Knowledge Organiser

Year 11

Cycle 1

OPTIONS SUBJECTS

Name:

Tutor Group:

What is a Knowledge Organiser and why are they important?

A knowledge organiser is designed to summarise the key information, concepts, and vocabulary for a specific topic or unit of work in each subject. Its purpose is to help students:

- o Understand what they are expected to learn.
- o Make connections between ideas.
- o Retain and recall essential knowledge more effectively.
- o Support independent study and revision

Your Knowledge Organiser contains the essential knowledge that we expect every student to know. Regular use of the Knowledge Organiser helps you to recap, revise and revisit what you have learnt in lessons. This can be part of your homework in some subjects or as independent revision The aim is to help remember this knowledge in the long term and to help strengthen your memory.

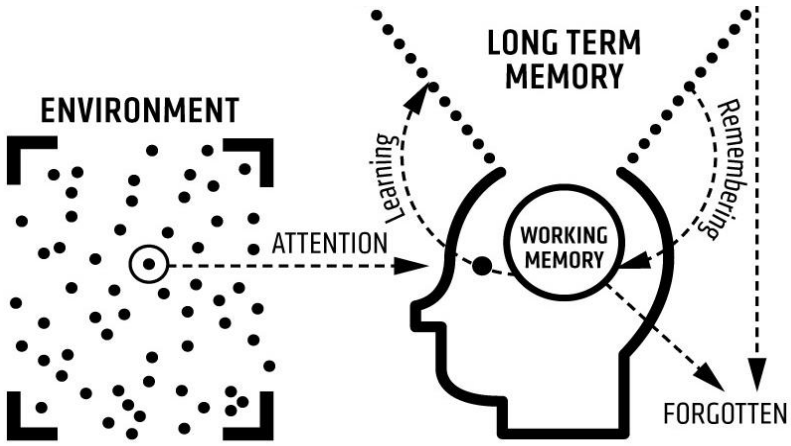
Each cycle there is an assessment in every subject and you will be assessed on the knowledge from your Knowledge Organiser; the more you revisit information the more likely it will be remembered for lessons, assessments and exams.

How we learn anything

We learn by focusing our attention on something. If we are distracted by other things in our environment (eg mobile phones, listening to music) it will affect how much/what we learn.

Information we pay attention to goes into our working memory, but our working memory is not very good and we quickly and easily forget things.

Learning happens when we think about, process or practise doing something so that it is stored in our long-term memory. Even then it can still be forgotten if we do not regularly think about it and go over it. *We remember what we think about*. Using your Knowledge Organiser outside of lessons helps you to remember things in the long-term.



Homework in Year 10-11

The purpose of homework

Homework plays a crucial role in reinforcing what you learn in the classroom, helping you to develop a deeper understanding of the material. It encourages independent learning, time management, and responsibility: skills that are essential for success both in school and in life.

Homework fosters a strong work ethic and a sense of discipline, preparing you for future academic and professional challenges. Homework is not just about completing tasks, it is about building lifelong learning habits. Learning is defined as a change in the long-term memory. You attend 5 hours of lessons per day, which is a lot of new information being taken in. Without additional opportunities to practise remembering, much of that information would be quickly forgotten.

Homework expectations

In Years 10-11 we expect every student to complete around 1 hour of homework a day, 5 days a week. English, Maths and Science will set around 1 per week each and the other GCSE subjects will be around 30 minutes each using the following timetable:

	Monday	Tuesday	Wednesday	Thursday	Friday
Subject 1	Science	Geog/History	Maths	Option Block F	Maths
Subject 2	English	Option Block E	English	Science	Option Block G

Maths and Science homework will be completed on Sparx. All other subjects may be a mixture of Seneca, Knowledge Organiser work and worksheets/tasks. Homework will be recorded on Class Charts to help students and parents keep track of what to do.

Year 11 Options Cycle 1

Knowledge Organiser Contents Page

CREATIVE ARTS
GCSE 3D DESIGN – YEAR 11 MOCK
SIGNWRITING

A. Visual Elements Keywords

Line	Line is the path left by a moving point. A line can be horizontal, diagonal or curved and can also change length.
Shape	A shape is an area enclosed by a line. Shapes can be geometric or irregular.
Form	Form is a three dimensional shape, such as a cube, sphere or cone.
Tone	This refers to the lightness or darkness of something. This could be a shade, or how dark or light a colour appears.
Texture	This is to do with the surface quality of something. There are two types of texture: Actual texture really exists, so you can feel it or touch it; Visual texture is created using marks to represent actual texture.
Pattern	A design that is created by repeating lines, shapes, tones or colours.
Colour	Red, yellow and blue are primary colours, which means they can't be mixed using any other colours.

B. Key Knowledge: Please tick off once you have shown evidence in your work

AO1 - Research

- Visual AND annotated mind map of Ideas / themes / **CONCEPTS**
- Critical Studies (minimum of 3) using the literacy guides
- Extra critical studies as your project develops
- **LINKS** between your work, ideas and the work of others

AO2 - Experimentation with techniques and processes

- A response to every critical study using a different process/ material
- Digital Experiments
- Handmade Experiments
- **LINKS** between your experiments and ideas

AO3 - Recording Ideas

- Your own image collection, idea / concept sketches, diagrams. Digital mock-ups
- Experiments with materials, techniques and processes
- All work annotated using the literacy guide in your booklet
- Written **LINKS** between yours and others work that explain the concept

AO4 - Outcomes

- A statement of intent for your final piece
- Experiments in the style of your final piece ideas
- A final piece that clearly **LINKS** to your research, ideas and experiments
- An evaluation of your final piece

C. Key Knowledge: CONCEPT

Definition – an abstract idea, a plan, intention or invention

To score highly you must have an original concept – an idea that is yours and means something personal to you. In your work you must include research into your concept e.g a project on human emotions may include research into psychology and human nature.

D. Key Knowledge: Expert Modelling

https://www.youtube.com/watch?v=rtZl4s7TSKo
Watch this videos on a students GCSE 3D Design sketchbook. There is lots of inspiration and great ideas on YouTube.
https://www.youtube.com/watch?v=82JpgH7aXD0
Watch this video on how to make 3D letters from acrylic

E. How to find your own DESIGNERS

https://www.sign-vision.co.uk/

Look at this local signwriting company and the range of ideas and processes they use to run a successful business.

https://modocreative.com/

Modo Creative create bespoke signs for their customers in a range of materials and styles

https://www.pinterest.co.uk

Create your own Pinterest account to research and have a daily feed of new and exciting creatives and their work. This will support you in your research and developing an original CONCEPT.

ART & DESIGN Project – YEAR 11. Groups, types and places.
Threshold Concept -#2 Art communicates, in every sense.
#5 Artists play – with ideas, materials and failures
#6 Art engages heads, hands and heart

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B. Key Knowledge 1: AO1 – TICK OFF ONCE DONE

- ❑ I have created a double page mind map and mood board about my theme
- ❑ I have completed two critical studies with in depth annotation using my booklet for guidance
- ❑ I have completed some further research around my theme
- ❑ I have added in further critical studies as my ideas have developed and changed

AO2 – TICK OFF ONCE DONE

- ❑ I have completed one type of collage work
- ❑ I have experimented with drawing in monoprint
- ❑ I have experimented with colour
- ❑ I have experimented with printmaking, textiles or 3D work
- ❑ I have refined two of the above with a further experiment

AO3 – TICK OFF ONCE DONE

- ❑ I have completed a photoshoot
- ❑ I have drawn from life
- ❑ I have drawn from found images and my own photos
- ❑ I have drawn in pencil – tonal, Pen – mark making and tried continual and blind drawing.

AO4 – TICK OFF ONCE DONE

- ❑ I have written a statement of intent
- ❑ I have sketched and annotated thumbnails of final outcome ideas
- ❑ I have refined work and practiced elements of my final piece
- ❑ I have a final outcome that is meaningful, clearly relates to my developments and shows my best skills.

C. Expert Modelling:


Katie Scott


Kurt Jackson


David Hockney


Michael Wolf


Annette Messager


Alexandra Dillon

What Visual Elements can you see in this work?

E. IDENTIFYING SUCCESSES IN YOUR WORK

- Identify three formal elements in your work and explain why they are important
- Explain how you will refine a process further to develop your practical work
- Identify a gap or weakness you would like to improve.

D. Wider thinking, reading and doing:

- Create a conceptual page
- Do a large abstract experimental piece
- Contact an artist or organisation

GCSE TEXTILES Project – YEAR 11 MOCK
IDENTITY
LANDSCAPES
TRANSFORM

A. Visual Elements Keywords

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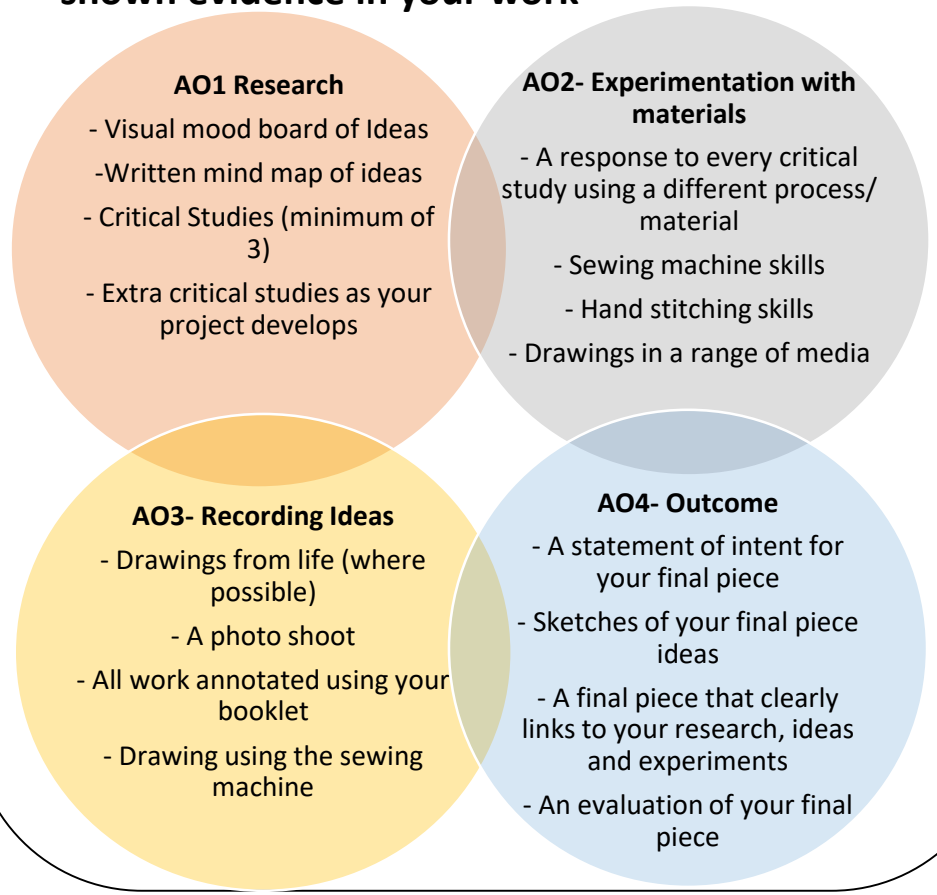
Pattern	A design that is created by repeating lines, shapes, tones or colours.
Colour	Red, yellow and blue are primary colours, which means they can't be mixed using any other colours.

B. Key Knowledge: Please tick off once you have shown evidence in your work



C. Key Knowledge: Artists

Transform
Jennifer Collier
Steam Punk
Kim Thittichai
Jacqueline Surdell

Identity
Victoria Villasana
Leslie Gabrielse
Andrea Cryer
Joetta Maue
Pat Kumicich

Landscapes
Ana Teresa Barboza
Karen Pleass
Cas Holmes
Bobbi Baugh Studio
Jenny Beasley
Carol Naylor

D. Key Knowledge: 20 minute Recording and Experimentation Tasks

- Observational drawing- pencil
- Taking photographs related to your theme
- Observational drawings- pen
- Observational drawings- mixed media
- Drawing using a sewing machine
- Hand-stitching
- Mood boards
- Annotations/ evaluation of work

E. Questions for Evaluation

Which Textile artists have you researched?

What aspect of their work inspired you?

How have you responded to their style?

What techniques have you used?

Have your sample pieces been successful? What worked well? What could be improved?

How have you developed your ideas as your project progressed?

What is your final piece/s? What is the meaning? How does it relate to your starting point?

Unit 1: Patterns of Development This unit aims to develop your knowledge and understanding of child development. You will learn about five different areas of development – physical, cognitive, communication and language, emotional and social – and how these areas are linked. In each of these five areas there are expected patterns of development based on the norms for different ages. These developmental norms are sometimes referred to as milestones. They are useful for several reasons. Early years professionals and health professionals monitor children's progress in achieving these milestones. While it is usual for children to have different rates of progress, it is important for professionals to know when children are showing unusual progress or patterns in their development. This sometimes means that a child needs additional support. Knowing the expected patterns of development and associated milestones for each area of development also helps adults to anticipate the next stage of a child's development in each area. You will investigate how adults in early years settings can support children's development. As part of your course, you will learn about the expected patterns of development, and if you choose to work with children this will help you plan activities and understand why children are doing certain things.		
Week 1 (Learning Aim A1) Growth and development	Growth • Key aspects of children's growth are changes to physical size, the skeleton, muscles and the brain • Children's height, weight and head circumference are measured to monitor growth, ensuring it is consistent with expected patterns, and to highlight potential issues at an early stage • Children's growth is plotted on centile charts. • Growth is determined by heredity, hormones, nutrition, sleep, illness and emotional influences. Development Child development is defined as the increasing acquisition of skills and knowledge gained by a child. • Development should be viewed holistically as children acquire skills at varying rates in different areas of development. • Developmental norms are sometimes called milestones. They have been determined by looking at the data of thousands of children and considering the average or 'typical' milestones. Using these norms or milestones helps to understand the patterns of development. Development can be broken down into the following five areas: • Gross motor and fine motor physical development is to do with movement – gross or large movement of limbs, developing locomotion, balance and coordination, and fine manipulative movement of fingers developing hand–eye coordination. • Cognitive development is the way children develop thought processes, perception, memory, imagination and problem-solving, and are able to increase their knowledge and understanding of their environment • Communication and language development is the way children communicate and develop speech, including reading and writing. • Emotional and behavioural development is how children develop feelings and express their emotions through behaviour and includes the development of self-concept and self-esteem. • Social development includes how children develop friendships with peers and cooperate with others and become aware of role models.	**Key Words** Growth Centile charts Heredity Hormones Nutrition Acquisition Holistically Developmental norms Milestones Gross motor skills Fine motor skills Cognitive development Communication and language development Emotional development Self-concept Self-esteem Social Development Role Models
Week 2 (Learning Aim A2) The links between areas of development and how each area may complement each other	Development should be viewed holistically as there are many ways in which areas of development relate to each other Language development helps children to understand new concepts and also to play with other children. Children with a language delay may become frustrated and this might affect their behaviour and also their ability to play with others. • Physical development helps children move to explore their surroundings, learn from new experiences and develop confidence in their abilities. • Cognitive and language development combine to help children express their thoughts and to develop reading and writing and problem-solving skills. • Emotional development helps children to develop secure attachments, enabling positive social relationships and friendships to evolve • Social development helps children to develop language through playing with others and interacting with adults.	**Key Words** Concepts Problem solving skills Secure attachments
Weeks 3 - 6 (Learning Aim B1)	Knowledge of the usual sequence in physical (gross and fine motor skills), cognitive, communication and language, emotional and social development **Birth up to twelve months** Gross motor development:	

Characteristics of children's development	Newborns are born with reflexes – sucking, rooting, startling, grasping – which help them survive. Movements are uncontrolled and uncoordinated: • at three months able to lift up head and chest when on their stomachs and bring hands together over body • at six months can roll over from back to front • at nine months can sit unsupported and is usually mobile by crawling or rolling, may pull up to stand alone and walk by holding on to furniture • at twelve months pulls up to stand, stands alone, walks holding on to furniture. Fine motor development: • no coordinated movement but newborns will grasp things put into their hands as a reflex action • at three months can watch their hands and hold a rattle for a moment • at six months can reach for a toy and move a toy from one hand to the other • at nine months can use a pincer grasp (index finger and thumb) to grasp objects, can deliberately release objects by dropping them • at twelve months can use pincer grasp to pick up small objects, points using index finger. Cognitive development: • at one month 'freezes' if hears a sound played softly • at three months can recognise familiar routines, alert and follows movement with eyes if objects are close • at six months can explore objects by putting in mouth, recognises voices • at eight or nine months can look for dropped objects and objects that they see being hidden • at twelve months enjoys throwing toys to the ground and watching their descent, learns by trying things out and repeating if successful. This approach to learning is called 'trial and error'. Communication and language development: • at one month can turn head to adult voice, at six weeks begins to coo • at three months smiles when hears a familiar voice • at six months makes short babbling sounds, such as 'da' and 'ba • at nine months understands 'no', vocalises in long strings of babbling • at twelve months knows own name and understands simple instructions. Emotional and social development: • at one month can focus on human faces with interest • at six weeks can smile • at three months enjoys being held and forms indiscriminate attachments • at six months can recognise and respond to emotions in others • from seven to eight months can form specific attachments and show wariness of strangers • from eight months develops specific attachments and imitates actions of others, such as clapping • from eight months experiences separation anxiety from primary carer(s). **Twelve months up to three years** Gross motor development: • at fifteen months can crawl upstairs and may walk hesitantly • at eighteen months can walk unaided, can walk upstairs with help and can squat to pick up toys • at two years can run, climb onto furniture and use sit-and-ride toys • at two and a half years can kick a large ball and can jump with two feet together from a low step • at three years able to run forwards and backwards, steer and pedal a tricycle, walk upstairs with alternate feet and throw a large ball. Fine motor development: • at fifteen months pincer grasp is precise, uses palmar grasp to hold crayons • at eighteen months can build a tower of three bricks, can feed self with a spoon and scribble using a crayon in palmar grasp • at two years can draw dots and circles, can put on shoes and fasten with Velcro® but not buckles and laces • at two and a half years starts to show a hand preference, can pull down items of clothing and starting to develop tripod grasp • at three years can use tripod grasp, draw a circle, hand preference is established for most tasks.

	Cognitive development: • at fifteen months explores objects by sight and sound • at eighteen months very curious to explore environment, remembers where things belong • at two years recognises self in mirror, can remember past experiences • at two and a half years recognises self in photographs, with help can complete simple puzzles • at three years understands the difference between past and present, can complete simple puzzles. Communication and language development: • at fifteen months communicates by pointing and vocalising, has up to six words • at eighteen months has around 15 words, able to communicate wishes, understands simple requests • at two years has up to 50 words, able to join words, enjoys looking at books • at two and a half years has around 200 words, starting to use simple sentences, asks questions, uses personal pronouns, plurals and negatives • at three years speech is clear to anyone unfamiliar with child, enjoys books and turns pages. Emotional and social development: • at eighteen months emotionally dependent on parents and key persons, plays alone but enjoys being near adults and siblings, insistent on immediate attention to needs and can copy adult actions • at two years unable to wait for needs to be met, may be distracted from tantrums, plays in parallel with other children but unable to share toys • at two and a half years plays alongside other children and engages in onlooker play, very dependent on adults and jealous of other children gaining attention, responds well to adult attention and praise and has tantrums when frustrated • at three years finds it easier to wait, starting to take turns and share, enjoys being with other children and will comfort another child. **Three years up to five years** Gross motor development: • from three to four years can hop on one foot, walk along a line, aim and throw a ball and kick it with force, ride a tricycle using pedals • from four to five years can run avoiding obstacles, skip with a rope, throw a large ball to partner and catch it. Fine motor development: • from three to four years can button and unbutton clothes, use scissors to cut out simple shapes, draw a person with head, trunk and legs, eat with a knife and fork, thread beads to make a necklace • from four to five years can form letters, write own name and colour in pictures. Cognitive development: • from three to four years can recognise and name primary colours, understands what is meant by 'more', can tell whether an object is heavy or light, arranges objects into categories, makes a connection between people and events • from four to five years can count accurately up to 10, can add two sets of objects together, can match equal sets, understands the need for rules, names the time of day associated with activities. Communication and language development: • from three to four years, speech can be easily understood, although some words may be incorrect, uses questions and by four years language is fluent, with some speech immaturities • from four to five years can count accurately up to 10, uses complex sentences with words such as 'because', can talk about what has happened and what might happen, uses language to argue and answer back. Emotional and social development: • from three to four years can cope with separation from primary carer with someone they know, is beginning to play cooperatively and show clear friendship preferences, and plays with others • from four to five years can work out what other people may be thinking, which helps them to negotiate with others, able to understand the need for rules, develops close friendships develop, behaviour mostly cooperative and separates more easily from parents.

	Five years up to eight years Gross motor development: • from five to eight years can hop, skip and jump confidently, can swerve and dodge when running, balance on a beam, ride a bicycle and use roller skates • coordination is more proficient, allowing for tasks that require coordinated movements including improved ball skills, swimming activities, hopscotch. Fine motor development: • from five to eight years can tie and untie shoelaces, and accurately cut out shapes • from six years able to thread a large-eyed needle and sew large stitches, has good control over pencils and paintbrushes, allowing for more detailed drawings and clear handwriting. Cognitive development: • from five to eight years can recognise numerals up to 100, do simple calculations, show simple reasoning and be reasoned with • from seven years can 'conserve' quantities and numbers, complete a simple maze, is starting to tell the time, understands the need for and uses rules. Communication and language development: • from five to eight years uses language to reason and explain ideas, understands and enjoys jokes and riddles • uses more complex sentence structures and asks what, when, who, where, how, why questions • from seven years has mastered the basics of reading and writing. Emotional and social development: • from five to six years starts to compare self with others and becomes more aware of the feelings and needs of others • confidence in self may be shaken by 'failure' • from five to seven years has strong friendships, often of the same gender, can understand that others have different viewpoints than them, can read facial expressions of others accurately and recognise what others might be feeling.	
Week 7 (Learning Aim C1) Understand how adults in early years settings can support children's development	Gross motor and fine motor physical development: • meeting children's physical needs by providing a well-ventilated and relaxing sleep area for children to sleep at regular intervals • meeting diet and nutritional needs in accordance with policy and parental wishes • providing opportunities to be outdoors • providing age-appropriate resources and activities that encourage gross and fine motor skills both indoors and outdoors • providing resources and activities that encourage children to touch, feel and explore objects with their senses • providing opportunities for children to meet their physical needs. Cognitive development: • providing objects and games that encourage children to develop their memory and imaginative skills and helping them to think about others • providing age-and stage-appropriate activities and resources that encourage problem-solving skills • providing opportunities for children to visit different places and experience new things • encouraging children to ask questions, helping children to link new experiences to past ones (memory and recall). Communication and language development: • taking time to talk and smiling and maintaining eye contact to encourage listening skills • encouraging speaking and listening skills by using nursery rhymes, picture books, telling stories, reciting rhymes, 'show and tell', and by asking questions such as 'what' 'where' 'who' to encourage speaking • providing role play activities for pretend play • encouraging writing skills by copying their own name and familiar names and words • encouraging creative expression through stories, poetry, dance, drama and making music. Emotional and social development: • encouraging bonding through holding children close, maintaining eye contact, talking in appropriate tone	**Key Words** Bonding Proximity Transitions

	• maintaining proximity as key person, responding to changing behaviour such as clinging, resistance, temper tantrums by helping children express their emotions positively without hurting others • supporting children through appropriate transitions such as moving home, new sibling, change of carer • encouraging confidence and self-esteem, encouraging children to express their feelings through activities and resources, and encouraging children to share and help other peers or other adults • maintaining appropriate proximity to children while allowing them to express themselves freely and safely • encouraging children to develop positive relationships and encouraging children to challenge negative comments and actions from others • helping children to understand their changing emotions and dealing with them positively through discussion or role play • introducing everyday routines to establish security • providing age appropriate play to encourage children to interact with other children, support others and learn to share and take turns • encouraging children to be thoughtful and cooperative with others by praising them and being a positive role model • encouraging children to develop a range of friendships.	

2.2. Programming fundamentals

2.2.3 Subprograms

A subprogram is a sequence of program instructions that performs a specific task, packaged as a unit. This unit can then be used in programs wherever that particular task should be performed.

Functions

```
def vat(Price):
    Total= Price * 1.2
    return Total
```

Description:
A function is a subprogram that can return a result based on it's defined parameters.

OCR Exam Reference Language Equivalent:

- Function vat (Price)
  - Total = Price * 1.2
  - return Total
- end function

What is a parameter?
A parameter is a special variable used within a function to return a result.

Global v Local variables

Global Variable: A variable that can be accessed anywhere in the program.
Local Variable: A variable that can only be accessed inside the subprogram it was declared in.

Benefits of using subprograms:

Usability: It creates re-usable code.	**Debugging:** The problem maybe in the subprogram itself.	**Testing:** Only need to test the subprogram
Efficiency: Less code required as it can be reused.	**Delegation:** Easy split between developers	**Decomposition:** Breaks the problem down.

Procedure

```
def message():
    print("Hello world")
    print("Welcome")


message()
```

Description:
A procedure is a subprogram that will not return a result, but information can still be passed through it.

OCR Exam Reference Language Equivalent:

- Procedure message()
  - print("Hello world")
  - print("Welcome")
- end procedure

2.2. Programming fundamentals

2.2.3 Arrays

In computer science, a data structure is a data organization, management, and storage format that enables efficient access and modification. More precisely, a data structure is a collection of data values, the relationships among them, and the functions or operations that can be applied to the data.

Reasons why arrays are used:

Reasons:

- An array allows multiple items of data to be stored under one identifier.
- It can be stored in a table like structure and reduces the number of variables required as you can set above.
- This creates a more elegant and efficient solution.
- In Python these are referred to as lists.
- There are many data structures used such as: linked lists, hash tables, trees, graphs etc…

1D Array:

Names	Sam	Jessica	David	Gemma	Dom

```
names = ["Sam","Jessica","David","Gemma","Dom"]
```

Description:

A 1D array is a simple data structure that stores a collection of data in a constant block of memory. It's known as a single dimensional array which stores data as a list.

2D Array:

	0	1	2	3	4
0	Sam	Jessica	David	Gemma	Dom
1	M	F	M	F	M

```
p = [["Sam","M"],["Jessica","F"],["David","M"],["Gemma","F"],["Dom","M"]]
```

Description:

A 2D array is a type of array that stores multiple data elements in a table like format with a number of rows and columns. This type of array is commonly referred to as multi-dimensional.

2.2 Programming Fundamentals

2.2.3 Random number generation

The random module is a built-in module to generate the random variables.

Random functions:

```
import random

x = random.randrange(1,10)
print (x)
```

```
import random

x = random.choice("Hello")
print (x)
```

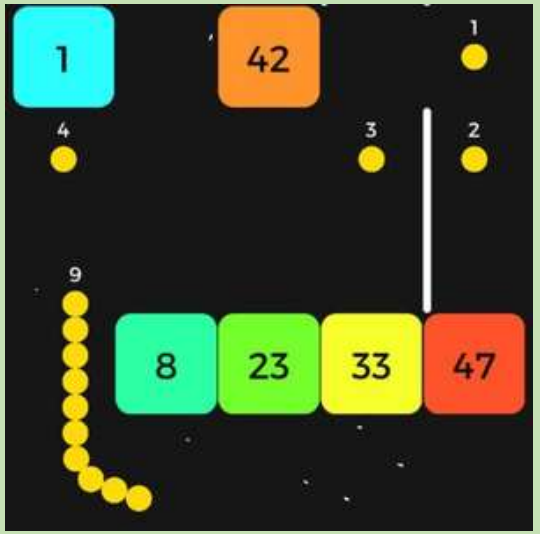
Random module

```
#Guess the number challenge
import random

Answer = random.randint(1,100)#Random number between 1 and a 100.

score = 1 # Record number of guesses
guess = int(input("Enter a number between 1 and a 100"))

while guess != Answer: #While user guesses incorrectly.
    if guess < Answer: #Indicates whether they are too high or low.
        print("Too low")
    elif guess > Answer:
        print("Too high")
    elif guess == Answer:
        print("Correct")
    else:
        print("Out of range")
    score = score + 1 #Adds to guesses
    guess = int(input("Please enter a number between 1 and 100"))

print("Well done, it took you",score,"guesses") #Prints out the total
```

Example

In this example the random module has been imported. The random integer function has been used to generate a random integer between a specified range.

Context



Example

In this game Snake vs Block there are various aspects of the game that have been randomised such as:

- The numbers in the blocks change.
- The blocks change position
- The number of points scored changes.

Tip:

The random module is an in-built library that can be found in Python. Remember you must import the random module into your script if you want to use it.

2.2 Programming Fundamentals

2.2.3 SQL & Data Structures

It stands for Structured Query Language and its code uses to create, access and maintain databases.

Did you know?

You can use wildcard characters to run a more efficient query. For example the * can be used to select all fields.

SELECT * FROM Cars WHERE Mileage > 40000

Using SQL commands in a database:

Product No.	Registration	Make	Year	Mileage	Price
0001	AV60 HES	Peugeot	2010	33156	£5,500
0002	GF56 RTE	Toyota	2006	26875	£8,500
0003	FD02 YOU	Hyundai	2002	85300	£3,499
0004	AD62 HGF	Peugeot	2012	50887	£7,649
0005	AF63 THE	Peugeot	2013	45860	£6,780
0006	GF64 NGB	Renault	2014	38665	£6,199
0007	GR11 JUL	Renault	2011	90760	£2,999

What is a Database?

Definition:
A database allows you to store records that can be accessed, modified and deleted.

Product code	Brand	Product type	Description	Colour	Price	Ratings	Stock
2230013	Amazon	All-new Echo Dot (4th gen)	Smart speaker with Alexa	Charcoal	49.99	136	45

Field
A field is a category of data. So each heading in the grey box is classified as a field.

Primary Key
This is a field that will uniquely identify a record and removing any duplicates.

Record
A record is an individual set of data. So in this case, the Amazon Echo Dot is a record.

SQL Commands

SELECT
This command will request (Select) fields that they want to appear in the final results.

FROM
This command means the source in which the information came from. So this would be the name of the database.

WHERE
This command will request specific information from the selected fields. This makes the search more refined

2.3 Producing robust programs

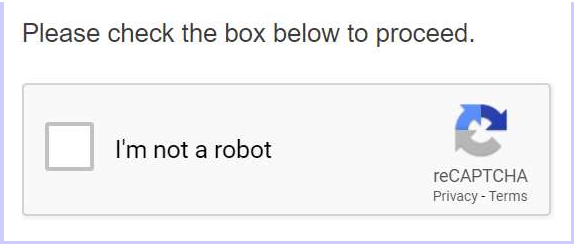
2.3.1 Authentication

Authentication is the process of determining the identity of the user. Identify what each of these methods are and describe how they work.

Exam tip:

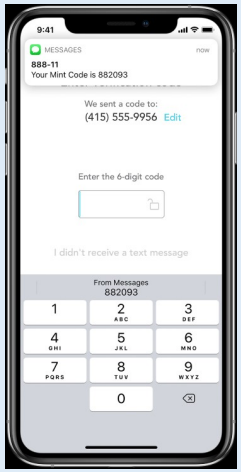
Other examples of authentication include: PIN, Biometrics (Facial/Thumb/Eye recognition), Passport No. and swipe cards. Anything that uniquely identifies you.

CAPTCHA



Description:
This is s a security application that determines whether data is being entered by humans or bots. They use images because bots cannot read images.

2-Step Verification



Description:
This can be used to confirm a new account or recover an old account. The provider will send a verification code to the phone number used to register the account.

Security Question

Description:
This might be used to confirm registration or used if user has forgotten their password.

Specific characters:

Description:
This is where users enter certain characters from their password. (e.g. 2nd and 4th)

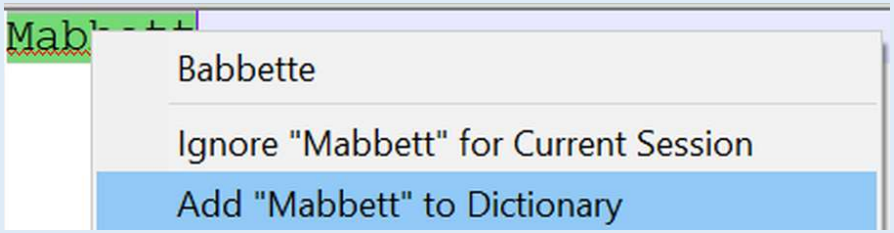
2.3 Producing robust programs

2.3.1 Validation

This is a process that checks data entered is sensible, reasonable and appropriate to be processed by the program. Match up the validation methods with the correct description.

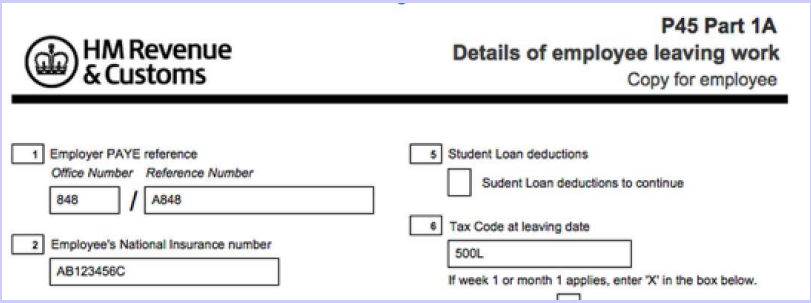
Spell check:

Description:
Used to check the quality of written communication in a document.



Format check:

Description:
Used to check data entered is the appropriate data type (e.g. entering a letter when it says enter a letter)



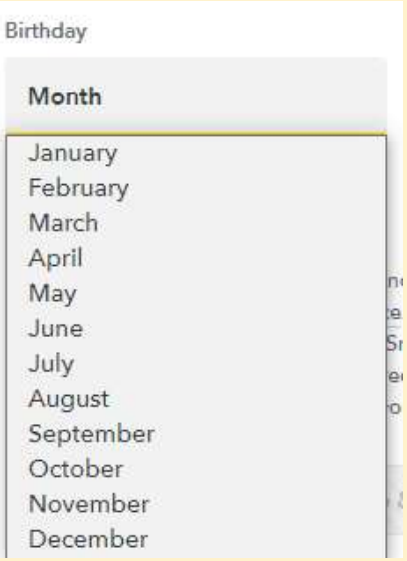
Example:
A national insurance number is a combination of numbers and letters. So the format will be LL NN NN NN L

```
while True:
    number = input("Enter an integer")
    if number.isdigit():
        number = int(number)
        break
    else:
        print("That's not an integer")
```

Coded example

Lookup table:

Description:
Used to find the date and time on an online entry form.



Example:
In this example, there is a pre-populated list of months for the user to select. In some cases, you may need to enter data by selecting dates from a calendar.

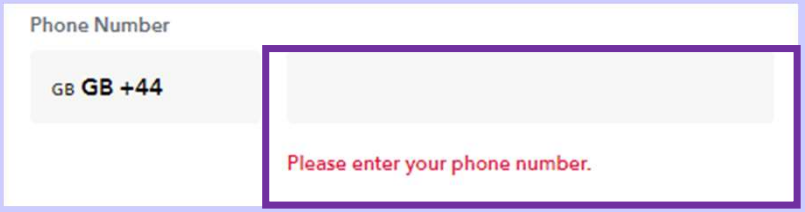
2.3 Producing robust programs

2.3.1 Validation

This is a process that checks data entered is sensible, reasonable and appropriate to be processed by the program. Match up the validation methods with the correct description.

Presence check:

Description:
Used to check that a field has not been left blank.



Example:
In this example, the sign up button is greyed out because there is a required field missing. Some text in red has been added to indicate this to the user.

```
Name = ""
print ("Please enter your Name")
Name = input()
while Name == "":
  print ("Sorry, your name must be entered, try again ")
  Name = input()
print ("Thank you " + Name + " Your comment has been posted")
```

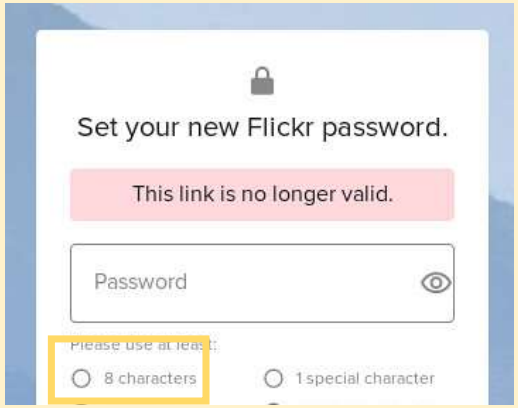
Range check:

```
Please enter a number between 1 and 1011
Please enter a number between 1 and 104
Thank you
```

```
while True:
    option = int(input("Option: "))
    if option >= 1 and option <=4:
        print("You have chosen option",option)
        break
```

Description:
Used to check whether data entered fits within a set criteria.

Length check:



Description:
Used to check if the data enter has sufficient amount of characters.

Example:
In this example, to register with this provider. The password needs to be at least 8 characters in length.

```
while True:
    password = input("Enter a new password: ")
    if len(password) < 10:
        print("Password must have more than ten characters")
    else:
        print("Password length correct")
```

2.3 Producing robust programs

2.3.1 Maintainability

It is important that programmers make sure their code is maintainable to ensure it's structured correctly, that they've used meaningful variable names and comments to explain difficult parts of the code. This is extremely beneficial for developers who are collaborating on one project.

Indentation:

```
while guess != Answer: #While user guesses incorrectly.
    if guess < Answer: #Indicates whether they are too high or low.
        print("Too low")
    elif guess > Answer:
        print("Too high")
    elif guess == Answer:
        print("Correct")
    else:
        print("Out of range")
    score = score + 1 #Adds to guesses
    guess = int(input("Please enter a number between 1 and 100"))
```

Description:
Indentation makes it clear to the developer where statements appear within a selection statement or iteration.
It is built into Python's syntax so incorrect use of indentation will lead to a syntax error.

Naming conventions:

```
FirstNum = int(input("Please enter a number"))
```

Description:
CamelCase is a common technique when naming variables. This is because variables cannot contain any spaces which makes the variable stand out.

Tip:

You should always use meaningful variable names for all variables.

Comments:

```
#Guess the number challenge
import random

Answer = random.randint(1,100)#Random number between 1 and a 100.

score = 1 # Record number of guesses
guess = int(input("Please enter a number between 1 and 100"))

while guess != Answer: #While user guesses incorrectly.
    if guess < Answer: #Indicates whether they are too high or low.
```

Description:
Comments can be used to say who wrote the program, the purpose of the program and to explain any difficult bits of code work. This is useful for developers who are collaborating on the same project.

2.3 Producing robust programs

2.3.1 Testing

In computer hardware and software development, testing is used at key intervals to determine whether the program meets the needs of the client (end user)

Example test table

Test No.	Description/ Type of test	Expected outcome	Actual outcome	Pass/Fail	Remedial action?

Test data:

Boundary (Valid extreme)
Testing inside the boundary. What will just be accepted? In this example, a valid extreme test would be 1 or 100.

Boundary (Invalid extreme)
Testing outside the boundary. What will just about not be accepted?
In this example it would be 0 and 101.

```
#Guess the number challenge
import random

Answer = random.randint(1,100)#Random number between 1 and a 100.

score = 1 # Record number of guesses
guess = int(input("Enter a number between 1 and a 100"))

while guess != Answer: #While user guesses incorrectly.
    if guess < Answer: #Indicates whether they are too high or low.
        print("Too low")
    elif guess > Answer:
        print("Too high")
    elif guess == Answer:
        print("Correct")
    else:
        print("Out of range")
    score = score + 1 #Adds to guesses
    guess = int(input("Please enter a number between 1 and 100"))

print("Well done, it took you",score,"guesses") #Prints out the total
```

Types of testing:
Iterative testing: This is when testing takes place during the development of the program. For example, this might involve testing one block of code to make sure it works before moving onto the next one.

Final testing: This takes place when the development of the code is complete, all tests will then be conducted.

Valid:
Testing data that should definitely work or should be accepted by the program. Any number between 2 and 99 would be a valid test in this example.

Erroneous:
Purposely testing something extreme that wouldn't work. In this example, using a letter instead of a number.

Why test?

Purpose:
To check the program works properly and identify any errors so they can be fixed. It's important businesses test their websites and apps to make sure they function the way they would expect it to.

2.4 Boolean Logic

2.4.1 Boolean Logic

Logic is concerned with forms of reasoning. The study of logic is essential for students who undertake a wide range of subjects, not only Computer Science.

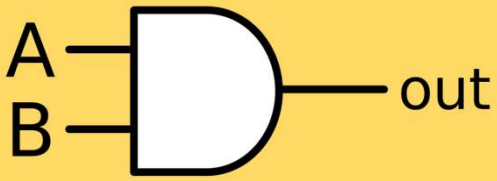
Did you know?

Logic gates are made up of a series of transistors which acts as switches. These switches are either ON (1) or OFF (0)) Transistors are tiny electronic components found on the CPU.

Revision tip:

It is important to learn each notation and what they represent just incase you need to interpret a Boolean expression in the exam.

AND



Description:

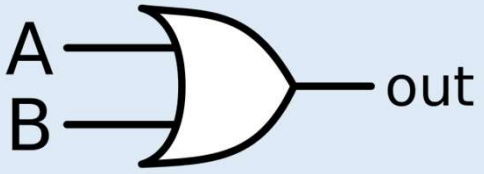
- This is an AND gate.
- Both inputs need to be positive to achieve the same output.
- The notation used to represent AND is ∧

Boolean expression:

- Q = (A AND B)
- Q = (A ∧ B)

A	B	Q
1	1	1
1	0	0
0	1	0
0	0	0

OR



Description:

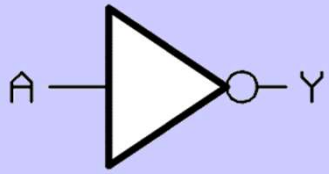
- This is an OR gate.
- Only one input needs to be positive to achieve a positive output.
- The notation used to represent OR is V

Boolean expression:

- OUT = (A OR B)
- OUT = (A ∨ B)

A	B	Q
1	1	1
1	0	1
0	1	1
0	0	0

NOT



Description:

- This is a NOT gate.
- The output will be opposite to an input, a bit like a light switch.
- The notation used to represent NOT is ¬

Boolean expression:

- Y = NOT A
- = ¬ A

A	Y
1	0
0	1

2.5 – Programming languages and Integrated Development Environments

2.5.1 Languages

Examples of high-level programming languages in active use today include Python, Visual Basic, Delphi, Perl, PHP, ECMAScript, Ruby, C#, Java and many others.
needs.

Low-level languages

Machine code

A language directly understood by the CPU because they use a set of transistors that consist of one of two states, in the form of 0's and 1's.

Assembly language

A language that uses mnemonics to represent commands used by specific types of processor. It must be converted to machine code using an assembler.

High-level languages

Description:
The part of software that most computer users don't ever see; it's the code computer programmers can manipulate to change how a piece of software works.

Interpreter	Compiler
Translates and execute one line of source code at a time.	Translates all of the code in one batch, instead of line by line.
Interpreters are easy to use for beginners which makes it a real advantage.	Translated before executing and packaged into a machine code file, usually in the form of an exe (executable file)
If a line contains an error – then the interpreter will stop at that line and go now further.	Instead of stopping at the first error, it will generate a list of errors (if any) all at once.
Interpreted code must be translated each time it's run	The process of compilation is relatively complicated. It spends a lot of time analysing and processing the program.
It is easy to access source code because it's converted into machine code when the program is run.	Compiled code will run faster.

2.5 – Programming languages and Integrated Development

2.5.2 The Integrated Development Environment (IDE)

IDE is a tool built within software that allows you to write programs using code.

Additional IDE features:

Auto-completion
A feature that automatically detects recognised syntax while you type code.

Libraries
These are in-built functions that can be immediately accessed and added to code.

Run-time environment
As soon as a software program is executed, it is in a runtime state.

IDE Features:

Auto-indentation
Automatically indents the next line if required.

```
password = ""
while password != "secret":
    password = input("Please enter the password: ")
    if password == "secret":
        print("Thank you. You have entered the correct password")
    else:
        print("Sorry the value entered in incorrect - try again")
```

Syntax highlighter
Displays source code in different colours so certain commands in orange, functions in purple etc..

Debugging tool/Error diagnostics
Allows code to be inspected for errors with suggestions on where the problem lies.

```
Traceback (most recent call last):
  File "\\dshs-05\CorbettDC\Desktop\Python\password.py", line 2, in <module>
    while passwords != "secret":
NameError: name 'passwords' is not defined
```

Bracket matching
It highlights matching sets to identify whether you've used the correct amount of brackets.

‘DNA’ by Dennis Kelly Knowledge Organiser

CHARACTERS

PHIL	Menacing, Cold, Sinister
JOHN TATE	Controlling, Manipulative, Tyrannical
LEAH	Insecure, Loyal, Insightful
MARK	Cruel, Malicious, Ruthless
JAN	Bullying, Intimidating, Gullible
RICHARD	Insecure, Confident, Sycophant (flatterer)
CATHY	Volatile, Sadistic, Merciless
BRIAN	Nervous, Introverted, Vulnerable
LOU	Unsuspecting, Impressionable, Spineless
DANNY	Ambitious, Fearful, Sceptical
ADAM	Victim, Confused, Scared

Staging

Proxemics	Where a performer stands in relation to other performers & any objects.
Levels	Levels can be used to show status, power, perspective and variation.
Sight lines	Ensures the action is visible to the audience from all angles.
Entrances / Exits	It is important for the audience to understand where the performers have come from and where they are going. This can help put each scene into context.
Movement	Stillness, pace, direction, size, flow, weight, control, orientation of performers.

PLOT

Act 1	Street Field Wood	Tension and mystery build as Mark tells Jan that someone is dead. Leah, talking to Phil, admits she is scared. The group meet, led by JT. Mark and Jan outline how they were bullying Adam, until they forced him to walk over a grille and, while having stones thrown at him, fell in. The group assume Adam has been killed. Phil concocts an elaborate plan involving a fictional postman to cover up what they have done. Later, Leah compares humans to bonobos.
Act 2	Street Field Wood	The group find out the police have arrested a postman matching the description of the fictional ‘fat postman with bad teeth.’ This is because Cathy, in an attempt to make the suspect as realistic as possible, found a postman who matched Phil’s description, and contrived to have him pick up Adam’s jumper when she dropped it. The plan has gone wrong and an innocent man has been framed. Brian has been asked to go to the police station to identify the man, but he is scared, so Phil threatens him to make him go.
Act 3	Street Field Wood	Cathy has discovered Adam alive and living in the woods. He has clearly been affected by what has happened to him. In a shocking twist, and to save themselves from having to reveal the truth of the gang’s plotting, Phil takes charge and demonstrates to Cathy how to kill Adam with a plastic bag.
Act 4	Street Field	Jan and Mark and then Richard and Phil in brief conversations about what has happened to the others.

CONTEXT

Original performance

When?	16th February 2008
Where?	Cottesloe Theatre, National Theatre, London
Why?	Intended for schools and youth groups.
Director	Paul Miller
Designer	Simon Daw (Set, Costume and Video)
Designer	Paule Constable (Lighting)
Stage	‘End on,’ bare stage with back projection
Lights	Blue gels
Location	Contemporary Britain – Street, Field, Wood - anywhere
Sound	Drum & bass for transitions, distant aeroplane when Leah leaves Phil, sea gulls after Richard’s monologue.
Costume	Uniform (in different states) grey, blue, white

Themes

Gangs / Belonging	The whole group belong to a gang – with different pairings, relationships and friendships. Some gang members leave. Gang leaders change and try to solve the issue of Adam to protect the gang. There is a sense of loyalty and cruelty. The gang are nihilistic – they have rejected all religious and moral principles.
Power/ Status/ Hierarchy	The power continually shifts within the group. There appears to be a clear hierarchical structure within the characters.
Bullying/ Cruelty	Psychological and physical abuse of Adam. Phil’s lack of communication towards Leah is emotional cruelty. John Tate is aggressive and threatening. Other characters are bystanders in the bullying – they allow the events to happen.
Identity	How many of the group members are really being themselves? Which group members are putting on an act to impress others? Which group members follow or copy others? Dennis Kelly states that the characters can be played by males or females – either gender is capable of carrying out the actions within the play.

PERFORMANCE SKILLS

Vocal

Pitch	How high or low the voice is.
Pace	The rhythm and speed with which words are spoken.
Projection	(or volume) How loud or quiet the voice is.
Pause	Stopping to emphasise a point or provide contrast and variation.
Intonation	The rise and fall of the voice to provide variation and interest.
Tone	How lines are said to convey meaning.
Accent	Used to indicate where are character is from (location) or to show social class or status.
Inflection	The ups and downs of spoken language.
Emphasis (or stress)	Used to place importance on specifically chosen words.
Nuance	Subtle changes in voice to change meaning in a text.

Physical

Gesture	Used to show how a character feels or expresses their thoughts.
Facial Expression	Shows a character’s response to a situation or reveals their inner feelings & thoughts.
Body language	The way a performer communicates non-verbally.
Posture (or stance)	How a character stands. Could show their age, status or emotional state.
Gait	How the character walks.
Proxemics	How the performer uses stage space. Could show relationships or status.
Focus (eye contact)	Where a character is looking.
Levels	The height of a character/actor.
Movement	How a character moves.

Drama Design Knowledge Organiser

LIGHTING

Considerations: Mood/ Atmosphere, Location, Time, Symbolism, Colour, Effect, Angle, Position

Lantern Type and specials

PAR can	Lights a large area (with an edge). Can produce intense colours.
Profile Spot	Gives a hard-edged spot of light. Highlights a performer or area.
Fresnel	Gives a soft-edged spotlight which enables the lighting of precise areas. Easy to blend.
Barn Door	Four hinged flaps that are fitted in front of a lantern. Can be positioned to block light from reaching certain areas of the stage.
Floodlight	Provides lots of light to a wide area (no edge).
Moving heads	Automated lights that offer flexibility and variation.
Gels	Coloured plastic placed in front of the lantern to alter the colour.
Birdie	A miniature light that is useful for hiding in parts of set.
Gobo	A small metal disc with a pattern or shape cut into it to create a specific shape (when slotted into a Profile Spot lantern).
UV	Ultra violet light causes specially treated materials to look fluorescent on an otherwise blackened stage.
LED	LED stage lights use light-emitting diodes (LEDs) as a light source. LED instruments are an alternative to traditional stage lighting.

Lighting Angles (position / direction)

Backlight	The actors are lit from behind. Can be used to create shadows / silhouettes or obscure the audience's view.
Up-light	Lighting is angled upwards to create tension or suspense.
Down Light	Where the performers are lit from the front.
Side light	Lit from the side. Can indicate another location or give a feeling of mystery.
High Front	Performers are lit from above. Provides a clear and natural effect.

Lighting Techniques

Cross Fade	Similar to a fade, a cross fade occurs when one lighting state fades out whilst the other is gradually faded in.
Cue	The indicator of when the next lighting state should take place (usually a line from one of the performers).
Lighting State	A plan of which lights are being used at any one time.
Snap	Where the lighting changes abruptly from one state to the next.
Fade	Gradually takes in or takes out a lighting state. This could be done quickly or over a more prolonged time period.
Blackout	To remove all (or almost all) light on the performing area, usually done rapidly.
Wash	An even, overall illumination over a large area.
Focus	To aim and adjust a lens so that the light is concentrated at a focal point.
Intensity	A measure of strength of a light source in a particular direction.

SET

Considerations: Space, Materials, Colours, Location, Levels, Symbolism, Time, Entrances/exits

Style	Set design is hugely influenced by the style of the play (naturalistic/ realistic, expressionist, symbolic etc).
Period	The time on history when the play is set.
Colour	Reinforces mood, atmosphere, communicates meaning.
Texture	Support key themes and ideas (a metallic texture will have a different meaning from earthy textures).
Backdrop	A painted cloth hung at the back of a theatre stage as part of the scenery.
Projection	Used to create a set, or show film or images. Can have a distancing or dreamlike effect.
Entrances/ Exits	Position of entrances / exits, and how characters use them, can be significant.
Cyclorama	Curved, stretched cloth around the back of the stage which gives the impression of sky or extensive space.
Levels	Levels give a stage more visual interest, allowing different characters to communicate different status.

SOUND

Considerations: Mood/ Atmosphere, Location, Time, Symbolism, Volume, Tone, Sound effects

Live Music / Sound	Live music / sound is where the performers or musicians generate the music /sound on stage.
Recorded Sound	Sounds that have been pre-recorded and are then played through speakers/a PA system.
Pitch	This relates to whether a sound is high or low.
Volume	This relates to whether a sound is loud or quiet.
Sound Effects	Can be pre-recorded or played live. Can reflect what is happening on or off stage. Can be naturalistic or abstract depending on the style of the performance.
Direction	Speakers and musicians can be positioned anywhere within the space and create impact on an audience.

PROPS AND STAGE FURNITURE

Props	Any moveable items that the performer uses on stage - does not include costume or scenery.
Stage furniture	Parts of the set that performers can move during the performance. Can communicate location, time period or style, or the status of the characters.
Personal props	Props that are used for individual characters. Could help find nuances in the character.

COSTUME

Considerations: Age, Status, Personality, Economic Climate, Symbolism, Practical

Style	Concept of play and overall appearance.
Period	Time the play is set.
Naturalistic	Accurate to the period.
Symbolic	Item / colour signals to the audience.
Texture	The feel of the fabric.
Representational	Single item that indicates a particular character.
Breakdown	Make a costume appear shabby or dirty.
Material	Cotton, wool, velvet, leather, metal, lace.
Colour meanings	***Red*** *Passion, desire, love, war, danger*
	Yellow *Joy, happiness, cowardice, caution*
	Green *Growth, harmony, fertility, jealousy*
	Blue *Depth, trust, truth, depression*
	Black *Power, elegance, formality, mystery, death, evil*
	Purple *Power, wisdom, luxury, arrogance*
	White *Purity, peace, cold, clinical.*

TYPES OF STAGING

Proscenium Arch	Most common type of staging in Western Theatre - the audience sits on one side only, also known as end-on staging.
In The Round	Positioned at the centre of the audience, who sit around the whole stage. Creates an intimate atmosphere, is good for audience involvement.
End-on-stage	Found in a studio theatre. Seats face the stage space at one end. No proscenium arch.
Thrust	Extends into the audience on three sides and is connected to the backstage area by its upstage end. Greater intimacy between performers.
Traverse	Like a catwalk, audience sit either side of stage. Brings audience closer to action & creates an intimate/ engaging atmosphere. Could be difficult to use without blocking sight lines.
Promenade	(Immersive) Audience members walk through the space to experience the performance.
Site specific theatre	These spaces are chosen as a key part of the production.
Amphi-theatre	He audience sit in a large and steep half bowl shape with a circular stage at the bottom. Originated from Ancient Greece.

Year 10 Food & Nutrition

GCSE Food preparation and nutrition

Week 1
Carbohydrates in the diet

Functions of carbohydrates

Carbohydrates are present throughout the body and is required for **ENERGY** needed for movement, growth and chemical reactions and processes.

Starch

Starch – Main food source in plants
Pectin – natural in fruits
Glycogen – energy storage in humans

Sugar

Fructose – Fruit and honey
Sucrose – Sugar, golden syrup
Glucose – Ripe fruits and vegetables
Maltose – Found in cereals and beer
Lactose – milk, yoghurt, cream

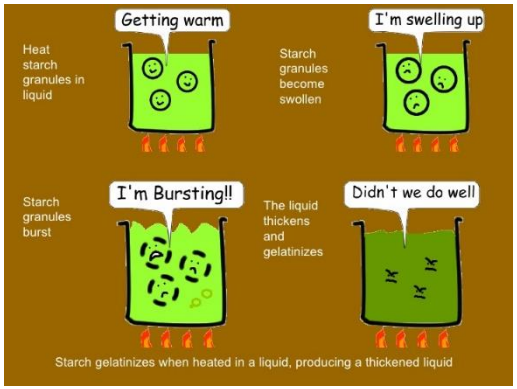
Fibre

Insoluble – passes through
Wholegrain foods, brown rice, wheat bran, nuts and seeds
soluble fibre -fuller for longer
Oats, nuts, legumes, fruits, vegetables.

Excess	Deficiencies
• A diet rich in cereals can reduce the body's ability to absorb calcium and iron • Could lead to weight gain. • Cause tooth decay, weight gain and even type 2 diabetes	• A deficiency of fibre can contribute towards constipation and this could lead to an increased risk of bowel cancer • Sugar deficiency is rare

Week 2
Chemical functions of carbohydrates

Gelatinisation



Gelatinisation is the **thickening** of a liquid. **Starch** warms it begins to swell, starch begin to burst due to the liquid and heat. This occurs between **75 and 83 degrees**. Starch bursts **amylose** is released which thickens the product.
Complete at 100 degrees

Factors that affect gelatinisation:

- Sugar
- Acids
- Stirring
- Temperature
- Amount of liquid
- Types of starch used

Dextrinization

- starch is broken down into dextrin by dry heat for example baking, grilling or toasting. Dextrin adds a sweet taste to baked products

Caramelisation

- Caramelisation causes changes to a food's colour and flavour.
- Caramelisation occurs when food products containing sugar come into contact with heat. It is the process of sugar turning brown through heat being applied.

Week 3
Protein in the diet

Protein is needed for:

Growth of all body cells and tissues
Energy – secondary source of energy
Repair of body tissues
Maintenance of the body

GERM

HBV	LBV
Meat, chicken, pork, beef bacon, sausages Fish and seafood Milk Yoghurt Eggs Soya beans Quinoa	Cereals, e.g. wheat, rice, oats, barley Cereal products e.g. bread, pasta, rice Sweetcorn Peas, beans, lentils Nuts and nut products e.g. peanut butter Seeds

Biological value of proteins:

20 different amino acids found in plants and animals. The essential amino acids cannot be made in the body and therefore need to be consumed in the diet
Children+2 = 10
Adults +2 = 8.

Protein complementation:

LBV + LBV = HBV - All essential amino acids are present

1. Peas and rice
2. Beans on toast

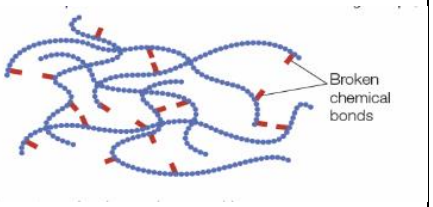
Deficiency and excess:

Kwashiorkor is a deficiency that mostly occurs in children. They will have poor growth rates, suffer hair loss and persistent infections.

Too much protein can be harmful to the kidneys and liver

Week 4
Chemical functions of protein

Denaturation



Changing in the structure of a protein

Denaturation occurs by:

1. Use of a marinade by adding acid
2. Use of heat
3. Mechanical agitation e.g. whisking eggs

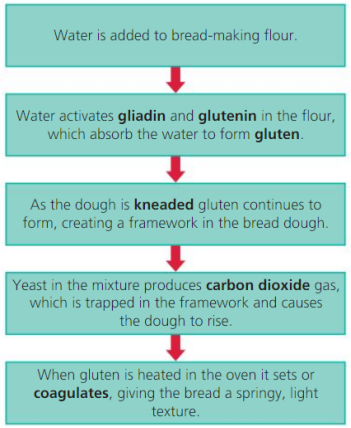
Coagulation

Coagulation is when the protein in food sets. This occurs when the protein is heated.

Foam formation

A foam is when a gas is spread throughout a liquid. Eggs are excellent at foam formation. Whisking eggs produces a gas-in-liquid foam.

Gluten formation



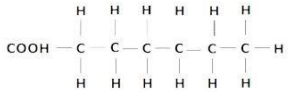
Week 5
Fat in the diet

Functions of fat:

1. Protection of vital organs
2. Insulating the body
3. Energy

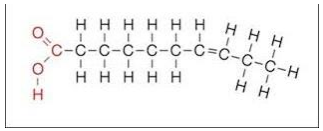
Animal fat	Vegetable fats
Butter, ghee, goose fat, suet	Vegetable and plant oils e.g. olive oil
Meat e.g. pork, lamb, chicken, bacon	Avocados and olives
Oily fish e.g. tuna salmon	Seeds, e.g. sesame seeds

Saturated fat



- Fully saturated in hydrogen
- Solid at room temp

Unsaturated fat



- Double bond, less hydrogen
- Liquid at room temp

There are two types of unsaturated fats:

1. Monounsaturated fatty acids
2. Polyunsaturated fatty acids

Monounsaturated fats have just one double bond whereas polyunsaturated fats have many double bonds.

Essential fatty acids

Omega 3- Found in oily fish, seeds and green leafy vegetables

Omega 6 – found in vegetables, grains, seeds and chicken.

Excess fat: Saturated fat can raise our bad cholesterol levels in the body, which increases the risk of heart diseas3.

Week 6
Chemical functions of fat

Shortening

Shortening is when fat coats the flour preventing the absorption of water, which results in a crumbly texture.

Plasticity

Plasticity describes the ability of a solid fat over a range of temperatures.

Plasticity is very important when choosing which fat to use in food preparation. There are many different types of fat. Solid fat does not melt immediately but soften over a range of temperatures.

Plasticity affects the spreading, creaming and shortening ability of the fat.

Emulsification

Fats and oils do not mix with water. This means they are 'immiscible' and they cannot be mixed. When two immiscible liquids are forced together, tiny droplets of one liquid such as oil, are spread throughout another liquid.

An emulsion is a special type of liquid where tiny droplets of one liquid, such as oil, are spread throughout another liquid such as water.

Aeration

Aeration is when air is trapped in a mixture.

Air needs to be added to a cake mixture in order to give a springy and well-risen texture to the baked cake.

When making a cake, fat and sugar are creamed together. When the fat and sugar are creamed together, they enclose tiny bubbles of air.

Week 7 Micronutrients	**Week 7** Micronutrients	**Week 8** Reducing loss of nutrients
<u>Vitamin A</u> Needed for vision, healthy skin and mucous membranes, bone and tooth growth, immune system health <u>Vitamin D</u> These nutrients are needed to keep bones, teeth and muscles healthy. Vitamin D helps regulate the amount of calcium and phosphate in the body <u>Vitamin E</u> Vitamin E helps maintain healthy skin and eyes, and strengthen the body's natural defence against illness and infection (the immune system <u>Vitamin K</u> Vitamin K is needed for blood clotting, which means it helps wounds heal properly. <u>Vitamin B1</u> Break down and release energy from food. keep the nervous system healthy <u>Vitamin B2</u> keep skin, eyes and the nervous system healthy the body release energy from food <u>Vitamin B9</u> The body form healthy red blood cells. Reduce the risk of central neural tube defects, such as spina bifida in unborn babies <u>Vitamin C</u> Helping to protect cells and keeps them healthy, maintaining healthy skin, blood vessels, bones and cartilage and helping with wound healing <u>Antioxidants – ACE</u> Antioxidants help to protect healthy cells from the damage caused by free radicals	<u>Calcium</u> Helping build strong bones and teeth regulating muscle contractions, including heartbeat making sure blood clots normally A lack of calcium could lead to a condition called rickets in children and osteoporosis in adults Sources include: • Milk, cheese and other dairy foods • green leafy vegetables **<u>Iron</u>** Iron is important in making red blood cells, which carry oxygen around the body. A lack of iron can lead to iron deficiency anaemia Sources include: • Liver (but avoid this during pregnancy) • Meat **<u>Potassium</u>** Potassium is a mineral that helps control the balance of fluids in the body, and also helps the heart muscle work properly. Sources include • Fruit – such as bananas • some vegetables – such as broccoli, parsnips **<u>Sodium</u>** Sodium and chloride are minerals needed by the body in small amounts to help keep the level of fluids in the body balanced. Chloride also helps the body digest food. Having too much salt is linked to high blood pressure, which raises your risk of serious problems like strokes and heart attacks Sources include: • ready meals • meat products – such as bacon	**<u>How preparation and cooking affect nutritional properties of food</u>** Vitamin B and C are significantly affected by either cooking, preparing or storing these foods. **<u>Reducing the losses when cooking:</u>** **During cooking** • Use only a little water for cooking, so only small amounts of nutrients dissolve in it • Boil the water first, then add the food so that they start cooking quickly • Cook vegetables for a minimum time until they are just tender • Steaming instead of boiling vegetables • Serve food straight away • Save cooking water from vegetables, use it in gravy/soup/sauces • Cook meat, fish for the shortest time possible • Oil that can be used for frying should be changed regularly to avoid harmful chemicals as a by-product of heating and cooling of oil. **During food storage:** • Store away from heat and light • Store food in an airtight container • Store food for as little time as possible **During food preparation:** • Avoid buying damaged and bruised fruits and vegetables • Cut, grate, squeeze, chop fruit and vegetables just before cooking and serving to minimise exposure to oxygen Avoid peeling fruits and vegetables where possible as skin holds many nutrients

Week 9 Role of water in the diet	**Week 10** Diet, health and nutrition	**Week 11** Life stages
Body temperature is 37°C. If the temperature increases by just a few degrees, then body cells will be damaged. To prevent this, the body sweats The evaporation of this water allows the body to cool down You sweat more: • In hot conditions • When you are exercising • When you are ill and your temperature rises Therefore, in hot conditions, when exercising and during illness you should drink more water. **Functions of water** 1. Cooling the body 2. Removing waste from the body 3. Helping the body to use the food you eat **How much water is needed each day?** Depends on many factors, such as: • Your age • Your size • How active you are • The climate (weather) Most people need about 1.5–2 litres of water each day – this is about 8 average sized glasses. **Signs of dehydration:** • Feeling thirsty • Dark urine • Headaches • Lack of energy • Feeling lightheaded	 The Eatwell guide divides food into groups, depending on their nutritional role and shows the proportions of each of the groups needed for a healthy, varied diet. As well as food groups extra information has been included such as: • Hydration stating 6-8 cups/2 litres of water per day. • Nutritional labelling to remind you that you should choose foods that are lower in fat, sugar and salt. • The average energy needs of men and women have been included to remind you that all foods and drinks contribute to the total energy intake **<u>8 Tips for a healthy diet</u>** 1. Base your meals on starchy foods 2. Eat lots of fruit and vegetables 3. Eat more fish, including a portion of oily fish each week 4. Cut down on saturated fat and sugar 5. Eat less salt (no more than 6g per day) 6. Get active and be a healthy weight 7. Don't get thirsty 8. Don't skip breakfast	**<u>Young Children Years 1-4</u>** • Vitamin D and calcium are crucial for development of bones. • Solid foods introduced after first 6 months. • Sufficient fibre should be eaten to avoid constipation **<u>School children Years 5-12</u>** • key nutrients for growth, repair and maintenance of the body, and provide a regular supply of energy. • given smaller portions • Regular consumption of water • contain plenty of dietary fibre • try new foods and eat a varied diet **<u>Teenagers</u>** Full range of nutrients to provide them with the materials they need to grow and develop normally. Key nutrients include: • Iron • Calcium and Vitamin D • Protein • Dietary fibre **<u>Adults 19+</u>** Nutritional needs should be met by following <u>dietary guidelines</u> and maintaining their general health. **<u>Elderly</u>** • Very unique nutritional needs • Antioxidants – Help prevent disease • Reduced macronutrients as less active • Increased iron to prevent deficiencies • Increased Zinc to maintain immune system • Increased vitamin D and calcium to support bone function and maintain bone health

Seneca completion	**How to complete a timeplan for your assessed practical**
Week 1: 4.2.1 temperature control 4.2.2 ambient foods and food labels 4.2.3 preparing, cooking and serving food **Week 2:** 2.1.4 Carbohydrates 2.1.5 Carbohydrates **Week 3**: 2.1.1 Protein 2.1.2 Protein **Week 4:** 3.2.1 Protein and carbohydrate **Week 5:** 2.1.3 – Fats 3.2.2 – Fats and oils **Week 6:** 2.4.1 – End of topics test – Food science **Week 7:** 2.2.1 Fat soluble 2.2.2 Water soluble vitamins 2.2.3 minerals and water **Week 8:** 2.2.4 – Minerals and water 2 2.2.5 – End of topic test – Macro and micronutrients Week 9: **Week 9:** **Timeplan for assessed practical** **Week 10:** 1.1.1 – General practical skills 1.1.2- Knife skills 1.1.3.Preparing fruit and vegetables and using equipment **Week 11:** 2.3.2 - Informed choices for a balanced diet 2 **Week 12:** **Evaluation of Seneca – complete any outstanding Seneca in preparation for cycle 2**	**Your timeplan should include:** • Timings: Within your three hour timing how long will steps take. • Mise en place: this demonstrates your understanding of what would happen in a professional kitchen, where the preparation of ingredients for a range of dishes is a key stage in the efficient production of a menu. • Order of work: this is the method that you will follow throughout the practical. This must be detailed enough to allow anyone to follow it. • Health and safety/additional comments: What health and safety points do you need to think about when making. Think about physical, chemical and biological issues. **An example:** **Ensure your timeplan is detailed and realistic – top tip use a recipe to help get the steps you need and add extra detal into your steps.**

Time	Order of work	Health and safety
9:00 – 9.15	Mise en place • Personal hygiene: wash hands; remove jewellery, put on a chef jacket. • Weigh ingredients for each recipe • Collect equipment	Hands washed using hot soapy water to remove bacteria and dirt
9.15- 9.20	Butterfly the chicken breast by slicing the chicken breast part way through with a sharp knife, and then open them out like a book. Place each breast between two sheets of baking paper and bash with a rolling pin until about 5mm thick. Cover in cling film and store in the fridge for use in a kiev recipe	Chicken must be stored in fridge until needed to reduce bacterial growth Red chopping board used to prepare chicken to prevent cross-contamination.
9.25	Lay the butterflied chicken breast on a sheet of cling film and place a roll of cheese at a long edge before rolling up tightly and sealing in the cling film. Store in the fridge until needed for poaching later.	Wash hands before and after handling raw meat. Red chopping board used to prepare chicken to reduce cross contamination. Store in fridge until needed to reduce bacterial growth.

Year 11 French Knowledge Organiser cycle 1

Complete your weekly assignment on Seneca

Extensions:

- Create revision cards for each of the main tenses studied to help you remember how to form them.
- Find a picture in a magazine/online and write a photo description
- Do 10 minutes of Duolingo every day to build your vocabulary
- Write a glossary of vocabulary we see in class – memorise it and test yourself at home.

Start with Week 1. Each week, complete the next colour block. Write each word out 3 times and each definition once. Check it all with a purple pen. Tick what is correct, fix what is wrong. For the 'Digging Deeper' task, follow the instructions in the box.

Coombeshead Academy *Inspiring Excellence*		GCSE Media Studies			*Year 10 Cycle 1*
wk	**keyword**	definition	example		
Week 1	**Medium**	A device of method of communication.	Films, magazines and radio are three different **mediums.**	**Week 1**	**Digging Deeper:** Have a look at the front page of the newspaper below. Write a small **summary*** to explain how the person is being **portrayed***. *summary: the main points of something *portrayed: shown/presented. 
	Language	The words we use.	Emotive language and writer's methods are collective terms for the **language** we have studied in English.		
	Representation	The ways in which things are presented to an audience.	Stereotypes are one form of **representation.**		
Week2	**Industry**	A particular form or branch of commercial activity.	The media **industry** includes TV and film.	**Week2**	**Digging Deeper:** Study the film poster here. Make notes on who the intended audience is- how do you know this? Refer to details on the poster.  Think about: • The colours used • The positioning of figures • Hints given to the audience
	Audience	The group of people that a medium is created for.	A medium is designed with a particular **audience** in mind.		
	Regulation	Rules made by an authority in order to maintain order.	There are several bodies that provide **regulation** of the media.		
Week 3	**Software**	Programs used by a computer.	PremierePro is an example of a piece of **software.**	**Week 3**	**Digging Deeper:** Imagine that you are creating a new product to sell. You need to create a logo for it. 1. Design a logo. 2. Annotate it with notes on why you made the design decisions you did. Think about images and colours. 3. How will you market your product? Why?
	Advertising	The act of producing something to promote a service or product.	Film trailers are used as a way of **advertising** the film before release.		
	Marketing	The action of promoting a product or service.	Advertising is one form of **marketing.**		

Week 4	**Denotation**	The meaning of a word.	The **denotation** of 'weapon' is an item that is used to inflict actual harm.		Week 4	**Digging Deeper:** This picture is used to promote 'Of Mice and Men'. 1. What images can you pick out? 2. Why do you think the designer chose these? 3. What are the connotations of this imagery? 
	Connotation	The associated meanings of a word.	The **connotations** of 'weapon' include power, violence and aggression.			
	Imagery	The collective term for visual images.	Film trailers are made up of selected **imagery** from the film itself.			
Week 5	**Narrative**	A written or spoken account of events.	Film posters tell audiences certain points of the **narrative** in the film.		Week 5	**Digging Deeper:** 1. Research some songs that you like to listen to. What intertextual references can you find in them? 2. Create a plan for a classic narrative, according to Propp's theory. Annotate your plan to explain how you fit each of his character profiles.
	Codes	Tools that have come to be accepted by audiences as having certain meaning.	An example of a **code** would be a camera shot fading to black indicating that time has passed.			
	Intertextual	Links across texts/mediums.	Taylor Swift mentioning 'Romeo and Juliet' in her song 'Love Story'.			
Week 6	**Imperative**	A word or phrase that gives a command or order.	"You must go now!" would be an example of an **imperative.**		Week 6	**Digging Deeper:** 1. Find some examples of magazine covers. What examples of imperatives can you find? 2. Find a variety of print products and find some examples of visual and language codes.
	Typography	The style and size of font used.	Different magazines might uses different **typographies** to appeal to certain audiences.			
	Emotive Language	Language that is particularly positive or negative.	**Emotive language** aims to get a particular emotion from the audience, such as shock.			

Week 7	**Analysis** **Ana/la/sis**	A detailed examination of something.	In Media, we **analyse** media to get an understanding of their deeper meaning.		Week 7	**Digging Deeper:** 1. Research the unique selling points of 3 products of your choice. 2. Design a product of your choice. On your drawing/piece of work, write down what your product's unique selling point would be. 
	Brand	The name of a product or manufacturer of the product.	'Nike', 'Fortnite' and 'Xbox' are all examples of **brands.**			
	Unique selling point **u/nee/k**	Something that makes a product different from similar products.	A **unique selling point** of 'Coca-Cola' is that you are able to buy a bottle with your name on it from the supermarket.			
Week 8	**Stereotype**	An oversimplified image of a person or group, based upon assumptions about that person/group.	A **stereotype** of women would be that they are worse drivers than men.		Week 8	**Digging Deeper:** 1. What stereotypes are associated with men and women? 2. Research and write down some examples of stereotypes being upheld and subverted in the media.
	Uphold	To uphold a stereotype means to encourage it.	'Outnumbered' **upholds** stereotypes about teenagers only being interested in their phones.			
	Subvert	To subvert a stereotype means to go against it and present an alternative truth.	Many hospital dramas have male characters that are nurses- this **subverts** the stereotype that they are all female.			
Week 9	**Distribution**	The way in which a product is delivered to media audiences.	Digital methods of **distribution** are increasingly popular, e.g. Netflix.			**Digging Deeper:** 1. Ask your teacher for the set products that you need to study for this course. Research and learn the names of the organisations that produced them. 2. Create some revision cards with key information about these products (names of producers, dates, any interesting facts about production).
	Consumption	The way in which the audience 'takes in' the product.	Netflix often releases entire series in one day to allow 'binge watching'. This is one way the audience **consumes** media.			
	Production	The stage where a media product is produced.	Teams, budgets and equipment are all planned prior to **production** to ensure it can be done efficiently.			
Week 10	**Demographics**	The characteristics of a person of group that allows media producers to target products effectively.	Examples of **demographics** include age, gender and socio-economic group.		Week 11	**Digging Deeper:** 1. Research 'The Lego Movie'. - Who is the movie intended for? Be specific. - How has the audience been targeted in the theatrical release posters?

	Context	The background information that helps to shape a product.	Some older Bond movies appear quite sexist towards women. This is because of the **context** of the time in which they were produced.			- Include examples of media language and representations. .
	Editing	Lots of codes are used post-production to ensure that TV, film and music products are edited to be as successful as possible.	**Parallel and continuity editing** are two examples of how shots may be organised to tell a narrative.			

Year 10 Extension Task: Create your own storyboard of your own comedy show. Add annotations to show the codes you have used and why.

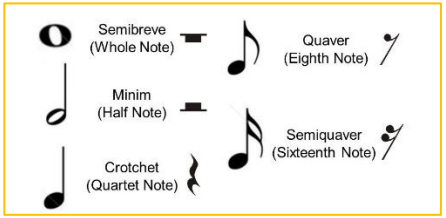
Music Composition Knowledge Organiser

Steps to create your own composition	
Be able to generate musical ideas from starting points	
Generating material	Pitches, rhythms, chords, harmonic systems, themes, texts, images.
Musical starting points	Hooks and riffs, melodic ideas, rhythmic pattern, chord progressions, sound pallets.
Working to a brief	Interpreting a brief and devising appropriate musical ideas.
Know how to extend, develop and manipulate musical material	
Extending and developing an idea	Repetition, decoration, variation, sequence and contrast.
Manipulating techniques	Transposition, transformations (inversion, retrograde, retrograde inversion) and processes (canon, phrasing, addition, subtraction, augmentation, diminution, displacement).
Working with layers	Instrumentation, textures, contrasts.
Be able to form musical material into completed compositions	
Form and structure	Binary, ternary, rondo, arch, ground bass, introductions, codas, song structures, 12-bar blues, effective use of repetition and contrast.
Pace	Maintaining momentum, contrasts, balancing repetition and change.
Be able to present compositions appropriately	
Appropriate presentation methods	Conventions of particular styles, genres and scores
Type of score	Full score, lead sheet, chord chart, relevant computer software.

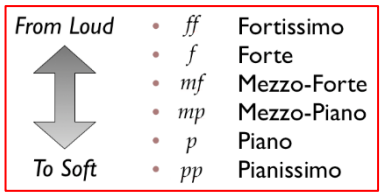
Musical Element	Definition	Examples
Dynamics	The volume of a piece of music.	piano, forte, crescendo and diminuendo.
Rhythm	The pattern of beats.	Semibreve, minim, crotchet, quaver, semiquaver, rests, broken chords, triplets.
Pitch	The intervals between different notes.	High, low, ascending, descending, stepwise
Structure	The sections that make up the music.	Binary, ternary, rondo, arch, ground bass, introduction, codas, 12-bar blues,
Melody	The main tune	Scalic, passing note, repetition, phrases, ostinato
Instrumentation	The different instruments used within the music.	Orchestra, pop band, chamber band, choir, duet, trio.
Texture	The different layers within the music.	Monophonic, homophonic, polyphonic, melody and accompaniment.
Tonality	The key the music is in	Major, minor, modal, chromatic.
Tempo	The speed of the music.	Allegro, Adagio, Andante, Largo, Presto
Timbre	The sound quality of each instrument.	Deep, light, clear, dark
Harmony	The way the notes sound together.	Chords, added note chords, inversions, transpositions.

Musical Symbols

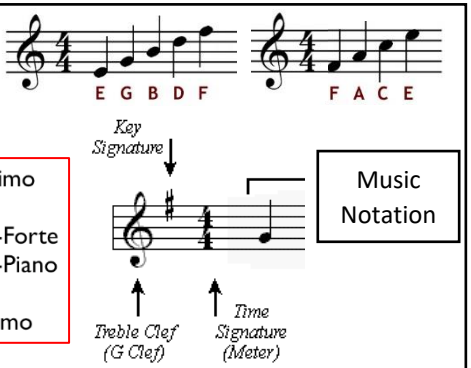
Rhythmic Notation



Dynamics



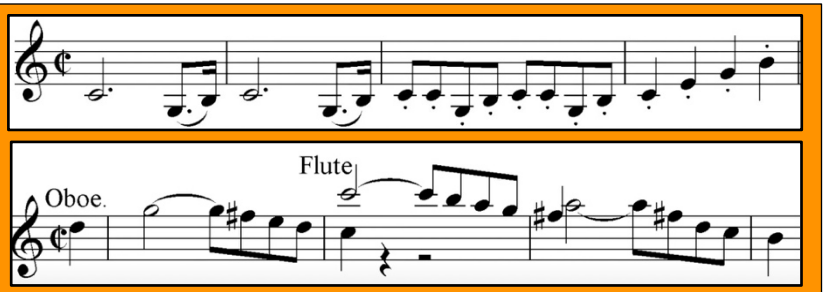
Music Notation



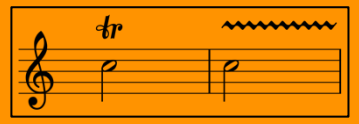
Knowledge Organiser

Beethoven's Symphony No.1 Movement 1: Adagio molto – Allegro con brio

MELODY



- 1st **subject** = **Rising triadic** shape, based off a C7 chord:
  - Quite **disjunct** as far as melodies go, it feels like it's dancing around!
  - 1ST subject is **sequenced** up a tone from C to D
  - 1st subject becomes increasingly 'shrunk'; it is halved and by bar 144, only the first 3 notes are used
- 2nd **subject** = **Falling scalic** shape, **shared** between the flute and oboe
  - Quite **conjunct** in terms of shape, but…
  - Because it's shared across instruments, it still ***feels*** jumpy
- There is heavy use of **diatonic major scales** but…
- There is also heavy use **chromatic** scales (e.g. bar 6-7) to add colour. In the recap, there is a rising chromatic **scale lasting for 8 bars**
- Melodies are often harmonised in **pleasing 3rds**, such as bars 8-10
- Use of ornamentation such as **trills and grace notes** to add tension (such as the 2-bar trill before the coda)



- **Tremolos**! LOTS of tremolos in the strings and timpani to add tension/drama

- **Descending sequence** at bar 82 of previous 3 bars
- Final coda features broken **triads spanning 3 octaves** to create drama and excitement

TEXTURE

- The intro is **homophonic**/chordal
- The exposition is **melody and accompaniment**
- Big finales to sections are usually **homorhythmic**
- There are moments of **monophony (b111)**, contrasted with full **chordal** textures at **112**
- There is **a lot** of imitation between families, such as bars 6-7
- **Unison** is used in the recapitulation; **all instruments** play the 1st subject in unison!

STRUCTURE

SONATA FORM (very typical of classical)

1. Intro = Bar 1
2. Exposition = Bar 12
3. Development = Bar 113
4. Recapitulation = Bar 178
5. Coda = Bar 271

Intro = Sets the scene/tone
Expo = Introduces 1st subject and 2nd subject
Dev = Evolves ideas through new keys
Recap = Literally recaps/returns ideas
Coda = 'Tail' or ending of the music

INSTRUMENTATION/SONORITY/TIMBRE

What is the role of?

1. The **woodwind**: Plays the 2nd subject, plays countermelodies, adds harmonic colour by playing harmonies of 3rds or chromatic notes
2. The **strings**: Use of pizzicato (plucking) and arco (bowed)
3. The **timpani**: emphasises the harmonic progressions, often plays basic tonic or dominant notes, plays tremolos at 'big' moments in the music
4. **Cello + bassoon**: plays the tonic, plays tonic pedals, reinforces the harmonic progressions

DYNAMICS

Sometimes taken for granted, but here they are everywhere and central to the story!

1. Use of **'fp'** adds further confusion to the opening 'joke' of the intro *fp*
2. Use of **'p'** on the 1st subject seems comedic as it's the main melody being timid or shy!
3. Use of **sfz** (sforzando/forced) on big musical moments *sfz*
4. Lots of **crescendos** to ff for drama 
5. **Extreme** dynamic **contrasts**, such as bar 76 where it goes from ff to pp

HARMONY + TONALITY

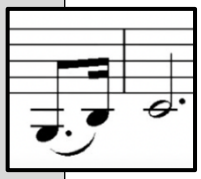
- Key of **C major** overall
- Opening 12 bars are confusing because we hear the following:
  1. Perfect cadence in F major (C7 to F)
  2. Interrupted cadence in C major (G to Am)
  3. Perfect cadence in G major (D7 to G)

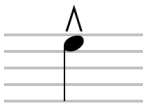
  These 3 progressions break the rules of C major and create a comedic 'joke'

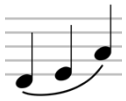
- Dominant 7th chords are <u>everywhere</u>: the 1st subject is even built on a C7 chord!
- Moves to keys such as G major (dominant), A minor (relative minor) and C minor (tonic AKA parallel minor)
- Perfect cadences are **regular and strong**, such as the I – IV – V7- I at bar 30
  - There are perfect cadences in C major as well as G major
  - The very last perfect cadence plays 'C' for **10 bars**! Perfect cadence is very strong!
- There are examples of tonic and dominant **pedals** that go on for ages… this means that the listener is usually very clear as to what the harmony is doing
- Unexpected and sudden **V – Ib at bar 69** which is unstable and unsatisfying
- The Development features several **diminished 7ths**, adding tension and intensity

RHYTHM

- ***Crotchet rests*** are often used to help add drama to big chords and musical climaxes
- The 1st subject is based off a ***dotted*** idea, which adds liveliness and reappears everywhere as a motif in itself (such as bar 144 when it is passed around). May also be a nod to Mozart!
- The 1st subject is a perfect example of ***rhythmic diminution*** (dotted quaver + minim to constant quavers)
- Heavy use of ***semiquaver and demisemiquaver*** scales to add momentum to the music
- Most of the time, the rhythms are ***simple crotchets and minims*** which allows the harmony to shine through







METRE

- Remains in 4/4 throughout

TEMPO

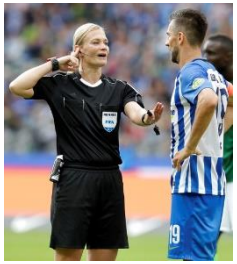
- Adagio molto (very slow) in Bars 1-12
- Tempo change to allegro con brio (fast and bright) for rest of the piece

ARTICULATION

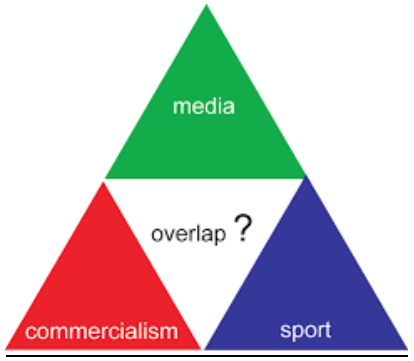
Purposeful use of articulation throughout:

1. **Marcato** is used everywhere (stronger sound)
2. **Legato** (smooth) is used in more delicate moments
3. 2nd subject is **accented** on **Beat 2**, which makes the pulse weaker and shows Beethoven is teasing the listener

Year 11 GSCE PE Cycle one

Week 1	Week 2	Week 3	Week 4
Socio-Cultural **It is important to understand for this section the benefits of sport and physical activity alongside the barriers that can prevent certain people participating.** There are many different social groups that can influence engagement in sport. Ethnicity Gender Age Disabilty Family and Friends We therefore need to monitor engagement patterns is essential to ensure that everything possible is done to promote sport and give people opportunities to participate in sports.	**Gender and Ethnicity** **Gender:**   **Role Model:** **A person looked up to by others as an example to be imitated.** **Ethnicity:**	**Age and Family**  Participation in sport and physical activity tends to peak between the ages of 16-25 when people have more free time. Engaging young people is important because if they participate at a younger age they are more likely to carry this on throughout their lives. Throughout working lives many people have less free time and less disposable income to spend on physical activity. • Flexibility decreases and many people also gain weight. • Skill levels improve with age and experience • Tidal volume and stroke volume decreases making it harder for oxygen to get to the working muscles. • The older you are the more likely you are to suffer from Ill health. • Older people are more likely to suffer injuries and will take longer to recover from them. • The body's ability to take In oxygen decreases by 1% each year after 25.	**Disability and Access** Disability = Physical or mental impairment that has a substantial and long-term effect on a person's ability to carry out normal daily activities. Therefore, it can affect a person's participation in sport and physical activity. National governing bodies make efforts to ensure their sports are accessible to all and participation rates of people with disabilities are on the increase. Barriers that affect participation: • Limited numbers of teachers/coaches with necessary qualifications. • Facilities not adapted. • Lack of clubs to join or train with. • Travelling can be problematic as they may be reliant on disability benefits which limits disposable income. Increased media coverage on the London 2012 Olympics

Year 11 GSCE PE Cycle one

Week 5	Week 6	Week 7	Week 8
Commercialisation and Media Covers a diverse range of technologies that act as a means of mass communication • Broadcast media   Television Radio • Internet and social media  Direct access to performers and up-to-the minute information • Print Media   Newspapers Magazines • Outdoor media  Used to advertise products and services to large audiences at sporting events.	**Commercialisation and Sponsorship**	**Commercialisation and the Golden Triangle**  	**Technology in Sport** The application of scientific knowledge for practical purposes. • **Hawkeye** • **Performance analysis aids** • **Television match officials** **Hawkeye** – a computer system that's uses many cameras to track the flight of the ball. Use in tennis and cricket to help decision making.  **Performance Analysis Aids** – These include wearable technology, they can monitor fitness and record performers actions such as heart rate monitors and smart watches.  **Television Match Officials (TMO) –** Also know as video referee. These are used to check and review decisions by the on-field official. 

A. Visual Elements Keywords

Line	Line is the path left by a moving point. A line can be horizontal, diagonal or curved and can also change length.
Shape	A shape is an area enclosed by a line. Shapes can be geometric or irregular.
Form	Form is a three dimensional shape, such as a cube, sphere or cone.
Tone	This refers to the lightness or darkness of something. This could be a shade, or how dark or light a colour appears.
Texture	This is to do with the surface quality of something. There are two types of texture: Actual texture really exists, so you can feel it or touch it; Visual texture is created using marks to represent actual texture.
Pattern	A design that is created by repeating lines, shapes, tones or colours.
Colour	Red, yellow and blue are primary colours, which means they can't be mixed using any other colours.

B. Key Knowledge: Please tick off once you have shown evidence in your work

AO1 - Research

- Visual AND annotated mind map of Ideas / themes / **CONCEPTS**
- Critical Studies (minimum of 3) using the literacy guides
- Extra critical studies as your project develops
- **LINKS** between your work, ideas and the work of others

AO2 - Experimentation with techniques and processes

- A response to every critical study using a different process/ material
- Photoshops Experiments
- Handmade Experiments
- **LINKS** between your experiments and ideas

AO3 - Recording Ideas

- Your own photoshoots (outside of school)
-
- All work annotated using the literacy guide in your booklet
- Written **LINKS** between yours and others work that explain the concept

AO4 - Outcomes

- A statement of intent for your final piece
- Experiments in the style of your final piece ideas
- A final piece that clearly **LINKS** to your research, ideas and experiments
- An evaluation of your final piece

C. Key Knowledge: CONCEPT

Definition – an abstract idea, a plan, intention or invention

To score highly you must have an original concept – an idea that is yours and means something personal to you. In your work you must include research into your concept e.g a project on human emotions may include research into psychology and human nature.

GCSE PHOTOGRAPHY – YEAR 11 MOCK
CHOOSE 1 of the 3 titles
(In your exam you will have 7 choices)

D. Key Knowledge: Expert Modelling

https://www.youtube.com/watch?v=SUSRl3PwGE4

https://www.youtube.com/watch?v=pOCK42gq_Jw

Watch these two videos on students GCSE Photography sketchbooks. There is lots of inspiration and great ideas on YouTube.

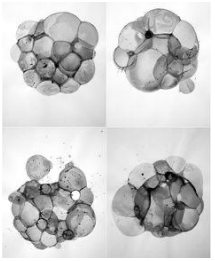
E. How to find your own Artists / Photographers

https://www.art2day.co.uk/photography2.html

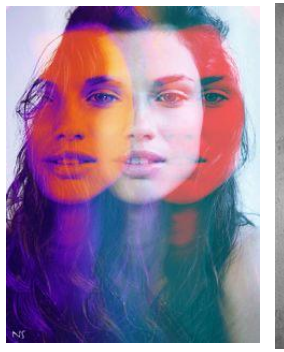
https://www.lensculture.com

https://www.photopedagogy.com

https://www.pinterest.co.uk



Create your own Pinterest account to research and have a daily feed of new and exciting creatives and their work. This will support you in your research and developing an original CONCEPT.



Y11 Triple Science Chemistry
Quantitative chemistry, Haber Process and Fertilisers

Lessons 1 Analysing substances Required practical	Lessons 2 Instrumental Analysis	Lessons 3 Atom Economy
Required practical Using chemical tests It is important in this core practical to use the appropriate apparatus and substances carefully and safely, and to observe chemical changes. This guide includes a summary of all the tests needed to carry out the practical. The tests can be carried out in any order, and you may not need to carry them all out on a particular substance. Eye protection must be worn. **Aims** To identify the ions in unknown salts, using the tests for the specified positive and negative anions. **Method** 1. Carry out one or more tests on each salt. You may need to dissolve a sample of salt in a little distilled water if you are given solids, rather than solutions. 2. Record your observations carefully. Repeat any tests that do not get clear results. **Flame tests** Carry out a flame test as described earlier. **Hydroxide precipitates tests** Add a few drops of dilute sodium hydroxide solution. Observe and record the colour of any precipitate formed. **Test for carbonate ions** Add a few drops of dilute hydrochloric acid. Bubbles are produced if carbonate ions are present. Confirm that the gas is carbon dioxide - limewater turns milky/cloudy. **Test for sulfate ions** Add a few drops of dilute hydrochloric acid, then a few drops of barium chloride solution. A white precipitate forms if sulfate ions are present. **Test for halide ions** Add a few drops of dilute nitric acid, then a few drops of silver nitrate solution. Observe and record the colour of any precipitate formed.	**Instrumental methods of analysis** Instrumental methods of analysis rely on machines. There are several different types of instrumental analysis. Some are suitable for detecting and identifying elements, while others are better suited to compounds. Compared to simple laboratory tests, instrumental methods of analysis may give improved: • speed • accuracy • sensitivity (they can detect very small amounts of a substance in a small amount of sample) **Flame emission spectroscopy** The flame emission spectroscope is a scientific instrument based on flame testing. Data from a spectroscope can be used to: 1. Identify metal ions in a sample. 2. Determine the concentration of metal ions in dilute solutions. **Identifying metal ions** In the flame emission spectroscope, the coloured light from a vaporised sample can be split to produce an emission spectrum. The different lines in an emission spectrum look like a coloured barcode. Each metal ion produces a unique emission spectrum. The metal present in a sample is identified by comparing its spectrum with reference spectra. These are emission spectra from known metal ions. If two spectra match, they must be from the same metal ion. **Determining concentrations** A reading is taken from the flame spectroscope for different concentrations of a metal ion in solution. These readings are used to plot a calibration curve.	**Atom economy** No atoms are gained or lost in a chemical reaction. However, some atoms in the reactants may not end up in the desired product. They instead form other products, and so are regarded as by-products. For example, hydrogen can be manufactured by reacting methane with steam: methane + steam → hydrogen + carbon monoxide $CH_4(g) + H_2O(g) \rightarrow 3H_2(g) + CO(g)$ In this reaction, carbon and oxygen atoms in the reactants do not form the useful product. Carbon monoxide is a waste gas. The atom economy of a reaction is a measure of the amount of starting materials that end up as useful products. It is important for sustainable development and for economic reasons to use reactions with high atom economy. Calculating percentage atom economy The percentage atom economy of a reaction is calculated using this equation: The highest possible value of atom economy is 100%, when all the reactant atoms end up in the desired product. If the atom economy is 50%, for example, then half the reactant atoms end up in the desired product or products. Hydrogen can be manufactured by reacting methane with steam: $CH_4(g) + H_2O(g) \rightarrow 3H_2(g) + CO(g)$ Calculate the atom economy for the reaction. (A_r of H = 1, A_r of C = 12, A_r of O = 16) M_r of CH_4 = 12 + (4 × 1) = 16 M_r of H_2O = (2 × 1) + 16 = 18 total M_r of reactants = 16 + 18 = 34 A_r of H_2 = (2 × 1) = 2 total M_r of desired product = 3 × 2 = 6 (there are three H_2 in the balanced equation) atom economy × 100 atom economy = 634×100 atom economy = 17.6% (to 3 significant figures)

Y11 Triple Science Chemistry
Quantitative chemistry, Haber Process and Fertilisers

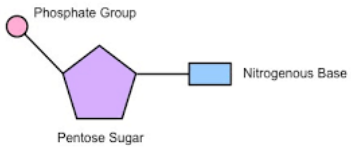
Lessons 4 Yield	Lessons 5 Moles+ Gas Volumes	Lessons 6 Moles+ Gas Volumes
Percentage yield The theoretical yield is the maximum possible mass of a product that can be made in a chemical reaction. It can be calculated from: • the balanced equation, • the mass and relative formula mass of the limiting reactant, and • the relative formula mass of the product Even though no atoms are gained or lost in a chemical reaction, it is not always possible to obtain the calculated amount of a given product. Reasons why the mass of product made is less than the maximum theoretical mass include: • the reaction not going to completion, because it is reversible • some of the product may be lost when it is separated from the reaction mixture by filtering, for example • some of the reactants may react in ways different to the expected reaction Copper oxide reacts with sulfuric acid to make copper sulfate and water. In an experiment, 1.6 g of dry copper sulfate crystals are made. If the theoretical yield is 2.0 g, calculate the percentage yield of copper sulfate. Actual yield = 1.6 g Percentage yield = 1.62.0 × 100 Percentage yield = 80%	**Avogadro's law - Higher** Avogadro's law states that when the temperature and pressure stay the same: • equal volumes of different gases contain an equal number of molecules This means that equal amounts in moles of gases occupy the same volume under the same conditions of temperature and pressure. For example: • 1 mol of hydrogen gas occupies the same volume as 1 mol of methane gas • 10 mol of nitrogen monoxide gas occupy the same volume as 10 mol of argon gas Avogadro's law can be used to calculate the volumes of gases involved in reactions. Using Avogadro's law Hydrogen reacts with chlorine to form hydrogen chloride: $H_2(g) + Cl_2(g) \rightarrow 2HCl(g)$ The mole ratio of hydrogen to chlorine is 1:1. This means, for example, that in terms of volume: • 1 cm^3 of hydrogen reacts exactly with 1 cm^3 of chlorine • 250 cm^3 of hydrogen reacts exactly with 250 cm^3 of chlorine The mole ratio of hydrogen to hydrogen chloride is 1:2. This means, for example: • 1 cm^3 of hydrogen produces 2 cm^3 of hydrogen chloride • 250 cm^3 of hydrogen produces 500 cm^3 of hydrogen chloride At a given temperature and pressure, one mole of any gas occupies the same volume: • the molar volume is the volume occupied by one mole of any gas, at room temperature and pressure The molar volume is equal to 24 dm^3 (24,000 cm^3). This volume is given in questions that need it. Using the molar volume **Calculating the volume of a gas** The volume of a known amount of gas can be calculated: Volume = amount in mol × molar volume	**Calculations involving molar volume - Higher** The molar volume can be used in calculations involving the masses of solids, and volumes of gases, in reactions. Calculating a volume from a mass **Worked example** 4.6 g of sodium reacts completely with excess water: $2Na(s) + 2H_2O(l) \rightarrow 2NaOH(aq) + H_2(g)$ Calculate the volume of hydrogen produced. (A_r of Na = 23, molar volume = 24 dm^3) **Step 1 - Calculate the amount of sodium in moles** Amount in mol = Amount in mol = 4.623 Amount of sodium = 0.20 mol **Step 2 - Find the amount of hydrogen in moles** From the balanced equation, the mole ratio Na:H_2 is 2:1 Therefore 0.20 mol of Na produces 0.202 = 0.10 mol of H_2 **Step 3 - Calculate the volume of hydrogen** Volume = amount in mol × molar volume Volume = 0.10 × 24 = 2.4 dm^3

Y11 Triple Science Chemistry
Quantitative chemistry, Haber Process and Fertilisers

Lessons 7 Haber Process	Lessons 8 Fertilizer	Lesson 9
The Haber process is used to manufacture ammonia. $N_2 + H_2 \rightarrow 2NH_3$ Nitrogen is obtained from air by fractional distillation. Hydrogen is obtained from natural gas. **Conditions :** 450°C, 200 atm pressure, Iron catalyst The mixture from the reversible reaction is cooled so the ammonia liquefies and is removed. The unreacted nitrogen and hydrogen are recycled. The ammonia made can be used to make ammonium salts used as fertilisers and nitric Make sure you can use the principles of dynamic equilibrium. **Temperature** – increasing the temperature decreases the yield because the forward reaction is exothermic and a high temperature favours the endothermic direction BUT a low temperature means a slow rate of reaction. 450°C is a trade off between a reasonable yield and a reasonable rate. **Pressure** – increasing the pressure increases the yield because there are fewer moles of gas on the right hand side BUT operating at high pressure is very expensive. 200atm is a trade off between yield and cost. The **catalyst** does not affect the position of equilibrium and therefore yield but it increases the rate of reaction. Make sure you can interpret data in graphs and tables.	Fertilisers increase agricultural productivity. NPK fertilisers are formulations containing compounds of N, P and K. Some fertilisers are ammonium salts such as ammonium nitrate and ammonium sulphate. They are made using ammonia from the Haber process. Calculate % by mass of N in NH_4NO_3 (formula mass 80) $\%N = \frac{(2 \times 14)}{80} \times 100$ Potassium chloride, potassium sulphate and phosphate rock can be obtained by mining. Phosphate rock cannot be used directly as a fertiliser as it is not soluble. Phosphate rock is treated with acid to make soluble salts which can be used as fertilisers. Phosphate rock + nitric acid makes phosphoric acid and calcium nitrate. The phosphoric acid is neutralised with ammonia to make ammonium phosphate. Phosphate rock + sulphuric acid makes a mixture of calcium phosphate and calcium sulphate. Phosphate rock + phosphoric acid makes calcium phosphate	

Factors affecting food security Farming techniques	Impact of environmental change
Food security: having enough food to feed a population ***Food security*** *exists when all people, at all times, have physical, social, and economic access to sufficient, safe, and nutritious food which meets their dietary needs and food preferences for an active and healthy life.* **Malnutrition** is a condition that results from eating a diet in which one or more nutrients are either not enough or are too much such that the diet causes health problems. **Sustainable food production:** Producing food in ways that will supply the whole human population and can continue for many years. **Methods of sustainable food production:** -Maintaining soil quality -Looking after fish stocks -Using more efficient ways of producing food -Urban farming initiatives The efficiency of food production can be improved by restricting energy transfer from food animals to the environment. -Limit their movement -Control the temperature of their surroundings. Some animals are fed high proteins foods: -Increased growth, animals have greater mass, so sell for more money. Sustainable fisheries: Fish being caught faster than they can reproduce, lots of bi-catch Solutions: line & hoot, spear and harpooning and traps, control net size, fishing quotas.	Changes in the environment affect the distribution of species. Environmental changes can affect the distribution of organisms: Water availability Temperature Atmospheric gases The seasons, geographic position and human interaction affect water availability, temperature and atmospheric gases.

Y11 Triple Biology
Triple content: Inheritance

Lessons 1 **Reproduction +/- sexual vs asexual**	**Lesson 2** **DNA structure**	**Lesson 3** **Protein synthesis**
Advantages of sexual reproduction • Produces variation in the offspring, the offspring are different to the parent • If the environment changes, variation can give a survival advantage by natural selection • Natural selection can be speeded up by humans in selective breeding Examples of selective breeding: To increase food production Advantages of asexual reproduction • Only one parent is needed • More energy efficient, do not need to find a mate • More time efficient, do not need to find a mate • Faster than sexual reproduction • Many identical offspring can be produced when conditions are favourable. Organisms: fungi, bacteria and strawberries. Using both types of reproduction: Some organisms use both asexual and sexual reproduction. Fungi- most commonly uses asexual producing spores by mitosis. If conditions are unfavourable uses sexual reproduction. Using meiosis to make haploid spores.	DNA is a polymer made from 4 different nucleotides. Each nucleotide consists of a sugar, a phosphate group and 1 of 4 different bases. Bases: A, C, G and T Bases are read in 3s. Each 3 bases will be a code for a particular amino acid. The order of the bases in the DNA controls the order that the amino acid are assembled to produce a particular protein. This is a DNA nucleotide:  The base could be A, C, G or T. C is paired to a G T is always paired with an A.	Protein synthesis in the cell in controlled by the DNA in the nucleus. Genes in the DNA produce a template for protein. The template reflects the sequence of bases in the DNA, it is small and leaves the nucleus. The template travels to the ribosome. In the cytoplasm there are carrier molecules with amino acids attached. The carrier molecules attach themselves to the template in the order given by the DNA. The amino acids are joined together to form a specific protein. The carrier molecules keep bringing specific amino acid to add to the growing protein chain in the correct order until the template is completed. The protein detaches from the carrier molecules and the carrier molecules detach from the template and return to the cytoplasm to pick up more amino acids. Once the protein chain is complete it will fold up to a specific shape to enable it to carry out its specific function in the cell. Enzymes, hormones or forming structures in the body such as collagen.

Y11 Triple Biology
Triple content: Inheritance

Lesson 4 **Mutation**	**Lesson 5** **Gene expression**	**Lesson 6** **Cloning**
Mutation: A change in the DNA sequence Mutations occur continuously. Most mutations do not alter the protein or only alter it slightly so that the appearance or function is not changed. If the DNA sequence changes, this can change the amino acid that is added to the protein chain. If the DNA codes for an altered protein, this can this can lead to a different shape. A change to the shape for an enzyme could mean that the active site is different enough that the substrate will not longer fit. Not all parts of the DNA code for proteins. Non coding parts of DNA can switch genes on and off, so variables in these areas of DNA may affects how genes are expressed.	Genes are switched on and off as we grow and develop. The environment may affect how genes are switched on and off and which genes are switched on and off. When a gene codes for a protein that is synthesised by a cell, the gene is said to be expressed. Non coding DNA holds the answer for how the body can synthesis so many chemicals wit so few genes. Each gene can synthesis lots of different chemicals depending how much of each gene is turned on or off or which other genes are switched on or off at the same time. Variations in the non-coding DNA sequence is responsible for how genes are expressed. New genes exist as a result of DNA mutations. Mutations occur all the time as a result of mistakes during copying DNA to make new cells. Mutations in the non-coding DNA sequence can affect which genes are switched on or off.	A clone is an individual that has been produced asexually and is genetically identical to the parent. **Cloning plants** <u>Tissue culture:</u> using small groups of cells from part of a plant to grow identical new plants. This is important for preserving rare plant species or commercially in nurseries. <u>Cuttings</u>: older, simpler method used by gardeners to produce many identical plants from a parent plant. **Cloning Animals** <u>Embryo transplants</u>: Splitting apart cells from a developing animal embryo before they become specialised, then transplanting the identical embryos in to host mothers. <u>Adult cell cloning:</u> -Nucleus is removed from an unfertilised egg ell -nucleus is removed from a body cell, such as a kin cell, it is inserted in to the empty egg cell -An electric shock stimulates the egg cell to divide to form an embryo -These embryo cells contain the small genetic information as the body cell (adult skin cell) -When the embryo has developed in to a ball of cells, it is inserted in to the womb of an adult female to continue its development.

Y11 Triple Biology
Triple content: Inheritance

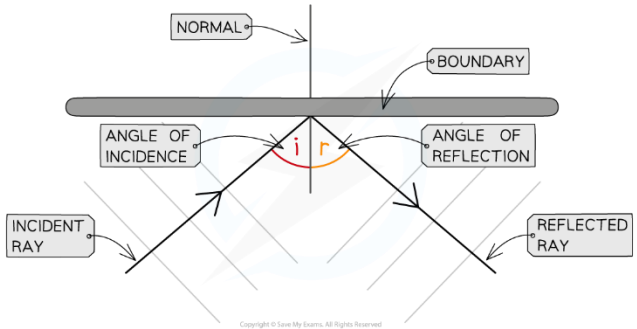
Lesson 7 **Theory of evolution**	**Lesson 8** **Lamarck's Theory of evolution**	**Lesson 9** **Accepting Darwin's ideas**
Charles Darwin, as a result of expeditions around the world, backed by years of experimentation and discussion and linked to developing knowledge of geology and fossils proposed the theory of evolution by natural selection. -Individual organisms within a particular species show a wide range of variations for a characteristic -Individuals with characteristics most suited to the environment are more likely to survive to breed successfully. The characteristics that have enabled these individuals to survive are then passed on to the next generation. Darwin published his ideas in On the Origin of Species (1859). There was lots of controversy surrounding these revolutionary ideas. Theory of evolution by natural selection was only gradually accepted because: The theory challenged the idea that God made all animals and plants that live on Earth. There was insufficient evidence at the time the theory was published to convince many scientists. The mechanism of inheritance and variation was not known until 50 years after the theory was published.	Other theories of evolution include that of John Baptist Lamarck. Idea is based on the idea that changes that occur in an organism during its lifetime can be inherited. We know that in the vast majority of case this type of inheritance cannot occur. Lamarck's ideas influenced the way that Darwin thought. There were several problems with Lamarck's ideas: No evidence for the fountain of life People didn't like the idea of being descended from worms People could quite clearly see that changes in their bodies during their lifetime (like big muscles) was not passed on to their children.	Darwin realised that he would need lots of evidence to support his ideas. He used the amazing animals and plants that he saw on his journeys as part of the evidence. He notes that organisms on different islands had adapted to their environments by natural selection. They evolved to be different from each other. Darwin carried out breeding projects on pigeons at home. He wanted to show how features could be artificially selected. <u>Alfred Russel Wallace</u> Independently proposed the theory of evolution by natural selection. He published joint writing with Darwin in 1858. Prompting Darwin to publish On the origin of Species (1859). Wallace is best known for work on warning colouration in animals and his theory o speciation. Theory of speciation: New species arise as a result of isolation where 2 populations are separated from each other. There is genetic variation between the populations. Natural selection that operates differently on the two populations. Populations become so different to each other that successful interbreeding is no longer possible.

Y11 Triple Biology
Triple content: Inheritance

Lesson 10 **The history of genetics**	**Lesson 11** **The role of biotechnology**	
Mid-19th century Gregor Mendel carried out breeding experiments on plants. Observed that the inheritance of each characteristic is determined by separated units of inherited material that are passed on to decedents unchanged. He realised that some characteristics were dominant other others and that they never mixed together. Chromosomes had not yet been discovered, it was only after his death that his discovery was recognised, the late 19th century. In the mid 20th century the structure of DNA was determined and the mechanism of the gene function worked out.	Biotechnical and agriculture solutions, including genetic modification to meet the demands of the growing human population. Genetically modified crops are being developed to give bigger yields, or improved nutrition. -Golden rice contains extra vitamin A. Modern biotechnology techniques enable large quantities of microorganisms to be cultured in industrially controlled vats for food. Fusarium is useful for producing mycoproteins, a protein rich food suitable for vegetarians. Fungus is grown on glucose syrup in aerobic conditions, the biomass is harvested and purified. Genetically modified bacteria is used to produce human insulin. Which is used to treat diabetes.	

Y11 C1 Triple Physics

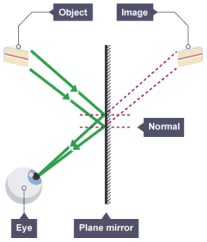
Lesson 1 Reflection

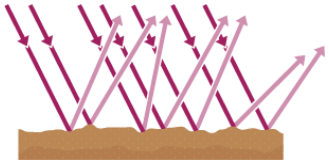


- Reflection occurs when:
- **A wave hits a boundary between two media and does not pass through, but instead stays in the original medium**
- The law of reflection states:
- **The angle of incidence = The angle of reflection**

Specular Reflection

- Reflection from a smooth, flat surface is called specular reflection
- This is the type of reflection we get in a mirror
- What kind of image is formed by the mirror in the diagram?

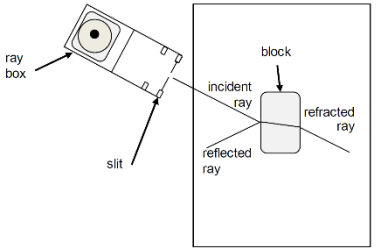




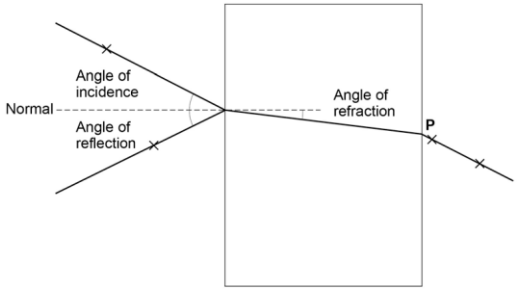
Diffuse Reflection

- Reflection from a rough surface is called diffuse reflection
- This scatters light in all directions and results in distorted images, or no images forming at all

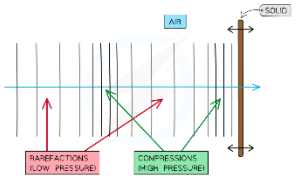
Lesson 2 Refraction



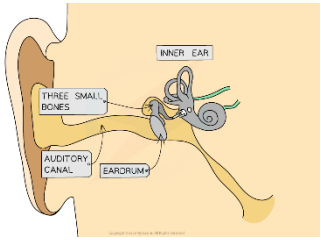
- Refraction is the change in direction that can happen because light travels at different speeds in different materials.
- Light travels more slowly in denser materials, and this means it changes direction towards the normal.
- Refraction won't happen when the light enters a medium at 90° to the surface



Lesson 3 Sound

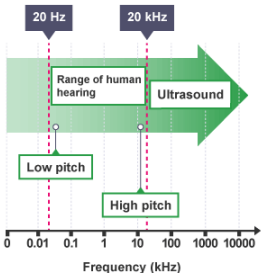


Sound waves
Sound waves are **longitudinal waves**. They cause particles to vibrate parallel to the direction of wave travel.



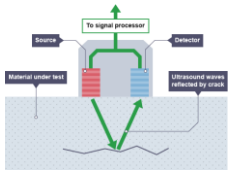
The ear
Sound waves enter the ear canal and cause the eardrum to vibrate. Three small bones transmit these vibrations to the cochlea. This produces electrical signals which pass through the auditory nerve to the brain, where they are interpreted as sound.

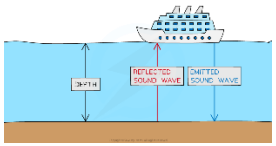
- Ultrasound waves have a frequency higher than the upper limit for human hearing - above 20,000 Hertz (Hz).
- Uses of ultrasound include:
  - breaking kidney stones
  - cleaning jewellery



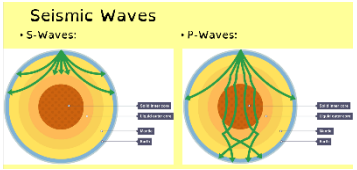
- Ultrasound imaging creates a picture of something that cannot be seen directly, such as an unborn baby in the womb, or faults and defects inside manufactured parts.
- **These uses rely on what happens when ultrasound waves meet the boundary between two different materials.**

Lessons 4
Uses of waves





- Ultrasound imaging creates a picture of something that cannot be seen directly, such as an unborn baby in the womb, or faults and defects inside manufactured parts.
- **These uses rely on what happens when ultrasound**

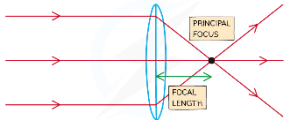


- Seismic waves are produced by earthquakes in the Earth's crust. They can cause damage to structures on the Earth's surface, as well as tsunamis.
- **There are two types of seismic waves:**
  - **P-waves, which are longitudinal waves**
  - **S-waves, which are transverse waves**

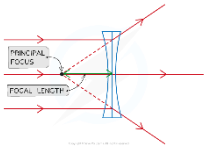
	P-waves	S-waves
Type of wave	longitudinal	transverse
Relative speed	faster	slower
Can travel through	solids and liquids	solids only

Lesson 5 and 6
Lenses

- A lens is a piece of equipment that forms an image by **refracting** light
- There are two types of lens:
  - Convex
  - Concave
- **Real:** light rays can fall on a screen and be seen
- **Virtual:** The image isn't seen at the convergence of actual light rays
- **Upright:** The right way up
- **Inverted:** Upside down
- **Magnified:** Bigger than the real object
- **Diminished:** Smaller than the real object

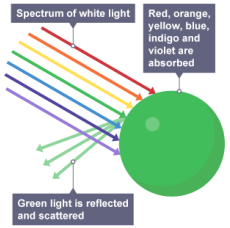


- In a convex lens, parallel rays of light are brought to a focus
- This point is called the principal focus
- This lens is sometimes referred to as a converging lens
- The distance from the lens to the principal focus is called the focal length
- This depends on how curved the lens is
- The more curved the lens, the shorter the focal length



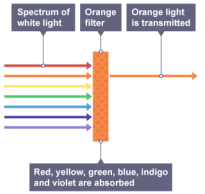
- In a concave lens, parallel rays of light are made to diverge (spread out) from a point
- This lens is sometimes referred to as a diverging lens
- The principal focus is now the point from which the rays appear to diverge from

Lesson 7
Colour



- Visible light exists as a spectrum, with different wavelengths having different colours
- R - O – Y – G – B – I – V
- We see objects as having different colours because they absorb

- Visible light exists as a spectrum, with different wavelengths having different colours
- R - O – Y – G – B – I – V
- We see objects as having different colours because they absorb some wavelengths and reflect others



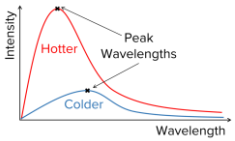
- Colour filters only allow certain wavelengths of light through

Differences between transp
materials

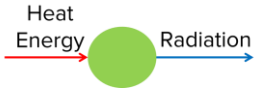
- Opaque materials do not let light through
- Translucent materials let some light through, but not enough to see an image through them
- Transparent materials allow light through them and images can be seen through them

Lesson 8
Blackbody Radiation

- All bodies (objects) absorb and emit radiation. The amount of radiation emitted depends on the temperature of the object.
- A perfect black body is an object that absorbs all of the radiation that it comes in contact with. This means that it does not transmit or reflect any radiation.
- Why would it be called a "*black*" body?



The **intensity** and **wavelength distribution** of the radiation emitted by a **black body** depends on the **temperature** of the object.



Hotter objects emit a greater intensity of every wavelength. However, the increase in intensity occurs more quickly for shorter wavelengths than longer wavelengths. This means that the peak wavelength (the wavelength with the greatest intensity) decreases.

- The temperature of an object depends on the amount of heat energy the object has. The heat energy increases when energy is transferred into the object and decreases when the object emits radiation.
- If an object is at a constant temperature, then the heat energy going in to the object is equal to the energy lost by the object via radiation.
- When an object emits radiation faster than it gains energy, it cools down.
- When an object gains energy faster than it emits radiation, it heats up.

Lesson 9
IR Radiation and the atmosphere

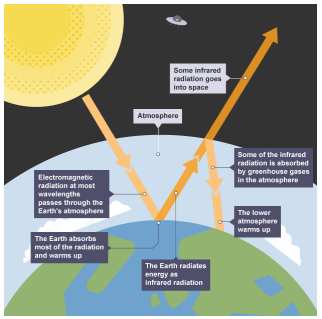
The temperature of the Earth depends on many factors including the concentration of greenhouse gases such as water vapour, methane and carbon dioxide.

The Earth's temperature also depends on the rates at which light radiation and *infrared radiation* are:

- absorbed by the Earth's surface and atmosphere
- emitted by the Earth's surface and atmosphere

When visible light and high frequency infrared radiation are absorbed by the surface of the Earth, the planet's *internal energy* increases and the surface gets hotter.

- Some of this energy is transferred to the atmosphere by *conduction* and *convection*.



The Earth also radiates lower frequency infrared radiation. Some of this infrared radiation is transmitted through the atmosphere back out into space, and some is absorbed by greenhouse gases in the atmosphere. The greenhouse gases emit infrared radiation in all directions - some out into space and some back towards Earth, which is then reabsorbed.

Lessons 10
Required practical: Thermal insulation

Investigate the effectiveness of different materials as thermal insulators and the factors that may affect the thermal insulation properties of a material.

In this practical you will:

- measure the rate of cooling of a beaker of hot water that is insulated with different materials
- use your results to plot cooling curves to determine which is the best thermal insulator
- measure the rate of cooling of a beaker of hot water that is insulated with different thicknesses of the same material
- use your results to plot cooling curves to determine the effect of changing the thickness of the insulator.

Method

1. Place a small beaker into a larger beaker.
2. Fill the small beaker with hot water from a kettle.
3. Put a piece of cardboard over the beakers as a lid. The lid should have a hole suitable for a thermometer.
4. Place a thermometer into the smaller beaker through the hole.
5. Record the temperature of the water in the small beaker and start the stopwatch.
5. Record the temperature of the water every 2 minutes for 20 minutes.
7. Repeat steps 1-6, each time packing the space between the large beaker and small beaker with the chosen insulating material.
8. Plot a graph of temperature (y-axis) against time (x-axis).

Method

1. Wrap a sheet of newspaper around a 100 ml beaker.
2. Fill the beaker with hot water from a kettle.
3. Put a piece of cardboard over the beaker as a lid. The lid should have a hole suitable for a thermometer.
4. Place a thermometer into the beaker through the hole.
5. Record the temperature of the water in the beaker and start the stopwatch.
6. Record the temperature of the water every 2 minutes for 20 minutes.
7. Repeat steps 1-6, each time adding another layer of newspaper around the beaker until there are 10 layers of newspaper wrapped around the beaker.
8. Plot graphs of temperature against time.

Hazards and control measures

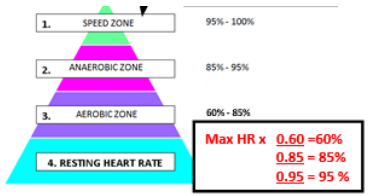
Hazard	Consequence	Control measures
Boiling water	Scald skin	Do not overfill the kettle. Place the small beaker inside the large beaker before gently pouring the water. Remember to place any scald under cold running water for at least 10 minutes.
Knocking beaker off the desk	Scald skin	Place the beaker away from the edge of desk. Carry out the experiment whilst standing.

Year 11 Spanish Knowledge Organiser cycle 1

Complete your weekly assignment on Seneca

Extensions:

- Create revision cards for each of the main tenses studied to help you remember how to form them.
- Find a picture in a magazine/online and write a photo description
- Do 10 minutes of Duolingo every day to build your vocabulary
- Write a glossary of vocabulary we see in class – memorise it and test yourself at home.

	Week 1	Week 2	Week 3	Week 4	Week 5
BTEC SPORT UNIT 1	**Components of Fitness Learning aim A** **Physical Fitness** 1. Body Composition 2. Aerobic Endurance 3. Strength (Muscular) 4. Speed 5. Flexibility 6. Muscular Endurance **Skill - related Fitness** 1. Co-ordination 2. Reaction time 3. Agility 4. Balance 5. Power Can you link these components to different sports?	**Exercise Intensity Learning aim A** 220-Age=Max HR Training Pyramid  **BORG Scale – Rating of Perceived Exertion (RPE)** 6 No exertion 7 8 9 10 11 Light 12 13 Somewhat hard 14 15 Hard (heavy) 16 17 Very hard 18 19 20 Maximal exertion RPE x 10 = Heart rate bpm E.g Level 13 x 10 =130bpm	**Principles of Training Learning aim A** **FITT Principle** Frequency – How often do you train? (How many times a week) Intensity – How hard do you train? (Heart rate/pyramid, BPM, BORG scale RPE) Time – How long you train for? (min. 30mins) Type – What type of training method (e.g. weight, circuit, interval…?) **SPARRV Principle** Specificity – training specific to the individual needs of athlete (Sport, Position, Component of fitness, Age, Gender) Progressive Overload – Make training gradually harder so body gradually improves and adapts (increase *FREQUENCY/INTENSITY/TIME)* Adaptation – Body adapts in response to training (gets stronger because of strength training etc.) Rest and Recovery –Allows adaptation to take place and to avoid injuries due to fatigue/tiredness (have rest days) Reversibility – Body will reverse back if training is stopped for a prolonged time (illness, injury, and motivation) Variation – Training must be varied to avoid boredom (use different *TYPEs* of training methods)	MID CYCLE ASSESSMENT OF LEARNING AIM A List 3 areas you need to improve on from Learning aim A 1 2 3 **Learning aim B** **Warm up** - Pulse raiser, stretches, joint mobilisation **Cool down** – Pulse lowering, Static stretches, Developmental stretches (PNF)	**Flexibility training** **1. Static Stretching – Active (you), Passive (someone/thing else)** **2. Ballistic Stretching – bouncing, actions** **3. PNF Stretching – stretch, hold, tension, stretch further** **Strength, muscular endurance and power training** **1. Free weights – Sets, reps, barbell, dumbbell** **2. Circuit Training – stations** **3. Plyometric – bouncing, throwing, jumping**

	Week 6	Week 7	Week 8	Week 9	Week 10
BTEC SPORT UNIT 1	**Aerobic Endurance Training** 1. **Continuous training – non-stop 30 mins** 2. **Fartlek Training – 'Speed play', slow, medium, fast/different terrain** 3. **Interval Training – work, rest, work, rest** **Speed Training** **1. Hollow Sprint - broken up by 'hollow' lower level work** **2. Acceleration Sprints - jogging to striding and finally to sprinting at maximum speed.** **3. Interval Training -– work, rest, work, rest**	MID CYCLE ASSESSMENT OF LEARNING AIM A List 3 areas you need to improve on from Learning aim A 1 2 3 **Learning aim C** Why are tests important? Pre-test procedures: • Consent • Calibration of equipment Accurate measurements and recording results Reliability, validity and practicality	**Muscular Endurance** **Sit up and press up tests** Count how many sit ups or press-ups completed in 1 minute ✓ Quick and easy ✓ Little equipment ✓ Large groups at once ➢ Arguments of correct technique can affect results **Power** **Vertical Jump test** Stand side on to wall reach up and mark/set the measure. Standing jump as high as possible touching wall. Measure between two marks/measures ✓ Quick and easy ➢ Technique can affect result as need to jump and mark wall **Strength** **Grip dynamometer** 3 attempts, squeeze grip dynamometer measure result in Kg or KgW. ✓ Simple and easy test ✓ Lots of normative data ➢ Must be adjusted for hand size which may affect results **Flexibility** **Sit and Reach test** Both feet against the **sit and reach box**, reach forward and measure result in centimetres ✓ Well known test ✓ Quick and easy to perform ➢ measures lower back & hamstrings only ➢ length of arms and legs affect results	**Agility** **Illinois Agility test** Cones set up as in the image, lie face down on the floor at the start, measure time to complete course in seconds ✓ Cheap and easy to conduct ➢ Human error with timing can affect results ➢ Weather or surface conditions can affect results **Speed** **35m sprint test** Sprint from one line/cone to another in a straight line over 35m. Record time and compare to normative data ✓ Little equipment so cheap to run ➢ Human error when timing can affect results **Aerobic Endurance** **Multi Stage Fitness Test (MST/Bleep test)** Cones/Lines **20m apart**, run in-between to the sound of a beep. **Gradually gets faster**. Longer you can keep up the higher the level ✓ Can test a large group at once ✓ Tests to maximum effort ➢ Practice can affect score ➢ If outside environment may affect ➢ Scores can be subjective **Forestry Step Test** Step/ bench- 33cm for females and 40cm for males. Step up and down for 5 minutes to a metronome. **(90bpm/22.5steps a min)**. Record pulse and compare to table ✓ Low cost ✓ Can be performed inside or outside ✓ Can test on your own ➢ People may struggle to keep with the stepping pace on metronome	**Body Composition** **Body Mass Index (BMI)** $BMI = \frac{\text{Weight (kg)}}{\text{Height (m)} \times \text{Height (m)}}$ ➢ Easy to carry out ➢ Results can be misleading as muscles weighs more than fat **Bioelectrical Impedance Analysis (BIA)** BIA = electricity passed through body from **WRIST** to **ANKLE.** Measures the resistance from muscle and fat ✓ Quick and gives instant results ✓ Can be repeated over time with no bad effects ➢ Needs expensive equipment **Sum of Skinfolds** Use **CALLIPERS** to measure skin on the **BICEP, TRICEP, SHOULDER BLADE** and **HIP.** Add measurements together and use to the **JACKSON-POLLOCK** nomogram (4 lines) • Provides accurate percentages of body fat ➢ Needs specialist equipment ➢ Problems with people revealing bare skin

	Week 1	Week 2	Week 3, 4 & 5	Week 6	Week 7
BTEC SPORT UNIT 3	**TASK 1** • Personal information • Questionnaires, • Lifestyle and physical activity history • aims and goals, • motivation and attitude to training FITT and SPARVV principles and their application Measuring intensity - Heart rate - Borg scale	**TASK 1** Training methods recap from unit 1, principles of training, methods to record training intensity and designing a training diary Selection of appropriate training methods Safe design Warm up and cool down Creative design	**TASK 1** Complete task 1	**TASK 2** Exercise adherence • Access to facilities • Time • Commitment • Lack of interest • Personal injury • Emotional • Cost	**TASK 2** Strategies to overcome barriers • SMARTER targets • Implementing enjoyable activities • Training with others • Knowing the benefits of training programmes
	Week 8	**Week 9-14**	**Week 15**	**Week 16**	
BTEC SPORT UNIT 3	**TASK 2** Task completion	**TASK 3** Safely complete training plan with training intensities Diary completion - Date, time and location - Aims for each session - Method (type) of training - Use of FITT - Log of performance - Resources/equipment - Application of progressive overload - Use of HR and Borg Scale	**TASK 4** Review programme Measure for success – improved Component of fitness (fitness testing?) Future recommendations	**TASK 4** Complete task	