



SVKM J .V. Parekh International School

Long Term Plan

GRADE- 8

ENGLISH

Strand/ Topics	Learning Objectives (CAIE expectations)	Learning Experiences/ Engagements
Reading Writing	Non Fiction: 1. Select from a range of strategies and use the most appropriate ways to locate, retrieve and compare information and ideas from a variety of text. 2. Write to analyse, review and comment with a sense of linked progression. Fiction 1. Analyse and respond to the range of ideas and differing viewpoints and	Students are able to read, comprehend, learn new vocabulary and analyse nonfiction texts. Students are able to identify the features of magazine article and speech followed by writing one. Students were able to read, comprehend and analyse various fictional extracts.

	<p>interpretations of texts, supporting points with detailed textual evidence.</p> <p>2. Link a selection of ideas and planning choices explicitly to a clear sense of task, purpose and audience and establish and sustain character, point of view and voice.</p>	<p>Students were able to plan and write short story openings focusing on the setting, atmosphere, mood and the character.</p>
<p>Reading</p> <p>Writing</p> <p>Speaking</p>	<p>Non Fiction</p> <p>1. Select from a range of strategies and recognise ways in which writer uses different registers and other methods to communicate with their audience.</p> <p>2. Link a selection of ideas and select the most appropriate text format, layout and presentation to create impact and engage the reader.</p> <p>3. work in groups for a variety of purposes, such as taking decisions and planning and organisation</p> <p>Fiction</p> <p>1. Select from a range of strategies and analyse how meaning of the text differs according to the structural organisation</p>	<p>Students were able to read, comprehend and analyse various nonfiction reports.</p> <p>Students were able to understand the structure of a formal and informal letter followed by writing a formal letter.</p> <p>Students were able to present and collate ideas in a group discussion</p> <p>Students were able to read, comprehend and analyse various persuasive texts</p> <p>Students were able to identify and use embedded phrases and clauses that support succinct explanation to write a persuasive text.</p>

	<p>2. Shape and craft language within paragraphs and structure ideas between them, to achieve particular effect and purpose and audience in mind.</p> <p>3. Make increasingly significant contributions both as solo speakers and as members of groups.</p> <p>4. Demonstrate control of wide variety of sentence types used for intended purpose and desired effect.</p>	<p>Students were able to present their views and persuade the audience on the given topic.</p>
<p>Reading</p> <p>Writing</p>	<p>Non fiction</p> <p>1. Use a repertoire of reading strategies to analyse and explore different layers of meaning within texts, including bias.</p> <p>2. write to analyse, review, comment and select convincing evidence, opinions and appropriate information</p> <p>Fiction</p> <p>1. Analyse various extracts in depth and detail writers' use of literary, rhetorical and grammatical features and there effects on different readers.</p> <p>2. Use the editing, proofreading and</p>	<p>Students were able to read, comprehend and analyse various persuasive texts.</p> <p>Students were able to identify the features and write a persuasive article.</p> <p>Students were able to read, analyse and annotate argumentative prose, poem and drama.</p>

	<p>reviewing process, and revise as necessary, to evaluate the effectiveness and likely impact on the reader.</p>	<p>Students were able to understand, identify the features and write a diary entry</p>
	<p><u>September</u></p> <p>Non fiction Fiction</p>	<p>Students were able to solve checkpoint mock papers –</p> <p>paper 1 – non fiction</p> <p>paper 2 – fiction</p>
<p>Reading Writing</p>	<p>Language</p> <p>1. Explore how we can identify and unpack the explicit meanings followed by extracting detailed and implied meanings from a text.</p> <p>2. identify and collate point to write an effective summary</p> <p>Literature</p> <p>Poetry Pre IGCSE – Teaching the students to analyse the poem and preparing them for the IGCSE pattern of learning and appreciating poem text.</p> <p>Develop confidence in communicating beyond surface meanings to explore the poem's</p>	<p>students were able to identify, read and comprehend various factual extracts</p> <p>students were able to identify, list down and collate points to write a summary</p> <p>POEM</p> <p>1. Stopping by the Woods on a snowy evening</p> <p>2. Ozymandius</p> <p>Students will read the poem aloud from the text. In pairs they will consult the meanings of the difficult words in a dictionary.</p> <p>Students will discuss the meanings of words, identify the literary devices and the poet's use of:</p> <p>rhythm, rhyme, enjambment</p>

	<p>deeper implications.</p> <p>Explore how the poet uses language, form and structure to create and shape meanings and effects.</p>	<p>sound: alliteration, assonance, onomatopoeia etc</p> <p>imagery: simile, personification etc</p> <p>rhetorical: repetition, humour, irony. Etc.</p> <p>They will answer the questions to reach the deeper implication and support it with a personal response.</p> <p>PEE- point, evidence explanation will be stressed upon while analysing the poems.</p>
<p>Reading</p> <p>Writing</p>	<p>Language</p> <p>1. Read and identify the purpose of the text and use strategies to identify relevant textual evidence and ideas.</p> <p>2. Develop and enhance our writing to summarise skills</p> <p>Literature</p> <p>Poetry</p> <p>Develop confidence in communicating beyond surface meanings to explore the poem's deeper implications.</p> <p>Explore how the poet uses language, form and structure to create and shape meanings and effects.</p>	<p>Students were able to make notes using a range of different note-making formats and approaches (including mind mapping and tabulating) while annotating the text.</p> <p>Students are able to demonstrate control of wide variety of sentence types used for intended purpose and desired effect.</p> <p>POEM - London Snow</p> <p>Students will read the poem aloud from the text. In pairs they will consult the meanings of the difficult words in a dictionary.</p> <p>Students will discuss the meanings of words ,identify the literary devices and the poet's use of:</p> <p>rhythm ,rhyme ,enjambment</p> <p>sound: alliteration, assonance, onomatopoeia etc</p> <p>imagery: simile, personification etc</p>

	<p>Develop confidence in communicating a supported personal response.</p> <p>Prose</p> <p>To inculcate an understanding and appreciation of the set prose text among students.</p> <p>Move beyond surface meanings to explore deeper implications about character, how writer appeals to the senses to create settings ,how the narrative is told .</p> <p>The portrayal of character in the course of a prose text and the effect created by the author through the use of literary devices.</p>	<p>rhetorical:, repetition, humour, irony. Etc.</p> <p>They will answer the questions to reach the deeper implication and support it with a personal response.</p> <p>PEE- point, evidence explanation will be stressed upon while analysing the poems.</p> <p><u>Prose.</u> - There will come soft Rains</p> <p>Students will read the text. They will look for the meanings of difficult words in the dictionary . They will be taught to go beyond the surface meaning focussing on the imagery, symbol ,and other literary devices.</p> <p>They will identify the evidence in support of the point they are making.</p> <p>They will create a QUOTATION + COMMENT table.</p> <p>Then students identify the following aspects of prose fiction form:</p> <ul style="list-style-type: none"> • narration (moving the plot on) • description (of characters, setting) • dialogue (and how represented). <p>Focus will be on the IGCSE style questions</p>
	<p>Language</p> <p>1. Analyse and respond to the range of ideas and differing viewpoints and understand the use of literary,</p>	<p>Students were able to read and comprehend fictional texts and pick out phrases/words and</p>

Reading	rhetorical and grammatical features and their effects on different readers.	explain their associations.
Writing	2. Explore how a writer's use of language affects the reader's thinking and understandings	Students were able to read and analyse the text and identify figurative language and sense impressions, in a passage and explain meanings; suggesting something about the effect of the technique used in context.
	Literature	PROSE - On Her Knees
	PROSE	Students will read the lesson aloud. They will mark the characters.
	To inculcate an understanding and appreciation of the set prose text among students.	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.
	Move beyond surface meanings to explore deeper implications about character, how writer appeals to the senses to create settings, how the narrative is told .	They will identify the evidence in support of the point they are making.
	The portrayal of character in the course of a prose text and the effect created by the author through the use of literary devices.	They will create a QUOTATION + COMMENT table.
	DRAMA	Then students identify the following aspects of prose fiction form:
	Implore the dramatic effect of the key moments of the play.	<ul style="list-style-type: none"> • narration (moving the plot on) • description (of characters, setting) • dialogue (and how represented).
	Explore the precise ways in which language the writer uses language to	Focus will be on the IGCSE style questions
		<u>DRAMA</u> Introduction to Shakespeare Romeo & Juliet Act 1 Sc 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

	<p>UNSEEN PAPER</p> <p>To inculcate the understanding of unseen text - poem.</p> <p>Knowledge of the content of the text by differentiating between surface meaning and deeper meaning.</p> <p>Understand the use of language, structure, literary devices to shape the meaning and create effect in poem and characters, situations, themes in prose.</p>	<p>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</p> <p>Unseen Paper- Poem</p> <p>An unseen poem/prose text will be given to the students.</p> <p>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.</p> <p>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.</p> <p>For example:</p> <ul style="list-style-type: none"> • in poetry: stanza, rhythm, rhyme, enjambment • in prose: narration, description, dialogue.
Writing	<p>Language</p> <p>1. Explore how we can enhance the style and accuracy of our writing</p> <p>Literature</p> <p>Revision</p> <p>Poem</p> <p>Prose</p>	<p>Students were able to create their own writing structures and frames and thereby enhance their descriptive paragraphs.</p> <p>Poem</p> <p>The students will draw lines to indicate the different sections of the poem.</p> <p>On the copy of each poem, they highlight key words, phrases and sounds and make concise notes on the effects the poem.</p> <p>Go through past essays and add the essay titles to the relevant poems and think how they will</p>

	<p>Drama</p> <p>Unseen</p> <p>A past paper will be given to the students.</p> <p>They will annotate the poem, making concise comments about the effects of the words and phrases highlighted.</p> <p>Mark the different sections of the poem by drawing a line across the page and will comment how the writer uses structure, and other devices to communicate his ideas.</p>	<p>answer these questions now. Draw mind maps to help them gather ideas.</p> <p>Prose</p> <p>Test how well they know the text by summarising what happens immediately before and after the extracts.</p> <p>They will be asked to highlight the key words and phrases from these extracts and think how you would answer the questions now.</p> <p>Draw mind maps to help you gather ideas.</p> <p>Make lists of quotations together with brief comments on the writer's use of language for each main:</p> <ul style="list-style-type: none"> • character • theme • setting. <p>Drama</p> <p>List past extract. The students will summarise what happens immediately before and after the extracts.</p> <p>They will highlight key words and phrases from these extracts and think how they would answer the questions now.</p> <p>Draw mind maps to help you gather ideas.</p> <p>The students will make lists of quotations together with brief comments on the writer's use of language for each main:</p> <ul style="list-style-type: none"> • character
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HINDI

Strand/Topics	Learning Objectives (CAIE expectations)	Learning Experiences/Engagements
<p><u>Reading & Writing-</u> <u>Seen passage based on</u> Health is Wealth Section</p> <p><u>Grammar-</u> One word for phrase Noun- Proper, Common, abstract Hindi Counting- 1 to 100</p>	<ul style="list-style-type: none"> • identify and select relevant information • understand ideas, opinions and attitudes • show understanding of the connections between ideas, opinions and attitudes <ul style="list-style-type: none"> ✓ use a range of grammatical structures and vocabulary accurately and effectively ✓ show control of spelling 	<p>spoken interactions progressive reading reading and writing activities newspaper or magazine article Brain storming</p> <p>Videos and cd. Games-flash cards, Cover puzzles Pass the Ball</p>
<p><u>Reading & Writing-</u> Tourism World Section</p>	<ul style="list-style-type: none"> • identify and select relevant information • understand ideas, opinions and attitudes • show understanding of the connections between ideas, opinions and attitudes 	<p>spoken interactions progressive reading reading and writing activities newspaper or magazine article Brain storming</p>

<p>Grammar- Synonyms Antonyms Gender- Masculine & Feminine Number- Singular & Plural</p> <p>Art of writing- Diary Writing Informal letter writing Email writing</p>	<ul style="list-style-type: none"> • use a range of grammatical structures and vocabulary accurately and effectively • show control of spelling • communicate information/ideas/opinions clearly, accurately and effectively • organise ideas into coherent paragraphs using a range of appropriate linking devices • use a range of grammatical structures and vocabulary accurately and effectively • show control of punctuation and spelling • use appropriate register and style/format for the given purpose and audience • communicate ideas/opinions clearly, accurately and effectively • use a range of grammatical structures and vocabulary accurately and effectively • show control of pronunciation and intonation patterns 	<p>Videos and cd. Games-flash cards, Cover puzzles Pass the Ball</p> <p>practice writing short pieces of writing-Exemplar</p> <p>writing workshop- Which involves uninterrupted, silent, sustained writing on a topic of their own choice for 30 minutes.</p> <p>Shared writing session.</p> <p>Activity-Complete the sentence..... Paired interviews</p> <p>Rocket writing</p> <p>two- to-three-minute presentation three-to-four minute conversation or discussion</p>
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<p><u>Speaking</u> Formative 1 Topic presentation</p>		
<p><u>Reading & Writing-</u> Science Miscellany Section</p> <p><u>Grammar-</u> Pronoun- Personal,Definite,Indefinite,Interrogative,Relation,Reflexive</p> <p>Adjective- Adjective of quality, numbers, quantity, pronominal</p> <p><u>Speaking</u> Formative 2 Elocution</p>	<ul style="list-style-type: none"> • identify and select relevant information • understand ideas, opinions and attitudes • show understanding of the connections between ideas, opinions and attitudes <ul style="list-style-type: none"> ✓ use a range of grammatical structures and vocabulary accurately and effectively ✓ show control of spelling <ul style="list-style-type: none"> ▪ communicate ideas/opinions clearly, accurately and effectively ▪ use a range of grammatical structures and vocabulary accurately and effectively ▪ show control of pronunciation and intonation patterns <ul style="list-style-type: none"> ❖ communicate information/ideas/opinions clearly, 	<p>Brain storming spoken interactions progressive reading reading and writing activities newspaper or magazine article</p> <p>Videos and cd. Games-flash cards, Cover puzzles Pass the Ball</p> <p>two- to-three-minute presentation three-to-four minute conversation or discussion</p>

<p>Art of writing- Blog writing</p> <p><u>Listening-</u> Dialogue Story Article</p>	<p>accurately and effectively</p> <ul style="list-style-type: none"> ❖ organize ideas into coherent paragraphs using a range of appropriate linking devices ❖ use a range of grammatical structures and vocabulary accurately and effectively ❖ show control of punctuation and spelling ❖ use appropriate register and style/format for the given purpose and audience <ul style="list-style-type: none"> ○ Identify and select relevant information ○ understand ideas, opinions and attitudes ○ understand what is implied but not directly stated, e.g. gist, speaker's purpose, intention and feelings 	<p>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</p> <p>CD-ROMs-Saraswati and PaTvar Booklet</p>
<p><u>Reading & Writing-</u> Euphoria Section</p> <p><u>Listening-</u></p>	<ul style="list-style-type: none"> • identify and select relevant information • understand ideas, opinions and attitudes • show understanding of the connections between ideas, opinions and attitudes 	<p>spoken interactions progressive reading reading and writing activities newspaper or magazine article Brain storming</p>

<p>Dialogue Story Article</p> <p>Art of writing- Report Writing</p>	<ul style="list-style-type: none"> ○ Identify and select relevant information ○ understand ideas, opinions and attitudes ○ understand what is implied but not directly stated, e.g. gist, speaker's purpose, intention and feelings ❖ communicate information/ideas/opinions clearly, accurately and effectively ❖ organize ideas into coherent paragraphs using a range of appropriate linking devices ❖ use a range of grammatical structures and vocabulary accurately and effectively ❖ show control of punctuation and spelling ❖ use appropriate register and style/format for the given purpose and audience 	<p>CD-ROMs-Saraswati and PaTvar Booklet</p> <p>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</p>
<p><u>Reading & Writing-</u> <u>Seen passage based on World of Creatures</u></p>	<ul style="list-style-type: none"> ● identify and select relevant information ● understand ideas, opinions and attitudes ● show understanding of the connections between ideas, opinions and attitudes 	<p>spoken interactions progressive reading reading and writing activities newspaper or magazine article Brain storming</p>

<p>section</p> <p><u>Grammar-</u> Tense Correct sentences</p> <p><u>Speaking</u> Formative 1 Topic presentation</p>	<ul style="list-style-type: none"> ✓ use a range of grammatical structures and vocabulary accurately and effectively ✓ show control of spelling ▪ communicate ideas/opinions clearly, accurately and effectively ▪ use a range of grammatical structures and vocabulary accurately and effectively ▪ show control of pronunciation and intonation patterns 	<p>Videos and cd. flash cards</p> <p>two- to-three-minute presentation three-to-four minute conversation or discussion</p>
<p><u>Listening-</u></p> <p>Dialogue Story Article</p> <p><u>Art of writing-</u> Formal letter writing</p>	<ul style="list-style-type: none"> ○ Identify and select relevant information ○ understand ideas, opinions and attitudes ○ understand what is implied but not directly stated, e.g. gist, speaker's purpose, intention and feelings ❖ communicate information/ideas/opinions clearly, accurately and effectively ❖ organise ideas into coherent paragraphs using a range of appropriate linking devices 	<p>CD-ROMs-Saraswati and PaTvar Booklet</p> <p>practice writing short pieces of writing-Exampler</p> <p>writing workshop- Which involves uninterrupted, silent, sustained writing on a topic of their own choice for 30 minutes.</p> <p>Shared writing session.</p> <p>Activity-Complete the sentence.....</p>

<p>Summary writing</p>	<ul style="list-style-type: none"> ❖ use a range of grammatical structures and vocabulary accurately and effectively ❖ show control of punctuation and spelling ❖ use appropriate register and style/format for the given purpose and audience <ul style="list-style-type: none"> • understand ideas, opinions and attitudes • show understanding of the connections between ideas, opinions and attitudes • communicate information/ideas/opinions clearly, accurately and effectively • organise ideas into coherent paragraphs using a range of appropriate linking devices • use a range of grammatical structures and vocabulary accurately and effectively • show control of punctuation and spelling • use appropriate register and style/format for the given purpose and audience 	<p>Paired interviews</p> <p>Rocket writing</p> <p>Read out a report or short article and ask learners to make brief notes of the main ideas under three or four separate headings, and write a summary based on their notes.</p>
<p><u>Reading & Writing-</u> <u>Seen passage based on]</u> Environment</p>	<ul style="list-style-type: none"> • identify and select relevant information • understand ideas, opinions and attitudes 	<p>spoken interactions</p> <p>progressive reading</p> <p>reading and writing activities</p> <p>newspaper or magazine article</p> <p>Brain storming</p>

<p>Protection section</p> <p>Grammar- Punctuations Idioms</p> <p>Listening- Dialogue Story Article</p> <p>Art of writing- Speech Writing</p>	<ul style="list-style-type: none"> • show understanding of the connections between ideas, opinions and attitudes ✓ use a range of grammatical structures and vocabulary accurately and effectively ✓ show control of spelling ○ Identify and select relevant information ○ understand ideas, opinions and attitudes ○ understand what is implied but not directly stated, e.g. gist, speaker's purpose, intention and feelings ❖ communicate information/ideas/opinions clearly, accurately and effectively ❖ organise ideas into coherent paragraphs using a range of appropriate linking devices ❖ use a range of grammatical structures and vocabulary accurately and effectively ❖ show control of punctuation and spelling ❖ use appropriate register and style/format for the given purpose and audience 	<p>Videos and cd. flash cards</p> <p>CD-ROMs-Saraswati and PaTvar Booklet</p> <p>practice writing short pieces of writing-Exemplar</p> <p>writing workshop- Which involves uninterrupted, silent, sustained writing on a topic of their own choice for 30 minutes.</p> <p>Shared writing session.</p> <p>Activity-Complete the sentence..... Paired interviews</p> <p>Rocket writing</p>
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<p><u>Reading & Writing-</u> <u>Seen passage based on</u> Different Colors section</p> <p><u>Grammar-</u> Adverb Conjunction Prepositions interjection</p> <p><u>Art of writing-</u> Dialogue Writing</p> <p><u>Speaking</u> Formative 2</p>	<ul style="list-style-type: none"> • identify and select relevant information • understand ideas, opinions and attitudes • show understanding of the connections between ideas, opinions and attitudes ✓ use a range of grammatical structures and vocabulary accurately and effectively ✓ show control of spelling ❖ communicate information/ideas/opinions clearly, accurately and effectively ❖ organise ideas into coherent paragraphs using a range of appropriate linking devices ❖ use a range of grammatical structures and vocabulary accurately and effectively ❖ show control of punctuation and spelling ❖ use appropriate register and style/format for the given purpose and audience ▪ communicate ideas/opinions clearly, 	<p>Brain storming spoken interactions progressive reading reading and writing activities newspaper or magazine article</p> <p>Grammar Ref.Bk. Hindi Vyakaran 7</p> <p>Videos and cd. flash cards</p> <p>practice writing short pieces of writing-Exampler</p> <p>writing workshop- Which involves uninterrupted, silent, sustained writing on a topic of their own choice for 30 minutes.</p> <p>Shared writing session.</p> <p>Activity-Complete the sentence..... Paired interviews</p> <p>Rocket writing</p> <p>two- to-three-minute presentation three-to-four minute conversation or discussion</p>
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Elocution	<p>accurately and effectively</p> <ul style="list-style-type: none"> ▪ use a range of grammatical structures and vocabulary accurately and effectively ▪ show control of pronunciation and intonation patterns 	
<p><u>Listening-</u> Dialogue Story Article</p> <p>Art of writing- Essay Writing</p>	<ul style="list-style-type: none"> ○ Identify and select relevant information ○ understand ideas, opinions and attitudes ○ understand what is implied but not directly stated, e.g. gist, speaker's purpose, intention and feelings ❖ communicate information/ideas/opinions clearly, accurately and effectively ❖ organise ideas into coherent paragraphs using a range of appropriate linking devices ❖ use a range of grammatical structures and vocabulary accurately and effectively ❖ show control of punctuation and spelling ❖ use appropriate register and style/format for the given purpose and audience 	<p>CD-ROMs-Saraswati and PaTvar Booklet</p> <p>practice writing short pieces of writing-Exampler</p> <p>writing workshop- Which involves uninterrupted, silent, sustained writing on a topic of their own choice for 30 minutes.</p> <p>Shared writing session. Activity-Complete the sentence..... Paired interviews</p> <p>Rocket writing</p>

FRENCH

Strand/Topics	Learning Objectives (CAIE expectations)	Learning Experiences/Engagements
<p>Listening, Reading, Speaking & Writing</p> <p>Grammar: Adjectives and Reflexive Verbs, Revision of Present Tense</p> <p>1) Family, Friends and Everyday Life</p>	<p>Learners will be able to understand and exchange information about self, family, leisure interests, pets, friends and aspects of everyday life</p>	<p>Learners engage in self-introduction.</p> <p>They solve gap-filling and pairing exercises.</p> <p>They are provided with texts for Comprehension and True/False Statement Identification. They draft a short letter/post-card based on specimen provided.</p> <p>They solve Grammar Worksheet based on feminine adjectival forms.</p> <p><u>Reading/Writing/Listening Tasks:</u> Encore Tricolore 3 nouvelle edition: Student's Book, Teacher's Book & Audio CD Pack.</p>
<p>Speaking, Reading, Writing, Listening</p> <p>Grammar: Consolidation of Perfect Tense</p> <p>2) Tourist Information, Weather and Means of Transport</p>	<p>Learners will be able to seek and give tourist information, discuss weather/climate and describe holidays/visits</p>	<p>Learners watch a video presentation on the monuments of Paris https://www.youtube.com/watch?v=9FbPvmsivL8 followed by a short Quiz.</p> <p>They match captions and photographs to revise vocabulary based on tourism.</p> <p>They describe a recent visit for practice of perfect tense.</p> <p>Extensions Task: Learners go on a virtual tour of their locality, highlighting the shops and services available.</p> <p><u>Reading/Writing/Listening Tasks:</u> Encore Tricolore 3 nouvelle edition: Student's Book, Teacher's Book & Audio CD Pack</p>
<p>Speaking, Reading, Writing, Listening</p> <p>Grammar: Degrees of Comparison &</p>	<p>Learners will be able to talk about leisure activities /hobbies, give opinions and draw comparisons</p>	<p>Learners read and listen to texts for reinforcement of vocabulary.</p> <p>They write a short description about their leisure pursuits.</p> <p>They engage in sentence-matching and gap-filling tasks for usage of</p>

<p>Imperfect Tense</p> <p>3) Leisure/Hobbies</p>		<p>Imperfect Tense and degrees of comparison.</p> <p>Extension Task: They prepare a “<i>Sondage</i>” on Hobbies of classmates - Activity and Frequency.</p> <p>Reading/Writing/Listening Tasks: Encore Tricolore 3 nouvelle edition: Student’s Book, Teacher’s Book & Audio CD Pack.</p>
<p>Speaking, Reading, Writing, Listening</p> <p>Grammar: Negative Expressions and Revision of Near Future Tense</p> <p>4) School Life/Routine and Career Plans</p>	<p>Learners will be able to describe school and school routine, discuss future work and career plans</p>	<p>Learners revise school subjects with flashcards.</p> <p>They acquaint themselves with the Education System in France through a Ppt.</p> <p>They work in pairs to ask/answer questions about a typical day at school.</p> <p>They listen to recordings on career plans and learn to express their personal choice of work experience.</p> <p>They solve a Word Puzzle based on professions.</p> <p>They are provided with Grammar worksheets to apply Negative Forms appropriately and the Near Future Tense.</p> <p>Reading/Writing/Listening Tasks: Encore Tricolore 3 nouvelle edition: Student’s Book, Teacher’s Book & Audio CD Pack.</p>
<p>Speaking, Reading, Writing, Listening</p> <p>Grammar: Simple Future tense and Adverbial Pronoun ‘y’</p> <p>5) Holiday Plans and</p>	<p>Learners will be able to draw and discuss holiday plans, seek information on accommodation and report holiday problems</p>	<p>Learners listen to the publicity on “Futuroscope” (Theme Park) and match questions with answers.</p> <p>They engage in dialogues and interactive exercises for practice of the adverbial pronoun ‘y’.</p> <p>They participate in role-playing situations on hotel-booking and reporting problems</p> <p>They listen to recordings for identification of future tense and draw holiday</p>

<p>Excursions/Visits /Short Stays</p>		<p>plans in Simple Future tense.</p> <p>Reading/Writing/Listening Tasks: Encore Tricolore 3 nouvelle edition: Student's Book, Teacher's Book & Audio CD Pack.</p>
<p>Speaking, Reading, Writing, Listening</p> <p>Grammar: Usage of Perfect and Imperfect Tenses</p> <p>6) Health and Fitness, Malady and Accident</p>	<p>Learners will be able to discuss healthy eating/lifestyles, express discomfort, seek doctor's appointment and buy medical supplies, describe accidents</p>	<p>For revision of body parts, a timed competition is conducted wherein a picture of human body is to be labelled.</p> <p>Learners are provided with written texts and audio-visuals on food and eating habits of youth.</p> <p>They listen to conversations at the doctor's or at a pharmacy, in order to reinforce vocabulary on ailments and remedies.</p> <p>They are exposed to "<i>faits divers</i>" (short format articles) on accidents and write a short accident report.</p> <p>Extension Activity: Learners are required to set up a Discussion Forum on healthy lifestyle.</p> <p>Links to on-line worksheets for differentiation between Perfect and Imperfect Tenses are provided.</p> <p>Reading/Writing/Listening Tasks: Encore Tricolore 3 nouvelle edition: Student's Book, Teacher's Book & Audio CD Pack</p>
<p>Speaking, Reading, Writing, Listening</p> <p>Grammar: COD & COI</p> <p>7) Holiday/Travel Plans</p>	<p>Learners will be able to discuss in detail travel plans and options, execute bookings and deal with holiday problems</p>	<p>Learners simulate "Tourist Information Office" scenes to practise vocabulary and phrases.</p> <p>They write short e-mails about their own real/imaginary holiday plans.</p> <p>They are provided with sentence-completion and question-answer exercises for usage of Direct and Indirect Object Pronouns.</p> <p>Reading/Writing/Listening Tasks: Encore Tricolore 3 nouvelle edition:</p>

		Student's Book, Teacher's Book & Audio CD Pack.
<p>Speaking, Reading, Writing, Listening</p> <p>Grammar: Relative Pronouns Qui and Que; Adverbial Pronoun 'en'</p> <p>8) Our World</p>	<p>Learners will acquaint themselves with French-speaking regions around the world.</p> <p>Learners will be able to exchange information about countries, towns and regions. They will be able to understand environmental problems and propose solutions</p>	<p>Two French-speaking regions will be presented to learners through texts accompanied by general questions on "<i>Francophonie</i>".</p> <p>Audio-visuels are played to provide key vocabulary on environment and environmental problems.</p> <p>They read articles and listen to radio extracts for further information on environmental issues.</p> <p>They are provided with grammar worksheets based on Relative Pronouns 'Qui' and 'Que'.</p> <p>They go through the explanation of Adverbial Pronoun 'en' and practise it's usage with classroom objects.</p> <p>Reading/Writing/Listening Tasks: <i>Encore Tricolore 3 nouvelle edition</i>: Student's Book, Teacher's Book & Audio CD Pack.</p>

MATHEMATICS

Strand /Topics	Learning Objectives (CAIE expectations)	Learning Experiences/Engagements
NUMBER AND CALCULATION – INTEGER, POWER, ROOTS https://revisionmaths.com/content/numbers http://www.mathopenref.com		
	Revision of Integers, powers and roots	Differentiated exercises.
	Recognise the equivalence of 0.1 $\frac{1}{10}$ and 10^{-1} . Multiply and divide whole numbers and decimals by 10 to the power of any positive or negative integer.	Quick mental tests and differentiated exercises.
	Estimate square roots and cube roots.	Explain why $\sqrt{30}$ is between 5 and 6 or $\sqrt[3]{100}$ is between 4 and 5.
	Use positive, negative and zero indices and the index laws for multiplication and division of positive integer powers.	Develop patterns in results to show the effect of negative indices. Review and extend index laws from previous work.
	Use the order of operations, including brackets and powers.	Differentiated Exercises
NUMBER AND CALCULATION – SEQUENCES, FUNCTIONS https://revisionmaths.com/content/numbers http://www.mathopenref.com		

	Revision of sequences and functions	Differentiated Exercises
	Consolidate use of the rules of arithmetic and inverse operations to simplify calculations.	Differentiated Exercises
	Find the inverse of a linear function.	What will undo the table of results for this function? class discussion and gather ideas.
NUMBER AND CALCULATION – ROUNDING AND ACCURACY https://revisionmaths.com/content/numbers http://www.mathopenref.com		
	Revision of place value, ordering and rounding	Differentiated exercises
	Round numbers to a given number of decimal places or significant figures; use to give solutions to problems with an appropriate degree of accuracy.	Use similar methods for decimal places and sig figs. Given a rounded result convert it back to find a range of possible answers. Applying significant figures to news headlines
MEASURES- LENGTH, MASS, CAPACITY, TRAVEL GRAPHS https://revisionmaths.com/content/numbers http://www.mathopenref.com		
	Revision of Length, mass, capacity and time	Differentiated exercises
	Use compound measures to make comparisons in real-life contexts, e.g. travel graphs and value for money.	Focus on units vital to understand what you have - is 0.01 kg per \$ or \$ per kg. Most problems can be solved in a variety of ways.
GEOMETRY- 2D,3D SHAPES, ISOMETRICS, PLANS AND ELEVATIONS https://revisionmaths.com http://www.mathopenref.com		

	Revision of 2D,3D Shapes and properties, angle properties	Differentiated exercises and worksheets
	Calculate the interior or exterior angle of any regular polygon; prove and use the formula for the sum of the interior angles of any polygon; prove that the sum of the exterior angles of any polygon is 360° .	Videos on all topics, deriving proof of why do the exterior angles sum to 360? And formula for sum of interior angles of a polygon - http://cbsemathstudy.blogspot.in/2013/02/8th-polygons-solved-questions-papercbse.html
	Revise problems using properties of angles	Differentiated exercises
	Draw 3D shapes on isometric paper.	Video on 3D drawing. Using isometric paper
	Analyse 3D shapes through plans and elevations.	https://www.khanacademy.org/math/basic-geo/basic-geo-volume-surface-area/basic-geo-surface-area/e/nets-of-3d-figures https://www.ixl.com/math/grade-5/nets-of-3-dimensional-figures Video on plans and elevations. Developing plans and side views from the above drawings
	Identify reflection symmetry in 3D shapes.	Video on planes of symmetry. Drawing planes of symmetry in cubes, cuboids and compound shapes. https://www.slideshare.net/abyady/final-plane-symmetry-15245079
HANDLING DATA- PLANNING, COLLECTING AND ANALYSING DATA https://revisionmaths.com http://www.mathopenref.com		
	Revision of planning and collecting data	

	Suggest a question to explore using statistical methods; identify the sets of data needed, how to collect them, sample sizes and degree of accuracy.	Generating a Hypothesis, creating questionnaires in different situations, analysing questionnaires, knowing sample size
	Calculate statistics and select those most appropriate to the problem. Finding best average	Discuss various cases. http://www.cimt.org.uk/ www.mathsteacher.com
NUMBER AND CALCULATION-FRACTIONS https://revisionmaths.com http://www.mathopenref.com		
	Revision of fractions	Differentiated exercises
GEOMETRY-CONSTRUCTIONS AND PYTHAGORAS THEOREM https://revisionmaths.com http://www.mathopenref.com/tocs/constructionstoc.html		
	Revision of constructing the perpendicular from a point to a line and the perpendicular from a point on a line, perpendicular bisector, angle bisector	Work in pairs to provide a check on method and accuracy. Need to learn methods and choose appropriately each time. Observe videos on constructions.
	Drawing inscribe squares, equilateral triangles, and regular hexagons and octagons by constructing equal divisions of a circle	Work in pairs to provide a check on method and accuracy. Need to learn methods and choose appropriately each time. Observe step by step videos on constructions.
	Know and use Pythagoras' theorem to solve two-dimensional problems involving right-angled triangles.	Make sure that the unknown side is not always the hypotenuse. Change the orientation of triangles - use word problems instead of diagrams.
ALGEBRA-EXPRESSIONS, FACTORIZATION https://revisionmaths.com http://www.mathopenref.com		

	Apply the index laws for multiplication and division to simple algebraic expressions.	Observe the analogy between index laws for numbers and index laws for expressions.
	Simplify or transform algebraic expressions by taking out single-term common factors.	Simplify the results found above.
	Add and subtract simple algebraic fractions.	Review fraction work and compare with algebraic fractions.
	Expand the product of two linear expressions of the form $x \pm n$ and simplify the corresponding quadratic expression.	Lots of examples; review multiplication of directed numbers +ve and -ve. Work towards an understanding of the general solution $(x + A)(x + B) = x^2 + (A+B)x + AB$
NUMBER AND CALCULATION-DECIMALS AND PERCENTAGE		
		https://revisionmaths.com http://www.mathopenref.com
	Solve problems involving percentage changes, choosing the correct numbers to take as 100% or as a whole, including simple problems involving personal or household finance, e.g. simple interest, discount, profit, loss and tax.	Lots of opportunity for real life problem examples here. Including simulation of running a household which bills, how much, likely wage etc. Explaining payslip headings.
GEOMETRY-TRANSFORMATIONS AND LOCI		
		https://revisionmaths.com http://www.mathopenref.com
	Revision of Transformations	Worksheets, videos. The important word is combination. Sometimes the order matters sometimes not. Also need to know the notation of A' is used for the image of A etc.
	Enlarge 2D shapes, given a centre and positive integer scale factor; identify the scale factor of an	This develops previous work on enlargements. Encourage students to work in pairs and swap ideas and questions.

	enlargement as the ratio of the lengths of any two corresponding line segments.	
	Recognise that translations, rotations and reflections preserve length and angle, and map objects on to congruent images, and that enlargements preserve angle but not length.	This develops previous work on transformations. Encourage students to work in pairs and swap ideas and questions.
	Know what is needed to give a precise description of a reflection, rotation, translation or enlargement.	Follows from all the above work on transformations.
	Tessellate triangles and quadrilaterals and relate to angle sums and half-turn rotations; know which regular polygons tessellate, and explain why others will not.	A beautiful creative story printout 'US PENTAGON' from the book series "Murdermaths" for introduction. Review angle sum at a point and along a line. Prepared diagrams will help here. so that the focus is on the explanation not the draw of shapes.
	Use the coordinate grid to solve problems involving translations, rotations, reflections and enlargements.	Worksheets, videos. Fun activity worksheet using compound transformations. Creates word 'IMAGE' as a result.
	Find by reasoning the locus of a point that moves at a given distance from a fixed point, or at a given distance from a fixed straight line.	Videos. Physical demonstration of different loci using student groups. Toy goat tethered.

ALGEBRA- SIMULTANEOUS EQUATIONS ALGEBRAIC AND GRAPHIC		https://revisionmaths.com
http://www.mathopenref.com		
	Revision of solving linear equations	Differentiated exercises.
	Use systematic trial and improvement methods to find approximate solutions of equations such as $x^2 + 2x = 20$	Focus on the systematic- showing improvement and evidence of checking accuracy. Differentiated exercises.
	Solve a simple pair of simultaneous linear equations by eliminating one variable.	Differentiated exercises.
	Find the approximate solutions of a simple pair of simultaneous linear equations by finding the point of intersection of their graphs.	Here they really need to draw the graphs themselves move onto graph that intersect but do not have nice values there - leads to an algebraic approach.
	Understand and use inequality signs (<, >, ≤, ≥); construct and solve linear inequalities in one variable; represent the solution set on a number line.	Ask the class to list all the values of x that make $x > 3$ true.
Number and calculation-RATIO AND PROPORTION		https://revisionmaths.com http://www.mathopenref.com
	Revision of ratio and proportion	Worksheets from http://corbettmaths.com
GEOMETRY-AREA, PERIMETER, VOLUME		https://revisionmaths.com http://www.mathopenref.com
	Revision of conversion of units of area and volume, using hectares, solving circle problems	Conversion scale revision.

	Calculate lengths, surface areas and volumes in prisms and cylinders.	Deriving and applying formulas for volume and surface areas
DATA HANDLING – Probability https://revisionmaths.com http://www.mathopenref.com		
	Revision of probability	
GEOMETRY-BEARINGS, MAPS AND SCALES https://revisionmaths.com http://www.mathopenref.com		
	Use bearings (angles measured clockwise from the north) to solve problems involving distance and direction.	Fun activity- Provide a digital map on white board. One student decides starting destination. Second student decides final secret destination and gives route directions in terms of two to three angles. If first student draws correct route, both are rewarded.
	Make and use scale drawings and interpret maps.	Drawing scaled down drawing of the classroom.
DATA HANDLING AND GEOMETRY-GRAPHS https://revisionmaths.com http://www.mathopenref.com		
	Construct functions arising from real-life problems; draw and interpret their graphs.	Link to real life problem in unit 2A - for equations. https://www.gapminder.org/ www.stem.org.uk
	Select, draw, and interpret diagrams and graphs, including: <ul style="list-style-type: none"> - frequency diagrams for discrete and continuous data - line graphs for time series - scatter graphs to develop understanding of correlation - back to back stem-and-leaf diagrams. 	Videos. Drawing graphs on various cases. Analyse which is the best to use, and the benefits of each type.

	Interpret tables, graphs and diagrams and make inferences to support or cast doubt on initial conjectures; have a basic understanding of correlation.	If students present charts of their own data that they feel supports or casts doubt on their original hypothesis does the rest of the groups agree with them?
	Compare two or more distributions; make inferences, using the shape of the distributions and appropriate statistics.	Class discussion. www.mathsteacher.com
	Relate results and conclusions to the original question.	Follows on from the above it doesn't really matter if your original hypothesis was right or wrong as long as you can tell if your collected data supports it or not.

Pre IGCSE syllabus begins

NUMBER – TYPES OF NUMBERS

	<p>Identify and use natural numbers, integers (positive, negative and zero), prime numbers, square numbers, common factors and common multiples, rational and irrational numbers (e.g. π), real numbers, reciprocals π</p> <p>Includes expressing numbers as a product of prime factors. Finding the Lowest Common Multiple (LCM) and Highest Common Factor (HCF) of two numbers.</p>	<p>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. Learners would find it useful to have a definition of the listed terms (e.g. factor, multiple, square number) which can be found on the Maths Revision website www.mathsrevision.net</p> <p>A fun activity is to allocate a number to each learner in the class and ask them to stand up if their number exhibits a property that you call out. For example, you might call out “a multiple of 4”; “a factor of 18”, etc. Use this to show interesting facts, such as prime numbers will have 2 people standing up (this emphasises that 1 is not prime); and square numbers will have an odd number of people standing up. You can use this activity to highlight common factors/common multiples for pairs of numbers. This could be extended to HCF and LCM.</p> <p>A follow-on activity would be for learners to identify a number from a description of its properties. For example, say to the class “which number less than 50 has 3 and 5 as factors and is a multiple of 9?” You could also ask learners to make up their own descriptions and test one another.</p>
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		<p>Another interesting task is to look at Fermat's discovery, which shows that some prime numbers are the sum of two squares, e.g. $29 = 25 + 4 = 5^2 + 2^2$. Learners could see what other prime numbers they can form in this way, and any they can't form in this way. Learners can look for a rule that tests if a prime can be made like this.</p> <p>Look at how to write any integer as a product of prime numbers. One method that can be used is the factor tree approach which can be found online. Demonstrate this technique to your learners, then ask them to practise using the method to write other numbers as products of primes. Then ask learners to look at finding the product of primes of other numbers, for example 60, 450, 42, 315, but this time they should be encouraged to look for alternative methods, for example by researching on the internet; another useful method is the repeated division method.</p> <p>Give learners a definition of the terms rational, irrational and real numbers using site www.mathsisfun.com . Take tests on the site.</p>
	<p>Calculate with squares, square roots, cubes and cube roots and other powers and roots of numbers, e.g.</p>	<p>Using simple examples, illustrate squares, square roots, cubes and cube roots of integers.</p> <p>Extend this by asking more able learners to find the square and cube of fractions and decimals without using a calculator; you might need to cover topic 1.8 first to help with this.</p> <p>Show how to find the square root of an integer by repeated subtraction of consecutive odd numbers until you reach zero. For example, for 25 subtract in turn 1, 3, 5, 7, and then 9 to get to 0. Five odd numbers have been subtracted so the square root of 25 is 5. Ask learners to investigate this method for other, larger, square numbers.</p> <p>Explain to learners that the square number 121 is palindromic (when the digits are reversed it is the same number). Challenge learners to find all the palindromic square numbers less than 1000.</p> <p>To check their understanding, learners can then try the specimen paper question.</p>

	<p>Use directed numbers in practical situations, e.g. temperature changes, flood levels</p>	<p>Draw a number line from -20 to 20. Point to various numbers (both positive and negative) and ask learners questions such as “what is 5 more than this number?”; “What is 6 less than this number?” You can keep it simple by using only integers. Extension activity: extend the task by using decimals or fractions.</p> <p>Look at directed numbers in the context of practical situations such as temperature changes, flood levels, bank credits and debits. Learners can investigate a variety of temperature changes involving positive and negative temperatures, using the statistics for over 29 000 cities on www.weatherbase.com To check their understanding, learners can then try the past paper question.</p>
	<p>Order quantities by magnitude and demonstrate familiarity with the symbols $=, \neq, >, <, \geq, \leq$</p>	<p>good active learning approach to this topic is to give learners a set of cards with the symbols $=, \neq, >, <, \geq, \leq$. Ask them to choose which card should go in between pairs of quantities that you give them. For example, 400 m and 4000 cm; 20% and 0.2; -8 and -10, etc. Extend this by asking learners to consider when, or if, more than one card can be used (e.g. \neq can be used in place of $>$ or $<$).</p> <p>Give learners a list of fractions, decimals and percentages. Ask them to order these by magnitude using the inequality signs. To check their understanding, learners can then try the past paper question.</p>
	<p>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</p>	<p>Good starting activity is to ask learners to work in groups to use four 4s and the four rules for calculations to obtain all the whole numbers from 1 to 20, e.g. $4 + 4 \times 4 - 4 = 16$.</p> <p>The next step is to look at long multiplication, and short and long division. You can see the traditional and repeated subtraction (chunking) examples on the BBC bitesize website www.bbc.co.uk/schools/gcsebitesize/maths . This should be revision for most but is worth spending a bit of time on to ensure learners are confident in the methods.</p> <p>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</p>

		the use of a calculator as they may be expected to show working. learners to try the practice questions.
NUMBER – ACCURACY		
	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	<p>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.</p> <p>It is helpful to explain common misconceptions such as 43.98 to 1 d.p. is 44.0 not 44. Emphasise that for this syllabus, non-exact answers are required to three significant figures unless the question says otherwise. Revision of estimating and rounding can be found on www.math.com.</p>
	Give appropriate upper and lower bounds for data given to a specified accuracy, e.g. measured lengths. 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.	<p>Start this topic with examples to determine upper and lower bounds for data. Use simple examples and then progressively harder ones, such as: ‘a length, l, measured as 3 cm to the nearest millimetre has lower bound 2.95 cm and upper bound 3.05 cm’. Emphasise that the bounds, in this case, are not 2.5 and 3.5, which would be a common misconception. Show learners how this information can be written using inequality signs, e.g. $2.95 \text{ cm} \leq l < 3.05 \text{ cm}$.</p> <p>For extended learners, move on to looking at upper and lower bounds for quantities calculated from given formulae.</p> <p>To check their understanding, learners can then try the past paper question.</p>
	Use a calculator efficiently. Apply appropriate checks of accuracy.	<p>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. Find good examples and ask learners to practice.</p> <p>An interesting extension activity, linking this work to percentages, would be to investigate the percentage error produced by rounding calculations using addition/subtraction and multiplication/division. (You would need to explain percentage error beforehand.)</p>

NUMBER – FRACTIONS, DECIMALS AND PERCENTAGE

	<p>Use the language and notation of simple vulgar and decimal fractions and percentages in appropriate contexts. Recognise equivalence and convert between these forms</p> <p>Includes the conversion of recurring decimals to fractions</p>	<p>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). Ask learners to produce a crossword with the terms defined. Ask them to add any other terms that they can think of to do with fractions, decimals and percentages. Crosswords can be easily created using the excellent online software at www.eclipsecrossword.com</p> <p>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. For example 0.3 has 3 in the tenths column so it is $\frac{3}{10}$</p> <p>Look at the online lesson ‘converting repeating decimals to fractions at www.basic-mathematics.com to demonstrate how to convert recurring decimals to fractions. It uses the following method: $x = 0.15151515\dots$ $100x = 15.15151515\dots$ subtract these to get $99x = 15$ so $x = \frac{15}{99}$</p> <p>To check their understanding, learners can then try the past paper question. (F)</p>
	<p>Calculate a given percentage of a quantity. Express one quantity as a percentage</p> <p>Calculate percentage increase or decrease</p> <p>Carry out calculations involving reverse percentages, e.g. finding the</p>	<p>The best starting point is to revise converting between percentages and decimals. You can use examples that require the learners to find percentages of quantities, such as: to find 15% of \$24 they would calculate $0.15 \times 24 = 3.6$ so the answer is \$3.60. (Remind learners that in money calculations it is conventional to use 2 d.p. for dollar answers). You should encourage learners to practice mental arithmetic methods too, for example: divide by 10 to find 10%, halve this to find 5% and add these results to find 15%.</p> <p>Then, use examples to show how to express one quantity as a percentage of another including where there is a mixture of units.</p> <p>Extend the work on finding percentages of quantities to looking at how to calculate percentage increases and decreases. For example, to increase something by 15% you need to multiply by 1.15; to decrease something by 15% you need to multiply by 0.85. Provide practice examples.</p> <p>Eliminate the misconception that increasing a quantity by 50% and then decreasing</p>

	<p>cost price given the selling price and the percentage profit.</p>	<p>the resulting quantity by 50% leads back to the original value.</p> <p>For extended learners you will need to move on to calculations involving reverse percentages. There are two good videos explaining two different approaches for reverse percentages questions:</p> <ul style="list-style-type: none"> • ‘Reverse percentages’ on YouTube by ‘MrArnoldsMaths’ (https://www.youtube.com/watch?v=OQ9T1-0Up6I) • ‘Reverse percentages’ on the B grade maths website (http://bgrademaths.blogspot.co.uk) <p>Ask learners to compare these methods and to decide which method they think is easier.</p> <p>The STEM learning website (https://www.stem.org.uk/resources) has an excellent lesson on reverse percentages; search for ‘Using Percentages to Increase Quantities N7.’ The resource makes links between percentages, decimals and fractions and represents percentage increase and decrease as a multiplication and recognises the inverse relationship between increases and decrease. This material tackles the misconception that an increase of 50% followed by a decrease in 50% will take you back to the original value.</p> <p>‘Singapore Maths’ bar modelling can be used effectively to visualise reverse percentage www.greatmathsteachingideas.com includes an introduction on how to use a bar model with basic proportional reasoning problems; search for ‘Bar modelling – a powerful visual approach for introducing number topics’. This can be easily extended to include reverse percentage problems.</p>
	<p>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.</p>	<p>Learners will find it useful to have a definition of ratio with a practical demonstration, for example the ratio of different coloured beads on a necklace. Look at examples illustrating how a quantity can be divided into a number of unequal parts. For instance: ‘share \$360 in the ratio 2 : 3 : 7’. Move on to writing ratios in an equivalent form, e.g. 6 : 8 can be written as 3 : 4, leading on to the form 1 : n.</p> <p>An interesting alternative to exercise questions is the ratio jigsaw called ‘Tarsia – ratio (general)’ on the TES website (www.tes.co.uk) which learners can work in groups to complete. A fun homework task would be for learners to produce their own</p>

	<p>pressure and density.</p> <p>Increase and decrease a quantity by a given ratio.</p>	<p>'ratio' jigsaw. They can produce their own jigsaw using blank equilateral triangles and paper. However, if they prefer to do this task electronically then Tarsia software can be downloaded from the internet. (I)</p> <p>The next step is to look at ratio problems where you are not given the total. For example, 'Two lengths are in the ratio 4 : 7. if the shorter length is 48 cm, how long is the longer length?'</p> <p>Extend this to examples where you are given the difference. For example, 'The mass of two objects are in the ratio 2 : 5. One object is 36 g heavier than the other, what is the mass of each object?'</p> <p>The Nrich website https://nrich.maths.org has a series of problems of different levels of difficulty. Search for 'ratio and proportion' to obtain a list. They also have a set of problems on 'Ratio, proportion and rates of change' as well as some short problems; search for 'Ratio proportion and rates of change – short problems'.</p> <p>The Maths Is Fun website www.mathsisfun.com has a good summary of the difference between direct and inverse proportion; search for 'Directly proportional and inversely proportional'.</p> <p>Two variables are proportional if there is always a constant ratio between them. The constant is called the constant of proportionality. To express the statement "y is directly proportional to x" mathematically, write $y = cx$, where c is the proportionality constant. This can also be written as $y \propto x$. To express the statement "y is inversely proportional to x" mathematically, write an equation or "y is directly proportional to $\frac{1}{x}$". This can be demonstrated visually by drawing a graph of y against $\frac{1}{x}$, as per the example here https://www.desmos.com/calculator/audngjzwg8</p> <p>There is a lack of an explicit consensus of the role of a negative constant of proportionality.</p> <p>Look at drawing graphs to determine whether two quantities are in direct proportion. Ask learners to solve a variety of problems involving direct proportion by either the ratio method or the unitary method. Look at quantities in inverse proportion, for example, the number of days to perform a job and the number of people working on the job. You will be able to link proportion to measures of rate and scales, for</p>
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		<p>example exchange rates, average speed, density, map scales and other practical examples. For some ideas, read the online blog '<i>It started with a map</i>, November 2012' from colinbillett https://colinbillett.wordpress.com .</p> <p>For extended learners provide some good examples and questions on increasing and decreasing a quantity by a given ratio. Use specimen paper for question one which includes percentage change and compound interest questions to check students understanding (F).</p> <p>Use specimen paper 4, Q1(a) to check students' ability to apply ratio, percentages and fraction in context and specimen Paper 3, Q4(a) (b) to further check their understanding of ratio in context and also compound interest (F).</p>
	<p>Understand the meaning of indices (fractional, negative and zero) and use the rule of indices</p> <p>Use the standard form $A \times 10^n$ where n is a positive or negative integer, and $1 \leq A < 10$. Convert numbers into and out of standard form</p>	<p>Start with by revising the meaning of positive indices and the basic rules of indices such as $3^3 \times 3^5 = 3^8$, $5^4 \div 5^3 = 5^1 = 5$, etc. Give simple examples to revise writing an integer as a product of prime numbers, including writing answers using index notation. Try to avoid using 2 as the number you work with initially as this can encourage the misconception that 2^3 means 2×3 because of the exception that is 2^2 . This exception can be discussed once the concept is secure.</p> <p>An interesting challenge for learners is the puzzle 'Power Crazy' on the Nrich website https://nrich.maths.org . Ask learners to work in groups to complete the challenge. This can be extended to 'Excel investigation: Power Crazy' on the same website. This example also illustrates that a spreadsheet can be used as a tool to make calculations, but we need our brains to solve the problem using reasoning. Move on to negative, zero and fractional indices. You can move on to introducing fractional indices by relating them to roots (of positive integers), for example so. The rules of indices can be used to show how values such as can be simplified. Learners should try lots of examples and questions.</p>
	<p>Calculate with values in standard form.</p>	<p>The next step is to introduce standard form. The Maths Is Fun website www.mathsisfun.com can be used to make links between the rules of indices and standard notation. Search for 'Index notation and powers of 10' . Learners could explore the following problem:</p> <p>Using $a = 6 \times 10^3$ and $b = 3 \times 10^2$ determine which of these calculations gives the</p>

		<p>largest solution and which gives the smallest.</p> <p>It is important learners understand that standard form is way of writing very large and very small numbers. For example, it is used on a scientific calculator when a number is too large or too small to fit on the screen. Being able to write numbers in standard form depends on a secure understanding of place value. This understanding is fundamental in manipulating large and small numbers, both mentally and in written form.</p> <p>This video 'Powers of ten and the relative size of things in the universe' available on the Eames office official website www.eamesoffice.com ; it is also available on YouTube https://www.youtube.com/watch?v=OfKBhvDjuy0 . This is very good for helping learners to understand the concept of magnitude.</p> <p>The next step is to give learners a range of examples showing how to write numbers in C1.15 and E1.15 standard form and vice-versa. Emphasise to learners that different calculators display standard form in different ways and check that they know how to input numbers in standard form into their calculator.</p> <p>Extend this by using the four rules of calculation with numbers in standard form, both with and without a calculator. Emphasise common errors, for example, if learners are asked to work out the answer to $2.4 \times 10^4 - 2 \times 10^4$ in standard form it is common to see an answer of 0.4×10^4. Point out that answer is not in standard form, since 0.4 is less than 1.</p> <p>Ask learners to try the 'Standard form worksheet' from the TES website www.tes.com .</p>
	<p>Calculate using money and convert from one currency to another.</p>	<p>Use examples to show how to solve straightforward problems involving exchange rates. It is useful for learners if you link this work to syllabus section 2.9 (using conversion graphs). Up-to-date exchange rates can be found from a daily newspaper or online.</p> <p>To check their understanding, learners can then try the past paper question. (F)</p>
	<p>Use given data to solve problems on personal and household finance involving earnings, simple interest and compound interest.</p>	<p>Knowledge of compound interest formula is required.</p> <p>Look at simple problems on personal and household finance, using practical examples where possible. For example, taking information from published tables or</p>

	<p>Includes discount, profit and loss.</p> <p>Extract data from tables and charts.</p> <p>Includes discount, profit and loss.</p> <p>Knowledge of compound interest formula is required.</p>	<p>advertisements. 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.</p> <p>Two websites with a lot of resources linked to personal finance ranging in difficulty are: • Young money www.young-money.org.uk</p> <p>• Make money make sense www.moneymakesense.co.uk Both these websites cover the key areas of banks, bills, borrowing, budgeting, debt and wages. The second website also covers ethical considerations. The resources are quite UK-specific in the detail but could easily be adapted for use in other countries.</p> <p>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: Value of investment = $(1+r/100)^n + P$ where P is the amount invested, r is the percentage rate of interest and n is the number of years of compound interest. For example, the compound interest earned on an investment of \$500 over 4 years at a rate of 3% interest is 500×1.034.</p> <p>An interesting homework task is to ask learners to research the cost of borrowing money from different banks. (I)</p>
	<p>Use exponential growth and decay in relation to population and finance, e.g. depreciation, growth of bacteria.</p>	<p>Khan Academy www.khanacademy.org/ provides some good examples to introduce the topic of exponential growth and decay; search for 'Exponential growth & decay word problems'. This site uses the approach $n = akt$ where n = number at time t, a is the initial value and k is the rate. Ask learners to compare the similarities between this exponential growth formula and the compound interest formula.</p>
<p>NUMBER – TIME</p>		
	<p>Calculate times in terms of the 24-hour and 12-hour clock.</p> <p>Read clocks, dials and timetables</p>	<p>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.</p>

		<p>Ask learners to work in pairs or small groups to create a timetable for buses or trains running between two local towns. To extend a topic that is relatively easy for more able learners, there is an interesting case study online called 'Scheduling an aircraft' on the Centre for Innovation in Mathematics Teaching website www.cimt.org.uk .</p> <p>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. Times can be found online at timeanddate.com www.timeanddate.com by searching for the worldclock.</p> <p>A common error associated with time calculations occurs when learners use a calculator and are given a decimal answer, e.g. '5.3'. Make sure your learners understand that this means '5 hours 18 minutes' not '5 hours 3 minutes' or '5 hours 30 minutes'. You can illustrate this using the online decimal time converter at www.springfrog.com , which can be found by searching for the 'Convert between hours minutes & seconds and decimal time' page</p>
NUMBER-SET AND VENN DIAGRAMS		

<p>Understand notation of Venn diagrams. Definition of sets</p>	<p>It is useful to start by introducing/revising simple Venn diagrams. For example, group people who wear glasses in one circle and people with brown hair in another circle, and ask learners to describe the people in the overlapping region. You can encourage learners to actively participate by asking them to place physical objects into the regions of a Venn diagram. You could even get learners to create their own version of the Venn diagram by moving around the classroom based on their appearance; for example, as per the glasses and hair colour example above. You could introduce the idea of a union in the intersection visually, and then link this to the notation that they need to use. (I)</p> <p>There is some useful material on sets and set notation on the Maths Is Fun website www.mathsisfun.com . Search for 'Introduction to Sets' and 'Sets and Venn Diagrams' These resources also include some multiple choice questions that learners could use to check their understanding. (F)</p> <p>Venn diagrams are a great way to visualise the structure of set relationships. They can be used to help visualise a broad range of problems across the mathematics curriculum where you want to explore the relationships between groups. For example, they can be used to help solve probability questions (see syllabus ref. C8 .1, C8 .5, E8 .6, below). They can also be used across strands as a way of enhancing conceptual understanding by the use of multiple representations. While Venn diagrams work well for two or even three sets, they very quickly break down when the number of sets gets beyond three. It is important that learners understand that they a tool for visualising a problem but not really the solution to the problem that itself.</p>
<p>Use language, notation and Venn diagrams to describe sets and represent relationships between sets.</p>	<p>It is useful to start with revising simple Venn diagrams. For example, group people who wear glasses in one circle and people with brown hair in another circle, and ask learners to describe the people in the overlapping region. This can be extended to general Venn diagrams concentrating more on the shading of the regions representing the sets and helping learners to understand the notation.</p> <p>Learners need to be able to distinguish between a subset and a proper subset. The work on Venn diagrams can be extended to look at unions and intersections when there are three sets.</p>

MENSURATION – MEASURES, PERIMETER, AREA AND VOLUME

	<p>Use current units of mass, length, area, volume and capacity in practical situations and express quantities in terms of larger or smaller units.</p> <p>Convert between units including units of area and volume.</p>	<p>Use current units of mass, length, area, volume and capacity in practical situations and express quantities in terms of larger or smaller units.</p> <p>Convert between units including units of area and volume. A good starting point is to use practical examples to illustrate how to convert between: millimetres, centimetres, metres and kilometres; grams, kilograms and tonnes; millilitres, centilitres and litres. For example, by looking at various measuring scales. Extend this work to look at converting between units of area mm^2, cm^2 and m^2 and volume mm^3, cm^3 and m^3.</p> <p>More able learners will probably find it interesting to explore the link between the work on converting between area units to the work on ratio and similar shapes, and can look at using scales on maps to work with areas.</p>
	<p>Carry out calculations involving the perimeter and area of a rectangle, triangle, parallelogram and trapezium and compound shapes derived from these</p>	<p>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.</p> <p>An interesting investigation is to look at using isometric dot paper to find the area of shapes that have a perimeter of 5, 6, 7 units.</p> <p>Ask learners to find out what shape quadrilateral has the largest area when the perimeter is, for example 24 cm.</p>
	<p>Carry out calculations involving the circumference and area of a circle; Answers may be asked for in multiples of π.</p> <p>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).</p>	<p>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.</p> <p>Extend this by looking at how to find compound areas involving circles, for example, a circle with the radius of 5.3 cm is drawn touching the sides of a square. Ask learners “What area of the square is not covered by the circle?” the question can be extended to consider the area of waste material when cutting several circles of this size out of an A4 sheet of paper.</p> <p>The Khan academy website www.khanacademy.org includes a good explanation of</p>

		<p>arc length and sector area. Search 'Arc length from subtended angle' and 'Area of a sector'. The quiz for arc length includes challenge questions to check learners' understanding.</p> <p>The next step is to 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 (syllabus reference 6.3) to find segment areas.</p>
	<p>Carry out calculations involving the surface area and volume of a cuboid, prism and cylinder; answers may be asked for in multiples of π.</p> <p>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</p>	<p>Starting with simple examples, draw the nets of a variety of solids asking learners if they are able to identify the solid from the net. It is useful for learners to understand that there are many different right and wrong ways to draw the net of a cube. Less able learners might appreciate the opportunity to work in groups to draw nets on card and to use these to make various geometrical shapes.</p> <p>Next, demonstrate a purpose and use for drawing nets. For example, in the packaging industry there are many different interesting nets used to create boxes, particularly those that require little or no glue. An interesting homework activity would be to ask learners to collect lots of different packaging boxes to investigate the nets used to create them.</p> <p>You can then ask learners to look at 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 \times length. A useful resource on this topic can be found on the Annenberg learner website www.learner.org 'Geometry 3D shapes > surface area'.</p> <p>Move on to using nets to illustrate how to calculate the surface area of a triangular prism, a pyramid and a cone. It will be useful for learners to understand how to obtain the formula $\pi r(r + s)$ for the surface area of a cone (where s = slant length). You will also want to explain how to calculate the surface area of a sphere using the formula $4\pi r^2$. Use examples to illustrate how to calculate the volume of a pyramid (including a cone) using the formula $1/3 \times$ area of base \times perpendicular height. Also look at how to calculate the volume of a sphere using the formula $4/3 \pi r^3$. Diagrams and formulae can be found at www.thoughtco.com ; search for 'Math Formulas for Geometric Shapes'. Emphasise to learners that they should know</p>

		which formulae to learn and which will be given. Whilst some formulae will be given, you could challenge those with good memories to learn the given formulae too.
	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 sections 4.1 to 4.4 to find the surface area and volume of a wide variety of composite shapes.

PHYSICS

Strand/Topics	Learning Objectives (CAIE expectations)	Learning Experiences/Engagements
<p>Scientific Inquiry</p>	<p>Ideas and evidence</p> <p>Make predictions and review them against evidence</p> <p>Be able to talk about the importance of questions, evidence and explanations</p> <p>Plan investigative work</p> <p>Suggest ideas that may be tested</p> <p>Choose appropriate apparatus and use it correctly</p> <p>Make predictions referring to previous scientific knowledge and understanding</p> <p>Identify appropriate evidence to collect and suitable methods of collection</p> <p>Outline plans to carry out investigations, considering the variables to control, change or observe</p> <p>Obtain and present evidence</p> <p>Make careful observations including</p>	<p>Students will draw & label scientific diagrams, design their own experiments, observe & conclude, draw inferences, view videos & ppts, study model systems, make models, play games, answer quizzes, use scientific terminology, use scientific reasoning, make presentations, solve worksheets based on the given topics:</p>

	<p>measurements</p> <p>Present results in the form of tables, bar charts and line graphs</p> <p>Consider evidence and approach</p> <p>Make conclusions from collected data, including those presented</p> <p>Consider explanations for predictions using scientific knowledge and understanding and communicate these in a graph, chart or spreadsheet</p>	
Physics/Density	<p>Density</p> <p>Determine the density of a regular solid</p> <p>Determine the density of an irregular solid.</p> <p>Determine the density of a liquid</p> <p>Determine the density of a gas</p>	<p>Density</p> <p>Students investigate the density of different sized blocks of material</p> <p>Discuss ways of finding the volume of an irregular solid and a solid that floats in water.</p> <p>Investigate the density of a number of different materials.</p> <p>Pupils discuss ways of finding the density of a liquid and then find the density of water, salt water and other non-hazardous liquids</p> <p>Demonstration of finding the density of carbon dioxide</p>
Physics/Pressure	<p>Pressure</p> <p>Explain that pressure is caused by the action of a force on an area</p> <p>Explain pressures in gases and liquids</p>	<p>Pressure</p> <p>Discuss appropriate examples of experience of pressure such as walking on snow, mud, dry sand.</p> <p>Students explain why knives and drawing pins are effective but only if used the right way round.</p>

	<p>(qualitative only).</p> <p>Explain the pressure of a liquid in terms of a particle model.</p>	<p>Students can investigate pressure by pressing objects into plasticine, provided they are pressed with equal forces, shows that the smaller the area of contact the greater the pressure.</p> <p>Use a plastic bottle which has holes in the sides at different heights. When filled, water is forced out sideways, the lower the hole the greater the pressure.</p> <p>Blowing up balloons or tyres or heating tins with a lid on causes an increase of pressure which pupils should explain using a particle model.</p>
Physics/Turning on a Pivot	<p>Turning on a Pivot</p> <p>Know that forces can cause objects to turn on a pivot and understand the principle of moments.</p> <p>Introduce the idea of balancing</p> <p>Describe a lever as a simple machine which uses a pivot.</p>	<p>Turning on a Pivot</p> <p>Discuss how to open a tin with a tight-fitting lid.</p> <p>Explain that they are using a lever with a force and a pivot.</p> <p>Demonstrate other common examples of a lever in action e.g. a wrench, wheel brace.</p> <p>Investigate, as a whole class activity, the effect of changing the distance between the force used and the pivot, and the size of the force on the effectiveness of a lever.</p> <p>Understand the principle of moments by looking at a see saw.</p>
Physics/Electrostatics	<p>Electrostatics</p> <p>Describe electrostatics and the concept of charge, including digital sensors.</p> <p>Explain that only negative charges move in these circumstances and that by moving away from a neutral site they leave a net positive charge.</p> <p>Investigate the laws of attraction and</p>	<p>Electrostatics</p> <p>After charging by rubbing, plastic rulers pick up small pieces of paper, strips of cling film spring apart, balloons stick to walls, plastic rods deflect a steady stream of water etc.</p> <p>Suspending one charged item and approaching with other shows that similar charges repel and unlike charges attract</p> <p>Even a simple generator can build up several thousand volts and cause lightning flashes, hair to rise, neon lights to light up, windmills to turn etc.</p>

	<p>repulsion.</p> <p>Establish that there seem to be only two types of charge (only two effects are seen).</p> <p>Discuss the electrostatic generator</p>	<p>Pupils investigate some problems and some advantages about electrostatics using secondary sources.</p> <p>Presentation of findings to whole class.</p>
<p>Physics/ Electricity</p>	<p>Electricity</p> <p>Study of simple circuit</p> <p>Study of current</p> <p>Other components of circuit</p> <p>Understanding the working of Ammeter which measures current</p> <p>Voltage</p> <p>Understanding working of Voltmeter Which measures Voltage.</p>	<p>Electricity</p> <p>Pupil learn to connect simple circuit</p> <p>Make a simple series electric circuit with switch, bulb and battery.</p> <p>Draw the circuit diagram.</p> <p>Discuss the advantages of circuit diagrams.</p> <p>Pupil understand the concept of Current.</p> <p>Pupil uses various component to make a circuit diagram also explores the working of various components used in circuit</p> <p>Pupil learns how to use ammeter to measure current in amperes.</p> <p>Pupil learns to understand the concept of voltage</p> <p>Pupil learns how to use voltmeter to measure voltage in volts</p> <p>Make a simple parallel circuit by including a second bulb. Draw the circuit diagram.</p> <p>Give a variety of circuit diagrams or circuits and decode if they are parallel or series circuits</p> <p>Use a voltmeter to measure the voltage across a component. Pupils should be shown that a voltmeter measures the voltage output of a cell, two cells, etc. It can then be</p>

	<p>Interpret and draw simple parallel circuits.</p>	<p>used to measure the voltage across any two points in a circuit. They should also try the putting the meter in series to show that the circuit then does not 'work'.</p> <p>The voltage across a home-made cell can be detected using two different metals and a solution or simply a fruit. Students could investigate into the effect of different metals and different fruit / vegetables.</p>
<p>Physics/Heat energy transfer</p>	<p>Heat energy transfer</p> <p>Identify and explain the thermal (heat) energy transfer processes of conduction, convection and radiation.</p> <p>Apparatus to use and assess any hazards in the laboratory.</p> <p>Identify and explain the thermal (heat) energy transfer processes of conduction, convection and radiation. Identify and explain the thermal (heat) energy transfer processes of conduction, convection and radiation.</p> <p>Identify and explain the thermal (heat) energy transfer processes of conduction, convection and radiation.</p>	<p>Heat energy transfer</p> <p>Rods of different metals can be heated to find out which is the best thermal conductor. It is important to heat the ends of the rods equally, perhaps by supporting on a non-combustible mat on a tripod and heating them all at the same time.</p> <p>The heat energy can be detected by a pin attached by wax to the far end of the rod, it is released when the wax melts.</p> <p>Discuss everyday uses of conduction of heat energy. Include the use of bad conductors (insulators). Thermal radiation (infra-red) comes from all hot objects but pupils can investigate which surfaces emit / absorb heat the best. One way is to fill a metal container (radiation cube) with hot water. Different surfaces, black, dull, white, shiny, give off more or less radiation. This can be detected by placing the hand 2-3 cm away from the surface. The rate of heat loss can also be estimated by measuring the rate of temperature loss.</p> <p>Discuss everyday uses of heat transfer by radiation and also ways of preventing it.</p> <p>A vacuum flask (a broken one to reveal the inner layers) can be demonstrated as it has ways of preventing conduction, convection, radiation and evaporation which students can identify. Ensure that students understand that the flask can be used for keeping things hot or cold.</p> <p>Convection currents can be demonstrated in liquid (warming coloured crystals placed in a beaker of still water) and air (using a candle in a box with two chimneys and</p>

		<p>placing a smoking taper above.</p> <p>Discuss everyday uses of convection of heat energy e.g. solar heating panels.</p>
<p>Physics/World energy needs</p>	<p>World energy needs</p> <p>Describe factors affecting the size of populations.</p> <p>Look critically at sources of secondary data.</p> <p>Describe factors affecting the size of populations.</p> <p>Describe and investigate some effects of human influences on the environment.</p> <p>Use knowledge of energy sources including fossil fuels and renewable energy resources to consider the world's energy needs, including research from secondary sources.</p> <p>Describe and investigate some effects of human influences on the environment.</p> <p>Use knowledge of energy sources including fossil fuels and renewable energy resources to consider the world's energy needs, including research from secondary sources.</p>	<p>World energy needs</p> <p>Research different renewable fuels.</p> <p>Discuss whether 'nuclear fuels' are renewable or non-renewable.</p> <p>Discuss the advantages and disadvantages of using 'nuclear fuels' to generate electricity.</p> <p>Use secondary sources to find out about different renewable energy resources.</p> <p>Assess the advantages and disadvantages of each energy resource and how the energy resource is used to generate electricity.</p> <p>Present findings to the whole class as a poster, PowerPoint Discuss and list the problems of using all kinds of energy sources.</p> <p>These might include suitability of site, climate, cost of converting to electrical energy, pollution of any kind and destruction of habitats.</p> <p>Consider the energy sources most used in your region and whether there would be benefit in changing to other energy resources presentation or a hand-out.</p>

<p>(Pre IGCSE)</p> <p>1.1 Length and time</p>	<ul style="list-style-type: none"> • 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) 	<p>A circus of simple measuring experiments can work well here.</p> <p>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.</p> <p>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</p>
<p>1.1 Length and time</p>	<ul style="list-style-type: none"> • Understand that a micrometer screw gauge is used to measure very small distances 	<p>Both electronic and mechanical micrometer screw gauges can be used. Using a micrometer: www.youtube.com/watch?v=O8vMFFYNlfo</p>
<p>1.2 Motion</p>	<ul style="list-style-type: none"> • 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 <ul style="list-style-type: none"> ○ at rest ○ moving with constant speed ○ moving with changing speed 	<p>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)</p> <p>Resource Plus</p> <p>Experiment: Speed-time graphs</p> <p>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.</p> <p>Although not specifically part of the syllabus, work on thinking distance and braking distance of cars related to safety is useful and relevant here.</p>

	<ul style="list-style-type: none"> • Calculate the area under a speed-time graph to work out the distance travelled for motion with constant acceleration • Demonstrate understanding that acceleration and deceleration are related to changing speed including qualitative analysis of the gradient of a speed-time graph <p>State that the acceleration of free fall for a body near to the Earth is constant</p>	<p>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.</p> <p>Definition of velocity: www.youtube.com/watch?v=cE-bGnwTbTU</p> <p>What is acceleration: www.youtube.com/watch?v=l7W5pH0AKSI www.youtube.com/watch?v=O0I3hWs5gM</p> <p>Stopping distances can be found from: www.bbc.co.uk/schools/gcsebitesize/science/add_gateway_pre_2011/forces/motionrev3.shtml</p> <p>A fun investigation involving ideas around terminal velocity: www.bbc.co.uk/schools/gcsebitesize/science/add_aqa/forces/forcesvelocityrev1.shtml</p> <p>http://hyperphysics.phy-astr.gsu.edu/hbase/airfri2.html</p>
1.2 Motion	<ul style="list-style-type: none"> • Distinguish between speed and velocity • Define and calculate acceleration using <ul style="list-style-type: none"> • change of velocity • 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 	<p>Extension activity: extend the trolley work to analyse the graphs further and calculate the acceleration. (I)</p> <p>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 emphasizing.</p> <p>Terminal velocity: www.bbc.co.uk/schools/gcsebitesize/science/add_aqa/forces/forcesvelocityrev1.shtml http://hyperphysics.phy-astr.gsu.edu/hbase/airfri2.html</p>

	<ul style="list-style-type: none"> • 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) • 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) 	
1.3 Mass and weight	<ul style="list-style-type: none"> • Show familiarity with the idea of the mass of a body • State that weight is a gravitational force • Distinguish between mass and weight • Recall and use the equation $W = mg$ 	<p>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).</p> <p>Gravity (for more able learners): www.qrg.northwestern.edu/projects/vss/docs/space-environment/1-what-is-gravity.html</p> <p>Gravitational fields: www.youtube.com/watch?v=T8nLTwIWplo</p>

	<ul style="list-style-type: none"> Demonstrate understanding that weights (and hence masses) may be compared using a balance 	
1.3 Mass and weight	<p>Demonstrate an understanding that mass is a property that 'resists' change in motion</p> <p>Describe, and use the concept of, weight as the effect of a gravitational field on a mass</p>	<p>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.</p> <p>What is inertia: www.physicsclassroom.com/class/newtlaws/Lesson-1/Inertia-and-Mass Demonstrations of inertia: www.youtube.com/watch?v=T1ux9D7-O38</p>
1.4 Density	<ul style="list-style-type: none"> 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 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 	<p>Simple experiments measuring mass and volume of a liquid and calculating density. Using a solid, finding volume from height, width and depth. (I)</p> <p>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.</p> <p>Extension activity: extend to the displacement method, e.g. modelling clay of different shapes in a measuring cylinder with water.</p> <p>Resource Plus</p> <p>Experiment: Determining density</p> <p>This experiment focuses on determining the density of solids and liquids.</p> <p>Density: www.youtube.com/watch?v=Q5Sh_-pW6ho</p> <p>Calculate the density of an unknown solid: www.youtube.com/watch?v=nGJ_uWTmQZI</p> <p>Determining density of liquids – an experiment: www.youtube.com/watch?v=RnSJSSCfqPc</p>

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/

<p>1.6 Momentum</p>	<ul style="list-style-type: none"> • Understand the concepts of momentum and impulse • Recall and use the equation <p>momentum = mass × velocity, $\mathbf{p} = m\mathbf{v}$</p> <ul style="list-style-type: none"> • Recall and use the equation for impulse $\mathbf{Ft} = m\mathbf{v} - m\mathbf{u}$ • Apply the principle of the conservation of momentum to solve simple problems in one dimension 	<p>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.</p> <p>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.</p> <p>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.</p> <p>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</p> <p>Impulse: www.physicsclassroom.com/class/momentum/u4l1b.cfm</p> <p>Conservation of momentum</p>
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CHEMISTRY

Strand/Topics	Learning Objectives (CAIE expectations)	Learning Experiences/Engagements
Scientific Inquiry	<p>Ideas and evidence</p> <ul style="list-style-type: none"> • Make predictions and review them against evidence • Be able to talk about the importance of questions, evidence and explanations <p>Plan investigative work</p> <ul style="list-style-type: none"> • Suggest ideas that may be tested • Choose appropriate apparatus and use it correctly • Make predictions referring to previous scientific knowledge and understanding • Identify appropriate evidence to collect and suitable methods of collection • Outline plans to carry out investigations, considering the variables to control, change or observe <p>Obtain and present evidence</p> <ul style="list-style-type: none"> • Make careful observations 	<ul style="list-style-type: none"> • Be able to talk about the importance of questions, evidence and explanations • Make predictions and review them against evidence • Make conclusions from collected data, including those presented in a graph, chart or spreadsheet • Recognize results and observations that do not fit into a pattern, including those presented in a graph, chart or spreadsheet • Consider explanations for predictions using scientific knowledge and understanding and communicate these present conclusions using different methods

	<p>including measurements</p> <ul style="list-style-type: none"> • Present results in the form of tables, bar charts and line graphs <p>Consider evidence and approach</p> <p>Make conclusions from collected data, including those presented</p>	
<p>Structure of atom & Periodic table</p>	<p>Compare the structures of the first twenty elements of the Periodic Table.</p> <p>Describe the structure of an atom and learn about the methods and discoveries of Rutherford.</p> <p>Discuss and explain the importance of questions, evidence and explanations, using historical and contemporary examples.</p> <p>Discuss the way that scientists work today and how they worked in the past, including reference to experimentation, evidence and creative thought.</p>	<p>Teacher will revise the symbols for the first twenty elements.</p> <p>Each group of students can make a poster of the structure of a chosen element.</p> <p>Students will arrange the first 20 elements with atomic (proton) numbers into a simple Periodic Table.</p> <p>Students will learn to make structure of atom of first 20 elements.</p> <p>Students will learn about the work of Rutherford and other scientists associated with the development of atomic structure and the Periodic Table e.g. Mendeleev and Bohr.</p> <p>Students will use secondary sources to find out about the methods and discoveries of Rutherford.</p> <p>Students will prepare a poster or a presentation about Rutherford.</p>
	<p>Describe trends in groups and periods</p>	<p>Look at the vertical pairs of elements and seek similarities</p> <p>Students will make predictions about the next member of the group and compare the predictions with the actual properties of the element.</p> <p>Students will Recognise Groups and Periods by colouring in according to the properties of the elements e.g..metals and non-metals or solids, liquids and gases</p>

		<p>(at room temperature).</p> <p>Students will also relate atomic structure to Periods. Use diagrams to show the electron shells and relate these to position of elements in the Periodic Table.</p>
	<p>Explain how to prepare some common salts by the reactions of metals and metal carbonates and be able to write word equations for these reactions.</p> <p>Explain how to prepare some common salts by the reactions of metals and metal carbonates and be able to write word equations for these reactions.</p> <p>Decide which measurements and observations are necessary and what equipment to use.</p> <p>Make sufficient observations and measurements to reduce error and make results more reliable.</p> <p>Explain results using scientific knowledge and understanding.</p>	<p>Describe the preparation of crystals of chloride or sulfate salts from carbonates and acids.</p> <p>Students will prepare an appropriate salt such as calcium chloride, copper sulfate.</p> <p>Students assess the risks involved in the preparation.</p> <p>Students might discuss ways of producing different sized crystals.</p> <p>Teacher will demonstrate to prepare crystals of chloride or sulfate crystals from metals and acids.</p>
Reactivity and Rates of Reaction	<p>Describe the reactivity of metals with oxygen, water and dilute acids.</p> <p>Use a range of materials and equipment and control risks.</p> <p>Describe patterns seen in results.</p>	<p>Students will compare the rates of reaction of some metals with oxygen.</p> <p>Write word equations for each reaction.</p> <p>Students will compare the rates of reaction of some metals with water.</p> <p>Students will compare the rates of reaction of some metals with dilute acid.</p> <p>Small pieces of metals (NOT including sodium) are added to dilute hydrochloric</p>

	Describe the reactivity of metals with oxygen, water and dilute acids.	<p>acid and the reaction observed. The hydrogen gas made can be tested.</p> <p>Write word equations for each reaction.</p> <p>Construct a reactivity series for metals. Pupils should collect their observations of reactions in a table and suggest an order of reactivity.</p>
Acids & Alkalis	<p>Give examples of displacement reactions.</p> <p>Test explanations by using them to make predictions and then evaluate these against evidence.</p>	<p>Make predictions about displacement reactions.</p> <p>Students with the help of teacher and by performing experiment with magnesium ribbon will show how rate of reaction depends on concentration of reactants.</p> <p>Students with the help of teacher and by performing experiment with magnesium ribbon will show how rate of reaction depends on particle size</p> <p>Students with the help of teacher and by performing experiment with magnesium ribbon will show and understand how rate of reaction depends on the presence of a catalyst.</p> <p>Through diagrams, use ideas about particle theory to explain the effects of the different variables on the speed of reactions</p>
Chemicals and Thermal Energy	<p>Explore and explain the idea of endothermic processes and exothermic reactions.</p> <p>Make sufficient observations and measurements to reduce error and make results more reliable.</p> <p>Use a range of materials and equipment and control risks.</p> <p>Make observations and measurements.</p> <p>Choose the best way to present</p>	<p>Students along with the teacher will investigate the reactions of</p> <ul style="list-style-type: none"> • magnesium • sodium hydroxide solution • potassium hydrogencarbonate • sodium hydrogencarbonate <p>with acid measuring the temperature of the liquid before and after adding the reactants.</p> <p>Students will investigate the endothermic process of dissolving ammonium chloride.</p> <p>Students will classify the reactions on the basis of the temperature change.</p>

	<p>results.</p> <p>Describe patterns (correlations) seen in results.</p> <p>Interpret results using scientific knowledge and understanding.</p> <p>Fire Triangle</p> <p>Energy from the fuel</p>	<p>Teacher will discuss exothermic and endothermic reactions.</p> <p>By discussion identify the need for heat, fuel and oxygen to start / maintain a fire. Pupils should use this information to suggest ways of stopping different types of fire.</p> <p>Pupils produce a poster on fire prevention in the home and /or work environment.</p> <p>Students will compare the energy released by different fuels by heating equal volumes of water using a known mass of each fuel from the secondary data provided</p> <p>Compare changes in temperature.</p> <p>Students can research and report on which they consider to be the best fuel for a certain purpose such as cooking(camping) or transport. They should take into account factors such as convenience, cost, pollution, availability etc.</p>
	<p>Identify and explain the thermal(heat) energy transfer processes of conduction, convection and radiation.</p>	<p>Teacher will explain the process of conduction, convection and radiation by demonstration in the laboratory.</p> <p>Students will understand about a vacuum flask (a broken one to reveal the inner layers) can be demonstrated as it has ways of preventing conduction, convection, radiation and evaporation which students can identify. Ensure that students understand that the flask can be used for keeping things hot or cold.</p> <p>Revision</p>
<p>1: Experimental techniques</p> <p>2.1 Measurement</p>	<p>Name appropriate apparatus for the measurement of time, temperature, mass and volume, including burettes, pipettes and measuring cylinders</p>	<p>A circus of experiments may be used to introduce this by measuring the temperature, mass and volumes of different coloured liquids (water/food dye). (I) This will be reinforced when all experimental work is conducted.</p> <p>There are some good videos on YouTube. For example:</p>

		<p>Using a measuring cylinder: www.youtube.com/watch?v=Q_X8yKlzbkg</p> <p>Using a burette: www.youtube.com/watch?v=mZZqR5KImTw Using a pipette: www.youtube.com/watch?v=DKRQ95QfWNY</p>
2.2.1 Criteria of purity	<ul style="list-style-type: none"> Demonstrate knowledge and understanding of paper chromatography <p>Interpret simple chromatograms</p>	<p>Experimental work can involve simple inks, sweets, leaves, dyes and food colourings. Non-permanent felt-tip pens work well.</p> <p>Chromatography of sweets: www.practicalchemistry.org/experiments/chromatography-of-sweets%2C194%2CEX.html</p> <p>and www.rsc.org/learn-chemistry/resource/res00000455/smarties-chromatography</p> <p>Chromatography of leaves: www.practicalchemistry.org/experiments/chromatography-of-leaves,199,EX.html</p> <p>Another paper chromatography experiment: www.scienceprojectlab.com/paper-chromatography-experiment.html</p>
	<p>Interpret simple chromatograms, including the use of R_f values</p>	<p>Extension activity: with abler learners use R_f values to compare the height of the spots on the chromatograms obtained above. (I)</p> <p>Clear explanations can be found at: www.chemguide.co.uk/analysis/chromatography/paper.html</p> <p>and www.bbc.co.uk/schools/gcsebitesize/science/triple_ocr_21c/further_chemistry/chromatography/revision/4/</p>

	<ul style="list-style-type: none"> ● Outline how chromatography techniques can be applied to colourless substances by exposing chromatograms to substances called locating agents <p>(Knowledge of specific locating agents is not required.)</p>	<p>Experimental work can be extended to include separating a mixture of amino acids (using ninhydrin as a locating agent) and simple sugars. This may be best done as a teacher demonstration.</p> <p>Chromatography of amino acids: www.biotopics.co.uk/as/amino_acid_chromatography.html</p>
	<ul style="list-style-type: none"> ● Identify substances and assess their purity from melting point and boiling point information 	<p>This can be demonstrated by dissolving sodium chloride or other salts in water or by comparing the melting point of the alloy, solder, with those of lead and tin.</p> <p>The use of salt on roads to melt ice could be mentioned in this context.</p> <p>Practical procedure for comparing melting points of lead, tin and solder: www.nuffieldfoundation.org/practical-chemistry/solid-mixtures-tin-and-lead-solder</p>
	<ul style="list-style-type: none"> ● Understand the importance of purity in substances in everyday life, e.g. foodstuffs and drugs 	<p>Chemists need pure substances to study their properties. Pure substances are used in industry to make useful products such as food and drugs. This could be set as a brief research activity. (I)</p> <p>This web page contains some information: www.bbc.co.uk/schools/gcsebitesize/science/add_ocr_gateway/chemical_economics/batchcontinuousrev4.shtml</p>
<p>2.2.2 Methods of purification</p>	<ul style="list-style-type: none"> ● Describe and explain methods of purification by the use of a suitable solvent, filtration, crystallisation and distillation (including use of fractionating column) <p>(Refer to the fractional distillation of petroleum in section 14.2 and products of fermentation in section</p>	<p>Typical solvents to use are water (salt/sand) or ethanol (salt/sugar).</p> <p>Filtration is used in one of the salt preparation methods above to remove the excess solid.</p> <p>Crystallisation is used in most salt preparations to obtain the final product.</p> <p>Experimental work can involve:</p> <ul style="list-style-type: none"> ● purification of an impure solid ● demonstration of the extraction of iodine from seaweed

	14.6.)	<ul style="list-style-type: none"> • distillation of a carbonated drink or coloured water • demonstration of the (partial) separation of ethanol from water by distillation • demonstration of the separation of 'petroleum fractions' from mixtures of hydrocarbons using 'artificial' crude oil. <p>Resource Plus</p> <p>Experiment: The distillation of a carbonated drink This experiment focuses on a distillation experiment using a carbonated drink.</p> <p>Extension activity: the separation of oxygen and nitrogen from liquid air by fractional distillation.</p> <p>Separating salt and sand: www.nuffieldfoundation.org/practical-chemistry/separating-sand-and-salt</p> <p>Extracting iodine from seaweed: www.nuffieldfoundation.org/practical-chemistry/extracting-iodine-seaweed</p> <p>Fractional distillation of (artificial) crude oil: www.nuffieldfoundation.org/practical-chemistry/fractional-distillation-crude-oil</p> <p>An excellent collection of animations and video clips can be found at: www.nationalstemcentre.org.uk/elibrary/resource/3988/particles-in-motion This was originally published by Royal Society of Chemistry on a CD ROM, 'Particles in Motion', 2006</p>
	<ul style="list-style-type: none"> • Suggest suitable purification techniques, given information about the substances involved 	This may be linked to magnetic properties (less important) and varying solubilities (more important).
2. Particles, atomic structure, ionic bonding and the	<ul style="list-style-type: none"> • State the distinguishing properties of solids, liquids and gases 	This could be a quick question and answer session at the beginning of a lesson with examples of solids, liquids and gases to emphasise their properties. The use of the suggested link below would reinforce this. The animation could also be used

<p>Periodic Table</p> <p>1. The particulate nature of matter</p>		<p>individually. (I)</p> <p>There is a very good, interactive animation linking properties of solids, liquids and gases to the particle model: www.bbc.co.uk/bitesize/ks3/science/chemical_material_behaviour/particle_model/activity/</p>
	<ul style="list-style-type: none"> Describe the structure of solids, liquids and gases in terms of particle separation, arrangement and types of motion 	<p>Use 'particles in boxes' diagrams to represent the three states of matter.</p> <p>This could be a research activity using textbooks or the internet.</p> <p>An excellent collection of animations and video clips can be found at: www.nationalstemcentre.org.uk/elibrary/resource/3988/particles-in-motion This was originally published by Royal Society of Chemistry on a CD, 'Particles in Motion', 2006</p>
	<ul style="list-style-type: none"> Describe changes of state in terms of melting, boiling, evaporation, freezing, condensation and sublimation 	<p>The heating of solid octadecanoic acid (stearic acid) until it is liquid, and then allowing it to freeze again, measuring the temperature at regular intervals and plotting the results is a good class practical.</p> <p>Another possibility is investigating the rate of evaporation of propanone, either as a class practical or as a demonstration.</p> <p>Sublimation can be demonstrated by heating ammonium chloride in an evaporating dish and collecting the solid on the sides of an inverted filter funnel above the dish.</p> <p>Melting and freezing of stearic acid: www.nuffieldfoundation.org/practical-chemistry/melting-and-freezing-stearic-acid</p> <p>Rate of evaporation of propanone: www.nuffieldfoundation.org/practical-chemistry/rate-evaporation</p> <p>Sublimation of ammonium chloride: www.tes.co.uk/teaching-resource/Sublimation-of-Ammonium-Chloride-Experiment-</p>

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	<ul style="list-style-type: none"> • Explain changes of state in terms of the kinetic theory 	<p>Relate the conversions to the motion and arrangement of particles. This may be done as a research activity using textbooks or the internet. (I) Emphasise the change in the arrangement and movement of the particles when a substance changes state.</p> <p>Relate the conversions to the motion and arrangement of particles.</p> <p>Relate this to the energy input/output.</p> <p>Learners can be asked to use the theory to explain properties such as behaviour of gases under pressure and liquid flow (opportunity for a 'circus of experiments' here). (I)</p> <p>Also the excellent collection of animations and video clips at: www.nationalstemcentre.org.uk/elibrary/resource/3988/particles-in-motion</p>
	<ul style="list-style-type: none"> • Describe qualitatively the pressure and temperature of a gas in terms of the motion of its particles 	<p>This could be a research activity. (I)</p> <p>Pressure is due to particles in a gas hitting the walls of a container. The faster the speed of the particles the higher the pressure.</p> <p>The higher the temperature of a gas the faster the particles are moving.</p>
	<ul style="list-style-type: none"> • 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 	<p>One effective way to view Brownian motion is to view a slide of colloidal graphite through a microscope.</p> <p>There are a number of good videos on the internet which show examples of Brownian motion.</p> <p>Carbon particles in water: www.nuffieldfoundation.org/practical-physics/brownian-motion-carbon-particles-water</p> <p>Videos of Brownian motion can be found on YouTube. One example of smoke particles being bombarded by air particles is: www.youtube.com/watch?v=4tt7M2fpl6U</p>

		<p>Marble simulation is shown as part of a larger set of experiments in this link: www.nuffieldfoundation.org/practical-physics/modelling-brownian-motion</p>
	<ul style="list-style-type: none"> • Describe and explain Brownian motion in terms of random molecular bombardment • State evidence for Brownian motion 	<p>A good simulation explaining Brownian motion can be achieved by gently shaking a tray of small marbles with two or three larger marbles.</p> <p>See above.</p>
	<ul style="list-style-type: none"> • Describe and explain diffusion. 	<p>Simple examples of diffusion include:</p> <ul style="list-style-type: none"> • air freshener, perfume, ether, camphor smells in the lab • movement of nitrogen dioxide gas or bromine vapour in air • coloured inks/CuSO₄/KMnO₄ in water and Pb(NO₃)₂ in KI. <p>Extension activity: what would influence diffusion rate, for example temperature using tea bags held by a glass rod in beakers of hot and cold water.</p> <p>Learners should be able to link their observations to the particle model.</p> <p>Details of how to perform a diffusion in liquids experiment: www.nuffieldfoundation.org/practical-chemistry/diffusion-liquids</p>
	<ul style="list-style-type: none"> • Describe and explain dependence of rate of diffusion on molecular mass 	<p>Demonstration: Two cotton wool pads, one soaked with conc. hydrochloric acid and the other with conc. ammonia can be placed at opposite ends of a long glass tube sealed with bungs. A white 'smoke' of the precipitated ammonium chloride is seen where the two gases meet.</p> <p>Diffusion of ammonia and hydrogen chloride: www.nuffieldfoundation.org/practical-chemistry/diffusion-gases-ammonia-and-hydrogen-chloride</p>
3.1 Atomic structure and the Periodic Table	<ul style="list-style-type: none"> • State the relative charges and approximate relative masses of protons, neutrons and electrons 	<p>Opportunity for group work, learners can research and present their ideas on the development of the structure of the atom from the Greeks onwards. They can also discuss the limitations of each model using ICT/textbooks.</p>

		<p>A summary of atomic structure can be found in all good textbooks.</p> <p>A summary can also be found at: www.gcscience.com/a1-atom-electron-neutron-proton.htm</p> <p>Good lesson approach to the history of the atomic structure at: www.learnnc.org/lp/pages/2892</p>
	<ul style="list-style-type: none"> • Define <i>proton number</i> (atomic number) as the number of protons in the nucleus of an atom • Define <i>nucleon number</i> (mass number) as the total number of protons and neutrons in the nucleus of an atom 	<p>Once learners are aware of the definitions and the relative charges and masses of the sub-atomic particles they can use the information to solve problems, such as the number of protons, neutrons and electrons in the atom of a particular element given the proton number and nucleon number.</p> <p>Introducing the symbols of elements showing nucleon number and proton number is best done here. (I)</p> <p>Most good textbooks have questions about this and there are also examples in the Unit 2: Past and Specimen Paper questions attached to this scheme of work.</p> <p>There is a good animation at: www.bbc.co.uk/schools/gcsebitesize/science/add_aqa/atomic_structure/chemcalcact.shtml</p> <p>There is also an interactive quiz at: www.bbc.co.uk/bitesize/quiz/q76774007</p>
	<ul style="list-style-type: none"> • 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 numbers 1 to 20 	<p>This could be set as a brief research exercise.</p> <p>The first page of this link explains this: www.bbc.co.uk/schools/gcsebitesize/science/add_gateway_pre_2011/periodictable/atomsrev1.shtml</p>
	<ul style="list-style-type: none"> • Define <i>isotopes</i> as atoms of the same element which have the same proton number but a different nucleon number 	<p>A good way to illustrate isotopes is by comparing ice cubes in water – D₂O (sinks) and H₂O (floats).</p> <p>The atomic structure of isotopes of hydrogen: www.bbc.co.uk/schools/gcsebitesize/science/add_aqa_pre_2011/radiation/atomsisotopesrev2.shtml</p> <p>A good, short video of ice and D₂O in water:</p>

		www.youtube.com/watch?v=VLiirA5ooS0
	<ul style="list-style-type: none"> • Understand that isotopes have the same properties because they have the same number of electrons in their outer shell 	<p>Although this may be covered here, it should also be reinforced after 'electronic structures of atoms' have been covered.</p> <p>This is covered well in most good textbooks.</p>
	<ul style="list-style-type: none"> • State the two types of isotopes as being radioactive and non-radioactive 	<p>If an isotope is radioactive the nucleus is unstable and it will break down over a period of time.</p>
	<ul style="list-style-type: none"> • State one medical and one industrial use of radioactive isotopes 	<p>Possible examples include the location of blockages and leakages in underground pipes and the use of radioactive iodine in tracing thyroid activity.</p> <p>Modern uses of radioactive isotopes: www.chem.duke.edu/~jds/cruise_chem/nuclear/uses.html</p>
3.2.1 Bonding: the structure of matter	<ul style="list-style-type: none"> • Describe the differences between elements, mixtures and compounds, and between metals and non-metals 	<p>The reaction between iron sulfur to produce iron(II) sulfide can be carried out by learners to illustrate the varying properties of the elements, the mixture and the compound. (Link to Unit 5.)</p> <p>A good guide to carrying out the experiment suggested: www.nuffieldfoundation.org/practical-chemistry/iron-and-sulfur-reaction</p> <p>An excellent video animation of Fe, S and FeS is to be found at: www.bbc.co.uk/schools/ks3bitesize/science/chemical_material_behaviour/compounds_mixtures/activity.shtml</p> <p>This video also has a very good section linking back to Unit 1 of this scheme, i.e. chromatography and distillation.</p>
3.2.2 Ions and ionic bonds	<ul style="list-style-type: none"> • Describe the formation of ions by electron loss or gain 	<p>Emphasise formation of a full shell/noble gas configuration.</p> <p>Learners should be shown dot-and-cross diagrams for simple ionic substances, e.g. NaCl, KF, MgO; then challenged to draw diagrams for more complicated examples like CaCl₂, MgBr₂, AlF₃.</p>

		<p>Learners can use mini-whiteboards to draw electron diagrams as a class activity. This can also be done using cut out electrons and shells so learners can move electrons into place.</p> <p>Link this to Unit 11.</p> <p>There is a good section called 'A simple view of ionic bonding': www.chemguide.co.uk/atoms/bonding/ionic.html</p> <p>www.bbc.co.uk/schools/gcsebitesize/science/add_aqa/bonding/ionic_bondingrev1.shtml</p> <p>Although the commentary of this animation is a little colloquial, it is certainly worth considering: www.bbc.co.uk/schools/gcsebitesize/science/add_aqa/bonding/ionic_bondingrev1.shtml</p>
	<ul style="list-style-type: none"> Describe the formation of ionic bonds between elements from Groups I and VII 	<p>Concentrate on the attraction of + and – charges and the full outer shells obtained by electron transfer.</p> <p>Use above examples.</p> <p>Consider the above resources and remember that this is usually covered well in the endorsed and other good textbooks.</p>

BIOLOGY

Strand/Topics	Learning Objectives (CAIE expectations)	Learning Experiences/Engagements
Photosynthesis	<p>Define and describe photosynthesis and use the word equation.</p> <p>The importance of water and mineral salts to plant growth.</p> <p>Define and describe photosynthesis and use the word equation.</p> <p>Understand the importance of water and mineral salts to plant growth.</p> <p>Decide whether to use evidence from first-hand experience or secondary sources.</p>	<p>Review the work on photosynthesis and the transport of water and mineral salts in plants.</p> <p>Discuss how to investigate the effect of light on growing plants.</p> <p>Set up some quickly germinating seeds in advance, e.g. cress, and leave them in the dark to observe the effects. Some should be set up in the light as a comparison. Link the equation with transfer of energy along the food chain.</p> <p>Sun → producer → consumer.</p> <p>Construct the word equation for photosynthesis and explain it is an endothermic reaction because of the requirement for energy.</p> <p>Light + Carbon dioxide + water → sugar + oxygen.</p> <p>Know the green parts of cells are called chloroplasts.</p> <p>Compare pond weed and onion skin cells under the microscope. Chloroplasts are identified.</p>

		<p>Know that carbon dioxide can enter and oxygen escape through stoma.</p> <p>Leaf-peel techniques can be used to see stoma, possibly showing differences on upper and lower surfaces.</p> <p>Measure rates of photosynthesis by using the work on testing the formation of oxygen from pond weed to develop further investigations on the rate of production of oxygen e.g. by counting bubbles produced by pond weed, or the gas can be collected.</p> <p>Use secondary sources to explain why water is important to a plant.</p> <p>Investigate the effect of different nutrients on plant growth.</p> <p>Students should appreciate the importance of the three essential elements, nitrogen, phosphorus and potassium.</p> <p>Summarise the requirements for plant growth in the form of a diagram of a plant showing the intake and output of items by arrows and including the transport routes of xylem and phloem.</p>
<p>Reproduction in flowering plants</p>	<p>Understand sexual reproduction in flowering plants including pollination, fertilisation, seed formation and dispersal.</p>	<p>For a selection of locally occurring flowering plants, identify the different parts of the plant, including leaf, stem, roots, flower.</p> <p>Review the functions of each part and explain that the flower is the part where sexual reproduction takes place.</p> <p>Discuss the difference between flowers from different plant.</p> <p>Identify the positions and functions of the reproductive parts of a flowering plant.</p>

		<p>Investigate using secondary sources. Pupils can investigate the structure of the flowers of locally occurring plants.</p> <p>Draw diagrams of a flower showing the male and female reproductive parts. Include ovules in the ovary.</p> <p>Identify pollen as the male sex cell and the ovule as the female sex cell. Introduce 'gamete' as meaning sex cell.</p> <p>Observe pollen grains under the microscope.</p> <p>Investigate examples of wind and insect pollinated flowers (live, diagrams or photographs) and if possible a local flower showing the pollen and sticky stigma clearly.</p> <p>Explain what is meant by pollination. Discuss different ways pollen may travel from one flower to another.</p> <p>Discuss the features of a wind pollinated and an insect pollinated flower.</p> <p>Discuss the advantages and dis-advantages of self-pollination and cross-pollination.</p> <p>Explain what is meant by fertilisation. Observe pollen tubes using a microscope.</p> <p>Draw diagrams to show how the pollen causes a tube to grow down the style and into the ovary to allow fertilisation.</p>
<p>Adapting to a habitat</p>	<p>Explain the ways in which living things are adapted to their habitats.</p>	<p>Pupils choose(from a list) an animal and a plant and research and report on how they are adapted to be able to survive, by finding food and shelter and avoiding predators in their</p>

	Secondary sources can be used.	habitat.
Ecosystems	<p>Use and construct keys to identify plants and animals.</p> <p>Explain and model food chains, food webs and energy flow.</p> <p>Research the work of scientists studying the natural world.</p> <p>Explain and model food chains, food webs and energy flow.</p> <p>Explain the role of decomposers.</p>	<p>Using provided keys, pupils identify plants and animals in the local environment (alternatively, use provided keys to identify pictures, photos).</p> <p>Explain that that most food chains are interlinked as food-webs.</p> <p>Pupils identify food chains within an example of a food web, preferably of local species.</p> <p>Discuss the effect of the removal of one type of organism on the other organisms in the food web.</p> <p>Explain that food chains and webs show biomass and not individuals.</p> <p>Introduce the idea of energy flowing along the food chain and so flowing through the food web.</p> <p>Introduce the term 'trophic level'.</p> <p>Pupils redesign the layout of their food webs to show energy transfer through trophic levels.</p> <p>Explain the terms producer, primary consumer, secondary consumer, tertiary consumer, herbivore, carnivore.</p> <p>Make simple food chains from plants and animal identified by their key.</p>

		<p>Explain the role of decomposers.</p> <p>Demonstrate the breakdown of bread (or fruit) as moulds are allowed to grow on it in a sealed container.</p> <p>Discuss where decomposers fit in the food web.</p> <p>Discuss the importance of decomposers in food webs, in terms of recycling material such as minerals.</p>
<p>Human Influences</p>	<p>Describe factors affecting the size of populations.</p> <p>Look critically at sources of secondary data.</p> <p>Describe and investigate some effects of human influences on the environment.</p> <p>Use knowledge of energy sources including fossil fuels and renewable energy resources to consider the world's energy needs, including research from secondary sources.</p> <p>Look critically at sources of secondary data.</p>	<p>Students investigate changes in population of species using secondary data e.g. changes over a year, changes over time.</p> <p>Investigate graphs of the global population over time and consider reasons for, and disadvantages of, the rate of increase.</p> <p>Investigate the problems of obtaining enough living space.</p> <p>By researching the reasons for and effects of deforestation using secondary sources.</p> <p>Include information on how species might have been affected by destruction of habitat.</p> <p>Present findings and possible solutions.</p> <p>Investigate the availability of clean water resources and why water should be conserved using secondary sources.</p> <p>Explain why the world's energy needs is increasing. Discuss why the world's energy needs is increasing.</p>

	<p>Describe and investigate some effects of human influences on the environment.</p> <p>Use knowledge of energy sources including fossil fuels and renewable energy resources to consider the world's energy needs, including research from secondary sources.</p>	<p>Relate to the increase in population and the increased use of modern technology.</p> <p>Explain why fossil fuels are non-renewable fuels.</p> <p>Explain why there might be an energy crisis.</p> <p>Investigate the problem of atmospheric pollution caused by the combustion of fossil fuels e.g. the effects of acid (rain) on limestone or chalk (buildings).</p> <p>Research different renewable fuels.</p> <p>Discuss whether 'nuclear fuels' are renewable or non-renewable.</p> <p>Discuss the advantages and disadvantages of using 'nuclear fuels' to generate electricity.</p> <p>Use secondary sources to find out about different renewable energy resources.</p> <p>Assess the advantages and disadvantages of each energy resource and how the energy resource is used to generate electricity.</p> <p>Present findings to the whole class as a poster, PowerPoint presentation or a hand-out.</p> <p>Discuss and list the problems of using all kinds of energy sources.</p> <p>These might include suitability of site, climate, cost of converting to electrical energy, pollution of any kind and destruction of habitats.</p> <p>Consider the energy sources most used in your region and whether there would be benefit in changing to other energy resources.</p>
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<p>Classification and Variation</p>	<p>Understand that organisms inherit characteristics from their parents through genetic material that is carried in the cell nuclei.</p> <p>Describe how selective breeding can lead to new varieties.</p> <p>Discuss the way that scientists work today and how they worked in the past, including reference to experimentation and evidence.</p> <p>Discuss the work of Darwin in developing the scientific theory of natural selection.</p>	<p>Discuss inherited characteristics by giving examples of similarities and differences between parents and offspring.</p> <p>Explain that characteristics are passed on in genes, the genetic material is stored in the nucleus of the cell and discuss how this genetic material is passed on from one generation to another.</p> <p>Research selective breeding using secondary sources giving at least one example to write an account about how to selectively breed a certain characteristic in an organism e.g. of a flower grower trying to achieve a flower of a certain colour, or similarly for a vegetable with a desirable property.</p> <p>Discuss how selective breeding may also occur in nature (natural selection).</p> <p>Investigate Darwin's work and how he used evidence to come up with his theory of natural selection.</p>
<p>Pre IGCSE Concepts.</p> <p>Characteristics of living organisms</p>	<p>Describe the characteristics of living organisms by defining the terms: – <i>movement, respiration, sensitivity, growth, reproduction, excretion, nutrition</i></p> <p>Define and describe the <i>binomial system</i> of naming species as an internationally agreed system in</p>	<p>Section 1.1 of this unit can provide an introduction to the Biology course. The seven characteristics of living things form a basis from which the themes underlying many biological concepts can be developed.</p> <p>Activities:</p> <p>1. 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. (G)</p> <p>The mnemonic, MRS GREN is useful to remember the seven characteristics.</p> <p>Learners should understand that single-celled organisms, plants and animals all have</p>

	<p>which the scientific name of an organism is made up of two parts showing the genus and species</p> <p>Explain that the sequences of bases in DNA and of amino acids in proteins are used as a more accurate means of classification</p> <p>Explain that organisms which share a more recent ancestor (are more closely related) have base sequences in DNA that are more similar than those that share only a distant ancestor</p> <p>Construct and use simple dichotomous keys based on easily identifiable features</p> <p>List the features of viruses, limited to protein coat and genetic material</p> <p>Construct and use simple dichotomous keys based on easily</p>	<p>these characteristics.</p> <p>The characteristic of nutrition could be extended to include autotrophic and heterotrophic nutrition and the terms parasite and saprophyte.</p> <p>If models or specimens are available, learners could discuss the importance of having a large surface area in relation to volume for diffusion. (P) The importance of diffusion of gases in respiration will be understood more easily when Unit 4 is studied.</p> <p>Growth could also be explained as an increase in size due to cell division. There might be a change in shape with growth.</p> <p>Examples to explain the need for energy to carry out each of the characteristics should be discussed. (W) Learners will appreciate that energy is required for movement and this can be extended to show that energy is needed for growth, nutrition and sensitivity.</p> <p>Many learners have difficulty in constructing dichotomous keys. The concept can be introduced with coins or nails/screws with different shaped heads or even with postage stamps.</p> <p>The learners can then classify a selection of leaves from the school grounds or from a selection of small pictures of different arthropods. (P)</p>
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	identifiable features	
CELLS	<p>Describe and compare the structure of a plant cell with an animal cell, as seen under a light microscope, limited to cell wall, nucleus, cytoplasm, chloroplasts, vacuoles, ribosomes on rough endoplasmic reticulum, vesicles, and location of the cell membrane .</p> <p>State the functions of the structures seen</p> <p>Calculate magnification and size of biological specimens using millimetres and micrometres as units</p>	<p>Candidates should consider functions of features that are common to plant and animal cells, and those that are found in plant cells only. (I)</p> <p>They should understand how the differences between animal and plant cells relate to their different methods of obtaining nutrients.</p> <p>Examine a temporary mount of epidermal tissue peeled from the inner surface of an onion bulb. (I)</p> <p>Use a temporary mount of epidermal tissue peeled from the inner surface of an onion bulb or rhubarb stem and use an appropriate scale to determine the size of cells. (P)</p> <p>Learners can magnify a piece of hair to understand that magnification is: size of image (P) size of object</p>
CELLS	<p>Relate the structure of the following to their functions:</p> <ul style="list-style-type: none"> – ciliated cells – movement of mucus in the trachea and bronchi – root hair cells – absorption – xylem vessels – conduction and support – palisade mesophyll cells – 	<p>Learners can draw a flow diagram from cells to the particular organ system to begin to understand the complexity of the human body. (I)</p> <p>An outline of the human body can be used to draw in the main organ systems of the body. (W)</p> <p>Extension – learners could research a greater range of specialised cells. This could link</p>

	<p>photosynthesis</p> <ul style="list-style-type: none"> – nerve cells – conduction of impulses – red blood cells – transport of oxygen – sperm and egg cells – reproduction 	<p>to stem cells and their uses.</p>
<p>Movement in and out of a cell</p>	<p>Define <i>diffusion</i> 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</p> <p>Describe the importance of diffusion of gases and solutes</p> <p>State that substances move into and out of cells by diffusion through the cell membrane</p> <p>State that the energy for diffusion comes from the kinetic energy of random movement of molecules and ions</p> <p>Investigate the factors that influence diffusion, limited to</p>	<p>Use 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), or ammonia and hydrochloric acid placed at opposite ends of a long glass tube, or simply a perfume container opened in one corner of the room. (W)</p> <p>Bromine in a gas jar (carried out in a fume cupboard) can quickly show diffusion (gaseous diffusion).</p> <p>Emphasise the random motion of particles.</p> <p><i>Demonstrate diffusion through a membrane demonstrated with Visking tubing filled with iodine solution surrounded by a starch solution in a beaker.</i></p>

	surface area, temperature, concentration gradients and distance	
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GLOBAL PERSPECTIVE

Strand/Topics	Learning Objectives (CAIE expectations)	Learning Experiences/Engagements
Topic : Transport System	Analyse and evaluate the role efficiency of transport systems in connection to economic development. Collaboration	PPT presentation on different modes of transport used globally and its contribution to economic development. Conduct a survey through internet and find the funding of transport system at national and global level and represent the data on graphically map.
Topic : Transport System	Reflect on local, national global perspective about the environmental issues in connection to transportation.	Present a brief summary about the effects of transportation on environment and produce a reflection paper on it.
Topic : Changing Communities	Analyse the causes affecting communities. Collaboration	Use of flow cart and mind maps to highlight the causes of social mobility and urbanisation affecting communities. Class activity – Use a city building game or app to build cities. Each group will have different criteria for city development. Compare the cities they have built and what difference did the different criteria make?
Topic : Changing Communities	Understand the causes for loneliness and social problems	Research and understand different causes and consequences for loneliness and social problems and campaign an awareness drive in your school.

<p>Topic : Migration</p>	<p>Analyse and evaluate the types of migration and its effects on host and departure country.</p> <p>Collaboration</p>	<p>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.</p> <p>Work with students of different grade to compare the effect anti- migration sentiment in the community.</p>
<p>Topic : Migration</p>	<p>Analyse and evaluate local, national and global consequence of migration and criminality</p> <p>Collaboration</p>	<p>Research and interpret data on migration and criminality and present information on maps and graphically.</p> <p>Conduct a survey in teams to derive possible solutions for managing migration.</p>
<p>Topic : Family</p>	<p>Reflect on personal perspectives and those of others on the family and the role of parents</p> <p>Analyse and evaluate the role of a parent.</p>	<p>Survey on family composition .Discuss close/extended family and domestic set up.</p> <p>Questionnaire/Interview with parents about what it is like to be a parent.</p>
<p>Topic : Family</p>	<p>Collaborate</p> <p>Analyse and evaluate examples of care for elderly people</p> <p>Collaborate with others to plan a project with a clear outcome</p>	<p>Work with students from other grades to compare the effect of different cultures on the roles of parents and children.</p> <p>Interview elderly relatives about how they at themselves or are looked after. Analyse the information and compare it to group work discussion.</p> <p>Work with students in different grade to produce a fund raising campaign for a charity (charities) involved in helping the elderly in some way.</p>

Strand/Topics	Learning Objectives (CAIE expectations)	Learning Experiences/Engagements
<p>Types and – components of computer systems / Hardware and software</p>	<ul style="list-style-type: none"> • 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) • Define software as programs for controlling the operation of a computer or processing of electronic data • Identify the two types of software – applications software and systems software • Define applications software (e.g. word processing, spread sheet, database management systems, control software, measuring software, applets and apps, photo-editing software, video-editing software, graphics manipulation software) 	<p>Asked learners to look around the classroom and observed as many external hardware devices that they could.</p> <p>Demonstrate different types pf application software such as word-processor, database, spread sheet and DTP</p> <p>Looking at what is inside a computer: www.howstuffworks.com/inside-computer.htm</p> <p>BBC Bitesize page on word processing software: www.bbc.co.uk/education/guides/zjq9q6f/revision</p>

	<ul style="list-style-type: none"> Define system software (e.g. compilers, linkers, device drivers, operating systems and utilities) 	
Types and components of computer systems / The main components of computer systems	<ul style="list-style-type: none"> 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 <p>Define secondary/backing storage</p>	Learners will research the roles of CPU, ROM and RAM and represent how data is processed and stored. Gave learners a list of statements about the main components of computing system. Students identified the facts were true or false.
Types and components of computer systems / Operating systems	<ul style="list-style-type: none"> Define and describe operating systems which contain a Command Line Interface (CLI) Define and describe operating systems which contain a Graphical User Interface (GUI) Describe the differences, including the benefits and drawbacks, between operating systems which contain a CLI and those which contain a GUI 	Opening and Searching a File using GUI and CLI. Used dir command for command Line Interface
Types and components of computer systems / Types of computer	<ul style="list-style-type: none"> Describe the characteristics of a personal/desktop computer and its uses, both as a standalone and networked computer Describe the characteristics of a laptop computer and what it is used for, both as a standalone and networked computer Describe the characteristics of a tablet 	Give them the scenarios from different people. Compared the use of PC/Desktop Computers and Laptop. Asked them to think of tasks they perform everyday on their smartphones

	<p>computer and what it is used for, including its ability to use wireless technology or 3G/4G technology</p> <ul style="list-style-type: none"> • Describe the computer characteristics of a smartphone and what it is used for in computing terms • Describe the advantages and disadvantages of each type of computer in comparison with the others 	
<p>Types and components of computer systems / Impact of emerging technologies</p>	<ul style="list-style-type: none"> • 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). 	<p>Give learners a case study about the benefits and drawbacks of 3D printing and discuss as a whole class, e.g. prosthetic/artificial limbs</p> <p>Developing 3D printed artificial limbs. These are for war veterans that have lost limbs in combat: www.wired.com/2014/03/next-big-thing-missed-bionic-limbs-3d-printed-worlds-war-wounded/</p> <p>News US and Canada: www.bbc.co.uk/news/world-us-canada-23123964</p>
<p>Input and Output Devices / Input devices and their uses</p> <p>Output devices and their uses</p>	<ul style="list-style-type: none"> • 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, pressure sensor, light sensor, graphics tablet, video camera, web cam • 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 	<p>Will Give learners a scenarios focused on inputting and outputting data.</p> <p>Will Ask the learners to form a list of input and output devices and discuss in their group and compare the list.</p>

	<p>printer, inkjet printer, dot matrix printer, wide format printer, 3D printer, speakers, motors, buzzers, heaters, lights/lamps</p> <ul style="list-style-type: none"> • Describe the advantages and disadvantages of any of the above devices 	
<p>Input and Output Devices / Direct data entry and associated devices</p>	<ul style="list-style-type: none"> • 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 	<p>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.</p>
<p>Storage Devices and Media / Storage devices and media</p>	<ul style="list-style-type: none"> • Identify storage devices and their uses, e.g. <ul style="list-style-type: none"> ○ magnetic backing storage media: fixed hard disks, portable hard disks, magnetic tapes ○ optical backing storage media (CD/DVD/Blu-ray): CD ROM/DVD ROM, CD R/DVD R, CD RW/DVD RW, DVD RAM, Blu-ray discs ○ solid state backing storage: solid state drives, memory sticks/pen drives, flash • Describe the advantages and disadvantages of the above devices 	<p>Give learners a table with storage devices in and ask them to compare them for use, size, advantages and disadvantages.</p> <p>BBC Bitesize page on data storage: www.bbc.co.uk/education/guides/z7rk7ty/revision</p>
<p>ICT Applications / Communication applications</p>	<ul style="list-style-type: none"> • 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 	<p>Discuss with learners the purposes of a range of communication applications and what features they have that help them fulfil their purpose.</p> <p>Give learners a list of statements about communication methods, and ask them to identify if they are true or false.</p>

	<p>communication (e.g. text messaging, phone calls, accessing the internet)</p> <ul style="list-style-type: none"> Describe the use of internet telephony, including Voice Over Internet Protocol (VOIP) <p>Describe applications for publicity and corporate image publications (e.g. business cards, letterheads, flyers and brochures)</p>	Learners will research about Voice over internet protocol (VOIP) and Internet Telephony Service Providers (ITSP)
ICT Applications / Data handling applications	<ul style="list-style-type: none"> Describe the use of a range of data handling applications (e.g. surveys, address lists, clubs and society records, school reports and school libraries) 	Learners will research about the data handling applications used in their schools
ICT Applications / Applications in manufacturing industries	<ul style="list-style-type: none"> 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 	BBC Bitesize page with videos of commercial and industrial applications: www.bbc.co.uk/education/topics/z7bc87h/resources/1
ICT Applications / School management systems	<ul style="list-style-type: none"> Describe how systems are used to manage learner registration and attendance Describe how systems can be used to record learner performance Describe how systems can be used for organising examinations, creating timetables and managing teaching cover/substitution 	Discuss with learners what content linked to them goes into a school management system and what that data is used for.
ICT Applications / Booking systems	<ul style="list-style-type: none"> Identify areas where booking systems are used (e.g. travel industry, theatre and cinemas) Describe the online processing involved in 	Will Ask learners to book tickets online to the point of making a payment. Learners will make a note of the features of booking system.

	<p>booking tickets</p> <ul style="list-style-type: none"> • Discuss the advantages and disadvantages of online booking systems 	
ICT Applications / Banking applications	<ul style="list-style-type: none"> • 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 	<p>Ask learners to produce a flowchart to illustrate how an ATM machine works.</p> <p>Discuss with learners how banking was done before ATM machines, telephone banking and internet banking existed.</p> <p>Discuss issues such as how cash was withdrawn and how bills were paid.</p>
ICT Applications / Computers in medicine	<ul style="list-style-type: none"> • 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) 	<p>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.</p> <p>Examples of 3D printing being used in medicine: www.http//3dprintingindustry.com/medical/</p> <p>Stories about 3D printing in medicine: www.bbc.co.uk/news/technology-24125678</p>

ICT Applications / Computers in libraries	<ul style="list-style-type: none"> • 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 • Describe the automatic processing involved in issuing reminders for overdue books 	<p>Learners will put forward the steps that they go through when they issue a book from the library. They will discuss about the system used by the librarian to give the book for a specific period of time.</p> <p>Libraries and ICT page on the Teach ICT website: www.teach-ict.com/gcse_new/organisations/libraries/home_libraries.htm</p>
ICT Applications / Expert systems	<ul style="list-style-type: none"> • 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 	<p>Ask learners to use an example of an experts system e.g. WebMD and ask them to identify how it is giving a diagnosis.</p>
ICT Applications / Computers in the retail industry	<ul style="list-style-type: none"> • Describe the use of point of sale (POS) terminals, how the stock file is updated automatically, and how new stock can be ordered automatically • 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 	<p>Ask learners to think about what kind of things they may find for sale at a large online supermarket and consider what the delivery time and delivery cost might be.</p>

	of internet shopping	
Safety And Security / Physical safety	<ul style="list-style-type: none"> • 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 • Describe some simple strategies for preventing these issues • Evaluate own use of IT equipment and develop strategies to minimise the potential safety risks 	<p>Ask learners to produce a poster using a word document for classroom display to warn other learners about the safety hazards that can arise when using ICT.</p> <p>BBC Bitesize page on health and safety when working with computers: www.bbc.co.uk/education/guides/zkyg87h/revision</p> <p>Teach-ICT page on health and safety: www.teach-ict.com/gcse_new/health_safety/home_health_safety.htm</p>
Safety And Security / e-safety	<ul style="list-style-type: none"> • 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 • Evaluate own use of the internet and use strategies to minimise the potential dangers, e.g. only using websites recommended by teachers, only using a learner-friendly search engine • Evaluate own use of email and use strategies to minimise the potential dangers, including only emailing people 	<p>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.</p> <p>eSafety: www.thinkuknow.co.uk/ www.kidsmart.org.uk/ www.bbc.co.uk/cbbc/topics/stay-safe</p>

	<p>already known, thinking before opening an email from an unknown person, never emailing the school's name or a picture of a learner in school uniform</p> <ul style="list-style-type: none"> • Evaluate own use of social media/networking sites, instant messaging and internet chat rooms and use strategies to minimise the potential dangers, including: knowing how to block and report unwanted users, never arranging to meet anyone alone, and always telling an adult first and meeting in a public place, avoiding the misuse of images, using appropriate language, respecting confidentiality • Describe measures which should be taken when playing games on the internet (including not using real names) 	
<p>Safety And Security / Security of data</p>	<ul style="list-style-type: none"> • Effective security of data <ul style="list-style-type: none"> ○ 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 	<p>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.</p> <p>Will Discuss about the advantage of using a Strong Password.</p> <p>Password checker: www.passwordmeter.com/</p>
<p>Safety And Security / Security of data</p>	<ul style="list-style-type: none"> • Security of data online <ul style="list-style-type: none"> ○ explain what is meant by the term digital certificate and its purpose ○ explain what is meant by the term 	<p>Present learners with the five main security or nuisance issues to consider:</p> <ul style="list-style-type: none"> • phishing • pharming

	<p>Secure Socket Layer (SSL)</p> <ul style="list-style-type: none"> ○ describe the features of a web page that identify it as using a secure server ○ define the terms: phishing, pharming, smishing ○ describe the methods which can be used to help prevent phishing, pharming and smishing ○ describe the potential for the malicious use of technology to collect personal data, including: phishing, pharming, smishing ○ describe how it is possible to recognise when someone is attempting to obtain personal data, report the attempt and avoid the disclosure of information ○ explain the difference between moderated and un-moderated forums and the relative security of these ○ explain the concept of and how to recognise spam mail and avoid being drawn into it ○ describe what encryption is and why it is used ○ define the term computer virus and describe its effects ○ describe the effects of infecting a computer with a virus from a downloaded file ○ describe how to take preventative action to avoid the danger of infecting a computer with a virus from a downloaded file ○ describe the measures that must be taken in order to protect against hacking ○ describe how it is possible to be the 	<ul style="list-style-type: none"> ● spamming ● spyware ● cookies <p>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 a link to verify your account, links that are not related to the supposed sender, etc.</p> <p>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.</p> <p>Learners should add key terms and make notes to their glossary of terms so that they can refer to them easily.</p> <p>Phishing, pharming, smishing: www.webopedia.com/TERM/P/phishing.html www.webopedia.com/TERM/P/pharming.html www.webopedia.com/TERM/S/smishing_scams.html</p> <p>Viruses and how they work: www.howstuffworks.com/life/cellular-microscopic/virus-human.htm</p> <p>Preventing credit card fraud: www.bbc.co.uk/programmes/articles/35y0IMMrymhNNcm8Lv4qsvW/preventing-credit-card-fraud</p>
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	<p>subject of fraud when using a credit card online</p> <ul style="list-style-type: none"> ○ 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 	
<p>Communication / Communicate with other ICT users using email</p>	<ul style="list-style-type: none"> ● Describe the constraints that affect the use of email, including: the laws within a country, acceptable language, copyright, local guidelines set by an 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 	<p>Ask learners to research how to avoid getting on a spam list and produce a leaflet for their peers to help them avoid this too. (I)</p> <p>Spotify: www.spotify.com/uk/</p> <p>Spotify: seven reasons why Google might buy the streaming music service: www.theguardian.com/technology/2014/jul/24/google-spotify-acquisition-streaming-music</p>
<p>Communication / Effective use of the internet</p>	<ul style="list-style-type: none"> ● Fundamentals of the internet <ul style="list-style-type: none"> ○ define the terms internet and intranet ○ explain the differences between the internet, an intranet and the World Wide Web (WWW) ○ explain the concept of storage in the cloud ○ define and understand the terms: HyperText Transfer Protocol (HTTP), HyperText Transfer protocol secure variant (HTTPS), Uniform Resource Locator (URL), hyperlink, Internet Service Provider (ISP), File Transfer 	<p>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.</p> <p>Learners may use their own school intranet as an example and describe what it can be used for by teachers and learners.</p> <p>Learners list the uses of social networking and describe their own experiences of using it. Issues may be discussed.</p>

	<p>Protocol (FTP)</p> <ul style="list-style-type: none"> ○ describe the structure of a web address ○ explain what a web browser is used for ○ explain what a search engine is used for ○ define the term blog and describe the use of a blog as a means of communication ○ define the term wiki and describe the use of a wiki as a means of communication ○ define the term social networking and describe the use of social networking websites as a means of communication. 	
<p>Communication / Effective use of the internet</p>	<ul style="list-style-type: none"> ● Advantages and disadvantages of using the internet <ul style="list-style-type: none"> ○ explain why the internet is so popular giving reasons such as the amount of information available and the speed of accessing information ○ explain why an internet search to find relevant information is not always fast. ○ explain why it is not always easy to find reliable information on the internet ○ explain how to evaluate the reliability of information found on the internet 	<p>Ask learners to find answers to 10 unusual questions, using the internet only. Then ask them to prove that their answers are valid.</p> <p>Learners compile a list of advantages and disadvantages of using the internet. (I)</p> <p>www.bbc.co.uk/schools/gcsebitesize/ict/datacomm/</p>
<p>File Management / Manage files effectively</p>	<ul style="list-style-type: none"> ● 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 	<p>Learners were asked to save an excel sheet with the extension of .csv. They discussed about the difference between normal excel file and .csv file</p> <p>They created an image and saved it with different image extensions. They noted down the size of the image file with different extensions.</p> <p>They created a word document and saved it as .docx .rtf and pdf. They noted down the difference between all three file formats.</p> <p>Create a task for learners that requires them to do the following:</p> <ul style="list-style-type: none"> ● locate an image from a shared area. The image should be in

	<ul style="list-style-type: none"> • 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 • Explain why generic file formats are needed • Save and export data into generic file formats, including: .csv, .txt, .rtf, .pdf, .css, .htm 	<p>one type of image format and called pic1</p> <ul style="list-style-type: none"> • 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.
<p>File Management / reduce file sizes for storage or transmission</p>	<ul style="list-style-type: none"> • 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 <p>Reduce file sizes using file compression</p>	<p>Discuss with learners why an image file would be compressed.</p> <p>Compressing files for email: www.teach-ict.com/gcse_computing/ocr/214_representing_data/bitmap/miniweb/pg10.htm</p>
<p>Images / Images</p>	<ul style="list-style-type: none"> • 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: <ul style="list-style-type: none"> ○ place an image with precision ○ resize an image ○ maintain or adjust the aspect ratio of an image, or distort an image where appropriate 	<p>Give learners a brief that requires them to edit an image using all of the editing points listed in the learning objectives column opposite.</p> <p>Graphics software: www.bbc.co.uk/schools/gcsebitesize/ict/software/1graphicssoftwarerev1.shtml</p>

	<ul style="list-style-type: none"> ○ 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 	
Layout / Layout	<ul style="list-style-type: none"> ● Use software tools to prepare a basic document to match the purpose and target audience <ul style="list-style-type: none"> ○ 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, 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 	<p>User 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:</p> <ul style="list-style-type: none"> ● 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 ● 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. <p>BBC Bitesize page on word processors and desktop publishing: www.bbc.co.uk/education/guides/zjq9q6f/revision</p>
	<ul style="list-style-type: none"> ● Use software tools to use headers and footers appropriately within a range of software packages ● Create headers and footers 	<p>Using the document created above, learners will:</p> <ul style="list-style-type: none"> ● set the top and bottom margins to 2.5 cm and the left and right margins to 4 cm ● insert a header of 'The Solar System', your name and today's date

	<ul style="list-style-type: none"> • 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 information, automated page numbering, text, date, time • Explain why headers and footers are needed 	<ul style="list-style-type: none"> • your name should be left aligned, The Solar System should be centre-aligned and the date should be right aligned. The date should set automatically • insert a footer that automatically assigns page numbers.
<p>Styles / Styles</p>	<ul style="list-style-type: none"> • Understand the purpose of a corporate house style and ensure that all work produced matches this <ul style="list-style-type: none"> ○ produce documents which conform to a corporate house style ○ explain what is meant by corporate branding/house style 	<p>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.</p> <p>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.</p> <p>What is house style? www.teach-ict.com/as_a2_ict_new/ocr/AS_G061/313_standard_applications/house_styles/miniweb/pg3.htm</p>
	<ul style="list-style-type: none"> • Apply styles to ensure consistency of presentation <ul style="list-style-type: none"> ○ 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 	<p>Will Ask learners to design a house style for a given organisation. A background description will be provided of the organisation and learners will provide an evaluation to show how their house style is appropriate for the company.</p>

	<ul style="list-style-type: none"> ○ create and apply an appropriate style, including: font type (serif, sans-serif), point size, font colour, 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. 	
<p>Document Production / Document production</p>	<ul style="list-style-type: none"> ● Format text and organise page layout <ul style="list-style-type: none"> ○ set page size ○ set page orientation ○ set page and gutter margins ○ set the number of columns ○ 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 	<p>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:</p> <ul style="list-style-type: none"> ● 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 ● 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: <p>Password violations.</p> <p>Companies use on-going security procedures to check customers logging onto the system. If a customer makes more than the permitted number of attempts to gain access to the system, then use of that id is suspended. The customer is contacted for an explanation. These customers need to be contacted for information concerning their password violations:</p> <ul style="list-style-type: none"> ● Make these three points only listed under Password Violations bulleted style

	<ul style="list-style-type: none"> ○ 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 <ul style="list-style-type: none"> ○ 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 	<p>Companies use on-going security procedures to check customers logging on to the system. If a customer makes more than the permitted number of attempts to gain access to the system, then use of that id is suspended. The customer is contacted for an explanation.</p> <p>Insert a page break before the sentence:</p> <ul style="list-style-type: none"> ● These customers need to be contacted for information concerning their password violations.
<p>Presentation / Presentations</p>	<ul style="list-style-type: none"> ● Use a master slide to appropriately place objects and set suitable styles to meet the needs of the audience <ul style="list-style-type: none"> ○ 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, 	<p>Learners should follow the brief given to create a presentation.</p> <p>You work for a travel agency and have been asked to prepare a presentation about Villa Holidays which the company is promoting. This presentation will be run in the travel agency to inform customers of their many Villa Holidays.</p> <p>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.</p>

	<p>heading styles and colour schemes as required by the audience</p> <ul style="list-style-type: none"> ● manipulate and use specified areas for headings, subheadings bullets, images, charts, colours, text boxes, presenter notes, audience notes as appropriate 	
	<ul style="list-style-type: none"> ● Use suitable software tools to create presentation slides to meet the needs of the audience <ul style="list-style-type: none"> ○ insert a new slide, when required, selecting the appropriate slide type for the purpose ○ place text on the slides including: headings, subheadings, bulleted lists where appropriate ○ apply consistent styles using available software tools, including: select from the presentation colour scheme, the use of text enhancement ○ place appropriate images on the slides, including: still images, video clips, animated images ○ place sound within a slide ○ place charts imported from a spreadsheet ○ place other objects including: symbols, lines, arrows, call out boxes ○ create consistent transitions between pages ○ create consistent animation facilities on text, images and other objects ● Use suitable software tools to display the presentation in a variety of formats, including: looped on-screen carousel, controlled presentation, presenter notes, 	<p>Learners should then create the rest of the pages for the presentation using the master slide.</p> <p>Learners should look to insert a chart into the resorts and location page to show which are their most popular reports and locations.</p> <p>Learners should look to add slide transitions between each slide and animated elements where appropriate on the slides. Learners should take care when adding animations, these should only be used where information to is be withheld at first to be revealed little by little or where there is a need to emphasise an element.</p>

	audience notes taking into account the needs of the audience	
Website Authoring / Web development layers	<ul style="list-style-type: none"> • 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 	<p>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. Discuss with learners why the design of a webpage is separated into these layers and what the benefits of that are. For example, the ability to change each of them easily, such as creating a new style for the website and applying it, without the need to affect the content.</p> <p>Give learners the following brief for website creation:</p> <p>You are going to create a website for a local shop in your town. Your website needs to have at least three different pages, and should advertise the shop and the products that they sell. You should think about what you will include in your website in term of content. You will also need to think about the three different layers of the website, and how you will split the tasks that you need to complete, to create your website into the three different layers.</p> <p>Create styles for headings, paragraphs and bulleted lists. These should include font, colour, size, alignment and font weight. Save these styles as external style sheets to be used on each page. Add comments to each style that is created to provide information about how the style should be displayed.</p> <p>Gather information from a local shop in your town. Your material should include relevant graphics, charts, and text. Using the materials that you collected create web pages, including links.</p>
Website Authoring / Create a web page	<ul style="list-style-type: none"> • Use software tools to create the content layer of a web page to meet the needs of the audience <ul style="list-style-type: none"> ○ explain the purpose of the head and body sections of a web page 	<p>Ask learners to identify the head and body sections of the webpage. Ask them to identify what kind of things are put into the head and body sections. Learners may need more help with what is in the head section as there is likely to be quite a bit of information in this section for most commercial websites. 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.</p>

- place appropriate elements in the head section of a web page, including: page title, attached stylesheets
- place appropriate elements in the body section of a web page
- explain why tables are used to structure elements within a web page
- insert a table, including: table header, table rows, table data
- use appropriate table attributes, including: to adjust cells to span more than one row/column, to set table and cell sizes in terms of pixels and/or % values, to apply styles to tables, to meet the needs of the audience

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:

Home page

Design an index page (home page) for the shop.

This page should contain a little text: the shop name and an outline of the goods it sells. Seek out and scan if needed, a graphic as a logo to go onto the website.

Create links to other pages in your site as you create them.

Explain to learners that they can set the height and the width of an image they use for the logo. However, they must think about maintaining a suitable aspect ratio, so as not to distort the image. Show learners how to change the height and width of an image, and show them what happens if they do this but do not maintain the aspect ratio.

Explain to learners how to use the alt attribute in the image tag, and when the text that is added to this attribute is displayed. Ask learners to think about why it is good practice to add the alt text.

Second page

Open a second web page that will give information on the products sold – this page should link back to the index page. Create a table to hold the product details, see example below:

XXXSHOP		
ITEM	AVAILABILITY	COST

		<p>Make the top row of the table expand the whole width of all the columns in the table. Set the width of the table to a suitable percentage, for example 50%. Create a border around each cell in the table and set a suitable padding for the data, for example 10px.</p> <p>Change the background colour of the table to a suitable colour and central align the text in each cell.</p> <p>Add a suitable title for each page in the correct section.</p>
	<ul style="list-style-type: none"> ● Use software tools to appropriately place the content in a web page <ul style="list-style-type: none"> ○ insert appropriate objects into a web page including: text, still images, moving images, sound clips ○ apply styles to text within a web page ○ apply styles to a list, including: ordered list, unordered list ○ insert an appropriate image into a web page ○ use appropriate image attributes, including: to adjust its size, aspect ratio and alternate text 	<p>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. They could look to include a short video that could be a review of the shop.</p> <p>Explain to learners that adding images to websites can enhance the appeal of the website, but ask them what problems they could foresee if too many images are added e.g. the time it takes to load the website, and what affect this can have on the user.</p> <p>Ask learners to select at least two images to add to their website. They should think about maintaining the aspect ratio of the image, using suitable height and width values. For example:</p> <p>Add the shop logo. Set a suitable length and width for the image to be displayed. Make sure that the image is not distorted in the process. Set the text 'Shop Logo' to appear if the image cannot be displayed.</p> <p>Explain to learners the difference between an ordered list and an unordered list, and ask students to think about when each might be used. Demonstrate to learners how to use the list tags, and how to set a list as ordered or unordered. Ask learners to incorporate each type of list in their website.</p>
	<ul style="list-style-type: none"> ● Use software tools to create navigation within a web page and between web pages <ul style="list-style-type: none"> ○ describe the function of a hyperlink 	<p>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. Show learners a webpage that is one continual</p>

	<ul style="list-style-type: none"> ○ describe the concept of a bookmark and methods of creating a bookmark within a web page ○ describe the function of an anchor and why it is rarely seen from the browser view ○ define and understand the terms relative file path and absolute file path ○ explain why absolute file paths must not be used for hyperlinks to locally saved web pages/objects ○ use an object's id attribute to create a bookmark within a web page ○ create an anchor within a web page ○ create hyperlinks from: text, images ○ create hyperlinks, where appropriate, to: bookmarks on the same page, other locally stored web pages, a website using the URL, send mail to a specified email address, open in a specified location including: the same window, new window, with a window named as specified 	<p>page that can be navigated using bookmarks. Explain to learners that bookmarks can be used to jump to certain sections of a webpage. Explain that the most simple kind of bookmark would be 'Back to the top'.</p> <p>Third page This page should contain contact details. These will be the shop's name and address and telephone number, the web address and email address of either yourself or someone at the shop. Links should be made to the web address and also to the email address.</p> <p>Add a reviews section to the bottom of this page and add some customer reviews. Add a bookmark to this section to allow users to jump to the review section.</p> <p>Create links on this page back to the index page and the second page.</p> <p>Revisit the pages you have created and ensure all pages have links to each other and that they work.</p>
<p>Website Authoring / Use style sheets</p>	<ul style="list-style-type: none"> ● Use software tools to create the presentation layer of a web page <ul style="list-style-type: none"> ○ explain what is meant by the term cascading style sheets ○ explain the difference between attached stylesheets and in-line style attributes ○ explain the hierarchy of multiple attached 	<p>Explain to learners that there are two ways that formatting can be applied to a webpage, using a style sheet or using an in-line style attribute. 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. They should be able to identify things such as if it is done within the tag then it only changes in</p>

	<p>style sheets and in-line styles within a web page</p> <ul style="list-style-type: none"> ○ explain the difference between a style and a class ○ create generic external styles and in line style attributes, including: background properties (like colour, images), table properties (e.g. background colour, horizontal and vertical alignment, spacing, padding, borders: including collapsed, border thickness, visible/invisible), font properties (like style, typeface) ○ create external styles to be tagged in a web page including: h1, h2, h3, p, li as required ○ specify the font appearance for each style, including features like: font family, size, colour, alignment, bold and italic ○ save styles in cascading style sheet format ○ explain why relative file paths must be used for attached style sheets ○ attach an external style sheet to a web page using a relative file path attach comments to an external stylesheet 	<p>that one place, but if done within the style sheet, then every instance of using that tag will be changed.</p> <p>Learners implement style sheets within their web sites created in 21.1-21.2.</p> <p>W3C Recommendations on style sheets page: www.w3.org/TR/html401/present/styles.html</p>
<p>Website Authoring / Test and publish a website</p>	<ul style="list-style-type: none"> ● Know how to publish a website <ul style="list-style-type: none"> ○ explain how to upload and publish the content of a website using ftp ○ test that web page elements work ○ test navigation within/from a web page using a test plan ● Test a website 	<p>Explain to learners that when they are creating a website and viewing it in the web browser, it isn't yet live for others to view. Explain that a website needs to be hosted in order to be live for other people to view it. Explain what this involves, and how FTP is used to upload the website and make any future changes to it.</p> <p>Discuss with learners the different tests that may need to be carried out, to make sure a website is fully functioning. They should be looking to</p>

	<ul style="list-style-type: none">○ create a test plan to test a website including: web page elements are visible, navigation within/from a web page justify the choice of test plan	<p>test things such as:</p> <ul style="list-style-type: none">• Links (both internal and external)• The size an image is displayed• The formatting applied• Any multimedia elements that have been added• The time it takes to load a webpage• What the webpages looks like on different browsers• What the webpage looks like on different devices <p>Ask learners to create a test plan for their website, so that a third party can test the full functioning of the site.</p>
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ART

Strand/Topics	Learning Objectives (CAIE expectations)	Learning Experiences/Engagements
Colour wheel	<p>Colours and their interaction with one another. Learning the parts of a colour wheel This lesson will introduce students to the different colours and how they interact with one another.</p> <p>This project will introduce students to the theory of colour with a hands-on experience.</p> <ol style="list-style-type: none"> 1. Understand Colour Mixing 2. Understand the layout of the Colour Wheel 3. Understand the order of colors on the colour wheel <ul style="list-style-type: none"> - Students will learn about complementary and analogous colors 	<p>Students will draw and paint their own colour wheel Students will show understanding by filling in their own colour boxes</p> <ul style="list-style-type: none"> - Students will mix secondary and tertiary colors from primary colors - Create a Colour Wheel with only the Primary Colors: Red, Blue and Yellow
Design for an Umbrella	<ul style="list-style-type: none"> -To be able to create 2D design -To be able to use elements of art such as line, shapes, space, value, colours. -to be able to use positive & negative space, overlapping and composition along with the colour schemes 	<p>Students will create a design based on their previous knowledge of shapes, space, overlapping and colour schemes.</p>

<p>Dreamscape</p>	<p>-To introduce students to the Art movement- Surrealism & artist Rene Magritte</p> <p>-To know the connection between dreams and surrealism</p> <p>-To be able to understand what makes an artwork a surreal artwork.</p> <p>-To know and use the devices with which they can create a surreal artwork.</p>	<p>Student will study the artworks by Rene Magritte. They'll use any one of the following techniques to create their own 'Dreamscape'.</p> <ul style="list-style-type: none"> • Scale • Levitation • Juxtaposition • Dislocation • Transparency • Transformation <p>following prompts will be given to the students to describe their dream:</p> <ul style="list-style-type: none"> • Write about a dream you've had that seemed strange. Provide sufficient details. • Analyse your write up to create a surrealistic painting. Write down what you plan to draw. • Create your own work based on your dream and paint it with the techniques appropriate for your work.
<p>Nature Drawing</p>	<p>-To develop the observation skills</p> <p>-To be able to record from direct observation from the secondary source</p> <p>-To be able to understand & show in their work the understanding of composition, proportion, positive & negative space and various values & colours in their still life.</p>	<p>Students will demonstrate their ability to observe the secondary source of the natural object in front of them and draw it realistically and demonstrate their observation skills and knowledge of value, colours and texture with Painting.</p>
<p>Elements of Art</p>	<p>-To introduce students to the elements of art i.e. Visual language</p> <p>-To be able to identify 7 elements of art and understand how artists use them effectively to create the artwork</p>	<p>Students will study carefully few works of art and identify the elements of art used in them. Then they will create their own artwork consciously using 7 elements of art .</p>

	-To be able to use them in their work intentionally & effectively	
Expressionist art work (Painting from Expressionism)	<p>-To be able to understand & appreciate the work of an artist</p> <p>-To be able to understand the media, techniques and processes used by the artist to create his artwork.</p> <p>-To be able to use those media, techniques and processes to replicate the artist's work.</p> <p>-To learn how to use elements of art intentionally to create their own work to represent their own ideas.</p> <p>-To be able to make appropriate choices of media, techniques and processes to create their own artwork</p>	Student will observe the artwork from an art movement, expressionism. They will identify the elements of art in it as well as the techniques used to create the artwork and try to replicate the same according to their abilities.
Still Life (Theme-Memories)	<p>-To develop the observation skills</p> <p>-To be able to record from the direct observation from the secondary source</p> <p>-To be able to understand & show in their work the composition, proportion, positive & negative space and various values in their still life.</p>	Students will demonstrate their ability to observe the secondary source of a group of objects arranged in front of them and draw it realistically and demonstrate their knowledge of value with Painting.
Design (Mural)	-To be able to notice and observe the	Students will create a design for a mural pack based on the secondary sources &

	design in their surrounding -To be able to create a design for applied purpose	Paint it with the appropriate colour scheme
Changing Times (Interpretative Assignment)	-to be able to investigate, research, develop and present ideas and images based on the given theme	Student will develop their ideas based on a given theme and represent them in an appropriate form

BUSINESS STUDIES

Strand/Topics	Learning Objectives (CAIE expectations)	Learning Experiences/Engagements
1.3 Enterprise & Entrepreneurship	<p>Describe characteristics of successful entrepreneurs.</p> <p>Benefits and disadvantages of being entrepreneurs</p>	<p>Group activity on Entrepreneurs</p> <ul style="list-style-type: none"> - Women Entrepreneur - Indian Entrepreneur - Start up entrepreneurs
1.1 Business activity	<p>Demonstrate an understanding the purpose and nature of business activity.</p> <p>Describe how business activity aims to meet these unlimited needs and wants from limited resources. Students learn about the four factors of production and the problem of scarcity.</p> <p>Students understand the concept of opportunity cost through simple example of missing chemistry class to study economics and choosing between their wants.</p> <p>Use of furniture making business to explain how specialisation can improve production</p> <p>Example of Mc donalds and potato swirl to explain the concept of value addition</p>	<p>Class Activities to list things used in daily life to explain needs and wants</p> <p>Pose a case study of government printing unlimited notes to curb poverty.</p> <p>PPT</p> <p>PPT on value added and ways to achieve the same</p> <p>Exam style Q.Ans</p>
1.2 Classification of business	<p>Understand the basis of business classification.</p> <p>Give reasons for the changing importance of business classification.</p> <p>Classify business enterprises between private sector</p>	<p>Group activities</p> <p>PPT</p> <p>Textual Activities</p>

	<p>and public sector in a mixed economy.</p>	
<p>1.3 business growth and size</p> <p>Apply knowledge and understanding of the methods and problems of measuring the size of business</p> <p>Learners should be able to explain reasons why some businesses grow and others remain small.</p>	<p>Identify methods that Governments might use to help business start-ups and explain why they help such businesses Learners list possible ways to measure the size of a business. Explain that profit is not a reliable measure of size.</p> <p>Provide some data for either turnover, labour, capital employed or outlets for four or five businesses in the same sector. Learners classify the 3 businesses based on its size (largest to smallest).then on the other criteria and identify the problems in measuring business size.</p> <p>Learners work in pairs to mind map possible reasons why a business might want to expand. Follow this with a whole class discussion.</p> <p>Explain the different ways a business can grow – internal (organic) and external methods including horizontal, vertical forward and backwards integration and conglomerate integration.</p> <p>Learners watch a presentation on different types of mergers and integration.</p> <p>Learners given several activities to complete using worksheets and case studies to identify and explain the form of business growth used by different businesses.</p> <p>Learners complete a simple case study about the</p>	<p>PPT,</p> <p>Text book</p> <p>Worksheet with case study from study guide and past papers</p> <p>Group activity</p> <p>Textual Case studies and Activities</p>

<p>Learners should be able to explain why some (new or established) businesses fail.</p>	<p>problems of growth. Learners, individually, are given time to read the case study and identify potential problem(s).</p>	
<p>Explain the main features of different forms of business organisation.</p> <p>Recommend and justify a suitable form of business organisation for a given situation.</p> <p>Sole trader / partnership/ LTD. Cos.</p>	<p>Presentation on the main features of each form of business organisation. It is important to include concepts of risk, ownership and limited liability. Learners complete an activity to match relevant features to different types of organisation.</p> <p>Learners identify the advantages disadvantage of each form of organisation and attempt gap fillers for basic terms on each organisation</p>	<p>Dinesh Bakshi gap fillers, match up, crossword</p> <p>Textual case study and question answers.</p>
<p>Recommend and justify a suitable form of business organisation for a given situation.</p> <p>Franchise Joint Venture Public corporations</p>	<p>Explain the difference between a franchise, franchisee and franchisor. Learners to match the terms to definitions written on cards. Learners complete a worksheet based on main advantages and disadvantages of franchises for franchisees and franchisors. All points are in the wrong order and learners sort them into the correct section.</p> <p>Briefly outline other forms of business organisation including joint ventures, public corporations.</p>	<p>Video</p> <p>Case study</p> <p>Textual activities and Q.Ans.</p>
<p>1.5 Business objectives</p>	<p>Identify the main stakeholders, and their different objectives.</p> <p>Explain reasons why their objectives might conflict.</p>	<p>Case study</p>