The John of Gaunt School
A Community Academy

Name   TG

Year 11

Knowledge Organisers

Term 2- 2025

unifrog Career readiness means being prepared to succeed in the world of work — not just having a job, but being ready to grow, learn, and thrive in a career. It's about having the skills, knowledge, and attitudes that employers look for. The activities below are to help you reach career readiness.

Term 1	What are my employability skills?	Resources on unifrog What are my employability skills workbook What are my employability skills ppt	These are the tasks on unifrog and the suggested time when to do them. You are given the title of the resources so that you can find them yourself but they will appear on unifrog. You will get an email notification. The tasks are tracked. The activities include the teacher powerpoint, which gives suggestions. Sometimes, it might be good to do the activity with a friend or parent so that you can share ideas. The powerpoints are designed for a class of 30 pupils and have the teacher notes to help you. When working on your own, it will take 15 – 30 mins for the activities and longer for the thinking. Create a folder in which to save your worksheets.
	Post 16 Choices	Post 16 choices workbook Post 16 choices ppt	
	Choosing your post 16 pathway	Choosing your post 16 pathway workbook Choosing your post 16 pathway ppt	
Term 2	Is a UK apprenticeship suitable for me	Is a UK apprenticeship suitable for me ppt	
	Using the apprenticeships tool	Diamond 9 – apprenticeships ppt Using the apprenticeships tool to find the best fit workbook Using the apprenticeships tool to find the best fit ppt	
	Apprenticeships or university?	Apprenticeships vs HE workbook Apprenticeships vs HE ppt	
Term 3	Applying for an apprenticeship	Applying to an apprenticeship workbook Applying to an apprenticeship ppt	
	Finding a job	Researching volunteering or paid work workbook Researching volunteering or paid work ppt	
Further interest	Coping with change, entering the world of employment	Powerpoints and workbook	Useful websites to use https://www.johnofgauntschool.org/parents-and-carers/careers-information https://nationalcareers.service.gov.uk/ https://www.gov.uk/apply-apprenticeship https://www.ucas.com/ https://www.wiltshire.ac.uk/ https://www.bathcollege.ac.uk/
	Adjusting to change	Information	
	Undecided about apprenticeships	Video	
	Demystifying higher apprenticeships (Level 3)	Video	

INTRODUCCIÓN – Espacios naturales maravillosos

- **¿A ti qué te parece?** - *What do you think?*
- **A mí** me gusta(n) / me encanta(n) - *I love / I like…*
- **A mí** me interesa(n) - *I am interested in …*
- **A mí me parece(n)** - *It seems / They seem … to me*
- **¿A ti** qué lugar te gustaría visitar? - *Which place would you like to visit?*
- **¿A ti** qué lugar te interesaría visitar? - *Which place would you be interested in visiting?*
- **A mí** me interesaría / me gustaría visitar (el museo) - *I would be interested in visiting / like to visit (the museum)*
- ¿Por qué te gustaría visitarlo? - *Why would you like to visit it?*
- ¿Por qué te interesaría visitarlo? - *Why would you be interested in visiting it?*
- (A mí) Me gustaría visitarlo… - *I would like to visit it…*
- …porque suena/**parece** - *because it sounds/seems…*
- …increíble / emocionante - *incredible / exciting*
- Hay que ir… - *You have to / One has to go…*
- …cuando hace buen tiempo. - *when it is good weather*
- …durante el mes de (julio). - *during the month of (July).*
- El sitio más **hermoso**/alto del mundo… - *The prettiest / tallest place in the world…*
- está en… - *is in…*
- …América Latina / España - *Latin America / Spain*
- *el medio del mar - *the middle of the sea*

UNIDAD 1 – ¡Actúa ya! (Part 1)

- **¿Cómo ayudas en la sociedad?** - *How do you help in society?*
- ¿Qué haces para ayudar… ? - *What do you do to help…?*
- …en tu comunidad / la sociedad - *in your community / society*
- Para ayudar en mi comunidad / la sociedad, - *To help in my community / society,*
- Compro ropa de segunda mano. - *I buy secondhand clothes.*
- Compro **productos** de **comercio** justo. – *I buy fairtrade products.*
- Ayudo / Participo en proyectos sociales. - *I help / participate in social projects.*
- Doy / Llevo comida a los bancos de **alimentos**. - *I give / take food to food banks.*
- Hago **campañas** para **apoyar a** las personas sin **hogar**. - *I do campaigns to support homeless people.*
- ¿Por qué lo haces? - *Why do you do it?*
- Es importante hacerlo porque… - *It is important to do it because…*
- …**vale la pena apoyar** buenas causas. - *it is worth supporting good causes*
- …**hace falta** ayudar / ser responsable - *it is necessary to help / be responsible*
- ¿Y qué hiciste en el pasado para ayudar a otras personas? - *What did you do in the past to help other people?*
- El mes/año/verano pasado… - *Last month/year/summer…*
- El fin de semana pasado… - *Last weekend…*
- di dinero a… - *I gave money to …*
- …organicé / compré… - *I organised / I bought*
- …hice - *I did/made …*

UNIDAD 1 – ¡Actúa ya! (Part 2)

- …ayudé en un **hogar** de ancianos. - *I helped in a care home.*
- …ayudé a personas sin **hogar**. - *I helped homeless people.*
- ¿Qué más te gustaría hacer en el futuro? - *What else would you like to do in the future?*
- El próximo verano/año… - *Next summer/year…*
- …haré / daré – *I will do/make / I will give…*
- …ayudaré / participaré en… - *I will help / participate in…*
- …un proyecto de conservación - *a conservation project*
- …una **campaña** para … - *a campaign to…*
- …compraré **productos** de **comercio** justo - *I will buy fairtrade products.*
- Me gustaría… - *I would like to…*
- …ayudar / participar en… - *help / participate in…*
- …dar/**recoger** ropa y zapatos - *give/collect clothes and shoes*

UNIDAD 2 – El planeta en peligro

- **¿Cuál es el problema más grave para el planeta?** - *What is the most serious problem for the planet?*
- Pues, para mí, el problema más **grave** es… - *Well, for me, the most serious problem is…*
- …el hambre / la polución - *hunger / pollution*
- …el cambio **climático** - *climate change*
- …**la falta de** agua/comida - *the lack of water/food*
- …porque creo/pienso que… - *because I think (that)…*
- …porque **me parece** que… - *because it seems to me that…*
- …afecta a nuestro planeta - *it affects our planet*
- …afecta a nuestra salud – *it affects our health*
- …hay personas que no tienen acceso a comida - *there are people who don't have access to food*
- no se puede vivir sin agua limpia - *you/one can't live without clean water*
- **¿Qué estabas haciendo cuando vino la tormenta?** - *What were you doing when the storm came?*
- Estaba ayudando a mi madre en el jardín. - *I was helping my mother in the garden.*
- Estaba viendo una película. - *I was watching a film.*
- Mi amiga y yo estábamos paseando a su perro. - *My friend and I were walking her dog.*
- Mis amigos y yo estábamos jugando un partido de fútbol. - *My friends and I were playing a football match.*
- Estaban escuchando un pódcast. - *They were listening to a podcast.*
- El medioambiente - *The environment*
- Llover / Nevar - *To rain / To snow*
- **Mientras**… - *While*

UNIDAD 3 – Protegemos el planeta

- **¿Qué haces para cuidar el medio ambiente en casa?** - *What do you do to look after the environment at home?*
- Para ayudar al medioambiente, en casa… - *To help the environment, at home …*
- …no uso bolsas/botellas de plástico - *I don't use plastic bags/bottles*
- …trato de/intento limitar el uso de… - *I try to limit the use of…*
- …viajo en… - *I travel by…*
- …reciclo / **separo** la **basura** - *I recycle / separate the rubbish*
- …**utilizo** botellas de vidrio - *I use glass bottles*
- ¿Y en tu colegio? ¿Qué cosas hacéis para ayudar? - *What about at your school? What do you do to help?*
- Para ayudar al medioambiente en el colegio… - *To help the environment, at school…*
- …se sigue la regla de 'las tres erres' - *the 'three Rs' rule is followed*
- …se apagan las luces - *lights are switched off*
- …se recicla el papel/vidrio - *paper/glass is recycled*
- …**se ahorra** energía/agua - *energy/water is saved*
- …se organizan/hacen **campañas** de reciclaje - *recycling campaigns are organised/done…*
- …cada mes / todos los meses… - *each month / every month*
- …se mantienen limpias las zonas verdes - *green spaces are kept clean*
- …la comida se recicla, no se tira - *food is recycled, it isn't thrown away*
- …se usa para **crear** compost para el jardín - *it is used to create compost for the garden*
- se apagan los ordenadores, **las pantallas** y las luces. - *computers, screens and lights are switched off*
- ¿Qué hiciste en el pasado para ayudar? - *What did you do in the past to help?*
- El mes/año/verano pasado… - *Last month/year/summer…*
- El fin de semana pasado… - *Last weekend…*
- …aprendí / ayudé a… - *I learned / helped to…*
- …hice – *I did/made*
- …organicé / **ahorré** – *I organised… / I saved…*
- …participé en…/ viajé en… - *I participated in… / I travelled by…*
- ¿Qué más te gustaría hacer para ayudar? - *What else would you like to do to help?*
- El verano/año próximo… - *Next summer/year…*
- …me gustaría… - *I would like…*
- …ayudar a los animales en peligro - *to help animals at risk*
- …reciclar la ropa - *to recycle clothes*
- …organizar un mercado para… - *to organise a market to…*
- …comprar/vender ropa y objetos de segunda mano - *to buy/sell secondhand clothes and objects*
- …aprender a **arreglar aparatos electrónicos** - *to learn to fix electronic devices*
- …organizar **campañas** de reciclaje - *to organise recycling campaigns*

UNIDAD 4 – Nuestro mundo, nuestra responsabilidad (Part 1)

- **¿Qué problema(s) te preocupa(n) más?** - *Which problem(s) worry/worries you the most?*
- **(A mí) me preocupa(n)**… - *I worry about…*
- …el racismo/sexismo - *racism/sexism*
- …la discriminación - *discrimination*
- …la polución de los bosques/mares - *pollution of forests/seas*
- …la violencia contra… - *…violence against…*
- …las mujeres - *women*
- …las personas transgénero - *transgender people*
- …**la falta** de agua - *lack of water*
- …porque / ya que… - *because / given that…*
- …debido a que… - *due to (the fact that)…*
- …muchos animales… - *many/lots of animals…*
- …muchas personas… - *many/lots of people…*
- …no tienen suficiente comida - *don't have enough food*
- son afectados/as - *are affected*
- **sufren** - *suffer*
- ¿Qué acción quieres ver? - *What action do you want to see?*
- Quiero/Espero que… - *I want/hope (that)…*
- Recomiendo que… - *I recommend (that)…*

UNIDAD 4 – Nuestro mundo, nuestra responsabilidad (Part 2)

- el gobierno… - *government…*
- la gente/**juventud**/sociedad… - *people/youths/society…*
- **haga** acciones positivas… - *do(es) positive actions*
- **haga** campañas contra… - *do(es) campaigns against*
- **sea** responsable - *be responsible*
- **tenga cuidado** con… - *be careful with…*
- **vaya** a **manifestaciones** contra… - *go(es) to protests against…*
- Odio que… - *I hate that…*
- Me pone triste que… - *It makes me sad that…*
- el gobierno… - *government…*
- la gente/**juventud**/sociedad… - *people/youths/society…*
- …no **haga** acciones positivas - *do(es) not do positive actions*
- …no **haga** campañas - *do(es) not do campaigns*
- …no **sea** responsable - *is/are not responsible*
- …no **tenga cuidado** con… - *is/are not careful with…*
- …hacer un esfuerzo - *to make an effort*
- …proteger / **cuidar** - *to protect / to look after*
- …**preocuparse** - *to worry*
- …tener **cuidado** - *to be careful*

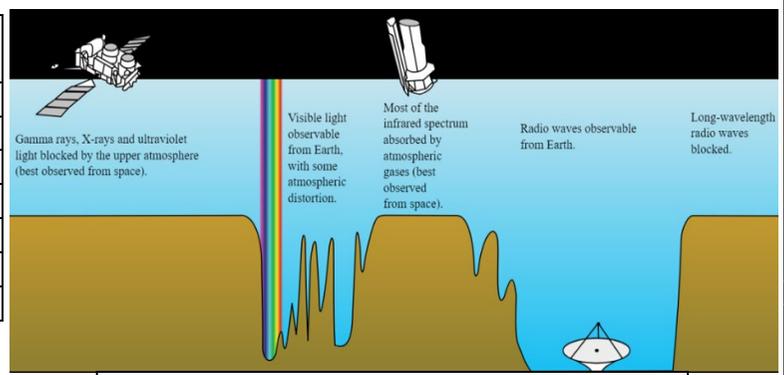## UNIDAD 5 – El futuro está en nuestras manos

- **Jóvenes en acción** - *Young people in action*
- Se debería ayudar a solucionar los problemas sociales - *You/One should help to solve social problems.*
- ¿Quién es tu **modelo de conducta** favorito? - *Who is your favourite role model?*
- Mi **modelo de conducta** favorito es… - *My favourite role model is…*
- porque… - *because…*
- …usa su popularidad en TikTok para… - *he/she uses his/her popularity on TikTok to…*
- …ayuda a mucha gente… - *he/she helps a lot of people…*
- ¿Te gustaría hacer trabajo voluntario? - *Would you like to volunteer work?*
- ¿Por qué (no)? - *Why (not)?*
- Sí, me gustaría hacer… - *Yes, I would like to do…*
- Creo que es importante ayudar / participar en… - *I think it is important to help…/ to participate in …*
- No me gustaría hacer… - *I would not like to do…*
- ¿Qué se debería hacer para ser un buen voluntario? - *What should you/one do to be a good volunteer?*
- Para ser un buen voluntario, se debería ayudar a solucionar… - *To be a good volunteer, you/one should help to solve…*
- Yo pienso que se debería hacer todo lo posible… - *I think that you/one should do everything…*
- **A mí me parece** que… - *I think that…*
- Yo **estoy** de acuerdo con sus acciones porque… - *I agree with his/her actions because…*
- (no) se debería - *you/one should (not)*
- *gracias a / igual que - *thanks to / the same as*
- haz / pon / sal / sé - *do / put / go out / be*
- ten / ve / ven - *have / go / come*
- **escuchad / participad** - *listen / participate*
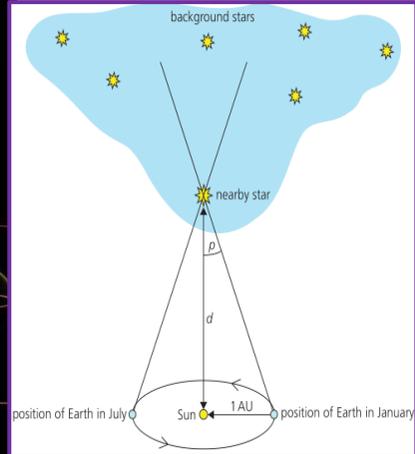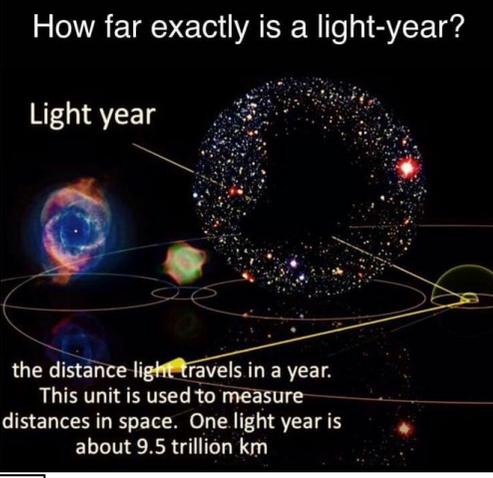- **pedid / respetad / evitad** - *ask for / respect / avoid*

PREPOSITIONAL PRONOUNS

Prepositional pronouns are pronouns used after prepositions such as **a**, **de**, **en**, **para** and **sin**. They are the same as the subject pronouns, except for the forms **mí** (me) and **ti** (you).
Note that **mí** and **él** have an accent, to distinguish them from mi (my) and el (the), but there is no accent in ti.
There are two irregular forms: **conmigo** (with me) and **contigo** (with you).
The use of pronouns after **a** is to add emphasis. For example:
- A mi me encanta este parque.
  I love this park.
- ¿A ti te gusta? - *Do you like it?*

Singular		Plural	
me	mí	us	nosotr**os**/**as**
you	ti	you	vosotr**os**/**as**
him	**él**	them (masc.)	ell**os**
her	**ella**	them (fem.)	ell**as**
you (formal)	Usted	you (formal)	ustedes

THE IMPERATIVE

The imperative is used to give instructions. The singular (*tú*) positive imperative is formed by removing the –s from the *tú* form of the verb. This is the same as the he/she/it form in the present tense.
- votar → (tú) votas → **¡Vota!** (*Vote!*)
- proteger → (tú) proteges → **¡Protege!** (*Protect!*)
- pedir → (tú) pides → **¡Pide!** (*Ask!*)

With imperatives, pronouns are attached to the end of the verb to become a single word.
- **Hazlo** (*Do it*)

If the imperative verb has two syllables or more, an accent is placed on the second-to-last syllable, not counting the pronoun.
- **Protégelos** (*Protect them*)
- **¡Ayúdame!** (*Help me!*)

IMPERSONAL VERBS

These impersonal verbs can be used alone or followed by an infinitive:
- Vale la pena – *It's worth (it)* → Example: Vale la pena reciclar la basura. – *It is worth recycling the rubbish.*
- Basta (con)/(de) – *It's enough to/of* → Example: ¡Basta de contaminar! – *Stop polluting! / It's enough of contaminating!*
- Hace falta – *It is necessary (to)* → Example: Hace falta cuidar los bosques. – *It is necessary to look after the forests.*
- Falta – *is lacking* → Example: ¡Falta agua! – *Water is lacking!*

THE PASSIVE VOICE

The passive voice is used to say what is/was/will be done to something or someone.
To make the passive voice in Spanish, you need the correct form of the verb "ser" (to be) and the past participle.

SER (to be)
Es - *it is*
Son - *they are*
Fue - *it was*
Fueron - *they were*
Será - *it will be*
Serán - *they will be*

+

Past participle
To form the past participle, you must remove the last two letters of the infinitive (-ar, -er, -ir) and add:
- For –ar verbs add "-ado". Hablar → Habl**ado**
- For –er and –ir verbs add "-ido" Comer → Com**ido** / Vivir → Viv**ido**

Examples:
- El árbol **fue plantado** por los estudiantes. – *The tree was planted by the students.*
- El avión **es conducido** por el piloto. – *The plane is driven by the pilot.*
- El colegio **será construido** el año que viene. – *The school will be built next year.*

AVOIDING THE PASSIVE VOICE IN SPANISH

The passive voice is used in English more often than in Spanish. In fact, Spanish people often avoid using this tense by using the pronoun "se". For example:
- El castillo **se construyó** en 1800. – *The castle was built in 1880.*
- En mi colegio **se recicla** la basura. – *In my school the rubbish is recycled.*
- El libro **se publicará** el año que viene. – *The book will be published next year.*

USES OF PRESENT SUBJUNCTIVE

You have already learned to use the present subjunctive after "cuando". We have also learned how to conjugate the present subjunctive (KO - module 6). Here is a reminder of how to form the subjunctive in the present tense. Remember that you must start with the "I" form of the present tense, remove the –o, then add the following endings

Subject pronouns	AR verbs (Hablar/to talk)	ER verbs (Comer/to eat)	IR verbs (Vivir/to live)
Yo	habl**e**	com**a**	viv**a**
Tú	habl**es**	com**as**	viv**as**
Él/ella	habl**e**	com**a**	viv**a**
Nosotros/as	habl**emos**	com**amos**	viv**amos**
Vosotros/as	habl**éis**	com**áis**	viv**áis**
Ellos/as	habl**en**	com**an**	viv**an**

The present subjunctive is also used after verbs of wishing, command, request and emotion, such as **recomendar**, **esperar**, **querer** and **odiar**.

Only use the present subjunctive when there is a change of subject in the sentence. For example:
- Odio (yo) que mucha gente no tenga (ella) dinero.
  I hate that lots of people have no money.
- Quiero (yo) que mis estudiantes reciclen (ellos) más.
  I want my students to recycle more.

Here are a couple of irregular verbs in the present tense that you need to be aware of:
- Ser → (yo) sea
- Ir → (yo) vaya

NO SE DEBERÍA + INFINITIVE

Use "no se debería + infinitive" to say what should or shouldn't be done. For example:
- Se debería plantar más árboles. – *We/One should plant more trees.*
- No se debería tirar basura en la calle. – *We/One should not throw rubbish in the street.*
- Se debería usar el transporte público. – *We/One should use public transport.*

Star name	Bayer Classification	Apparent magnitude
Sirius	α CMa	-1.5
Rigel	B Ori	0.1
Polaris	α UMi	1.8
Ruchbah	ς	2.7
No name	ζ	3.4
No name	ψ	5.5
Lower magnitude = brighter star		

magnitude difference	Ratio of brightness
1.0	2.5
2.0	2.5 x 2.5 = 6.25
3.0	2.5 x 2.5 x 2.5 = 16
4.0	40
5.0	100
6.0	250

EM Spectrum absorption by the atmosphere

How far exactly is a light-year?

Light year

the distance light travels in a year. This unit is used to measure distances in space. One light year is about 9.5 trillion km

Parallax

$$d = \frac{1}{p}$$

d = in parsecs

apparent magnitude (m): How bright a star **appears** in the sky depends on four main factors:

- The total energy radiated by the star in the visible region;
- The distance to the star;
- The amount of interstellar gas and dust that reflects and absorbs light;
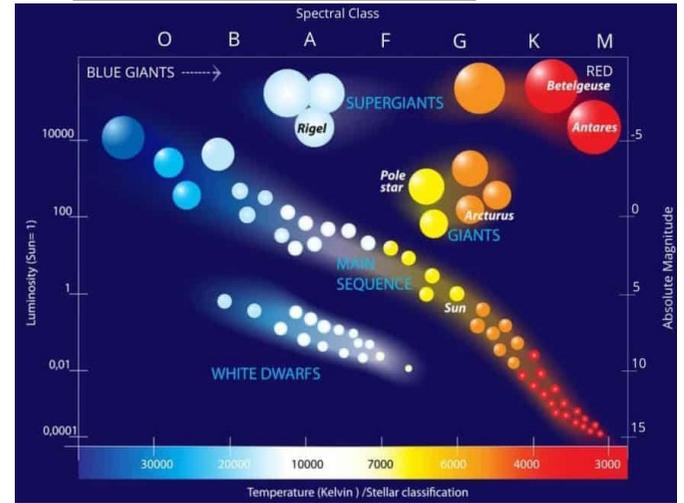- The amount of light absorbed and scattered by the Earth's atmosphere.

Aperture synthesis – using arrays of telescopes
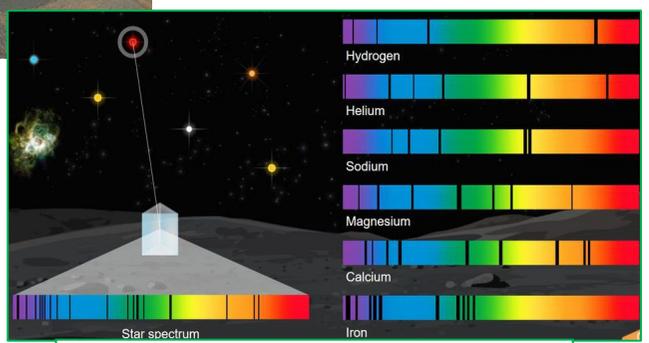
Spectroscopy: Collecting light with a telescope and splitting it up using a diffraction grating to obtain a

Hydrogen
Helium
Sodium
Magnesium
Calcium
Star spectrum
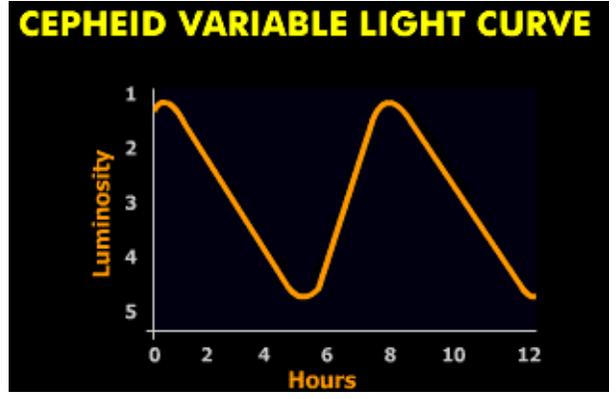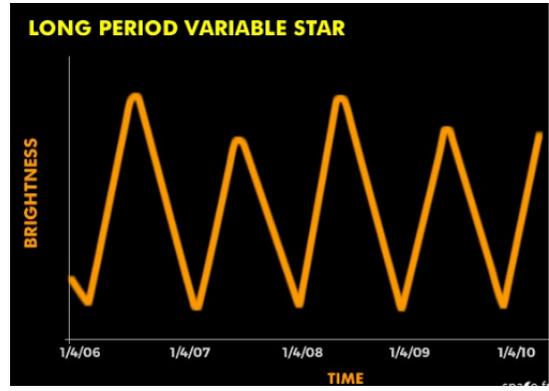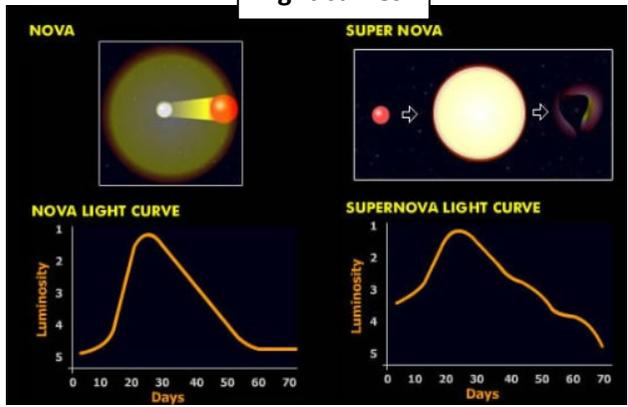Iron

Hertzsprung-Russel diagram

absolute magnitude (M): The true brightness of a star. Defined as the star's **apparent magnitude** at a distance of **10 parsecs** from us:

M = m + 5 – 5 log d

d is measured in parsecs.

Light curves

NOVA

SUPER NOVA

NOVA LIGHT CURVE

SUPERNOVA LIGHT CURVE

LONG PERIOD VARIABLE STAR

CEPHEID VARIABLE LIGHT CURVE

4:4 Consumer Law

Consumer law is: the are of law which protects customers.

Customers are protected by the **Consumer Rights Act 2015**. This Act of Parliament gives customers protection when they buy goods and services.

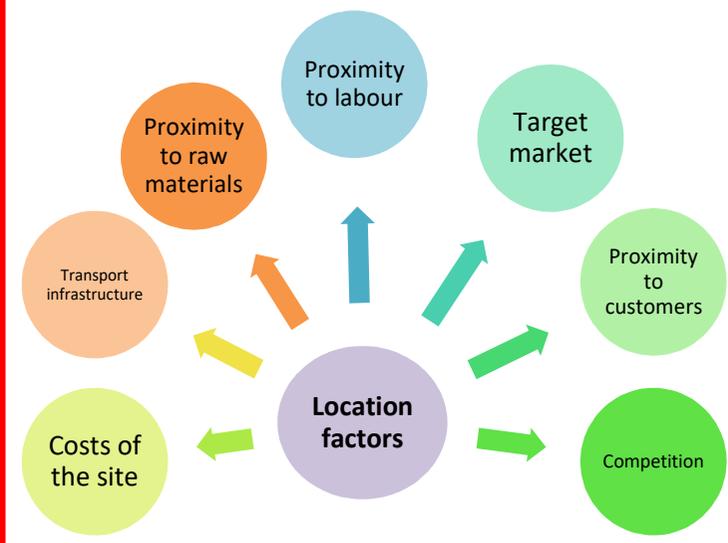*Fit for purpose*
This means that goods must do what they are meant to do
As described
This means goods must be as the business describes
Satisfactory quality of goods
This means that how the goods are made will reflect the price
Reputation
What customers say about a business

They must be:

- Fit for purpose
- As described
- Satisfactory quality
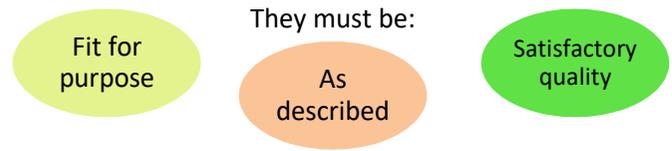
Impact of consumer law on business

Production	A business must make sure that the quality of the goods is up to standard. They must not be faulty or damaged when bought. If they are not customer could return products and this will affect their reputation.
Safety of goods	If goods are produced in a defective way customers can claim compensation for damage or personal injury. This could result in huge costs for the business and a loss of reputation.

4:5 Business Location

Location: refers to the place where a business is sited
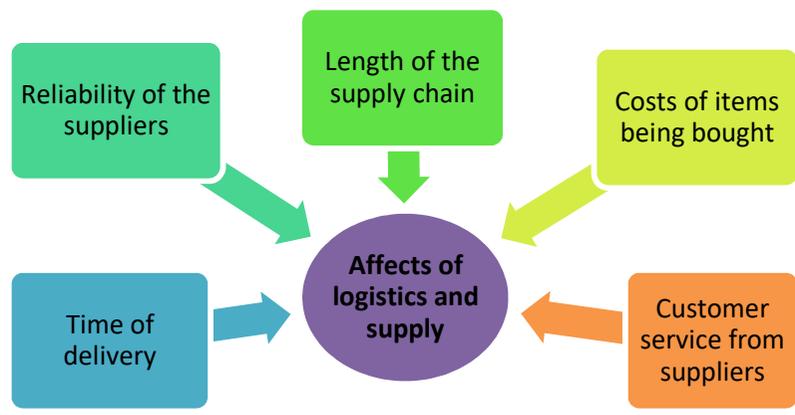
For many businesses, the decision of where to locate is one of the most important decisions it takes. There are a number of factors that influence the location of a business

Proximity
Means 'nearness to'
Labour
The people employed by the business to produce goods and services
Raw materials
Materials needed to produce saleable goods and services
Transport infrastructure
The provision of roads, railways, ports and airports

Location factors: Proximity to raw materials, Proximity to labour, Target market, Proximity to customers, Competition, Costs of the site, Transport infrastructure

4:6 Working with Suppliers

Logistics
The management of the transportation and storage of goods
Procurement
The management of purchasing within a business
Suppliers
Parties who supply goods and/or services to a business

Procurement has a number of roles within a business:

1. Identifying goods and services to buy
2. Choosing suppliers
3. Ordering goods and services
4. Receiving deliveries from suppliers

Affects of logistics and supply: Reliability of the suppliers, Length of the supply chain, Costs of items being bought, Time of delivery, Customer service from suppliers

Assessment Information

Your assessment will take place during a normal timetabled lesson but you should be revising at home.

Number of marks available: 40
Time allowed: 50 minutes

Answer **ALL** of the questions

The first 10 questions will be multiple choice - you must only select **ONE** answer, selecting two will score 0 marks.

The other questions will include a range of 2, 3, 4, 6, 7, & 9 mark questions

Possible questions

1. State one way consumers are protected by law.

2. Explain why quality is important to businesses.

3. Analyse one benefit of using batch production.

4. Recommend one type of production a business could use for a product.

5. Evaluate the importance of selling good-quality products.

State   **Explain**   **Analyse**   **Recommend**   **Evaluate**

1: **Add details**: name of child (initials only) age of child, when the activity will take place, where the activity will take place

2. **Briefly describe the activity you have planned**. Give it a **clear title.**
This could include: mark making, gardening. What's the time Mrs Wolf?, ride on bikes, stepping stones, collage, model making…..

3. **Developmental area** What area of development are you targeting/promoting?

4. **Reasons for choice.** Explain how this activity will help the children's development in the area you have chosen. Explain how it will relevant to a particular child and their developmental norms

5. **Aims:** Identify what area of the child's development needs support/developing. Focus on the specific skill you wish to promote and link it to the area of development. E.g. The aim may be to develop the fine motor skill of fastening and unfastening buttons. Make sure the aim is measurable

6. **Timing** Take into consideration the time it will take. Break the activity into parts and think about the time needed for each one e.g. the introduction, developing the activity, time for the child to put things away, time for the child to talk about what they have done.

7. **Safety considerations** Think carefully about any safety issues there may be and explain how you will reduce this risk. Consider: where the activity will take place, the equipment needed, how you will supervise it. Consider the weather if you are doing the activity outside. Think about safety labels

8. **Resources** This includes everything you need to carry out the activity. Eg. Space needed, materials, equipment, List all the equipment you will need for the activity. Check that these will be available and are in usable condition.

9. **How will you introduce the activity to the child?** You need to capture the child's interest so they are keen to be involved. You might start by reading a story to inspire them, or show resources or material they could use, Think about if you will introduce the activity and step back or play alongside the child.

Method of observation	What the method involves
Narrative	A detailed written description of what is being observed over a short period of time.
Checklist	A list of possible skills is produced so that the observer can check off the child's skills as they are observed.
Snapshot	A brief note is made about a child to capture something they do or a skill they use.
Time sample	Capturing information about what a child is doing at particular times of the day. It could be how they play or how they behave.

Photographs

Child's work

written

Methods of recording observations
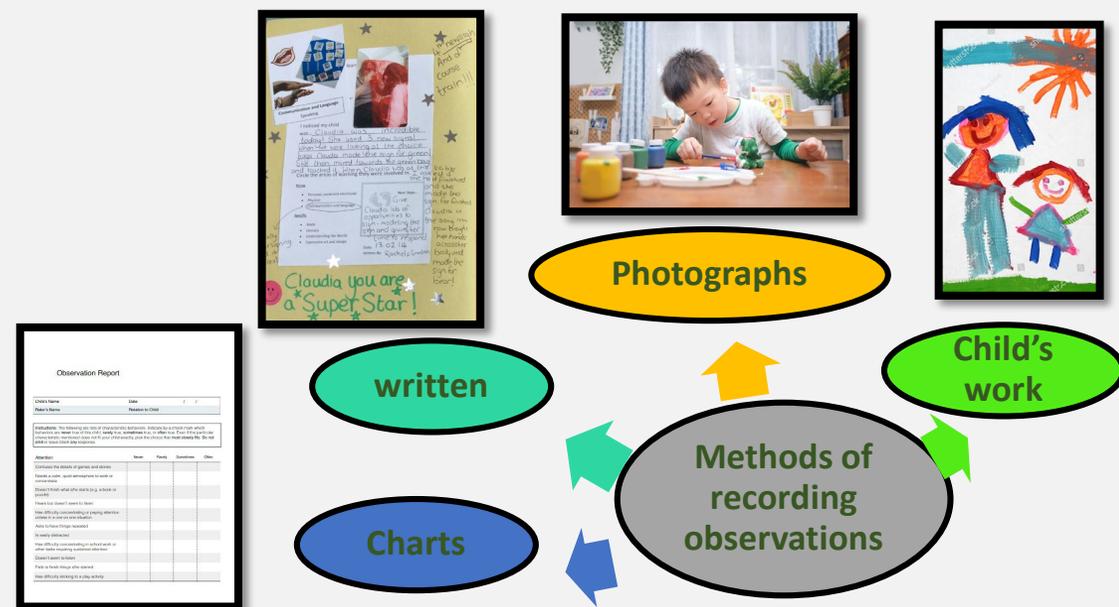
Charts

Key vocab	
Operating System	(OS) A collection of programs that tell the hardware what to do. They are necessary on most computer systems, other than simple self-booting systems devoted to a single task.
Kernel	A part of the operating system that connects applications to the hardware. Applications do not have direct control over hardware.
User interface	A system for providing a means of communication between the user and the operating system. Sits above the kernel.
Batch file	A file that contains a series of command line instructions.
DLL	Dynamic Linked Library
Library	A series of instructions and commands available to a programmer.
Firmware	Software that is permanently stored on a device using a ROM device.
Multi-Tasking	If a current program is loading data from a slow peripheral, rather than allow the CPU to stand idle it will turn its attention to another process. Often used to run several programs at one time.
Multi-User OS	An operating system that allows many users to log into the same system simultaneously.
Real time OS	Safety-critical systems that require a short and guaranteed response, such as in a nuclear power plant.
Scheduling	The process of arranging, controlling and optimising commands within the CPU.
User management	A set of controls that allow the access and actions of users to be restricted.
Memory Management	Operating system ensures that all data is stored safely and efficiently in the correct location.
Paging	Splitting programs into equal sized pages to fill available blocks in memory.
Segmentation	Splitting programs into blocks to fill available blocks in memory.
Driver	A program that controls a peripheral device.
Peripheral Management	Managing the communication through signals between a device and its driver.

Roles of an operating system
Managing hardware & peripherals
Managing programs installed and being run
Managing data transfer between memory locations, the CPU and secondary storage
Providing the interface between the hardware and the applications
Providing an interface between the computer and user, managing display to the screen
Managing security and organising data so that it is not overwritten
Providing a file system for the storage and retrieval of files

User interfaces	
Command Line	Commands are given to the operating system through using text. Normally used by technicians as it can provide powerful instructions quickly.
Graphical User Interface (GUI)	The use of small icons that represent applications and actions that are performed to reduce the need to learn commands.
Voice Input	Mainly used on mobile devices to provide voice input to a computer system.

Typical operating systems	
Android	Developed by Google to run on mobile devices, based on Linux.
Mac OS	Apple's mobile device operating system used on iPhones, iPads and Apple TV.
Unix	A widely used platform for building alternative operating systems above including MAC OS X and Linux.
Linux	Available in many distributions, Linux is an open source operating system based on Unix.
Mac OS X	Operating system on Apple computers based on Unix.
Windows	Most commonly used operating system developed by Microsoft. Windows is used on laptop and desktop PCs and on a range of devices.

Key vocab

Sequence

Addition example code

```
number1 = int(input("Input the first number :"))
number2 = int(input("Input the second number :"))
answer = number1 + number2
print("The answer is " + str(answer))
```

The code above takes two number inputs and stores them as variables called number1 and number2. It then adds these together and saves them in a variable called answer.

The final line prints the answer out in a sentence.

Iteration

for i in range(0,10):	Repeats any code indented after this line a set number of times, in this case, 10.
while x < 10:	Repeats any code indented after this line until a condition is met, in this case x becoming equal to or greater than 10.
list = ["",""]	Creates a variable and makes it an array – a list which can store many values.

Selection

Selection example code

```
fav_num = int(input("Pick a number between 1 & 10..."))

if(fav_num == 7):
    print("Good guess!")
elif(fav_num < 7):
    print("Too low!")
else:
    print("Too high!")
```

The code above inputs a number. If the number is 7 it will print "Good guess!", if it is less than 7 it will print "Too low!" and for anything else it will print "Too high!".

Method	Description	Method	Description
.length	Outputs the length in characters of the string.	.count(x)	Outputs the number of instances of x in the string.
.substring(x,y)	Outputs the character that are between positions x and y.	.reverse	Outputs the characters of the string but in reverse.
.upper	Outputs the string in upper case.	.split	Splits the string, into a list, usually where there are spaces.
.lower	Outputs the string in lower case.	string[3]	Outputs the character at index 3.
.replace(x,y)	Outputs the string but with all instances of x being replaced with y.	.strip(x)	Outputs the string but with any instances of x removed from the front and end of string.

Key content
Concatenating Strings
This means joining multiple strings together. A plus symbol (+) is used in Python.

greeting = "Hello"
name = "Elizabeth"

```
print(greeting + " " + name)
```

Hello Elizabeth

More info can be found here:
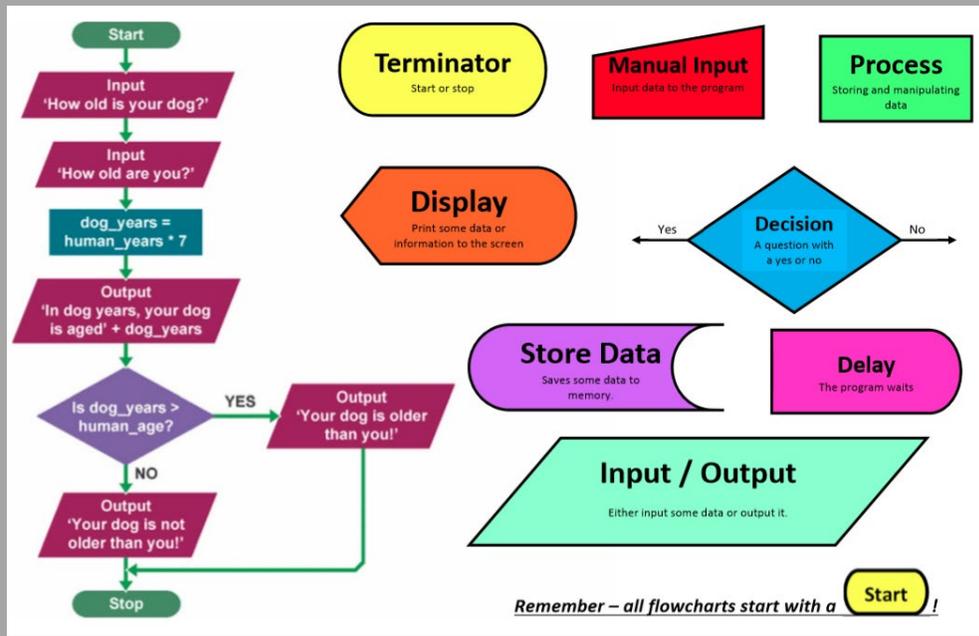https://youtu.be/wLJ1n47sGRI

Key content

Comparative operators

==	Equal to
!=	Not equal to (or different to)
>	Greater than
<	Less than
>=	Greater than or equal to
<=	Less than or equal to

Arithmetic operators

Operation	Symbol	Example	Output
Addition	+	2 + 10	12
Subtraction	-	9 − 6	3
Multiplication	*	5 * 4	20
Division	/	5 / 2	2.5
Floor Division	//	7 // 2	3
Remainder	%	7 % 3	1

Key vocab

Word	Definition
Abstraction	The process of removing unnecessary details and including only the relevant details. It is a method of computational thinking that focusses on what is important in problem solving
Decomposition	The process of breaking a complex problem down into smaller more manageable parts. Dealing with many different stages of a problem at once is much more difficult than breaking a problem down into a number of smaller problems and solving each, one at time.
Flowchart	A method of representing the sequences of steps in an algorithm in the form of a diagram. Sometimes called a Flow diagram
Structure Diagram	A diagram showing a top-down breakdown of a complex problem
Pseudocode	A text based alternative of representing the sequences of steps in an algorithm. Pseudo-code can be thought of as a simplified form of programming code.
OCR Reference Language	You must be able to read this but you can always use Python in your exams— but be precise
Syntax Error	Syntax errors are errors which break the grammatical rules of the programming language. They stop it from being run/translated
Logic Error	Errors which won't stop the program running. Logic errors are errors which produce unexpected output. E.g Outputting an answer that was multiplied when it should have been taken away

Diagrams

More info can be found here:

https://youtu.be/wLJ1n47sGRI

Key content
Comparing secondary storage

Capacity The amount of space that is available to store files. Generally measured in GB.
Speed How quickly a computer can read and write data from a storage device.
Portability
How easy a device is to be transported. Some devices may be permanent hardware, others may be easier to transport.
**D**urability Will the device withstand a certain amount of damage without corrupting files?
Reliability The length of time that a device is expected to last for, how long will it retain functionality?
Cost The cost of a device is compared in terms of cost per GB.

Diagrams:

Key vocab

Secondary Storage	A non-volatile storage medium which stores files and programs. Examples include the hard drive (HDD) and solid state drives (SSD).
Magnetic Devices	Magnetic disks are read and written to with a moving head inside the disk drive. They often contain moving parts and are susceptible to damage. Magnetic devices can be either internal or portable.
Solid State Devices	SSD has no moving parts. It retains an electronic charge using logic gates. Examples include SD cards and USB memory sticks. Also referred to as flash storage.
Optical Devices	Optical media includes CD, DVD and Blu-Ray disks. Lasers are used to read and write data to a disk. Data is stored on tracks around the disk as a series of pits which represent binary code.
Cloud Storage	Cloud storage refers to saving data in an off-site location maintained by another party. Examples include Dropbox, Google and Microsoft. This relies on having an internet connection to be able to upload and download files from a cloud server.
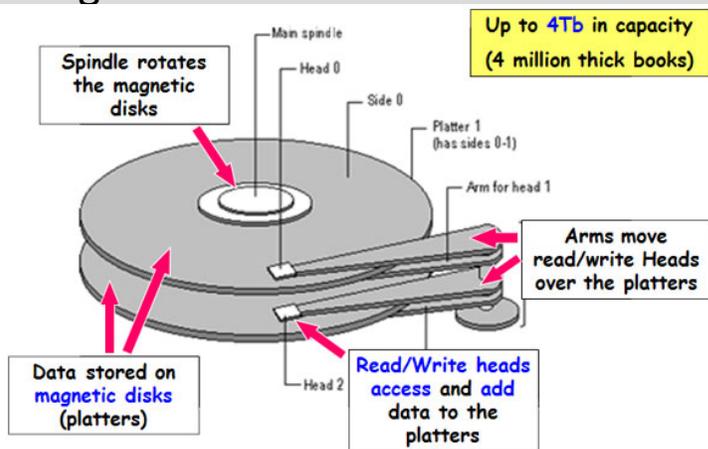
More info can be found here:
https://youtu.be/qIy_wgo03Oo
https://youtu.be/xfDwcdap5LA

Create and develop ideas to communicate meaning for theatrical performance (AO1)

Apply theatrical skills to realise artistic intentions in live performance (AO2)

To know and demonstrate knowledge and understanding of how drama and theatre is developed and performed (AO3)

Analyse and evaluate their own work (AO4)

Analyse and evaluate the work of others, professional or peers (AO4)

Devising Process—PERFORMANCE REQUIREMENT

- Combine and apply vocal and physical skills which are highly dynamic and engaging.
- Vocal control - use of clarity, pace, inflection, pitch & projection
- Physical control—use of space, gesture, stillness and stance
- Characterisation— supporting the communication of your performance aim with focus, energy, confidence and commitment. Shows an accomplished level of refinement and range of moods and emotions
- Understanding of style, genre and theatrical conventions. (Brecht, Stanislavski, Physical Theatre, Artaud, documentary-drama).

Physical skills: Body-language, facial expression, eye-contact, gait, demeanour, movement, gesture, posture, spatial relationships, interaction, proxemics.

Vocal skills: pace, pitch, pause, tone, volume, delivery, emphasis, accent, rhythm, timing

Theatrical Conventions

Choral movement/speech: two or more actors doing the same movement at the same time

Canon: two or more actors doing the same movement one after another

Sound-scape: layering sound to create atmosphere

Hot-seating: an actor answering questions in character

Thought-tracking: pausing the action to reveal a characters' innermost secret thoughts and feelings

Direct address: talking directly to the audience e.g. narrator, reporter

Still image: stopping the action to highlight a moment

Slow motion: slowing down the action to highlight a moment

Cross-cutting: splitting the stage into two scenes/locations

How to give constructive feedback

- **I/the actor used the skill [WHAT]**

- **I/the actor used the skill in the following way [HOW]**

- **I/the actor used the skill because... creating the effect of… [WHY]**

- **This means that I/the actor succeeded because… [LINK]**

- **HOWEVER, I/the actor did not use the skill [WHAT]**

- **I/the actor could have used the skill in the following way [HOW]**

- **This would've created the effect that…[WHY]**

Section 1: Response to Stimulus

What do you need to include:

- Initial response to stimuli (pick 3 of the stimulus we looked at, sum up each in a sentence).

- Stimulus you chose, why?

- Research you did, what did you find?

- Style? Technique? Aim?

Section 2: Development and Collaboration

What do you need to include?

- Specific scene: intention of and how you developed it?

Specific scene: intention of and how you developed it?

- Character you are playing, aim of role, use of physical skill, use of vocal skill, use of technique

- Style chosen, why it's working/not work-

Section 3:

Analysis and Evaluation

What do you need to include?

- EVALUATE success of a scene

- EVALUATE success of a scene

- Physical and vocal skills you used, how this added to the performance?

- Link back to group aims, style, audience reaction, overall success

For your NEA tasks you will need to demonstrate a range of key making and machining skills.
1. Marking out different materials
2. Cutting different materials
3. Shaping materials to a tolerance
4. Drilling
5. Turning
6. folding / bending
7. Threading
8. Laser cutting / 3D printing
9. Joining (brazing)

Templates

Templates are used to help you mark out shapes more accurately. They also allow you to repeat a part using the same template.
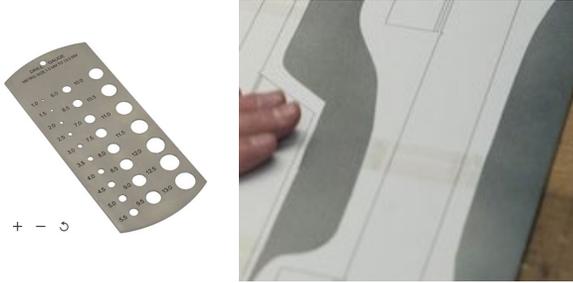
Templates can be made from different materials such as paper, card, plastic, wood.

Finishing

Finishing is where you ensure that the surface of a material has no sharp edges and is looks attractive and is protected from its environment.
Many materials require finishing so that they do not rot or rust other materials can be just polished.

Polishing	Lacquering	Varnishing
Buffing	Oiling	Knurling
Staining varnishing	Waxing	Oil blacking

Finishing materials

Metals
Emery cloth
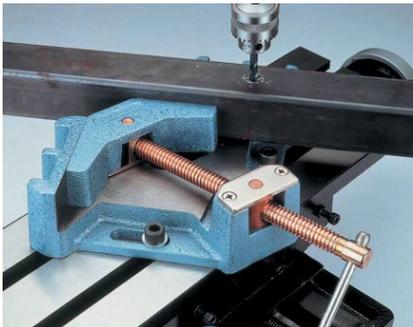Wet and dry carbide paper
Wire wool

Woods
Glass paper

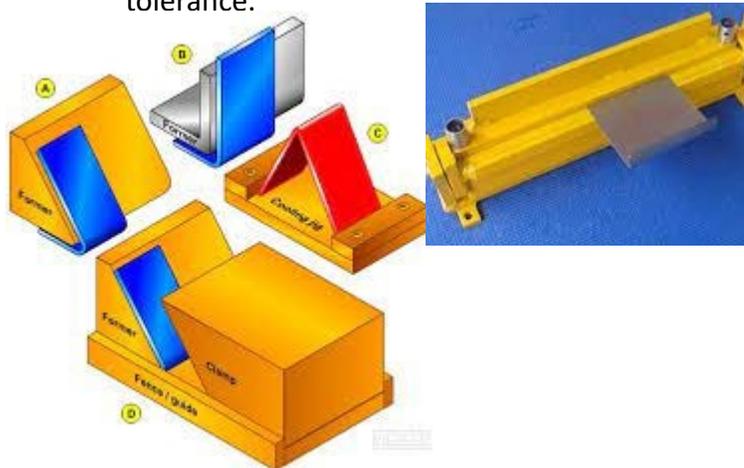**Plastics**
Wet and dry carbide paper
Brasso

Jigs

Jigs are used to control the location and movement of a part. So that you can cut or join the part accurately.

Drilling Jig, Brazing Jigs etc.

Former

Formers are used to help you shape a part to a required shape / angle or tolerance.

Machine Cutting Speeds

$$\text{Cutting Speed (V)} = \frac{\pi \times D \times S}{1,000}$$

$$\text{Spindle Speed (S)} = V \div \pi \div D \times 1,000$$

$$\text{Feed (F)} = S \times f \times N$$

$$\text{feed per Tooth (f)} = \frac{F}{S \times N}$$

V = Cutting Speed
π = The Circular Constant
D = Diameter
S = Spindle Speed
F = Feed
f = Feed per Tooth
N = Number of Fluttes

Metric Coarse Tapping Drill Sizes

Size	Pitch	Drill
M1	0.25	0.75
M2	0.4	1.6
M3	0.5	2.5
M4	0.7	3.3
M5	0.8	4.2
M6	1	5
M7	1	6
M8	1.25	6.75

Food science

Functions of ingredients
Ingredients provide a variety of functions in recipes.

Carbohydrate, protein and fat
Carbohydrate, protein and fat all have a range of properties that make them useful in a variety of food products.

Carbohydrates perform different functions in food.
They can:
- help to cause the colour change of bread, toast and bakery products (dextrinisation);
- contribute to the chewiness, colour and sweet flavour of caramel;
- thicken products such as sauces and custards (gelatinisation).

Maillard reaction
Foods which are baked, grilled or roasted undergo colour, odour and flavour changes. This is primarily due to a group of reactions involving amino acids (from protein) and reducing sugars.

Dextrinisation
When foods containing starch are heated they can also produce brown compounds due to dextrinisation. Dextrinisation occurs when the heat breaks the large starch polysaccharides into smaller molecules known as dextrins which produce a brown colour.

Caramelisation
When sucrose (table sugar) is heated above its melting point it undergoes physical and chemical changes to produce caramel.

Gelatinisation
When starch is mixed with water and heated, the starch granules swell and eventually rupture, absorbing liquid, which thickens the mixture. On cooling, if enough starch is used, a gel forms.

Proteins perform different functions in food products.
They:
- aerate foods, e.g. whisking egg whites;
- thicken sauces, e.g. egg custard;
- bind ingredients together, e.g. fishcakes;
- form structures, e.g. gluten formation in bread;
- gel, e.g. lime jelly.

Gluten formation
Two proteins, gliadin and glutenin, found in wheat flour, form gluten when mixed with water. Gluten is strong, elastic and forms a 3D network in dough. In the production of bread, kneading helps untangle the gluten strands and align them. Gluten helps give structure to the bread and keeps in the gases that expand during cooking.

Gelation
Gelatine is a protein which is extracted from collagen, present in animal connective tissue. When it is mixed with warm water, the gelatine protein molecules start to unwind. On cooling, a stable, solid network is formed, trapping the liquid.

Denaturation
Denaturation is the change in structure of protein molecules. The process results in the unfolding of the protein's structure. Factors which contribute to denaturation are heat, salts, pH and mechanical action.

Coagulation
Coagulation follows denaturation. For example, when egg white is cooked it changes colour and becomes firmer (sets). The heat causes egg proteins to unfold from their coiled state and form a solid, stable network.

Aeration
Products such as creamed cakes need air incorporated into the mixture in order to give a well-risen texture. This is achieved by creaming a fat, such as butter or baking spread, with sugar. Small bubbles of air are incorporated and form a stable foam.

Fats performs different functions in food.
They help to:
- add 'shortness' or 'flakiness' to foods, e.g. shortbread, pastry;
- provide a range of textures and cooking mediums;
- glaze foods, e.g. butter on carrots;
- aerate mixtures, e.g. a creamed cake mix;
- add a range of flavours.

Plasticity
Fats do not melt at fixed temperatures, but over a range. This property is called plasticity.

Colloidal systems
Colloidal systems give structure, texture and mouthfeel to many different products.

System	Disperse phase	Continuous phase	Food
Sol	Solid	Liquid	Unset jelly
Gel	Liquid	Solid	Jelly
Emulsion	Liquid	Liquid	Mayonnaise
Solid emulsion	Liquid	Solid	Butter
Foam	Gas	Liquid	Whipped cream
Solid foam	Gas	Solid	Meringue

Raising agents
Raising agents include anything that causes rising within foods, and are usually used in baked goods. Raising agents can be:
- biological, e.g. yeast;
- chemical, e.g. baking powder;
- mechanical, e.g. adding air through beating or folding.

Functional ingredients
These are ingredients that are specifically included in food for additional health benefits. They include:
- probiotics – 'good' bacteria that may have a positive impact on human health;
- prebiotics – food ingredients that promote the growth of beneficial microorganisms in the gut;
- sterols/stanols – compounds that can lower cholesterol;
- healthy fats (e.g. omega-3);
- added vitamins and minerals (more than in the original food).

Why is food prepared and cooked?
Food is prepared and cooked to:
- make the food more palatable – improves flavour, texture and appearance;
- reduce the bulk of the food;
- provide variety and interest to meals.

Methods of cooking food
The methods of cooking are divided up into groups. These are based on the cooking medium used.
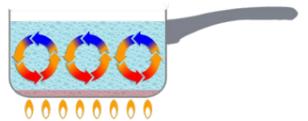They are:
- moist/liquid methods, e.g. boiling;
- dry methods, e.g. grilling;
- fat-based, e.g. frying.

Selecting the most appropriate way of preparing and cooking certain foods is important to maintain or enhance their nutritional value.
- Vitamins can be lost due to oxidation during preparation or leaching into the cooking liquid.
- Fat-based methods of cooking increase the energy (calories) of the food.
- The use of different cooking methods affects the sensory qualities of the food.

There are three ways that heat is transferred to food.
- Conduction – the exchange of heat by direct contact with foods on a surface.
- Radiation – energy in the form of rays.
- Convection – currents of hot air or hot liquid transfer the heat energy to the food.

Key terms
Conduction: The exchange of heat by direct contact with foods on a surface.
Convection: Currents of hot air or hot liquid transfer the heat energy to the food.
Functional ingredients: Included in food for additional health benefits.
Heat transfer: Transference of heat energy between objects.
Radiation: Energy in the form of rays.

Tenderisation
- Mechanical tenderisation – a meat cleaver or meat hammer may be used to beat the meat. Cutting into small cubes or mincing can also help.
- Chemical tenderisation (marinating) –the addition of any liquid to flavour or soften meat before cooking.

Tasks
1. Choose a recipe that you enjoy or have made recently and explain in detail the functions of the ingredients.
2. Explain the function of raising agents, giving examples of recipes.

To find out more go to: https://bit.ly/2SPqWEG

Sensory science

Using our senses
A range of senses are used when eating food:
- sight;
- smell;
- hearing;
- taste;
- touch.

A combination of these senses helps to evaluate a food.

Appearance
The size, shape, colour, temperature and surface texture all play an important part in helping to determine first reactions to a food.

Taste
There are five basic tastes:
- bitter;
- salt;
- sour;
- sweet;
- umami.

Smell (odour or aroma)
The nose detects volatile aromas released from food. An odour may be described by association with a particular food, e.g. herby, cheesy, fishy.

The intensity can also be recorded. Odour and taste work together to produce flavour.

Touch
Food texture is the way food is felt by the fingertips, tongue, teeth and palate. When food is placed in the mouth, the surface of the tongue and other sensitive skin reacts to its surface texture. This sensation is known as mouthfeel.

Hearing (sound)
The sounds of food being prepared, cooked, served and eaten all help to influence our preferences. The sound of eating food can alter our perception of how fresh a food is, e.g. crunchy carrots.

Taste receptors

Our tongues are covered with taste buds, which are designed to sense chemicals in the mouth. Most taste buds are located in the top outer edges of the tongue, but there are also receptors at the back of the tongue as well as on the walls of the mouth and at the back of the throat. As we chew food, molecules mix with saliva, enter taste pores and interact with gustatory hairs, also known as taste receptors. This triggers nerve impulses that are transmitted to the brain.
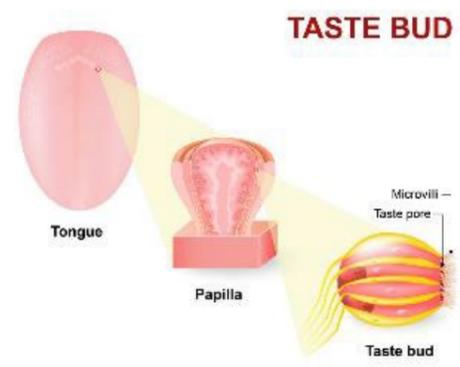
Tasting vocabulary (sensory attributes)

Category			
Sight	Bubbling	Flaky	Opaque
	Caramelised	Firm	Smooth
	Clear	Heavy	Solid
	Coarse	Icy	Steaming
	Crumbly	Juicy	Sticky
	Dry	Moist	Thick
Smell	Acidic	Fresh	Spicy
	Aromatic	Meaty	Strong
	Bland	Mild	Sweet
	Citrus	Pungent	Tart
	Earthy	Savoury	Weak
	Fragrant	Smoky	Zesty
Sound	Brittle	Crisp	Pop
	Crackle	Crunch	Sizzle
Taste	Bitter	Rich	Strong
	Bland	Salty	Sweet
	Floury	Savoury	Tangy
	Hot	Smoky	Tart
	Mild	Sour	Umami
	Piquant	Spicy	Zesty
Touch	Brittle	Dry	Short
	Bubbly	Gooey	Soft
	Chewy	Granular	Solid
	Close	Greasy	Tacky
	Cloying	Moist	Tender
	Coarse	Open	Waxy

Sensory evaluation and tests
Sensory evaluation analyses and measures human responses to food and drink, e.g. appearance, touch, odour, texture, temperature and taste. In order to obtain reliable results, sensory evaluation tests should be set up in a controlled way to ensure fair testing, e.g. no distracting colours, noise or smells; same size portions; coded samples, and water to drink.

Preference tests - these types of tests supply information about people's likes and dislikes of a product. They are not intended to evaluate specific characteristics, such as crunchiness or smoothness. They are subjective tests and include hedonic, paired comparison and scoring.

Discrimination tests - these types of tests aim to evaluate specific attributes, i.e. characteristics of products (crunchiness). They are objective tests and include triangle, duo trio, ranking and paired comparison.

Olfactory system

This is the sensory system used for olfaction, or the sense of smell. As we breathe in, the olfactory receptor cells are stimulated by odours and the olfactory membrane sends neural messages up the olfactory nerve to the brain.

Key terms
Fair testing: Ensuring that sensory tests obtain reliable results.
Food texture: The way food is felt by the fingertips, tongue, teeth and palate.
Olfactory system: The sensory system used for olfaction, or the sense of smell.
Senses: Sight, smell, hearing, taste and touch are all used when eating food and drink.
Sensory attributes: Words used to describe the appearance, odour, taste and texture of a food product
Sensory evaluation: Analyses and measures human responses to food and drink.

Intensity
Foods may be described by association, e.g. meaty, minty or fruity.

The intensity (low, medium or high) can also be recorded, e.g. garlicky or salty.

Tasks
1. Write a guide to conducting sensory evaluation tests that are fair and reliable.
2. Research umami and make a dish that is rich in the taste of umami.

To find out more, go to:
https://bit.ly/2Bzsgq5

The UK's changing employment structure

How has it changed?	Why has it changed?
Primary employment has fallen from 75% in 1800 to 2% today **Secondary** increased from 15% in 1800 to 55% by 1900 but has since fallen to 15% **Tertiary** has increased from 10% in 1800 to 74% now **Quaternary** a new category that accounts for 9% employment now	• Primary has fallen because of the increased use of machines. We are also reducing our reliance on fossil fuels so many mines have closed. • Secondary has fallen because we have **deindustrialised.** • Tertiary has increased because we are richer and have more free time. • The UK is a global leader in research and development, the sector employs over 60,000 people

Development of London's Rail Network: Crossrail
• Aims to improve journey times across London
• Contributed £42 billion to the UK's economy
• Provides a 10% increase in London's' rail capacity
• Aims to reduce traffic congestion and air pollution in the city

The development of HS2
• The development of HS2 aims to reduce the north south divide by making the north more accessible to commuters and businesses
• It will bring £92 billion of benefits
• Creates 25,000 jobs and 70% of these will be outside of London

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The impact of Torr Quarry, Somerset

Where is it?
• A limestone quarry on the Mendip hill

Impacts on the environment
❖ Destroys natural habitats
❖ Pollutes waterways
❖ An ugly scar on the landscape
✓ Contributes £15 million to the local economy
✓ Produces 8 million tonnes of limestone every year
✓ It is vital to the construction industry

What is the quarry doing to become more sustainable?
• Restoring the quarry and lakes to create a wildlife haven that can be used for water sports and leisure
• Transport by rail to reduce traffic congestion
• Monitor and report noise and air pollution

Unit 2b
The Changing Economic World

Cambridge Science Park is sustainable because….
• 50 % of the timber used in construction is from sustainable sources
• They use solar energy for part of their power
• Rainwater is collected and used to flush toilets
• A car share scheme runs for workers
• Workers can hire bicycles cheaply to commute to work
• Extensive planting of native trees enhances the environment
• The boiler/heater systems is one of the most efficient on the market

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Rural decline in the Outer Hebrides
• A population of just 27,400 people
• Population has fallen by 50% since 1901
• Young people are leaving the area to find work
THIS HAS LEAD TO CHANGE
Local shops and services such as pubs and post offices are closing
Young people with qualification leave the area to find work
The population is ageing
There is an increase in second/holiday homes bought by wealthy city dwellers pricing young locals out of the market
Rural growth in South Cambridgeshire
• Its population of 150,000 is increasing due to migration
• It is a desirable place to live
• Many villages and towns have become commuter settlements
Lack of affordable housing, increased traffic and pollution, urban sprawl

Expansion of Commuter towns: Basildon
Some major cities experience counter urbanisation "When the proportion of people living in cities starts to fall"

Why are people moving here?	How is it changing?
Good schools: Woodlands School rated Good in Ofsted Good shopping facilities e.g Eastgate shopping centre Only ½ hour by train to central London Average house prices just £180,000 Just 20 minutes from the sea	No longer rural Population increased from 180,000 to 200,000 Houses prices increased by 70% since 2008 1000's acres of greenbelt land lost A130 to London is more congested

• **There is a divide in opportunities and wealth between the north and the south of the UK**
• **Life expectancies are lower in the north**
• **There is more poverty in the north**
• **Education attainment is lower in the north**

Measuring Development

Development measures how economically, socially, culturally or technologically advanced a country is. It suggests: advancement, evolution, expansion, growth, improvement, increase, maturity, progress, changes for the better.

Development Indicators

GNI	Gross national income: the money earnt by a country's industry
HDI	Human development index: a composite measure
Infant mortality	The number of babies that die per 1000 live births before their first birthday
Literacy rate	The percentage of adults that can read and write

You need to know the advantages and disadvantages of each of these

The development gap

- A HIC has an GNI per capita of over ~$12000
- A NEE has an economy that is rapidly progressing
- A LIC has a GNI per capita of below $800

Many years ago, Dr Brandt classified the world into the rich north and the poor south. He drew this line called the Brandt Line or the North-South Divide.
However over time, countries in the south began to develop like Singapore and China and the line became outdated.

Measuring Population

The demographic transition model shows how a country's population changes as it becomes more developed from subsistence farming cultures to HICs.

Population pyramids/structures change over time too – from having a lot of babies and a wide bottom, to good healthcare and more elderly people.

Factors Causing Uneven Development

Physical Environment	Health
• Soil erosion, desertification, climate change, overgrazing and infertile soils affect farming. • Areas without fertile land, natural resources, water and energy suffer. • Natural hazards make little progress with development e.g. Haiti.	• Diseases can make people too weak to work or go to school. • 80% of all developing world disease is water-related. 2 million die a year. • LIC's are unable to invest in good quality health care
Trade	History
• Trade blocs favour its members. • Primary products sold by LIC's are sold for cheap prices that can fluctuate. HICs make more expensive products so earn more.. • Poor infrastructure or conflict means some people cannot sell their goods at all.	• Colonialism: Many countries in Asia, S. America and Africa have spent a lot of time and money on civil wars and political struggles for power since being made separate from European superpowers. • Many LICs haven't had time to develop fully.

Solutions to Uneven Development

TNCs	**Aid**
Industrial Development	**Intermediate Technology**
Fair Trade	**Debt Relief**
Microfinance	**Tourism**

SoL/QoL

Standard of life refers to the **economic level** of a person's daily life. **Quality of life** looks at **social measures of well being**.

UK Links

Ports	Air	Roads
• UK port industry is the biggest in Europe due to our large coastline • 120 ports in UK; Teesport is the 3rd biggest • Teesport handles 5000 vessels each year	• Heathrow is the Uks busiest airport with 1 plane taking off every 45 secs • 300000 people employed in UK aviation • Durham Tees Valley airport is looking to expand	• 1st motorway in 1958 • By 2008 there were 2200 miles of motorways • The A1 is the longest road in the UK and connects Teesside • The A19 is getting improved

UK Global Links

Political	Commonwealth • These are 53 states across the world that were part of our colonial history • Many expats live there (Brits who live abroad) • The Queen is head of state in 16 of these countries • promotes democracy, good governance, human rights and economic development as the UK trades with its previous colonies EU • We joined the EU in 1979 and opted to leave in 2016. • About 50% of exports and imports are to the EU • It's now a bit confusing as we go through the Brexit process about what will happen to EU laws that we have.
Trade	• 49.6% of the UK's exports went to EU countries, and 50.4% went to non-EU countries such as the USA and China,. The USA takes the most. • A lot of trade is now finance and communications following deindustrialisation.
Transport	• More than 750,000 international flights depart from the UK annually to 400 airports in 114 countries • Heathrow is the 4th busiest airport in the world (good seeing as we're not the 4th biggest population!) • Eurotunnel links our island to Europe
Culture	• English Language has helped us set up strong links • Students abroad can sit British exams • UK TV productions have a global audience • We are a culture of immigration leading to a unique and multicultural society
Technology	• 90% of population has internet – very connected! • We spend more online shopping than anywhere in Europe • 18 million businesses run from home

Economic and Industrial Change in Nigeria

Location and Importance

- Nigeria is a country in West Africa. Nigeria boarders, Benin, Niger, Chad and Cameroon. It is almost due south of the UK, one hour ahead of Greenwich Mean Time. At latitude 10 degrees north and longitude 8 degrees east it extends from the Gulf of Guinea in the south to the Sahel in the North.
- In 2014 Nigeria's economy became the 21st biggest in the world and Nigeria has one of the biggest economic growth rates in the world
- It supplies 2.7% of the worlds oil (12th largest producer)
- It is the fifth largest contributor to UN peacekeeping missions around the world
- Highest GDP in Africa and the 3rd largest manufacturing sector
- It has the largest farm output in Africa and 70% of its population is employed in Agriculture

TNCs in Nigeria: Shell

- Shell has been in Nigeria since 1937
- The Bonga facility (Nigeria's first deep water facility) produces 200,000 barrels of oil a day
- It operates 90 oil fields and over 1000 oil wells
- Maintains 5,000km pipelines
- Employs 6,000 people

The benefits and problems of TNCs in Nigeria

Benefits	Problems
Employs 6,000 people	The Ogoni lands have been heavily/dangerously polluted
Shell provides scholarships for young people to attend university	Shell pays little tax and the profits go the headquarters in Holland and the UK
Invests in local health clinics to improve maternal health	Shell has been accused of corruption and bribing the government. Implicated in the death of Ken Saro Wiwa

Impacts of Development in Nigeria

Socio-economic	Environmental
Although oil from Ogoniland has provided approximately $30 billion to the economy of Nigeria1, the people of Ogoni see little to nothing from their contribution to Shell's pocketbook	Over 6000 spills had been recorded in the 50 years of oil exploitation in Nigeria, with an average of 150 spills per annum

Aid in Nigeria

AID: is help given to countries in the form of a gift or loan. It can be financial, technical or in the form of advise

Bilaterial aid: aid given from one country to another e.g the UK provides £158 million to Nigeria every year
Multilaterial aid: aid given to poorer countries from the world bank or IMF (loans)
NGO aid: assistance provided by charities

Emergency aid: aid designed to save lives after a disaster e.g. food, water, tents, blankets and medicines

Long term development aid: aid designed to improve lives in the long term e.g. education and training, funding for a new road or hospital

NGO AID in Nigeria: improving sanitation

The problem	The solution: WaterAid
• 57million people don't have access to safe water • 2/3 of the population don't have access to sanitation • 60,000 children under five years old did every year	Drill borehole for wells Provide education on hygiene Provide hygiene facilities Provide composting latrines Provide water harvesting technologies

Employment in Nigeria

Employment sector	1999	2012
Primary	70%	39%
Secondary	10%	35%
Tertiary	20%	26%

Nigeria's changing economy

- Nigeria is now classed as a NEE (newly emerging economy
- Employment in manufacturing has increased dramatically
- This has dramatically increased export earning for the country
- Nigeria's GDP is increasing

Key Words: Can you define these?

Development, TNC, LIC, NEE, GNI, HDI, primary industry, secondary industry, tertiary industry, quaternary industry, deindustrialisation, aid, bilateral, multilateral, emergency aid, long term aid, sanitation, colonialism, famine, drought,

Health & Social Care	Barriers to communication in H&SC and their effects on service users

Barriers to communication are things that can break or interfere with the communication cycle. Here are some types of barrier that could affect people who use health and social care.

Lighting

- Someone who does not see well will be unable to read information in a badly lit room. They will not be able to read body language, so may not see a facial expression, a hand movement or body posture, which give clues to what the person is saying.
- Someone who is hearing impaired will have difficulty understanding if they cannot see to lip read e.g. if the person speaking is standing with the sunlight behind them.

Noise

- Background noise can prevent people from hearing and can interrupt concentration especially for someone who cannot hear well, or does not speak the language fluently. If you are in a community centre where a lot of things are happening, as 2 or 3 different groups may be taking place at the same time (e.g. playgroup, dance class, knitting group) one activity can be a distraction to the other.
- If the hall is big, has a high ceiling and no carpets, this can cause an echo, as hard surfaces tend to bounce the noise around the room. This would be a problem for people with a hearing impairment as they would not be able to hear every word, it may sound more like a buzzing noise.

Sensory Deprivation

- This can prevent the exchange of information, or information may be confused or inaccurate. People may not be able to lip read accurately if the person speaking is standing behind them. They may not be able or read information if the print on a leaflet is too small, e.g. exit or toilet signs may not be seen.
- People with learning disabilities e.g. Down's syndrome, Cerebral Palsy and Autism may not be able to interpret the non-verbal signs of others. They may react by being aggressive or withdrawn.

Physical Illness

- A disability or illness such as Arthritis which causes stiffening of the joints is a very painful condition that can make movement difficult. Once a person is sitting down, they may not want to move to talk to friends and will find it difficult to turn around to see people.
- Someone who is ill may get tired easily and this will make them less receptive to messages.

Language barriers

- People for whom English is an additional language (EAL) may not be able to read signs and information in the community centre. They may not understand the body language of people from a different culture and their sense of humour can be different. They have to concentrate carefully on what people are saying and this can be very frustrating if they cannot make themselves understood.
- Jargon, slang and acronyms can cause problems for people who do not understand and this can cause confusion e.g. A carer may say that Mr Norton who has had a stroke is suffering from Hemiplegia, this may scare him, when in fact it means that he has a weakness on one side of his body making it difficult for him to balance.

Overcoming barriers

- Using the method of communication or preferred language that the service user prefers
- Adapt the environment to improve communication e.g. move furniture, improve lighting, put blinds up at the windows, look at the timing of events so that things do not clash, restrict the numbers of people taking part in activities, change the spaces where activities take place. Add carpets to improve the sound quality.
- Produce literature in fonts that everyone can see, have leaflets in different languages.
- Use positive facial expressions and appropriate gestures to make communication more effective.
- Make sure that service users have equipment that works e.g. hearing aids.
- Make sure that signs (e.g. exit, toilet, kitchen) are large enough to be seen and in different languages.
- Staff training in the use of verbal and nonverbal communication for certain service users e.g. Makaton signs for when the minibus is leaving or when asking what people want to drink etc.

Good as Hell (Lizzo, 2019)
Music, GCSE Media Studies Component 2

eduqas
Part of WJEC

General information

Good as Hell was originally released in 2016. The song featured in the film *Barbershop: The Next Cut*. The set music video was released in December 2019.

Lizzo played the piccolo and flute in a marching band, and this is a focus in the video.

The music video was nominated for Best Editing at the MTV Music Awards.

NOMINATION
BEST EDITING

Nominated for Best Editing

Context

The video is influenced by ideas of equality and empowerment. The video is set at a real-life university for the Black community.

Lizzo is outspoken in her support of body positivity and aims to promote this in her music video.

Terminology

Narrative	Anticipation	Equality
Colour palette	Sleeper hit	Stereotype
Hybrid	Opinion leaders	Subverting
Iconography	Convergence	Star power

Media language

This is a hybrid narrative and performance-based music video.

The colour palette and lighting for the video changes as things get more positive. Iconography is key to meaning in the video where instruments relate to success for some of the characters.

Close up shots show Lizzo and the main characters directly addressing the audience to show their confidence.

The music video performances suggest that being part of a community and supporting each other is important.

Industry

The video has the intention of highlighting the issues of equality and empowerment that Lizzo believes in; however, it is also a promotional tool to boost purchases of merchandise and gain income.

The song *Good as Hell* was a sleeper hit as it gained more success years after first being released.

The video gained more success by Lizzo performing at the MTV Music Awards as these awards act as opinion leaders.

Representation

The video is an exploration of empowerment especially for Black females. Women are portrayed as supporting one another and helping each other through difficult times.

Costumes suggest beauty ideals but post-feminists may argue that there is body positivity being shown through characters of different shapes and sizes.

Lizzo's star persona as a successful Black female is evident as she is a hero type character who brings positivity into the lives of the other characters.

All characters are portrayed as educated and talented people throughout the video.

Audience

Lizzo has a target audience of females aged 18 to 24.

Lizzo's music appearing in film soundtracks adds a sense of crossover appeal and helps gain a wider audience.

The music video offers opportunities for personal identity due to the range of characters and the narrative exploring their problems.
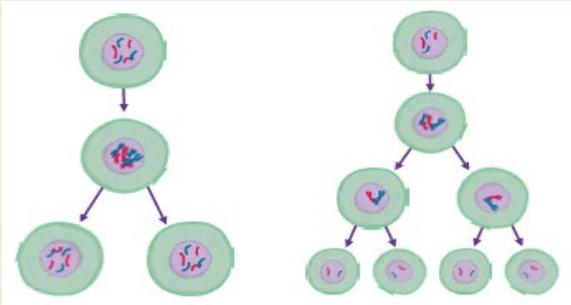
The video is also very positive and entertaining due to the performance sequences and Lizzo's focus on humour and body positivity.

It is possible that a male audience would have a negative response to the music video due to the portrayal of some of the men; one being a cheating boyfriend and another an angry teacher.

MADTSHIRT	BADINERIE – BACH
Melody - Direction (rising or falling) - Type of movement (steps or leaps) - Range (high or low, large or small) - Ornaments (trills, mordents etc.) - Repetition (of notes, motifs or phrases, riffs) - devices	The movement is based on two short musical ideas called <u>motifs</u> (X and Y). Motif X is a descending B minor arpeggio/broken chord and motif Y is an ascending semiquaver figure consisting of both arpeggios/broken chords and conjunct movement The flute part has a two-octave pitch range. The movement includes ornaments and compositional devices typical of the Baroque era (trills, appoggiaturas & sequences)
Articulation - Staccato (spiky) / legato (smooth) - Accents (suddenly loud notes) - Arco / Pizzicato / Tremolo (on string instruments) - Tongued or slurred (on wind and brass instruments)	Arco. Staccato and legato. Accompanying instruments (violins/viola/cello) mainly staccato. Mostly staccato (tongued) and legato (slurred) in parts.
Dynamics - Fortissimo down to pianissimo - Crescendo / diminuendo - Sforzando	Mostly forte, including use of <u>terraced dynamics</u> (although very few markings appear on the score, which was typical of the period).
Textures - Homophonic, polyphonic, melody and accompaniment, heterophonic, canon... -What roles are instruments/parts playing (e.g. melody, accompaniment, continuo, countermelody) -What relationships can you hear? (octaves, sixths, unison, call and response, contrary motion)	Largely homophonic (melody and accompaniment) The flute and the cello provide the main musical material, but the 1st violin participates occasionally. The 2nd violin and viola provide harmony with less busy musical lines. Examples of Heterophony and imitation.
Structure - Binary (AB – often with both sections repeated) - Ternary (ABA) - Verse-Chorus	<u>BINARY FORM</u> (AB), with each section repeated once (AABB): Section A : Bars $0^2 – 16^1$ (16 bars) Section B: Bars $16^2 – 40^1$ (24 bars)
Harmony & tonality - Consonant ('nice' intervals) / Dissonant (clashy ones) - Diatonic (notes from scale) / Chromatic (notes not from scale)) - Major / Minor - Pentatonic	Section A begins in <u>B minor</u> and ends in <u>F# minor</u> whilst section B does the opposite, beginning in F# minor and ending in B minor. *Section A modulates from the tonic to the dominant minor and Section B does the opposite.* In section A: Bm > A Major > F#m In section B: F#m > Em > D Maj > G Maj > D Maj > Bm Diatonic throughout. Imperfect and perfect cadences are clearly presented throughout. Chords frequently occur in inversion with occasional use of V7 in third inversion. A Neapolitan sixth chord. Suspensions also occur. Use of pedal (harmonic device) Fast harmonic rhythms
Instrumentation Writing about what instruments you can hear and what they are doing	Flute, string orchestra and harpsichord (playing the basso continuo)
Rhythms Tempo / Duration / Upbeat (or anacrusis) / Syncopation /Dotted rhythms / Swung rhythms./ Triplets	STARTS WITH AN ANACRUSIS TEMPO: Allegro (not marked on the score) Mainly quavers and semi-quavers used
Time Signature - How many beats there are in a bar - Whether the beats are divided into two or three	TIME SIGNATURE: 2/4

Mitosis vs. meiosis

| Mitosis	Meiosis
Produces two daughter cells	Produces four daughter cells
Daughter cells are genetically identical	Daughter cells are not genetically identical
The cells divide once	The cell divides twice
The chromosome number of the daughter cells is the same as the parent cells.	The chromosome number is half.
Used for growth and repair, and asexual reproduction.	Produces gametes for sexual reproduction.
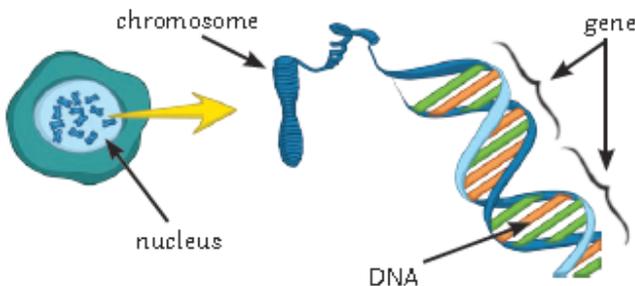
Punnet squares:
Step 1: Put the two alleles from one parent into the boxes at the top. This parent is a heterozygote. This means they have one dominant and one recessive allele.
Step 2: Put the two alleles from the second parent into the boxes on the left. This parent is also a heterozygote.
Step 3: Put the alleles from the first parent into the two boxes underneath them.
Step 4: Put the alleles from the second parent into the two boxes to the right on them.
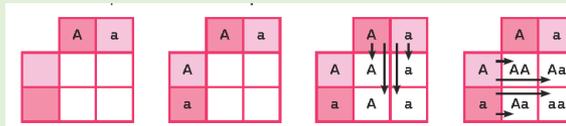
Probability
There are four possible combinations of gametes that offspring can inherit.

One of these four has the genotype aa – that's ¼, 25% or 0.25.

The recessive phenotype has a ratio of 1:3 because only one combination will show the phenotype while the other three will not.

Word	Definition
Allele	An alternate form of a gene
Asexual reproduction	The production of offspring from a single parent by mitosis. The offspring are clones of the parent
Chromosome	Structures that contain the DNA of an organism and are found in the nucleus.
Cystic Fibrosis	A disorder of cell membranes that is caused by a recessive allele
DNA	A polymer that is made up of two strands that form a double helix.
Dominant	An allele that is always expressed, even if there is only one copy.
Fertilisation	The fusion of male and female gametes.
Gamete	Sex cells
Gene	A small section of DNA that codes for a specific protein
Genotype	The combination of alleles
Heterozygous	A genotype with two different alleles.
Homozygous	A genotype with two of the same allele.

Combined science HT – biology – inheritance

Pure and impure substances

Pure substances, in chemistry, only contain one type of element or one type of compound. For example, pure water will just contain water (a compound).

Elements are made up of one type of atom. For example, oxygen is made up of oxygen atoms. Carbon is made up of carbon atoms.

Compounds are two or more elements that are chemically joined together. For example, NaCl which is sodium chloride.
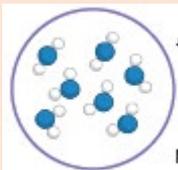
Mixtures are two or more elements or compounds that are not chemically joined together. An example of this is a standard cup of coffee. Coffee contains water, milk, coffee and possibly sugar. The components of the cup of coffee are not bonded together.
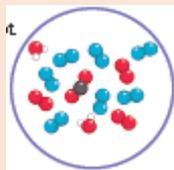
Pure Substances have a sharp melting point compared to impure substances which melt over a range of temperatures.

Formulations

Formulations are **mixtures of compounds or substances** that **do not react together**. They do **produce a useful product** with desirable characteristics or properties to suit a particular function.

Chromatography

Paper chromatography is a separation technique that is used to separate mixtures of soluble substances. How soluble a substance is determines how far it will travel across the paper.

In chromatography, there are two phases: the mobile and stationary phase.

The mobile phase moves through the stationary phase. The solvent is the mobile phase. It moves through the paper carrying the different substances with it. The stationary phase in paper chromatography is the absorbent paper.


Ink or plant dye
Pencil line
Solvent
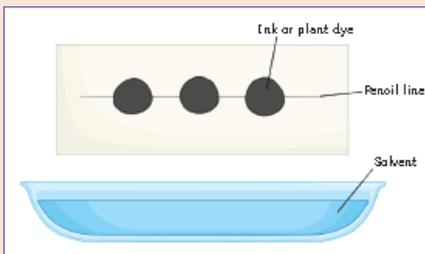
By calculating the Rf values for each of the spots, it is possible to identify the unknown substances. Similarly, if an unknown substance produces the same number and colour of spots, it is possible to match it to a known substance.

$$R_f = \frac{distance\ travelled\ by\ substance}{distance\ travelled\ by\ solvent}$$
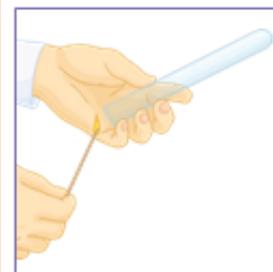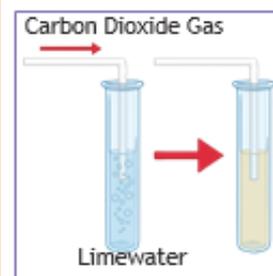
The Test for Hydrogen

Place a burning splint at the opening of a test tube.
If hydrogen gas is present, it will burn rapidly with a squeaky-pop sound.
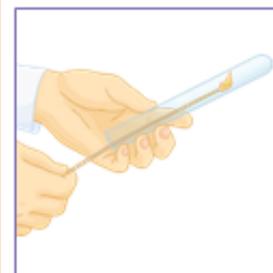
The Test for Oxygen

Place a glowing splint inside a test tube.
The splint will relight in the presence of oxygen.

The Test for Carbon Dioxide

Carbon Dioxide Gas

Limewater

Calcium hydroxide (lime water) is used to test for the presence of carbon dioxide. When carbon dioxide is bubbled through or shaken with limewater, the limewater turns cloudy.
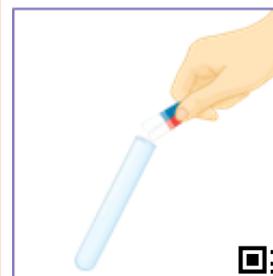
The Test for Chlorine

Damp litmus paper is used to test for chlorine gas.
The litmus paper becomes bleached and turns white.

Combined science HT – chemistry – chemical analysis

Transverse and Longitudinal Waves

In a transverse wave, the vibrations are at a right angle (perpendicular) to the direction of the energy transfer. The wave has peaks and troughs. Examples include water and light waves.

Transverse waves
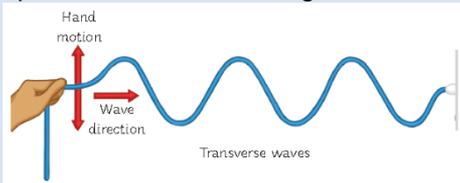
In a longitudinal wave, the vibrations are in the same direction (parallel) as the energy transfer. The wave has areas of compression and rarefaction. Examples of this type of wave are sound waves.

Compression   Rarefaction
Longitudinal waves
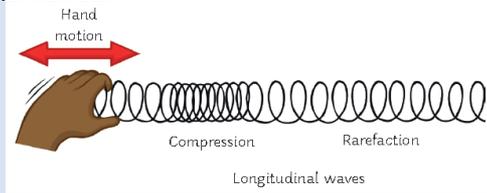
Properties of waves:
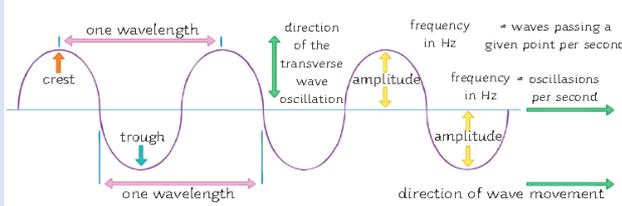
The frequency of a wave is the number of waves which pass a point every second.
Time period (s) = 1 ÷ frequency (Hz)
The wave speed is how quickly the energy is transferred through a medium
Wave speed (m/s) = frequency (Hz) x wavelength (m)
V = f x λ
**Speed = distance x time**

Electromagnetic spectrum:
Electromagnetic waves transfer energy from a source to an absorber as transverse waves. The different waves are grouped depending on their frequency and form a continuous spectrum known as the electromagnetic spectrum.
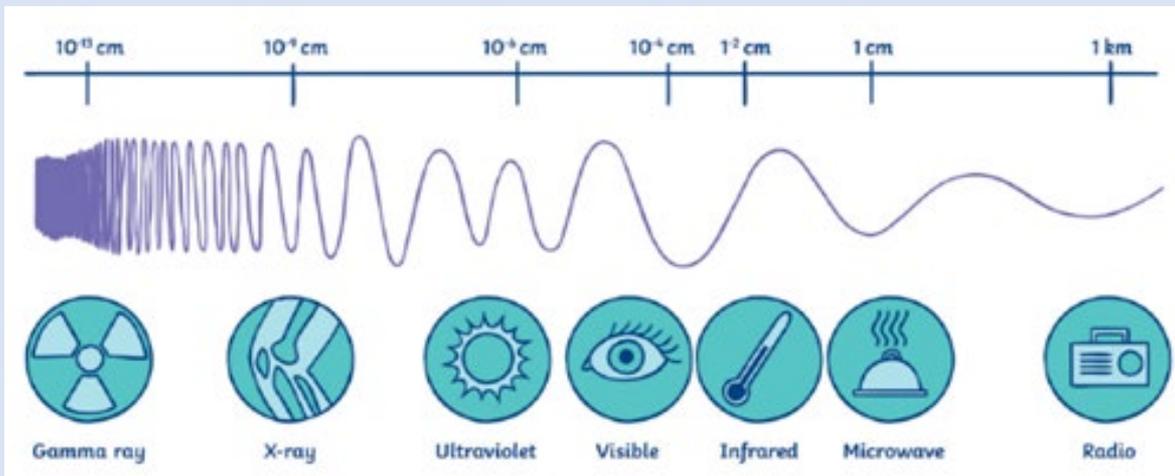

Word	Definition
Compression	is the part of the wave (or Slinky) that is pressed together
Rarefaction	is the part of the wave (or Slinky) that is spread apart.
Oscillations	occurs when a system or object goes back and forth repeatedly between two states or positions.
Frequency	the number of waves that pass a fixed point in unit time
Wave length	the distance between successive crests of a wave

Required practical
Aim: make observations and identify the suitability of apparatus to measure the frequency, wavelength and speed of waves in a ripple tank and waves in a solid, and take appropriate measurements.
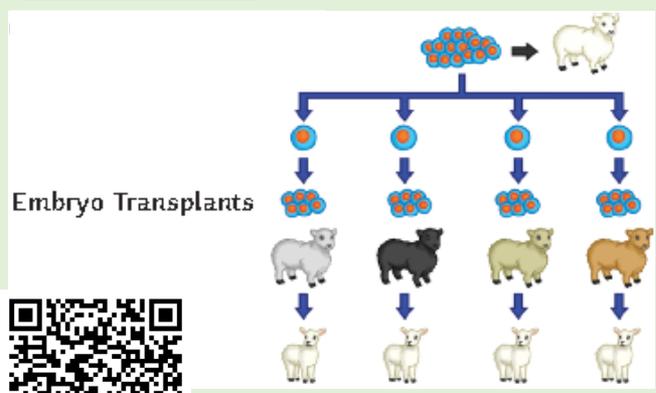

Combined science HT – physics - waves
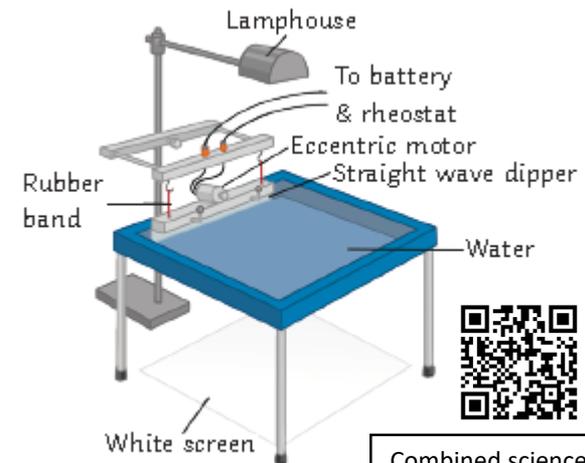
DNA structure
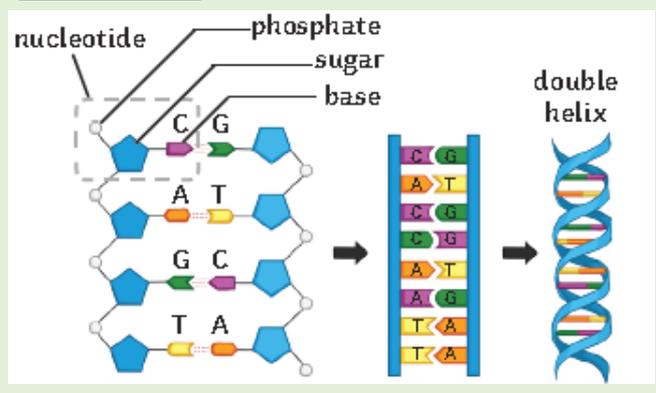
Cloning in Plants

Cloning in Animals

Flame testing

Ion	Colour in flame
Li^+	Crimson
Na^+	Yellow
K^+	Lilac
Ca^{2+}	Orange-red
Cu^{2+}	Green

crimson

Sulphates and sodium Hydroxide

Ion	Colour of precipitate
Al^{3+}	White
Ca^{2+}	White
Mg^{2+}	White
Cu^{2+}	Blue
Fe^{2+}	Green
Fe^{3+}	Brown
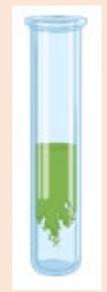
Carbonate ions CO_3^-

Place a small volume of limewater into a test tube. In a separate test tube, add a small sample of the **carbonate** and add a few drops of **hydrochloric acid** using a pipette. The delivery tube should be placed in the test tubecontaining the limewater. Bubbles of **carbon dioxide** gas will be produced. The **limewater will turn a milky colour.**

Sulphate ions SO_4^{2-}

Using a pipette, add a few drops of **barium chloride** solution to the sample followed by a few drops of **hydrochloric acid**. A positive result for sulfate ions will produce a white precipitate.

Halide Ions

Add a few drops of nitric acids and then silver nitrate, this will form a precipitate.
Cl → White   Br → Cream
I → Yellow

Refraction

Refraction occurs when a wave changes direction, usually at the boundary or two different materials. The density of the material affects the speed at which the wave can travel through it. When a wave passes from a more dense material to a less dense material, it speeds up and so will bend.
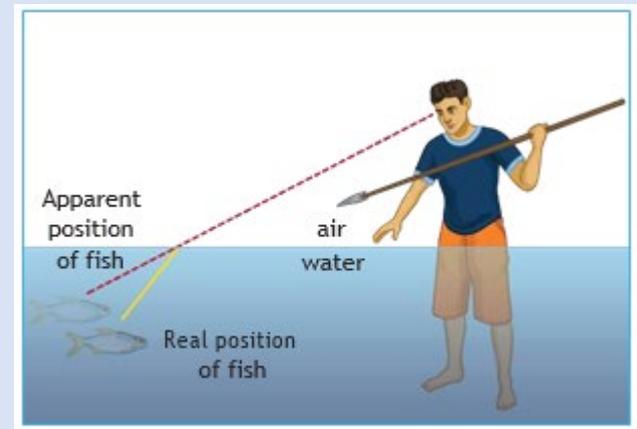
Imagine a car travelling across a muddy river at an angle. As it approaches the bank of the river, one of the wheels will be on the dry bank while the other is still in the mud. The wheel on the dry bank will move faster than the one still in the mud and it will change direction.
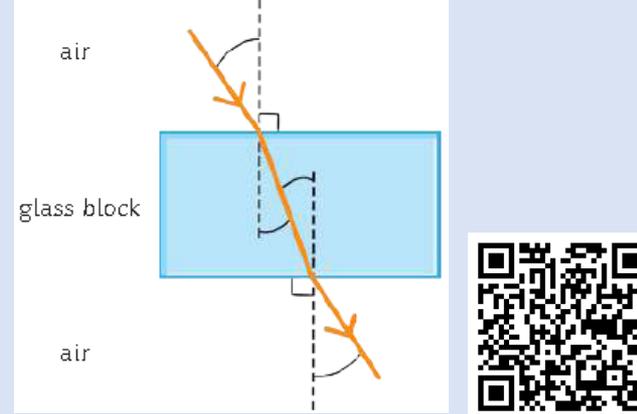
OCR Sports Science Knowledge Organiser
Topic Area 3:How to design and develop a balanced nutrition plan)

3.1: Gather details about a current nutrition plan and any issues that might impact the design of future nutrition plans
     Gather details - age range, allergies, cultural beliefs, food budget, cooking skill, activity, find current unbalanced nutritional information

3.1.2: Adapt the nutrition plan to suit a chosen sporting activity
Add or remove relevant nutrients
Change timings
Portion sizes
Amount of meals

Relevant nutrients - proteins, carbohydrates, vitamins and minerals, fats, water. Change timings to suit training/games/ events. Portion sizes – reduce or increase for relevant activity. Amount of meals – eat more or less often

3.2: Key factors when considering the success / impact of a nutrition plan

3.2.1: Identify the nutritional changes that can be made :
To include:
Nutrients - added protein for muscle repair, reduced fat for weight loss or increased carbohydrates for energy

3.2: Suitability and organisation of a nutrition plan

3.2.2:
Plan - portion sizes, timings of meals, amount of meals, liquid intake.

3.2.3 Review the potential success/impact of a nutrition plan:
On performance/training
Performance/training – energy levels, components of fitness
Improvements, weight/loss gain.

OCR Sports Studies Knowledge Organiser
Topic 4: How nutritional behaviours can be managed to improve sports performance)

4.1: The effect of overeating on sports performance
4.1.1 The effects of overeating on sports performance:

Effect on components of fitness
How overeating can be manipulated for selected sports
Increased nutrients
Performance benefits

4.2.1 The effects of undereating on sports performance:

Reduced energy levels
Reduced concentration
Weight management

4.3.1 The effects of dehydration on sports performance:

Overheating
Reduced performance level
Reduced bloated feeling
Reduced water retention

LAST PAGE