or *M*r will be used for ionic compounds.) (Calculations involving reacting masses in simple proportions may be set. Calculations will **not** involve the mole concept.)	Define the *mole* and the *Avogadro constant* •• Use the molar gas volume, taken as 24 dm3 at room temperature and pressure •• Calculate stoichiometric reacting masses, volumes of gases and solutions, and concentrations of solutions expressed in g / dm3 and mol / dm3. (Calculations involving the idea of limiting reactants may be set. Questions on the gas laws and the conversion of gaseous volumes to different temperatures and pressures will **not** be set.) •• Calculate empirical formulae and molecular formulae •• Calculate percentage yield
Electricity and chemistry	**Electricity and chemistry** •• Define electrolysis as the breakdown of an ionic compound, molten or in aqueous solution, by the passage of electricity •• Describe the electrode products and the observations made during the electrolysis of: — molten lead(II) bromide — concentrated hydrochloric acid — concentrated aqueous sodium chloride	Relate the products of electrolysis to the electrolyte and electrodes used, exemplified by the specific examples in the Core together with aqueous copper(II) sulfate using carbon electrodes and using copper electrodes (as used in the refining of copper) •• Describe electrolysis in terms of the ions present and reactions at the electrodes in the examples given

	— dilute sulfuric acid between inert electrodes (platinum or carbon) •• State the general principle that metals or hydrogen are formed at the negative electrode (cathode), and that non-metals (other than hydrogen) are formed at the positive electrode (anode) •• Predict the products of the electrolysis of a specified binary compound in the molten state •• Describe the electroplating of metals Describe the reasons for the use of copper and (steel-cored) aluminium in cables, and why plastics and ceramics are used as insulators	•• Predict the products of electrolysis of a specified halide in dilute or concentrated aqueous solution •• Construct ionic half-equations for reactions Describe the transfer of charge during electrolysis to include: — the movement of electrons in the metallic conductor — the removal or addition of electrons from the external circuit at the electrodes — the movement of ions in the electrolyte •• Describe the production of electrical energy from simple cells, i.e. two electrodes in an electrolyte. (This should be linked with the reactivity series in section 10.2 and redox in section 7.4.) •• Describe, in outline, the manufacture of: — aluminium from pure aluminium oxide in molten cryolite (refer to section 10.3) — chlorine, hydrogen and sodium hydroxide from concentrated aqueous sodium chloride (Starting materials and essential conditions should be given but not technical
Chemical energetics	**Chemical energetics** Describe the meaning of *exothermic* and *endothermic* reactions •• Interpret energy level diagrams showing exothermic and endothermic reactions	•• Describe bond breaking as an endothermic process and bond forming as an exothermic process •• Draw and label energy level diagrams for exothermic and endothermic reactions using data provided •• Calculate the energy of a reaction using bond Energies Describe the use of hydrogen as a fuel reacting with oxygen to generate electricity in a fuel cell.

Energy transfer	**Energy transfer** Describe the release of heat energy by burning fuels •• State the use of hydrogen as a fuel •• Describe radioactive isotopes, such as 235U, as a source of energy	(Details of the construction and operation of a fuel cell are **not** required.)
	Identify physical and chemical changes, and understand the differences between them Describe and explain the effect of concentration, particle size, catalysts (including enzymes) and temperature on the rate of reactions •• Describe the application of the above factors to the danger of explosive combustion with fine powders (e.g. flour mills) and gases (e.g. methane in mines) •• Demonstrate knowledge and understanding of a practical method for investigating the rate of a reaction involving gas evolution •• Interpret data obtained from experiments concerned with rate of reaction Note: Candidates should be encouraged to use the term *rate* rather than *speed*.	•• Devise and evaluate a suitable method for investigating the effect of a given variable on the rate of a reaction •• Describe and explain the effects of temperature and concentration in terms of collisions between reacting particles. (An increase in temperature causes an increase in collision rate **and** more of the colliding molecules have sufficient energy (activation energy) to react whereas an increase in concentration only causes an increase in collision rate.) •• Describe and explain the role of light in photochemical reactions and the effect of light on the rate of these reactions. (This should be linked to section 14.4.) •• Describe the use of silver salts in photography as a process of reduction of silver ions to silver; and photosynthesis as the reaction between carbon dioxide and water in the presence of chlorophyll and sunlight (energy) to produce glucose and oxygen

Reversible reactions	**Reversible reactions** Understand that some chemical reactions can be reversed by changing the reaction conditions. (Limited to the effects of heat and water on hydrated and anhydrous copper(II) sulfate and cobalt(II) chloride.) (Concept of equilibrium is **not** required.) Define *oxidation* and *reduction* in terms of oxygen loss/gain. (Oxidation state limited to its use to name ions, e.g. iron(II), iron(III), copper(II), manganate(VII).)	Predict the effect of changing the conditions (concentration, temperature and pressure) on other reversible reactions •• Demonstrate knowledge and understanding of the concept of equilibrium Define *redox* in terms of electron transfer •• Identify redox reactions by changes in oxidation state and by the colour changes involved when using acidified potassium manganate(VII), and potassium iodide. (Recall of equations involving KMnO4 is **not** required.) •• Define *oxidising agent* as a substance which oxidises another substance during a redox reaction. Define *reducing agent* as a substance which reduces another substance during a redox reaction. •• Identify oxidising agents and reducing agents from simple equations
Acids, bases and salts	**Acids, bases and salts** **8.1 The characteristic properties** Describe the characteristic properties of acids as reactions with metals, bases, carbonates and effect on litmus and methyl orange •• Describe the characteristic properties of bases as reactions with acids and with ammonium salts and effect on litmus and methyl orange •• Describe neutrality and relative acidity and alkalinity in terms of pH measured using universal indicator paper (whole numbers only) •• Describe and explain the importance of controlling acidity in soil	Define *acids* and *bases* in terms of proton transfer, limited to aqueous solutions •• Describe the meaning of weak and strong acids and bases Further classify other oxides as neutral or Amphoteric Demonstrate knowledge and understanding of the preparation of insoluble salts by precipitation

	Classify oxides as either acidic or basic, related to metallic and non-metallic character Demonstrate knowledge and understanding of preparation, separation and purification of salts as examples of some of the techniques specified in section 2.2.2 and the reactions specified in section 8.1 Describe the following tests to identify: *aqueous cations*: aluminium, ammonium, calcium, chromium(III), copper(II), iron(II), iron(III) and zinc (using aqueous sodium hydroxide and aqueous ammonia as appropriate). (Formulae of complex ions are **not** required.) *cations*: use of the flame test to identify lithium, sodium, potassium and copper(II) *anions*: carbonate (by reaction with dilute acid and then limewater), chloride, bromide and iodide (by reaction under acidic conditions with aqueous silver nitrate), nitrate (by reduction with aluminium), sulfate (by reaction under acidic conditions with aqueous barium ions) and sulphite (by reaction with dilute acids and then aqueous potassium manganate(VII)) *gases*: ammonia (using damp red litmus paper), carbon dioxide (using limewater), chlorine (using damp litmus paper), hydrogen (using lighted splint), oxygen (using a glowing splint), and sulfur dioxide (using aqueous potassium manganate(VII))	•• Suggest a method of making a given salt from a suitable starting material, given appropriate information
The Periodic Table	**The Periodic Table**	Describe and explain the relationship between

Transition elements	Describe the Periodic Table as a method of classifying elements and its use to predict properties of elements Describe the change from metallic to non-metallic character across a period Describe lithium, sodium and potassium in Group I as a collection of relatively soft metals showing a trend in melting point, density and reaction with water •• Predict the properties of other elements in Group I, given data, where appropriate •• Describe the halogens, chlorine, bromine and iodine in Group VII, as a collection of diatomic non-metals showing a trend in colour and density and state their reaction with other halide ions •• Predict the properties of other elements in Group VII, given data where appropriate **Transition elements** Describe the transition elements as a collection of metals having high densities, high melting points and forming coloured compounds, and which, as elements and compounds, often act as catalysts **Noble gases** Describe the noble gases, in Group VIII or 0, as being unreactive, monoatomic gases and explain this in terms of electronic structure •• State the uses of the noble gases in providing an inert atmosphere, i.e. argon in lamps, helium for filling balloons	Group number, number of outer shell electrons and metallic/non-metallic character Identify trends in Groups, given information about the elements concerned Know that transition elements have variable oxidation states
Metals	**Metals** List the general physical properties of metals	

Extraction of metals	•• Describe the general chemical properties of metals, e.g. reaction with dilute acids and reaction with oxygen •• Explain in terms of their properties why alloys are used instead of pure metals •• Identify representations of alloys from diagrams of structure **Reactivity series** Place in order of reactivity: potassium, sodium, calcium, magnesium, zinc, iron, (hydrogen) and copper, by reference to the reactions, if any, of the metals with: — water or steam — dilute hydrochloric acid and the reduction of their oxides with carbon **Extraction of metals** Describe the ease in obtaining metals from their ores by relating the elements to the reactivity series •• Describe and state the essential reactions in the extraction of iron from hematite •• Describe the conversion of iron into steel using basic oxides and oxygen •• Know that aluminium is extracted from the ore bauxite by electrolysis •• Discuss the advantages and disadvantages of recycling metals, limited to iron/steel and aluminium Name the uses of aluminium: — in the manufacture of aircraft because of its strength and low density — in food containers because of its resistance to corrosion	Describe the reactivity series as related to the tendency of a metal to form its positive ion,illustrated by its reaction, if any, with: — the aqueous ions — the oxides of the other listed metals •• Describe and explain the action of heat on the hydroxides, carbonates and nitrates of the listed metals •• Account for the apparent unreactivity of aluminium in terms of the oxide layer which adheres to the metal Describe in outline, the extraction of zinc from zinc blende •• Describe in outline, the extraction of aluminium from bauxite including the role of cryolite and the reactions at the electrodes Explain the uses of zinc for galvanising and for making brass •• Describe the idea of changing the properties of iron by the controlled use of additives to form steel alloys

	•• Name the uses of copper related to its properties (electrical wiring and in cooking utensils) •• Name the uses of mild steel (car bodies and machinery) and stainless steel (chemical plant and cutlery)	
	REVISION	
	HOLIDAYS	

SVKM J .V. Parekh International School

Long Term Plan

Academic Year: 2019-20 & 2020-21

Subject: Art & Design **GRADE- IX**

Name of the Teacher(s): Namita Thakur

Strand/Topics	**Learning Objectives (CAIE expectations)**	**Learning Experiences/Engagements**
understanding the Course outline and assessment objectives and requirements of the two components	Understanding the demands and requirements of the course.	Course outline Student will be made acquainted with the Yearly planning of the syllabus Requirements of each of the components will be explained. Students will go through the syllabus for more information. Introduction to Component 1 Requirements of Component 1 will be explained and also they'll be explained that it is made up of two parts: the portfolio and the final outcome. Student will decide a theme for their coursework on the basis of their technical skills in art and their own interest. Students will select their best works from both of these coursework as well as the class work assignments to form their Component 1 Coursework and submit this to Cambridge International. The assessment objectives Students will be Introduced to the assessment objectives (AO1–AO4).

		AO1 Record ideas observations and insights relevant to intentions as work progresses AO2 Explore and select appropriate resources, media, materials, techniques and processes AO3 Develop ideas through investigation, demonstrating critical understanding AO4 Present a personal and coherent response that realises intentions and demonstrates an understanding of visual language.
Elements of Art	-To be able to classify & assess the elements of art in artwork and the environment -To be able to use the elements of art intentionally & effectively for creating the artwork -to be able to understand visual and tactile elements, including colour, pattern and texture, line and tone, shape, form and space, and how these elements can be combined and organised for different purposes	Students will be creating an assignment based on their previous knowledge where they had been introduced to the Seven elements of art and how effectively they could be used to create the artwork. Student will demonstrate thoughtful use of seven elements of art I.e. Line Texture Colour Shape Form Space Value in various boxes along with the Artist's reference showing the intentional use of these elements of art to create an effective piece of artwork
Potted plant (observational assignment)	-to be able to create their own primary source with appropriate light and shade by clicking the images of the object. -To be able to record observations from primary	Student will be demonstrated how to draw the intricate details (Such as plant patterns) of the plant based on which they'll make their initial sketches from various angles from the primary sources created by themselves. After the completion of initial sketches they'll select one of those sketches to create their final drawing to complete it along with painting.

	source in drawing as well as painting.	
Coursework assignments	-To be able to plan out and execute their coursework according to their selected theme	Student will be doing their coursework assignment simultaneously along with their classwork assignments for which they'll be following the requirements of the assessment objectives, studying the artist's work which is close to their own theme and using the visual language in effective way
Facade	-to be able to develop an idea around a give theme to create an artwork -gather information from a range of sources to inform their thinking -to be able to manipulate the images in their work to represent their ideas - to be able to draw the human faces (with basic knowledge of the structure of it) with expressions -make personal collections to inspire ideas annotate drawings and make written notes	Student will study the structure of a human face by making initial sketches and compositions from the primary sources they have created themselves. Based on these initial sketches where they'll try various possibilities to depict their theme, they'll create a final drawing which will show the development from the previous sketches. They'll complete the same by making planned use of line, texture, colours and values to represent their theme effectively. In preparatory work they'll write the annotations to explain their theme as well as to explain why and how elements of art have been used intentionally

Folded, Pleated , Frayed	-to be able to arrange the objects to create a still life for their own primary sources. - To be able to record observations of clothes from primary source in drawing as well as painting.	Student will be demonstrated how to draw the details (Such as texture of clothes, folded , threaded and pleated part of the clothes) of the clothes based on which they'll make their initial sketches from various angles from the primary sources created by themselves. After the completion of initial sketches and compositions they'll select one of those sketches to create their final drawing to complete it along with painting as well as pencil rendering. Students will make use of various textures to create a realistic work based on their primary sources
Tangled	- To be able to develop an idea with the help of mind mapping around a given theme to create an artwork - To be able use a variety of methods and approaches to communicate observations, ideas and feelings, and to make images and artwork - To be able to explore materials and processes used in artwork and how these can be matched to ideas and intentions	Student will do the research for the given theme, along with gathering the relevant information and images and by creating the primary sources by clicking pictures of various natural as well as manmade objects (such as tangled hair, roots . They will make initial sketches and compositions from the primary sources they have created. Based on these initial sketches where they'll try various possibilities to depict their theme, they'll create a final drawing which will show the development from the previous sketches. They'll complete the same by making planned use of line, texture, colours and values to represent their theme effectively. In preparatory work they'll write the annotations to explain their theme as well as to explain why and how elements of art have been used intentionally

A person painting at the easel	-To be able to draw the human figure in a particular posture with basic knowledge of human anatomy -to be able to create a primary source for drawing human figure in a given posture	Student will create primary sources for their observational assignment by arranging the model in a given posture and by clicking the images from various angles and light Before starting the actual drawing student will study the structure of a human body with the help of anatomical drawings by other artists to prepare for the final work Student will make initial sketches (from various angles) and compositions from observation of their primary sources.
A pile of books, pens, pencils and a lamp	-to be able to arrange the objects to create a still life for their own primary sources. - to be able to arrange a still life with certain objects to convey ideas and meanings - To be able to record observations of a group of objects from primary source in drawing as well as painting.	Student will arrange their own group of objects to create their own still life set up. They'll create primary sources from various angles and with appropriate use of light and shade. They'll make their initial sketches of various compositions from various angles from the primary sources created. After the completion of initial sketches and compositions they'll select one of those sketches to create their final drawing to complete it along with painting as well as colour pencil.
Surreal	-to introduce students to Surrealism- the Art movement as well as the artists from the movement - To be able create their own work using various characteristics of surrealism.	Student will be shown a ppt about an art movement surrealism and surrealist artist Rene Magritte. They'll be explained the various characteristics of surrealism in order to make use of them and create their own artwork based on surrealism. They'll make their initial sketches of various compositions from the relevant primary sources created.

		After the completion of initial sketches and compositions they'll select one of those sketches to create their final drawing to complete it along with painting using poster colours, water colours and mix media.
Steps	-to be able to draw the architectural structure with the advanced knowledge of perspective -to be able to create their own primary sources for an outdoor theme -to be able to represent the architectural structure realistically in drawing as well as painting	Student will create primary sources from various angles and with appropriate use of light and shade to represent their theme with perspective. They'll make their initial sketches of various compositions from the primary sources created. After the completion of initial sketches and compositions they'll select one of those sketches to create their final drawing to complete it along with painting and charcoal.
Create an artwork based on a given poem	-to be able to comprehend and interpret the given poem according to their understanding to create an artwork based on it -To be able to develop an idea with the help of mind mapping around a given theme to create an artwork -To be able use a variety of methods and approaches to communicate observations, ideas and feelings, and to	Student will read part of the given poem and do the mind mapping to create an artwork, where they'll be making use of the imagery used in the poem. With the help of an imagery in the given poem they'll create their own primary sources to create an artwork. They'll make their initial sketches of various compositions from the relevant primary sources created. After the completion of initial sketches and compositions they'll select one of those sketches to create their final drawing to complete it along with watercolours.

	design and make images and artwork -To be able to explore materials and processes used in artwork and how these can be matched to ideas and intentions.	
Coursework assignment	record from experience and imagination, to select and record from first-hand observation and to explore ideas for different purposes	Student will make use of the primary sources they have created to create artwork based on their theme. While doing this they'll keep in mind the assessment objectives, they'll refer to the artist's work which resembles with their theme and make an effective use of the elements of art. Student will record from experience and imagination, to select and record from first-hand observation and to explore ideas for different purposes
Coursework assignment	Collect visual and other information [for example, images, materials] to help them develop their ideas, including using a sketchbook.	Student will Collect visual and other information [for example, images, materials] to help them develop their ideas, using a sketchbook. Student will make use of the primary sources they have created to create artwork based on their theme. While doing this they'll keep in mind the assessment objectives, they'll refer to the artist's work which resembles with their theme and make an effective use of the elements of art.
Coursework assignment	investigate and combine visual and tactile qualities of materials and processes and to match these qualities to the purpose of the work	Student will investigate and combine visual and tactile qualities of materials and processes and to match these qualities to the purpose of the work. Student will make use of the primary sources they have created to create artwork based on their theme. While doing this they'll keep in mind the assessment objectives, they'll refer to the artist's work which resembles with their theme and make an effective use of the elements of art.

Coursework assignment	Understanding what the visual elements refer to can help the pupils develop their aesthetic awareness. They gain language which they can use to describe the real, imagined, visual and tactile worlds. Both you and your pupils can use this shared vocabulary to discuss features of their work and progress.	Student will make use of the primary sources they have created to create artwork based on their theme. While doing this they'll keep in mind the assessment objectives, they'll refer to the artist's work which resembles with their theme and make an effective use of the elements of art.
Coursework assignment	apply their experience of materials and processes, including drawing, developing their control of tools and techniques	Students will apply their past experience of materials (i.e. Poster colours, water colours, colour pencils, charcoal etc.) and processes(e.g. creating a background with collage or texture relevant to their theme and then creating their final work on it), including drawing, developing their control of tools and techniques (e.g. various techniques to use watercolours, different types of pencil rendering etc.)
Coursework assignment	Use a variety of methods and approaches to communicate observations, ideas and feelings, and to design and make images and artefacts.	Students will Use a variety of methods (e.g. using symbolism or using surrealist devices etc.) and approaches to communicate observations, ideas and feelings, and to design and make images and artefacts.
Final Outcome	Student will create their final outcome for their coursework according to their selected theme.	Student will create their final outcome for their coursework which will show the gradual development of the theme they have selected at the start of this course. For which they'll be using the media they are well versed with.