Year 10 Option Subjects

Knowledge Organiser

January- April 2024

AMBITION, CONFIDENCE, CREATIVITY,
RESPECT, DETERMINATION

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FIVE ACRES HIGH SCHOOL

Why do we have knowledge organisers?
Knowledge organisers are a collation of the basic essential knowledge for success in each subject area that will underpin your learning for the term.

They are designed to provide the information you will need to be committing to your long term memory through recall exercises in Low Stakes Quizzing.

How do we use knowledge organisers?
You should be using these KOs to create your homework quizzes so that you are practising retrieving information.

1. You can do this by testing yourself on the definition of key terms (both recalling the key term and then swapping to recall the definition), practice labelling diagrams, retrieves reasons and justifications for the main learning points.
2. They can also be used for 'memory dumps' where you try to recall as much of the information about a topic as possible and then use the KP to fill in the gaps.
3. They can also be used in class to assist with retrieval of the core knowledge needed for each subject.

You should have these with you at all times in school and out on your desk in all lessons.

If you lose your KO or it becomes too dishevelled, please purchase a new one from the Head of Year or the School Office.

Contents

Viking Expansion Year 10 OCRb GCSE History: 1. **Homelands**

1 The Vikings in Scandinavia

Life in the Viking homelands was determined by the geography of Scandinavia

The Homelands

DENMARK is a **fertile** land of gently rolling hills in the south of **Scandinavia.**

NORWAY has a long coastline stretching to the **Arctic.** Along the coast are **inlets** called **fjords.** Inland there are huge mountains.

SWEDEN also stretches north to the **Arctic.** It is a land of thick forests and lakes.

Viking Society

- Viking society was **hierarchical** and divided into three main groups
    - **Jarls** were large landowners and warriors
    - **Bondi** were small landowners who fought for the **jarls**
    - **Thralls** were slaves who had been captured in war
- Viking society was **patriarchal**: women could not be **bondis** or **jarls**, instead running the household and managing the **thralls** when men were away

Everyday Life

- Vikings lived in wooden **longhouses** which they shared with their animals during the winter
- Most Vikings earned a living by **farming, fishing,** or **hunting**
- Viking food came from a variety of sources:
    - **Farming**: milk, eggs, pork, rye bread
    - **Fishing**: herring and shellfish
    - **Hunting**: elk and deer
- Food was preserved by **salting** or **smoking**

VOCABULARY

Fertile	Able to grow crops
Patriarchal	Dominated by men
Polytheistic	Having lots of different gods
To sacrifice	To kill something as an offering to the gods
Salting	Coating food in salt to preserve it

2 Viking ships, seafaring, and trade

Seafaring was an essential part of living in the Viking homelands

Viking Ships

- Viking ships were made of wood and powered by both sails and oars
- Warships - ***skeids*** - were long and narrow, allowing them to travel quickly, reaching Britain in just 2 days
- Cargo ships - ***knarrs*** - were wider and sturdier

Trade

- Ships allowed the **Vikings** to **trade** with places such as **England, Scotland,** and northern **Germany**
- In the 8th Century, trading towns such as **Hedeby** (Denmark) and **Kaupang** (Norway) began to develop
- Each town was protected by a **jarl** and traded in jewellery, cloth, and iron

3 Viking beliefs and rituals

Religion was central to Viking life but it is difficult to know precisely what they believed

The Vikings believed that the centre of the universe was a sacred tree called **Yggdrasil**, which was split into levels

Asgard --- the home of the gods

Midgard --- the world of the humans

Hel --- the underworld

Viking religion was **polytheistic.** The most important gods were:

ODIN

- The ruler of **Asgard**
- God of warriors
- Warriors who died feasted forever in his hall, **Valhalla**

THOR

- Odin's son and protector of **Asgard**
- God of sailors
- Carried a hammer

FREYA

- The goddess of love and **fertility**
- Her twin brother Freyr was the god of farming

The Vikings **sacrificed** horses as offerings to their gods and held huge **feasts** in their honour.

Viking Expansion Year 10 OCRb GCSE History: 2. **The Volga Vikings**

4 Trade and settlement in Russia

From the 8th Century, Vikings began to explore, trade with, and settle in the river systems of western Russia

c. 750 Vikings from Sweden travelled up the **Neva** and **Volkhov** rivers and settled in **Staraya Ladoga**

c. 800 By hauling boats and trade goods over land the Vikings were able to reach two important rivers:

- The **River Dnieper** allowed the Vikings to travel south to the **Black Sea** and reach **Constantinople** and the **Byzantine Empire**
- The **River Volga** allowed the Vikings to travel South to the **Caspian Sea** and reach **Baghdad** and the **Abbasid Empire**

These **Volga Vikings** exchanged swords, furs, walrus ivory, and slaves for silver and gold

c. 850 **Volga Vikings** - known by local **Slavs** as **Rus** - began to settle along the banks of rivers

- The **Rus** formed an **elite** who ruled over the **Slavs**
- They built the large towns of **Novgorod** and **Kiev**
- The **Rus** eventually **assimilated**, speaking Slavic and marrying **Slav** women

VOCABULARY

Abbasid Empire	Large and powerful Muslim empire
Assimilated	Became similar to
Bazaars	Markets
Byzantine Empire	Large and powerful Christian empire
Elite	High status
Mercenaries	Foreign soldiers hired for money / rewards
Merchants	People who travel to trade goods
Rus	The name given to the Vikings in eastern Europe
Slavs	The people of Eastern Europe
Volga Vikings	The Vikings who settled in eastern Europe

5 Trade and interaction with the Arab World

By the 10th Century, Vikings interacted regularly with the Arab world

- **Baghdad** was the capital of the **Abbasid Empire** and home to over a million people
- **Volga Vikings** travelled down the Volga, crossed the **Caspian Sea**, and trekked by camel to **Baghdad**
- In the city's **bazaars**, Vikings exchanged their goods for:
  - **Silk**, transported from China
  - Arabic silver coins, called ***dirhams***
- Interactions were not always peaceful: 500 Viking ships raided **Baku** in **913**

6 Constantinople and the Byzantine Empire

At different times the Vikings were traders, raiders, and mercenaries in the Byzantine Empire

Traders

- Viking **merchants** traded for wine, olive oil, fruit, and spices in the **bazaars** of **Constantinople**

Raiders

- **Viking raiders** attacked **Constantinople** in 860, 907, and 940
- Although they were unsuccessful, they forced the **Byzantine emperor** to sign **trade treaties**

Mercenaries

- The emperor formed an **elite bodyguard** of Vikings called the **Varangian Guard**

Viking Expansion Year 10 OCRb GCSE History: 3. **Raiders and Invaders**

7 Raids in Britain, Ireland, Scotland, and France

From the 790s, the Vikings began to raid wealthy areas of western Europe

Historians have divided the Viking raids on western Europe into four phases:

PHASE 1 Vikings raided **Lindisfarne** in 793
793-830 Hit-and-run attacks on other **coastal monasteries** with 2/3 ships

PHASE 2 Larger raids with 30-100 ships
830-850 Raiders travelled up rivers to attack **inland** trading towns

PHASE 3 The Vikings began **over-wintering** in defendable areas
850-865

PHASE 4 Large Viking army lands in England
865- Vikings become **invaders** not raiders

Historians disagree about the causes of the Viking raids:

- Shortage of **fertile** land in the **Homelands**
- Wealthy European **monasteries**
- An opportunity for **Jarls** to gain glory
- Divided and weak western Europe
- Improvements in ship technology

The nature of the Viking raids was different in different parts of western Europe:

Britain
- Raids on monasteries in the 790s (**Lindisfarne, Jarrow, Iona**)
- Raiders **looted** gold and silver and **ransomed** monks and holy books
- Attacks on market towns in 830s
- Vikings **overwintered** in Kent in 850-1

Scottish Islands
- The **Orkney** and **Shetland Islands** offered good **grazing** land
- Viking raiders seized the islands from the Picts around 800

Ireland
- 795 to 830, Vikings raided **monasteries**
- From 830, larger raiding fleets arrived and **over-wintered**
- In 841, Vikings established **Dublin** as a base

Frankish Empire
- From the 840s, the Vikings sailed up the **River Seine** to attack Rouen and **Paris**
- The Franks' defensive measures included **fortified** bridges
- As a result, raids stopped in the 860s

8 Viking warfare

Viking raiders were feared warriors and sailors

Warriors

Viking warriors used a range of weapons:

Double-edged swords

Battle axes

Wooden shields

Tactics

In battle, Viking warriors formed a shield wall

Viking **berserkers** whipped themselves into a frenzy before combat

Raiders murdered monks who resisted, often performing the **'blood eagle'** ritual

Warships

By 800, the Vikings had developed ideal ships for raiding. They had:

- ✓ A sail for rapid ocean travel
- ✓ Oars for rowing into the wind and up rivers
- ✓ A shallow **draught** for landing on beaches
- ✓ **Capacity** for over 100 warriors on the largest ships

9 The 'Great Heathen Army' and the Danelaw

In 865, a Viking army invaded England, eventually gaining control of the Danelaw

The Viking **'Great Heathen Army'** rampaged across England for 14 years
- Vikings demanded **Danegeld** from the **Anglo-Saxons**
- By 878 the army had conquered **East Anglia**, **Mercia**, and **Northumberland**

In 878, the Vikings were defeated by **King Alfred of Wessex** at the **Battle of Edington.**

Alfred and **Guthrum**, the Viking leader, agreed the **Treaty of Wedmore:**
- Vikings can settle the **Danelaw** (northeast England)
- **Guthrum** must be **baptised** as a **Christian**

VOCABULARY

Blood Eagle	A gruesome Viking execution method
Beserker	A particularly ferocious Viking warrior
Draught	The depth of a ship's hull
Fortified	Defended
Monasteries	Large, wealthy Christian religious centres
To over-winter	To stay in one place over the winter, rather than returning home
Ransom	To demand money to return something / someone

Viking Expansion Year 10 OCRb GCSE History: 4. **Settlers**

10 Settlement in western Europe

The nature of Viking settlement in western Europe varied from place to place

800	**Scotland and the islands**	• Vikings established rural settlements in the **Shetland/Orkney Islands**, north of Scotland, and **Isle of Man**, based in **Pict** villages • Place names ending in -ness and -wick suggest Vikings dominated these areas
865	**England**	• The Danelaw was ruled by **jarls** based in **fortified** trading towns called burhs, such as **Jorvik** • Large numbers of Viking place names (-by, -thorpe) and words (egg, sky, slaughter) suggest significant settlement
911	**Normandy**	• In 911, the French king offered a Viking, **Rollo**, control of Normandy in return for Christian conversion and protection against raiders • Viking settlement was limited to coastal areas / rivers • The settlers **assimilated** into French society and became **Normans**
914	**Ireland**	• Viking settlement was limited to coastal towns, such as **Dublin** • **Dublin** was a large trading base with wooden thatched houses • By the 11th Century, Vikings had **assimilated** into Irish society, for example converting to **Christianity**

11 Jorvik

Archaeological evidence from Jorvik can tell us a lot about Viking settlement

The Vikings captured **Jorvik** from the **Anglo-Saxons** in 866. By the 11th Century, 10,000 people lived there

- Homes in **Jorvik** were small, wooden structures with a **latrine** outside in the yard
- It's location on the **River Ouse** made **Jorvik** a trading centre for metals, silk, and ivory
- Vikings **minted** coins using Anglo-Saxons designs
- Burials in **churchyards** suggest **Christianity**, although coins often portrayed **Thor** and **Odin**
- Vikings lived alongside **Anglo-Saxons** in **Jorvik** and **intermarriage** was common

12 Iceland, Greenland, and North America

From the 9th Century, the Vikings established settlements across the North Atlantic

ICELAND (870-)	GREENLAND (983-)	NORTH AMERICA (1000-)
• Settlers in **Iceland** found little **fertile** land or wood for houses • Food came from fishing, hunting, and **livestock** • **Iceland** was ruled by the ***Althing***, an **assembly** of chieftains which met once a year	• **Greenland** was discovered by **Erik the Red** • **Greenland** imported wood, metal, and grain from **Iceland** and Europe • In return, **Greenlanders** exported **walrus ivory** and **polar bear furs**	• **Erik's** son, **Leif Eriksson**, attempted to settle in **North America** • He called the region **Vinland** and traded with **Native Americans** • This and later settlements failed however

VOCABULARY

Assembly	A meeting to make decisions
Assimilated	Became similar to
Intermarriage	Marriage between different groups
Latrine	A basic toilet
Livestock	Farm animals kept for meat and dairy
Picts	People who lived in Scotland and the islands before the Vikings

Viking Expansion Year 10 OCRb GCSE History: 5. **Viking Kings**

13 Harald Bluetooth

Harald Bluetooth was a great warrior king who converted Denmark to Christianity

Christianity

- In 965, Harald was **baptised** as a **Christian**
- He forced the **Danes** to become **Christian**, although many still worshipped the old Viking Gods
- The grave site at **Jelling** contains evidence of Christian practices, including a wooden church and a the grave of Harald's father, **Gorm the Old**

Expanding his Kingdom

- Harald captured the region of **Vik** in Norway
- He moved the Danish capital to **Roskilde** to be nearer Norway
- He built bridges and roads to connect his Empire together
- He **minted** coins to improve trade

Defence

- To defend his kingdom, Harald built four large wooden forts
- He strengthened the **Danevirke**, a wall to defend against attack from German tribes
- Nevertheless, he was killed by his own son, **Swein**, who had risen in rebellion in 986

14 Svein Forkbeard

Svein Forkbeard consolidated his father's kingdom and raided and invaded England

Consolidating power

- Like his father, Svein was a Christian king but he **tolerated paganism**
- He **minted** coins and protected **merchants** to improve trade
- In 1000, Svein defeated the King of Norway in battle and added a large part of Norway to his kingdom

Raiding England

- In 1002, **King Athelred** ordered the execution of all Vikings living in England in the **St Brices Day Massacre**
- In retaliation, from 1003 to 1013 Svein raided England constantly, burning towns like **Norwich** and Exeter
- The English gave thousands of pounds of jewellery and coins in **Danegeld** to stop Swein's attacks

Invading England

- In 1013 Svein invaded England with a huge fleet
- **Aethelred** fled to Normandy and Svein was crowned king
- Svein died just 5 weeks later and **Aethelred** was welcomed back as king by the English earls

15 Cnut the Great

Cnut became King of England and built a large Anglo-Scandinavian Empire

Seizing the English crown

- In 1015, Cnut sailed for England with 160 ships and 10,000 men
- In 1016 he fought a series of battles against **Ethelred's** son, **Edmund Ironside**
- After **Ironside's** death, **Cnut** became king of England

Ruling England

- **Cnut** defended England against further Viking attacks
- He executed English leaders and replaced them with Viking **jarls**, but there was no large scale settlement
- He increased taxes to pay for defence and worked hard to develop the Church

Anglo-Scandinavian Empire

- In 1017, Cnut married **Emma of Normandy**, creating an **alliance** with Normandy
- In 1018, Cnut became King of Denmark following the death of his brother, **Harald**
- In 1028, Cnut invaded Norway with a fleet of 50 ships and was named king

VOCABULARY

To be baptised	To officially become a Christian
Consolidated	Made more secure
Danes	People from Denmark
Jelling	A Viking grave site in Denmark
Minted coins	Produced coins
Tolerated	Put up with

Year 10 – Physical Landscapes in the UK – River Landscapes

Key words .

- Hard engineering Involves the building of entirely artificial (man made) structures using various materials such as rock, concrete and steel to reduce, disrupt or stop the impact of river processes.
- Hydraulic action The force of the river against the banks can cause air to be trapped in cracks and crevices. The pressure weakens the banks and gradually wears it away.
- Hydrograph A graph which shows the discharge of a river, related to rainfall, over a period of time.
- Interlocking spurs A series of ridges projecting out on alternate sides of a valley and around which a river winds its course.
- Lateral erosion Sideways erosion by a river on the outside of a meander channel. It eventually leads to the widening of the valley and contributes to the formation of the flood plain.
- Levees Embankment of sediment along the bank of a river. It may be formed naturally by regular flooding or be built up by people to protect the area against flooding.
- Long profile The gradient of a river, from its source to its mouth.
- Meander A pronounced bend in a river.
- Ox-bow lake An arc-shaped lake which has been cut off from a meandering river.
- Precipitation Moisture falling from the atmosphere - as rain, hail, sleet or snow.
- Saltation Particles bouncing down the river bed.
- Soft engineering Involves the use of the natural environment surrounding a river, using schemes that work with the river's natural processes.
- Solution Soluble particles are dissolved into the river.
- (Channel) straightening Removing meanders from a river to make the river straighter this allows it to carry more water quickly downstream, so it doesn't build up and is less likely to flood.
- Suspension Fine solid material held in the water while the water is moving.
- Traction The rolling of boulders and pebbles along the river bed.
- Vertical erosion Downward erosion of a river bed
- Waterfall Sudden descent of a river or stream over a vertical or very steep slope in its bed. It often forms where the river meets a band of softer rock after flowing over an area of more resistant material

KPI 1 To describe how the long profile changes

The long profile of a river refers to the changes in elevation from the source to the mouth.

- Upper Course: close to the source, the river tends to have a steep gradient, resulting in a rapid flow. The river channel is often narrow and shallow, with rocky or uneven terrain. This section is characterized by vertical erosion as the river cuts through the underlying rock and creates a V-shaped valley. Waterfalls, rapids, and gorges are common features in the upper course.

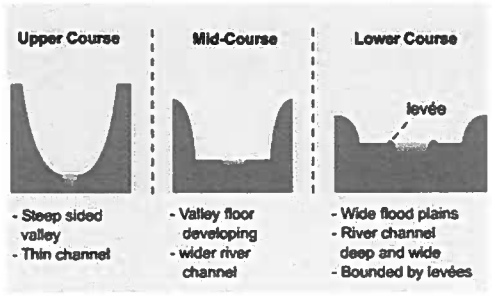
- Middle Course: As the river progresses into the middle course, the gradient becomes less steep. The river channel widens, and the flow of water becomes more meandering. The dominant erosional process shifts from vertical erosion to lateral erosion. The river starts to erode the valley sides and transport sediments downstream. Floodplains and meanders (bends in the river) begin to form in this section. The valley widens, and the river becomes deeper and wider.

- Lower Course: In the lower course, near the mouth of the river, the gradient is very gentle. The river channel becomes wider and deeper, and the flow slows down. Deposition becomes the dominant process, as the river has less energy to transport its load. As a result, the river deposits sediments, creating a wide floodplain. Meanders are well-developed, and oxbow lakes (abandoned meander loops) may be present. The river may also split into several distributaries as it enters the sea or a large body of water.

KPI 2 To describe how the cross profile of a river and its valley changes continued

- The cross profile of a river refers to the shape of the river channel and its valley from one bank to the other. The cross profile changes as the river progresses from the upper course to the lower course.
- Upper Course: In the upper course, the cross profile is typically narrow and V-shaped. The river channel is narrow, with steep valley sides. The river channel is often rocky, with rapids and waterfalls present. The valley sides are steep and may have interlocking spurs, which are ridges of hard rock that jut out into the valley.
- Middle Course: In the middle course, the cross profile becomes wider and more gently sloping. The river channel meanders within the valley, creating a wider floodplain. The valley sides are less steep and may feature gentle slopes or bluffs. Point bars (depositional features) can form on the inside of meander bends, while cut banks (erosional features) can be found on the outside of bends.
- Lower Course: In the lower course, the cross profile is the widest and flattest. The river channel is broad, and the valley sides are gentle. Floodplains are extensive, and the river may have multiple channels or distributaries. Natural levees, formed by successive flooding and deposition of sediments, can be found along the riverbanks.

The actual characteristics of a river and its valley can vary depending on local geology, climate, and other factors.



KPI 3 To explain how a river erodes

A river erodes by wearing away the land and rocks in its path. It does this through different processes:

- Hydraulic Action: The river's moving water can be very powerful, like a bulldozer. It pushes against the riverbanks and riverbed, causing bits of the land to break off and get carried away by the water.
- Abrasion: As the river flows, it carries tiny rocks, sand, and pebbles. These particles act like sandpaper, rubbing against the riverbanks and riverbed.
- Attrition: When the rocks, sand, and pebbles are being carried by the river, they bump into each other and they start to break into smaller pieces. The rocks in the river gradually become smaller and rounder as they keep bumping into each other
- Solution: River water can dissolve certain types of rocks and minerals that it comes into contact with. some rocks, like limestone, are made up of minerals that easily dissolve in water. When a river flows over or through these rocks, the water can react chemically with the rock and make it dissolve. I.

KPI 4 To explain how a river transports

- Traction: Larger, heavier materials like rocks and pebbles are rolled or pushed along the riverbed by the force of the water.
- Saltation: Smaller particles like sand and gravel are lifted up and bounced along the riverbed in a hopping motion before settling back down.
- Suspension: Fine particles like silt and clay are carried within the water, staying suspended and moving with the flow.
- Solution: Some dissolved minerals are transported within the river water itself, without being visible.

As the river flows, it carries its load downstream. The speed and strength of the river's current determine how much load it can transport. During floods or heavy rainfall, when the river's flow is faster and stronger, it can carry more material

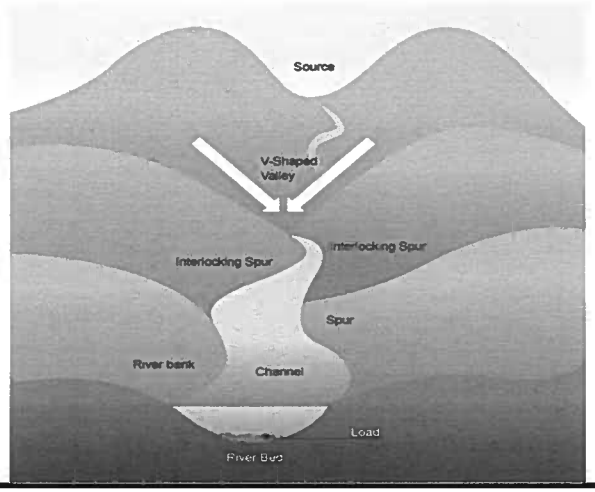
Year 10 – Physical Landscapes in the UK – River Landscapes

- **Abrasion:** Rocks carried along by the river wear down the river bed and banks.
- **Attrition:** Rocks being carried by the river smash together and break into smaller, smoother and rounder particles.
- **Cross profile:** The side to side cross-section of a river channel and/or valley.
- **Dam and reservoir:** A barrier (made on earth, concrete or stone) built across a valley to interrupt river flow and create a man-made lake (reservoir) which stores water and controls the discharge of the river.
- **Discharge:** The quantity of water that passes a given point on a stream or river-bank within a given period of time.
- **Embankments:** Raised banks constructed along the river; they effectively make the river deeper so it can hold more water. They are expensive and do not look natural but they do protect the land around them.
- **Estuary:** The tidal mouth of a river where it meets the sea; wide banks of deposited mud are exposed at low tide.
- **Flood:** Occurs when river discharge exceeds river channel capacity and water spills out of the channel onto the floodplain and other areas.
- **Flood plain:** The relatively flat area forming the valley floor on either side of a river channel, which is sometimes flooded.
- **Flood plain zoning:** This attempts to organise the flood defences in such a way that land that is near the river and often floods is not built on.
- **Flood relief channels:** Building new artificial channels which are used when a river is close to maximum discharge.
- **Flood risk:** The predicted frequency of floods in an area.
- **Flood warning:** Providing reliable advance information about possible flooding. Flood warning systems give people time to remove possessions and evacuate areas.
- **Fluvial processes:** relating to erosion, transport and deposition by a river.
- **Gorge:** A narrow, steep sided valley, often formed as a waterfall retreats upstream

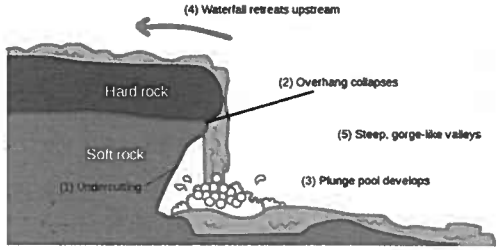
KPI 5 Describe the formation of interlocking spurs

Interlocking spurs are landforms that occur in the upper course of a river and are shaped by the river's erosion and the resistance of the surrounding rock

1. In the upper course of a river, the land is usually steep and uneven. As the river flows downhill, it encounters resistant rock outcrops or harder areas that are more difficult to erode.
2. The river's erosional processes, such as hydraulic action and abrasion, begin to wear away the less resistant rock layers. Over time, the river cuts a narrow and deep channel through the softer rock, forming a V-shaped valley.
3. As the river continues to erode the valley, it encounters areas of more resistant rock. Instead of cutting straight through these areas, the river is forced to flow around them, creating bends or meanders.
4. The river follows the path of least resistance, meandering around the hard rock areas, which act as obstacles. The river winds its way in a zigzag pattern, flowing around one side of the resistant rock and then switching to the other side.
5. As the river flows around these resistant rock features, it leaves behind sections of less eroded land that project out into the valley. These are called interlocking spurs. They appear like a series of projections or fingers that interlock with each other, extending from the valley sides into the river channel.



KPI 6 To describe and explain the formation of waterfalls and gorges



1. Step 1 - Differential Erosion: The formation of a waterfall begins with the presence of alternating layers of hard and soft rock in the river's course.
2. Step 2 - Erosion of the Soft Rock: As the river flows over the less resistant rock, such as softer sedimentary rock or clay, it erodes it more easily through processes like hydraulic action and abrasion. The continuous flow of water gradually undermines the softer rock, creating a plunge pool at the base.
3. Step 3 - Overhang Formation: Over time, the erosion of the softer rock creates an overhang or an unsupported ledge of the resistant rock above it. The overhang becomes more pronounced as the soft rock erodes at a faster rate compared to the resistant rock.
4. Step 4 - Plunge Pool Formation: The erosion process causes the waterfall to retreat upstream, as the soft rock gets worn away by the plunge of the falling water. As the water plunges from the overhang, it creates a powerful force that erodes and deepens a plunge pool at the base of the waterfall.
5. Step 5 - Recession of the Waterfall: Over time, the continued erosion of the soft rock and the undercutting of the resistant rock cause the overhang to become unsupported. Eventually, the overhang collapses, and the waterfall retreats further upstream. This process continues, leading to the backward migration of the waterfall.
6. Step 6 - Gorge Formation: As the waterfall retreats, it leaves behind a steep-sided gorge in the river's course. The process of vertical erosion by the falling water creates a deep, narrow channel downstream of the waterfall

KPI 7 To describe and explain the formation of meanders and ox-bow lakes

1. Formation of a Meander: A meander is a bend or curve in a river's course. Initially, the river may flow in a relatively straight path. However, as it travels across a floodplain or through an area with more easily erodible sediment, the river begins to erode laterally (sideways).
2. Erosion on the Outside Bend: The fastest flow of water occurs on the outside bend of a meander. As a result, the river's erosional forces, such as hydraulic action and abrasion, are concentrated on the outer bank of the bend. The water's force erodes and undercuts the bank, creating a river cliff or a steep slope.
3. Deposition on the Inside Bend: On the inner bank of the meander bend, the flow of water slows down. This slower flow allows for deposition to take place. The river deposits sediment, such as sand, silt, and clay, on the inside bank, creating a gently sloping feature called a slip-off slope.
4. Meander Migration: Over time, erosion and deposition cause the meander to migrate downstream. The erosion of the outer bank creates a wider bend, while the deposition on the inner bank makes the opposite side more pronounced.
5. Neck Formation and Oxbow Lake Formation: As the meander continues to migrate, the neck of the meander, the narrow strip of land between the two bends, becomes narrower. Eventually, due to erosion and natural processes, the river may cut through this narrow strip of land during a flood event, creating a new straighter channel.
6. Oxbow Lake Formation: Once the river has cut through the neck, it takes a shorter, straighter path. The abandoned meander bend is now called an oxbow lake. The oxbow lake is often crescent-shaped and remains filled with water, separated from the main river channel. Overtime it may fill with sediment, vegetation may grow in it, and it may eventually become a marsh or a meadow

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KPI 8 To explain how a levees is formed

Levees are natural embankments or raised banks that are formed alongside a river channel.

Step 1 - Flooding and Deposition: Levees are typically formed during periods of flooding when the river's water level rises and exceeds the capacity of the river channel. During a flood, the river carries a large volume of sediment, including sand, silt, and clay.

Step 2 - Loss of Velocity: As the river floods, the water spreads out over the floodplain, and its velocity decreases. The slower-moving water loses its ability to carry and transport sediment, causing the sediment to settle or deposit along the edges of the river channel.

Step 3 - Coarse Sediment Deposition: Due to the loss of velocity, the first sediments to be deposited are the larger and coarser particles, such as sand and gravel. These materials are deposited closest to the river channel, forming a layer of coarser sediment.

Step 4 - Fine Sediment Deposition: Beyond the layer of coarser sediment, finer particles like silt and clay settle out of the water as the velocity decreases even further. These finer sediments settle on top of the coarser layer, gradually building up the levee's height.

Step 5 - Repeated Flooding Events: Over time, with each recurring flood event, additional layers of sediment are deposited on top of the existing levee. This process results in the gradual growth and heightening of the levee.

Step 6 - Vegetation Colonization: As the levee builds up, it becomes a raised and relatively stable area compared to the surrounding floodplain. This makes it more suitable for the growth of vegetation, such as grasses and shrubs. The vegetation helps to stabilize the levee by further trapping sediment and reducing erosion.

Step 7 - Reinforcement: As the levee becomes vegetated, the roots of the plants bind the sediment together, strengthening the structure and making it more resistant to erosion.

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KPI 9 Describe the formation of floodplains and estuaries

Floodplain Formation:

- Step 1: Erosion and Deposition: Floodplains are created by the erosion and deposition of sediment by a river over time. In the upper course of a river, erosion processes like hydraulic action and abrasion remove material from the riverbed and banks. This eroded material, such as sand, silt, and clay, is then transported downstream.

- Step 2: Deposition on the Floodplain: As the river reaches the middle and lower courses, its velocity decreases, and it loses its ability to carry the sediment. The sediment is then deposited on the floodplain during periods of flooding. Floods occur when the river's water level exceeds its channel capacity, and the excess water spreads out onto the adjacent land.

- Step 3: Building Up of Sediment Layers: Each time a flood occurs, a new layer of sediment is deposited on the floodplain. Over time, this accumulation of sediment builds up the height and extent of the floodplain.

- Step 4: Formation of Natural Levees: During flooding events, the river's water velocity decreases, causing sediment to be deposited near the river channel. Coarser particles, such as sand and gravel, are deposited closest to the channel, forming natural embankments known as levees. These levees help confine the river within its channel during subsequent floods.

Estuary Formation:

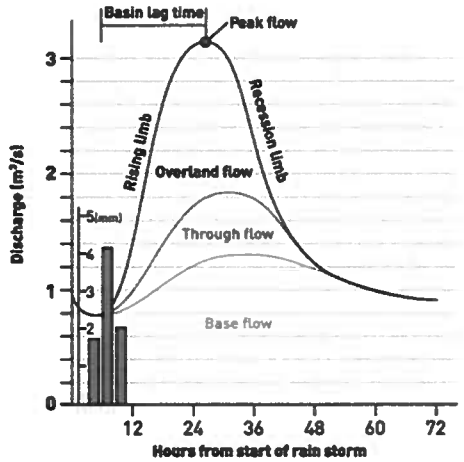
- Step 1: An estuary is formed at the point where a river meets the sea or ocean. The river carries sediment and freshwater downstream, while the sea or ocean brings in tidal currents and saltwater.

- Step 2: As the river flows into the estuary, the slower-moving water loses its capacity to transport sediment. This leads to the deposition of fine sediment, such as silt and clay, within the estuary.

- Step 4: Tidal currents play a significant role in shaping estuaries. As tides rise and fall, they cause the water to move in and out of the estuary, resulting in the erosion and deposition of sediment. The tidal currents can create channels, sandbars, and tidal flats within the estuary.

- Step 5: Development of Salt Marshes and Mudflats: The deposition of sediment and the interaction of freshwater and saltwater create favourable conditions for the growth of salt-tolerant vegetation, such as salt marsh grasses. Salt marshes and mudflats are common features in estuaries, providing habitats for a variety of plant and animal species.

KPI 10To describe how hydrographs to show the relationship between precipitation and discharge



Hydrographs are graphs that show the flow or discharge of water in a river over a specific period of time, usually in response to a rainfall event:

Discharge: Discharge refers to the volume of water passing through a specific cross-section of the river per unit of time.
Rising Limb: The rising limb of the hydrograph represents the increasing flow of water in the river following the onset of rainfall. As the rainfall infiltrates the ground and generates surface runoff, the river's discharge begins to rise.
Peak Flow: The peak flow is the highest point on the hydrograph and represents the maximum discharge reached during the rainfall event. It indicates the intensity of the rainfall and the river's response to it.
Lag Time: Lag time is the time delay between the peak rainfall and the peak flow in the river. It reflects the time it takes for the rainfall to reach the river, considering factors such as the rainfall intensity, soil conditions, and river characteristics.
Falling Limb: The falling limb of the hydrograph represents the decrease in river discharge following the cessation of rainfall. As the rainfall stops and the runoff diminishes, the river's discharge gradually returns to its base flow or pre-rainfall level.
Base Flow: The base flow represents the normal or background discharge of the river during non-rainfall periods. It is the flow sustained by groundwater sources and other ongoing inputs to the river.

KPI 11 To identify the factors that can affect flood risk

Several factors can affect flood risk in a particular area.

Natural Factors:

- Precipitation: The amount, intensity, and duration of rainfall are significant factors in flood risk. Heavy or prolonged rainfall can lead to increased runoff and overwhelm the capacity of rivers and drainage systems to handle the water, resulting in flooding.

- Drainage Basin Characteristics: The characteristics of the drainage basin, such as its size, shape, slope, and vegetation cover, influence how water is collected and transported within the basin. Areas with larger drainage basins, steep slopes, or insufficient vegetation cover are more prone to rapid runoff and increased flood risk.

Human Factors .

- Urbanisation and Land Use: The construction of buildings, roads, and other impervious surfaces reduces the natural infiltration of water into the soil, leading to increased surface runoff and a higher likelihood of flooding.

- Deforestation: deforestation less vegetation to intercept precipitation leads to increased surface run-off

Year 10 – Physical Landscapes in the UK – River Landscapes

KPI 12 Describe and explain the costs and benefits of hard engineering

Hard engineering refers to the use of artificial structures and techniques to manage and control the flow of rivers and prevent flooding.

Method	Benefits	Disadvantages
Dams and reservoirs (hard)	Reservoirs store water reducing the volume of water downstream. Water can be used for drinking and HEP.	Dams are very expensive to build and reservoirs can flood existing settlements. Material is deposited in the reservoir affecting farmland downstream
Channel straightening (hard)	Water moves quickly reducing the risk of flooding	Flooding risk and erosion rates increase downstream as the water ins moving faster.
Embankments (hard)	Increasing the volume of the channel	Very expensive and they can break

KPI 13 Restore rivers and their surrounding areas. Unlike hard engineering, which relies on artificial structures, soft engineering aims to work in harmony with the natural environment to achieve sustainable river management

Method	Benefits	Disadvantages
Flood warnings (soft)	People have time to move belongings upstairs and evacuate	They don't prevent flooding and people may not hear them
Flood plain zoning (soft)	The risk of flooding is reduced as building work does not happen on the floodplain	Space is limited in some urban areas which can cause conflict and some floodplains are already built on
Afforestation (soft)	Interception increases which reduces discharge. Creates habitats.	Less land available for farming
River restoration (soft)	Removing land made levees allows flood plains to flood. River is in its natural state	Local flood risk increases if nothing else is done

KPI 14 Describe an example of a flood management scheme in the UK

Location: located in Oxfordshire, England
Why was the Banbury Flood Management Plan needed? Banbury has been affected by flooding of the River Cherwell numerous times. The 1998 flood led to the closure of the railway station and caused £12.5 million in damage. There was further flooding in 2007.
What is the Banbury Flood Management Plan? 2012 construction of flood storage reservoir costing £18.5 mill.
The key features of the scheme included: raising the A36, constructing new pumping stations to transfer water, controlling the flow of the River Cherwell through the Hardwick and Huscote flow control structures, a biodiversity Action Plan (BAP) habitat with ponds, trees and hedgerows, constructing 4.5m high embankments using soil taken from the borrow area, which is now a small reservoir used for storing water that would otherwise have caused the River Cherwell to flood

What issues resulted from the scheme?

Social	Economic	Environmental
• The A361 is no longer affected by flooding, reducing transport disruption for local people. • The new green areas and footpaths have improved the quality of life for local people. • Reduced anxiety in local communities as the risk of flooding has been reduced.	• The cost of the scheme was £18.5 million. • The benefits are estimated at over £100 million. • 441 houses and 73 commercial properties are protected from flooding. • Property values have increased as they are no longer at risk of flooding.	• Around 100,000 tonnes of earth were required to make the embankment resulting in some habitat destruction. • The Biodiversity Action Plan (BAP) has resulted in planting trees and hedgerows and constructing ponds. • The BAP has created new ponds, trees and hedgerow habitats. • Part of the floodplain will be left to flood if river levels get too high. • The reservoir provides a temporary habitat for waterbirds.

Year 10 Geography - The Challenge of Natural Hazards – Introduction and Tectonic Hazards

KPI1 – Key terms

1. **Conservative plate margin:** Tectonic plate margin where two tectonic plates slide past each other.
2. **Constructive plate margin:** Tectonic plate margin where rising magma adds new material to plates that are diverging (*going apart*).
3. **Destructive plate margin:** Tectonic plate margin where two plates are converging (*coming together*). It can be linked to violent earthquakes and explosive volcanoes.
4. **Earthquake:** A sudden or violent movement within the Earth's crust followed by a series of shocks.
5. **Immediate responses:** The reaction of people as disasters happen in the immediate aftermath (*after-effects of an unpleasant event)*
6. **Long-term responses:** Later reactions that occur in the weeks, months of years after an event.
7. **Monitoring:** Recording physical changes, such as earthquake tremors (*ground shaking)* around a volcano, to help forecast when and where a natural hazard might strike.
8. **Plate margin:** The margin (or boundary) between two tectonic plates.
9. **Planning:** Actions taken to allow communities to response and recover from natural disasters.
10. **Prediction:** Attempts to forecast (predict) where and where a natural hazard might strike based on current knowledge.
11. **Primary effects:** The initial impacts of a natural event on people and property, caused directly by it.
12. **Protection:** Actions taken before a hazard strikes to reduce its impact, such as educating people.
13. **Secondary Effects:** The after-effects that occur as indirect impacts of a natural event.
14. **Tectonic Hazards:** A natural hazard caused by the movement of tectonic plates.
15. **Tectonic Plate:** A rigid (*not flexible*) part of the Earth's crust which moves across semi-molten *(melted)* rock below.

KPI2: What are natural hazards?

Definition: Natural hazards are physical events such as earthquakes and volcanoes that have the potential to do damage to humans and property. Hazards include tectonic hazards, tropical storms and forest fires.

Hazards become risks when...

- The population has grown.
- Climate change is leading to more extreme weather events.
- Wealth - LICs are particularly at risk as they do not have the money to protect themselves.

KPI3 Plate tectonic theory

Plate tectonic theory suggests that the outermost solid layers of the Earth (the crust) is divided into tectonic plates. There are two types of crustal plate.

- Oceanic plate – recently formed, thin and dense *(heavy)*
- Continental plate – older, thicker and less dense *(heavy)*

What mechanisms drive plate movements?

Tectonic plates are constantly moving due to:

Convection currents:

1. The Earth's core is extremely hot which causes the mantle to be heated near the core.
2. The hot rock rises towards the surface and cools down.
3. When it reaches the crust, it is forced sideways because it cannot pass through the solid rock above. It continues to cool and become denser, and sinks back towards the crust.
4. Once more in contact with the core, it is re-heated and starts to rise to the surface again.

Gravitational Sliding: Scientists believe that gravity plays an important role in plate movement – this is called gravitational sliding. There are two types of gravitational sliding.

- *Ridge Push* – At constructive plate margins, fresh magma rises at the mid-ocean ridge. The two plates are forced apart, away from the ridge. As the ridge rises at a higher than the ocean floor, gravity causes the plates to slide downwards.
- *Slab Pull* – at destructive plate margins, gravity acts upon the thicker, denser plate, causing it to sink under it's own weight, 'pulling' the rest of the plate with it.

KPI5 – Plate margins

Earthquakes occur along plate boundaries. On the edge of continents. Around the edge of the Pacific.

Constructive plate margins –

1. At a **constructive plate margin** the plates move **apart** from one another, causing earthquakes.
2. When this happens the magma from the mantle rises up to make (or construct) new land in the form of a **shield volcano**.

Destructive Plate Margin –

1. As the plates collide, the oceanic plate is forced beneath the continental plate. This is known as **subduction**. This happens because the oceanic plate is denser (heavier) than the continental plate.
2. When the plate sinks into the mantle it melts to form magma. The pressure of the magma builds up beneath the Earth's surface. The magma escapes through weaknesses in the rock and rises up to from a volcano. The volcanic eruptions are often violent.

Conservative Plate Margin –

1. At a **conservative plate margin**, the plates move past each other or are side by side moving at different speeds.
2. As the plates move, friction occurs and plates become stuck.
3. Pressure builds up because the plates are still trying to move. When the pressure is released, it sends out huge amounts of energy, causing an earthquake.

KPI6 – Effects from and responses to Earthquakes

There are two different types of effects from natural disasters such as earthquakes.

- Primary effects are caused by the ground shaking and can include deaths and injuries associated with the collapse of buildings and infrastructure such as roads.
- Secondary effects are associated with events triggered by the ground shaking, such as landslides, avalanches, fires and deadly tsunamis.

There are two different types of responses to natural disasters such as earthquakes.

- Immediate responses: these initially focus on search and rescue and providing emergency resources such as water, food, medicine, shelter and safety.
- Long term responses: These involve re-building and reconstruction, returning society to normal and reducing future risk.

	Nepal Earthquake (2015)	**Christchurch Earthquake (2011)**
Primary Effects	• 9000 people died and over	• 185 people were killed.
Secondary Effects	• Avalanches on Mount Everest killed at least 19 people	• Christchurch was no longer able to host the rugby world cup match.
Immediate Responses	• Search and rescue teams arrived quickly from the UK, India and China.	• 30,000 residents were provided with chemical toilets.
Long-term responses	• Over 7,000 schools to be re-built or repaired.	• The construction of around 10,000 affordable homes.

KPI7 – Reducing the impact

1. Monitoring: Seismometers measure earth movement. Volcanoes give off gases.
2. **Protection:** Reinforced buildings and making building foundations that absorb movement.
3. **Planning:** Training for emergency services and planned evacuation routes and drills.
4. **Prediction:** observing monitoring data, this can allow evacuation before event.

Page 2 Year 10 Geography - The Challenge of Natural Hazards – Weather Hazards

KPI8 – Additional Key terms

1. **Economic impact:** The effect of an event on the wealth of an area or community.
2. **Environmental impact:** The effect of an event on the landscape and ecology of the surrounding area.
3. **Extreme weather:** When a weather event is significantly different from the average or usual weather pattern, and is especially severe or unseasonal.
4. **Global atmospheric circulation:** The worldwide system of winds, which transports heat from tropical to polar latitudes.
5. **Management strategies:** Techniques of controlling, responding to, or dealing with an event.
6. **Social impact:** The effect of an event on the lives of people or community.
7. **Tropical storm:** (hurricane, cyclone, typhoon) An area of low pressure with winds moving in a spiral around the calm central point called the eye of the storm. Winds are powerful and rainfall is heavy.

KPI9 – Global Atmospheric Circulation

What causes wind?
Wind is caused by differences in atmospheric pressure (*weight of the air).* When there is a difference air moves from one area of low pressure, resulting in winds.

Solar Radiation:
- Towards the poles, the Sun's energy spreads over a large area, resulting in low temperatures and high pressure.
- At the Equator, the Sun's energy is concentrated over a small area, causing high temperatures and low pressure.

This difference in air pressure on Earth's surface causes global patterns of air circulation (cells) from areas of high pressure to areas of low pressure.

Global Atmospheric Circulation Model:

1. Warm air rises from the Equator, creating a belt of low pressure. As the air rises, it cools.
2. The resulting condensation creates clouds and rain that moves north and south of the Equator.
3. At 30° north and south of the Equator, the cold dry air sinks, creating high pressure and clear skies.
4. When the sinking air reaches the Earth's surface, it moves either back to the Equator or towards the Poles.
5. At 60° north and south of the Equator, the surface air meets colder air from the poles, which causes it to rise, creating a belt of low pressure.
6. The air rises and cools. At a high level, this moves either back to the Equator or towards the poles.
7. At the poles, the cool air sinks back to the Earth's surface, creating high pressure. The air then moves back towards the Equator.

KPI10 – Location of Tropical Storms

Tropical storms will only form when the following conditions are met:

1. Ocean temperatures above 26.5°C
2. Water depth 60-70m
3. Between 5° and 30° north and south of the equator.
4. Tropical storms cannot form more than 30° north or south of the equator as the water is not warm enough and the Coriolis force (spin) is not great enough.

KPI11 – Formation of Tropical Storms

1. Solar insolation heats the tropical water to above 26.5°C.
2. Warm, moist, unstable air above the ocean rises, creating an area of low pressure below.
3. The large mass of rising warm air cools and condenses to form large cumulonimbus clouds and heavy rain.
4. Surrounding cooler air is drawn into the area of low pressure, causing winds to form.
5. The system of clouds and winds spin due to the trade winds and the earth's rotation (Coriolis effect). Tropical Storms in the northern hemisphere move anticlockwise and those in the southern hemisphere move clockwise.
6. Colder drier air sinks into the center (eye) of the storm, creating calm conditions.
7. Prevailing winds push the storm towards the land.
8. The storm continues to get bigger and stronger until it reaches land or colder seas. Landfall and friction slow the storm down.

KPI12 – Tropical Storm Case Study: Typhoon Haiyan

Typhoon Haiyan, a category five typhoon, struck the Philippines, close to Tacloban on 8th November 2013.

Primary Effects:
- Approximately 6,300 deaths
- 90% of Tacloban City destroyed
- 1.1 million tonnes of crops destroyed.

Secondary Effects:
- Looting *(robbing)*
- Rice prices rose by 11.9%

Immediate Responses
- US aircraft carrier and helicopters helped with search and rescue
- 1200 evacuation centres set up
- UK government sent shelter kits for families

Long-term responses
- 'Cash for work' programmes -people paid to help clear debris
- Oxfam replaced fishing boats
- Rebuilt roads, bridges, airport .

KPI13 – Reducing the impact of tropical storms

Tropical storms can be predicted, so having effective prediction, planning and protection systems can significantly reduce the effects of storms.

1. Prediction: Scientists use technology to predict when and where a storm is likely to occur. Hurricane warnings give people advice on the necessary actions to take e.g. evacuation.
2. Protection: Buildings can be constructed from reinforced concrete or built on stilts to protect against winds and flooding,
3. Planning: Disaster kits can be provided for people in high-risk areas. Evacuation routes can help to get people away from danger quickly.

KPI14 – Evidence of UK Extreme Weather

- Temperatures are becoming more extreme: 2014 was the warmest year since 1910 and December 2014 was the coldest month for over 100 years.
- Rainfall is heavier and storms are more intense and frequent. December 2015 was the wettest UK month on record.

KPI15 – Extreme Weather in the UK Case Study: Beast from the East

Under normal circumstances, winters in the UK are mild compared to some places on the same latitude because of the jet stream (a warm air mass). However, in February 2018, a weather event disturbed the jet stream – allowing cold winds from Russia to travel as far as the UK.

Primary Effects
- A man died in London after being pulled from a frozen lake, whilst there were 3 other reported deaths

Secondary Effects
- British Airways cancelled hundreds of short-haul flights from Heathrow, and London City
- Hospitals in Glasgow, Grimsby, Scunthorpe and Goole cancelled all outpatient appointments while Harrogate hospital asked staff who can walk to work to go in to cover shifts

Responses
- Stranded drivers given foil blankets
- Red weather warning -do not travel
- Greggs Delivery van gave out free food to stranded drivers on A1

Page 3 Year 10 Geography - The Challenge of Natural Hazards – Climate Change

KPI16 – Key words continued

1. **Adaptation**: Actions taken to adjust to natural events such as climate change, to reduce potential damage, limit the impacts, take advantage of opportunities, or cope with the consequences.
2. **Climate change**: A long-term change in the Earth's average temperature and weather patterns.
3. **Mitigation**: Action taken to reduce or eliminate the long-term risk to human life and property from natural hazards, such as building earthquake-proof buildings or making international agreements about carbon reduction targets.
4. **Orbital changes**: Changes in the pathway of the Earth around the Sun.
5. **Quaternary period**: The period of geological time from about 2.6 million years ago to the present. It is characterised by the appearance and development of humans and includes the Pleistocene and Holocene Epochs.
6. **Epoch**: a smaller period of time.
7. **Enhanced Greenhouse effect:** When there is an increased concentration of greenhouse gases in the atmosphere.

KPI17 – Evidence of Climate Change

The Met Office has reliable climate evidence since 1914 – but we can tell what happened before that using several methods.

- **Ice and Sediment Cores**: Ice sheets are made up of layers of snow, one per year. Gases trapped in layers of ice can be analysed. Ice cores from Antarctica show changes over the last 400 000 years.
- **Pollen Analysis**: Pollen is preserved in sediment. Different species need different climatic conditions e.g. warmer/colder climates
- **Tree Rings**: A tree grows one new ring each year. Rings are thicker in warm, wet conditions This gives us reliable evidence for the last 10 000 years
- **Temperature Records**: Historical records date back to the 1850s. Historical records also tell us about harvest and weather reports.

KPI18 – Causes of Climate Change

The evidence shows that the Earth's climate has changed both naturally but over the last 200 years human actions have led to the Enhanced Greenhouse Effect.

Natural Factors:

1. Orbital changes – The Earth's orbit has changed from circular to elliptical, which affects its distance from the Sun. When the orbit is more circular, the temperature will increase as the Earth is closer to the Sun. When the orbit is elliptical, the temperature will decrease as the Earth is further from the Sun.
2. Volcanic Activity – Volcanic eruptions release particles of Sulphur Dioxide which reflect the Sun's rays, reducing temperatures. It also releases carbon dioxide which traps the Sun's heat resulting in warmer temperatures.
3. Solar Output – The Sun's solar energy output varies over time. More sunspots can mean that temperatures increase.

Human Factors:

1. Fossil fuels – burning fossil fuels release carbon dioxide into the atmosphere
2. Agriculture – livestock and rice farming produce methane into the atmosphere.
3. Deforestation – Burning wood releases carbon dioxide into the atmosphere.

All these methods lead to the Enhanced Greenhouse Effect which is where:

1. The Sun's solar radiation reaches the Earth's surface where most is absorbed.
2. The radiation is trapped by the additional greenhouse gases such as methane and carbon dioxide.

KPI19 – Effects of Climate Change

General Effect:

- Sea level rise leads to flooding and coastal erosion.
- Sea level rise leads to flooding and coastal erosion.
- Warmer rivers affect marine wildlife.

Specific Example:

The Maldives are a group of small islands in the Indian Ocean some 500 km west of India. Some climate models suggest that the islands may be uninhabitable by 2040 and submerged by 2100. The current 380,000 inhabitants have a very uncertain future as sea levels rise.

KPI20 – Managing Climate Change

Mitigation: Strategies which aim to reduce the causes of global warming by reducing the concentration of greenhouse gases in the atmosphere.

Examples:

1. Alternative energy production: Using nuclear power, hydroelectric power and solar power releases less greenhouse gases than burning fossil fuels.
2. International agreements: Countries agree common policies such as reducing greenhouse gases by a set amount by a certain date. The Paris Agreement (signed by over 170 countries) is one of the main agreements.
3. Planting trees: Reforestation aims to reverse deforestation by planting trees.
4. Carbon Capture and storage: Involves capturing Co2 released by industry of through burning fossil fuels and then storing it underground. According to the International Energy Agency, CCS can provide 20% of carbon cuts needed by 2050.

Adaptation: Strategies that aim to limit the negative effects of climate change on humans.

Examples:

1. Changing Agricultural Systems: Modifying (*changing)* farming to cope with the changing temperatures and rainfall.
2. Managing Water Supplies: Ensuring that all areas can access water by using water efficient devices and increasing supply through desalination plants. Additionally Ice Stupas can be used (*artificial glaciers)* to ensure all places can access water,
3. Reducing risk from rising sea levels would involve constructing defences such as the Thames Flood Barrier or restoring mangrove forests in Maldives, or raising buildings on stilts.

Y10 FRENCH MODULE 5: LE GRAND LARGE

1	During the summer holidays	Pendant les grandes vacances
2	I really like to spend time with my friends in town	j'aime beaucoup passer du temps avec mes amis en ville
3	however we normally go abroad	pourtant on va normalement à l'étranger
4	Last year I went to France	L'année dernière je suis allée en France
5	with my family for two weeks	avec ma famille pendant deux semaines
6	We stayed at a campsite in the southwest of France	Nous sommes restés au camping dans le sud-ouest de la France
7	I would say that it was really relaxing	Je dirais que c'était vraiment relaxant
8	despite the fact that we did not have electricity!	malgré le fait qu'on n'avait pas d'électricité!
9	Nevertheless, I would have preferred to stay in a hotel or a villa	Néanmoins, j'aurais préféré rester dans un hôtel ou un villa
10	because it would be more comfortable	car ça serait plus confortable.
11	Next year we will go to Spain	L'année prochaine on ira en Espagne
12	I'm looking forward to it	j'attends avec impatience
13	because we will stay in a big villa!	parce qu'on restera dans un grand villa!
14	I have always dreamed of going to New York.	J'ai toujours rêvé d'aller à New York.
15	I would like to see the monuments there and do some shopping.	J'aimerais y voir les monuments et faire des achats.
16	I have never gone to the United States so I hope that my dreams will come true one day.	Je ne suis jamais allée aux États-Unis donc j'espère que mes rêves se réaliseront un jour
17	Last month I travelled to Wales all alone	Le mois dernier j'ai voyagé au Pays de Galles toute seule
18	to visit my grandparents, it was completely disastrous!	pour visiter mes grands-parents, c'était complètement désastreux!
19	I had packed all my luggage	J'avais préparé tous mes bagages
20	but I forgot them at home!	mais je les ai oublié chez moi!

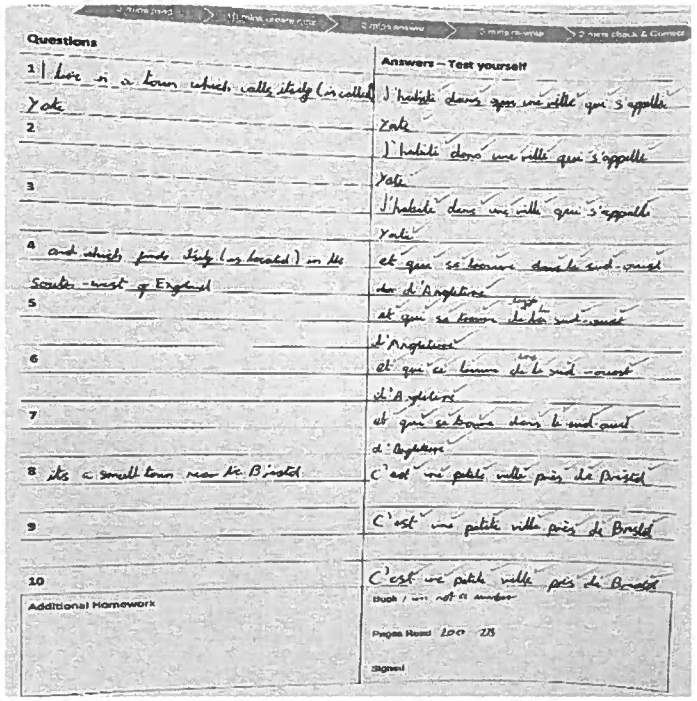
Grade 7+ Show Off Language

Opinions
malgré le fait que-In spite of the fact that
je dois avouer que- I must admit that
j'attends ça avec impatience- I'm excited for it/that (I await it with impatience)
j'en ai marre- I'm tired of it
soit...soit...- either...or...
je suis mal à l'aise avec- I am uncomfortable with
Subjunctive
bien que je sois (paresseux/se)- even though I am (lazy)
il faut que je fasse- I have to do
c'est dommage qu'il soit- it's a shame that it's
je doute qu'il soit important de + infinitive- I doubt that it's important to...
Si clauses + conditional
si j'avais l'occasion- if I had the opportunity (I would...)
si j'étais riche- If I were rich (I would...)
si j'avais le temps - If I had the time (I would...)
si je pouvais - If I could (I would...)
Past Tense
j'aurais aimé + infinitive- I would have liked (to...)
j'avais décidé que- I had decided that
j'avais toujours rêvé de + infinitive- I had always dreamed of...
je me suis rendu(e) compte que- I realised that
j'étais ravi(e) que- I was delighted that...
j'étais en train de + infinitive- I was in the middle of (doing...)
Connectives
néanmoins- nevertheless
du coup- thus/therefore
au lieu de- instead of
après avoir fait cela- After having done that...

MFL key classroom language:

Key Word	Definition	Example
Infinitive	In English it is always accompanied by the word **"TO"**. In French, it always ends in **ER/IR/RE** E.g: **to** play, **to** do, **to** go, **to** go out. jouer / faire / sortir	An opinion is always followed by an infinitive: <u>J'aime</u> jouer/ faire/ acheter <u>I like</u> **to play/to do/to buy**
Cognate	A word that is similar in spelling and meaning in two languages	This word is a cognate, what do you think it means? e.g. télé-réalité = TV reality
Connectives	A word that links two sentences or ideas together, e.g. et / cependant	What connective can we use to link these two sentences ? • j'aime l'histoire **(mais)** je déteste l'anglais • I like history **but** I hate English
Intensifiers	A word that strengthens the meaning of other expressions and shows emphasis, e.g. très/assez	Every time you write an adjective, make sure you use an intensifier before it. • je pense que le sport est très important • I think that sport is very important

Example of a French/Spanish LSQ:



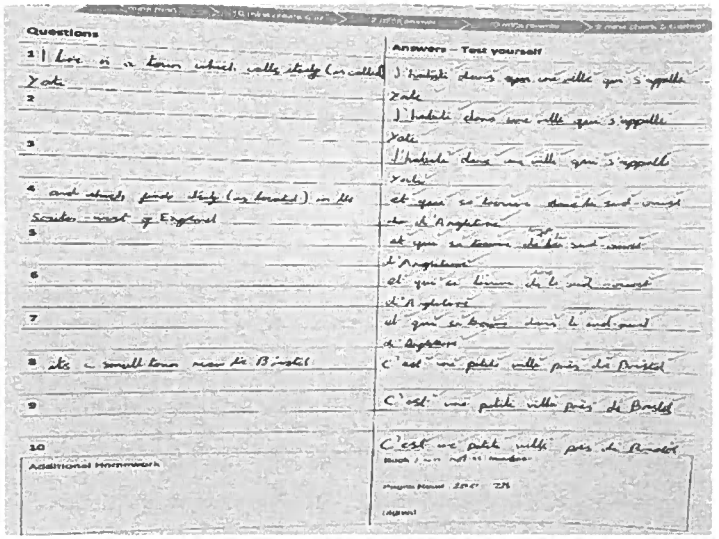
Y10 SPANISH MODULE 5: CIUDADES

1	I live in Coleford which is a quite small town near to Bristol.	Vivo en Coleford que es un pueblo pequeño, cerca de Bristol
2	It is located in the southwest of England. It is surrounded by woods.	Está situado en el suroeste de Inglaterra.Está rodeado de bosques.
3	Usually there is bad weather, it always rains	Generalmente hace mal tiempo, siempre llueve
4	I would say that there is not a lot to do for young people	Diría que no hay mucho que hacer para los jóvenes
5	However there is a cinema, a supermarket and some shops	Sin embargo , hay un cine, un supermercado y unas tiendas
6	I prefer to live in a city because there are more things to do	Prefiero vivir en una ciudad porque hay más que hacer
7	I love to go shopping in the city center and at the shopping center	Me encanta ir de compras en El centro y en el centro comercial
8	In my town you can go on a boat trip and you can go up to the tower	En mi pueblo se puede ir de excursión y se puede subir a la torre
9	Before my town was more quiet and there was not much traffic	Antes mi pueblo era más tranquilo y no había mucho tráfico
10	Last year I visited London with my family. We rented a bike which was cool.	El año pasado visité Londres con mi familia. Alquilamos una bici que fue guay
11	Tomorrow if there is good weather, I will go to the beach with my sister	Mañana si hace buen tiempo iré a la playa con mi hermana
12	I will buy clothes and shoes because I love fashion	Compraré ropa y zapatos porque me encanta la moda
13	However, if it rains I will rest and read books at home	Sin embargo, si llueve descansaré y leeré libros en casa
14	I prefer to shop online because it is more comfortable	Prefiero comprar en línea porque es más cómodo
15	I love secondhand shops because there are many bargains	Me encantan las tiendas de segunda mano porque hay muchas gangas
16	I would say that the best about my town is that there are many green spaces	Diría que lo mejor de mi pueblo es que hay muchos espacios verdes
17	But the worst is the public transport	Pero lo peor es el transporte público
18	I would invest in bike lanes because is better for the environment	Invertiría en rutas para bicis porque es mejor para el medio ambiente
19	Last year I went to Perú. The city was beautiful and the people were welcoming.	Lo peor de mi pueblo es que hay tanto tráfico.
20	The food was delicious and I would like to go back again.	La comida era deliciosa y me gustaría volver otra vez.

MFL key classroom language:

Key Word	Student-friendly definition	Example
Infinitive	In English it is always accompanied by the word **"TO"**. In Spanish, it always finishes in **"R" (-ar/-er/-ir)** E.g: **to** play, **to** do, **to** go, **to** visit. jugar/ hacer / ir / visitar	An opinion is always followed by an infinitive: Me gusta jugar/ hacer/ comprar I like **to play/to do/to buy** After suelo/solía, you always need an infinitive: suelo ver /jugar/descansar I tend **to watch/to play/to rest**
Cognate	A word that is similar in spelling and meaning in two languages.	This word is a cognate, what do you think it means? e.g. ciclismo = cycling
Connectives	A word that links two sentences or ideas together, e.g. y/por otro lado	What connective can we use to link these two sentences ? • Me gusta la historia **(pero)** odio el ingles • I like history **but** I hate English
Intensifiers	A word that strengthens the meaning of other expressions and shows emphasis, e.g. muy/bastante	Every time you write an adjective, make sure you use an intensifier before it. • Creo que las ciencias son **muy** interesantes • I think science is **very** interesting

Example of a French/Spanish LSQ:



Year 10 RE GCSE FULL Paper One – Christian worship and practices

Worship	Act of religious praise and devotion. Honouring God.
Liturgical	Church service that follows a set order and structure.
Non liturgical	A service that doesn't have a set order or structure.
Informal	Type of non-liturgical worship that is spontaneous e.g. Quaker and charismatic Christian worship
Prayer	Speaking to God
Lords Prayer	Set prayer taught by Jesus - 'Our Father'
Sacraments	Christian rituals where believers receive God's grace (free gift of love)
Eucharist	Holy Communion. Christian sacrament that uses bread and wine to re-enact the Last supper
Baptism	Baptism: Christian sacrament representing entrance into the Christian faith. Usually involves water
Transubstantiation	The belief that the bread and wine actually become the body and blood of Christ
Memorialism	Christ is not present, the Eucharist is carried out in remembrance of Jesus

KPI4: To be able to understand the sacrament of Holy Communion

•The **Eucharist**, which is also called the Holy Communion, Mass

• Although all denominations (church groups) recognise the importance of the Eucharist, they differ about its meaning. Roman Catholics believe that although the bread and wine physically remain the same, it is transformed into the body, blood soul and divinity of Jesus. This is called **Transubstantiation.**

In some churches (e.g. Roman Catholic) people come to the front to receive communion from the priest, usually in the form of a wafer and some alcoholic wine from a single cup In other churches (e.g. non-conformist) bread is usually set on a table alongside nonalcoholic wine in small cups and anyone who wishes to can take some.

KPI1:To understand what is meant by worship and different forms of worship.

•Worship is an act of showing **devotion** (loyalty) to God.

• Worship can be formal or informal, in a group or done individually (private worship).

•Liturgical worship involves a set format for worship, it can contain **liturgies.**

•Non liturgical worship is where there is no set structure, or where worship may be spontaneous. Informal worship is worship is more relaxed it is sometimes **charismatic,** it can be help at any time.

KPI2: To investigate the nature of prayer and its significance.

•Christians describe prayer as a conversation with God. Prayer can be silent or said out loud. It can use set words, or a person's own words.

•There are many different kinds of prayer, including: adoration - praising God for his greatness - confession - owning up to sin and asking for God's forgiveness thanksgiving - thanking God for his many blessings, petition - asking God for something, - intercession - asking God to help others who need it,

Most Christians believe prayer deepens a person's faith. Praying can help the believer come to a greater understanding of God's purpose for their lives.

KPI3: To explore the sacrament of baptism and the different forms amongst the church.

•**Infant Baptism**-In some Christian denominations babies are baptised as a symbol of welcome and belonging to the family of the Church. In this ceremony water is sprinkled on the baby's head as a symbol of new life and of being washed clean from sin. Parents and godparents promise to bring the baby up in the Christian faith following Jesus's example.

•**Adult baptism-** In some denominations people are not baptised until they are old enough to make the promise to follow Jesus Christ for themselves. Christians try to follow Jesus's example. He was baptised as an adult.

KPI5- To apply key religious teachings to the topic of worship

Prayer: The Lord's prayer: Matthew 6:9-13 "Give us today our daily bread and forgive us"

Baptism- The Great Commission: Matthew 28:19 "Go and make disciples of all nations, baptising them in the name of the Father and of the Son and of the Holy Spirit."

Eucharist: 1 Corinthians 11:23-26 "This is my body, do this in remembrance of me, this cup is the new covenant, drink it in remembrance of me."

RE GCSE FULL Paper One – Christian worship and practices

Pilgrimage	A journey made to a holy site for religious reasons.
Christmas	Christian festival celebrating the incarnation of Jesus
Easter	Christian festival commemorating the death and resurrection of Christ
Food banks	The Trussell Trust is a Christian charity that provides emergency food to people in crisis
Street pastors	Christian volunteers who provide free help and support to people, especially those who are out on a Friday or Saturday night.
Mission	A vocation or calling to spread the teachings of Jesus. The Great Commission: Jesus instruction to his followers to go and spread his message "Go and make disciples of many nations"
Evangelism	Spreading the teachings of Jesus
Church growth	Church attendance is falling in the UK, but is increasing rapidly in places like Africa
Reconciliation	The worldwide Church has a mission to heal people's relationship with God and with one another.
Persecution	Christians in places like North Korea and Syria are being persecuted by being attacked, forced to pay extra taxes or forbidden from certain jobs

KPI9:

- **Missionary** work means an organised effort to spread Christianity.
- Christians have suffered **persecution** in the past. Just after Jesus had died, many people began joining the new religion that Jesus had started called Christianity.
- Under the role of Roman Emperor Nero Christians were persecuted for their beliefs. Many of Jesus' disciples were persecuted and died horrible deaths such as being crucified or boiled alive.
- **Tearfund** are a Christian charity. They believe their duty is to follow the example of Jesus and help the poor and needy. They work in over 50 countries and provide short and long term aid.

KPI6- To describe the role and importance of pilgrimage.

A **pilgrimage** is a journey made for areligious reason. The believer makes a physical journey but it is also a spiritual journey toward God. Pilgrims may visit the Holy Land, particularly Jerusalem, because it is where Jesus lived and died. Christians go on pilgrimage to grow closer to God and seek a cure for an illness.

The pilgrimage site of **Lourdes** is near the Pyrenees mountains in France. Every year, it is visited by millions of pilgrims, particularly Roman Catholics.

Iona: Scottish island where Christians of all denominations go to pray, read the Bible and meditate

KPI7: To investigate Christian festivals

Christmas is a Christian festival remembering the birth of Jesus. Here are some of the ways it is celebrated: the story of Jesus' birth (the nativity) is re-told by children through nativity plays, church services often including carol singing, Some Christians start Christmas day with a midnight communion service (mass), gifts might be given or received which reminds Christians of the gift of Jesus

Easter remembers the crucifixion and resurrection of Jesus.

- Holy week begins with Palm Sunday, on Maundy Thursday, Jesus shared the last supper with his disciples.
- On good Friday Jesus was crucified by the Romans. Throughout the gospels, Jesus says that he will have to die but that his death will save many.
- Jesus was resurrected on Easter Sunday. Easter is celebrated by giving eggs which are a symbol of new life, Christians might attend church and share communion.

KPI8: The role of the church in the local community: Food Banks

The Trussell Trust

- Founded in 1997 it provides emergency food help and support to people in the UK.
- Based on the parable of the sheep and goats to aim to end poverty and relieve hunger of people
- Food is donated by churches, supermarkets, schools and business and care professionals identify people in need and give vouchers so that they can get food to help them in the short term.

Street Pastors

- The parable of the sheep and goats shows how Christians should help others and show agape
- Street pastors started in 2003 in London with volunteers to work on the streets to patrol areas to provide a reassuring presence to people at night
- They want to help people in practical ways working with the council and the police. They go out to listen to people, giving advice about where they can go, or to offer flip flops to girls whose shoes have broken or space blankets to help keep people warm

ART - Year 10 Unit 1: Identity

Formal Elements

Line
A mark that connects two or more points. These can be straight, curved, short or long.

Tone
The lightness or darkness or something. For darker tones use a higher grade B pencil.

Colour
Colour is what you see when light reflects of something.

Texture
How something looks or feels e.g. fluffy, rough, smooth etc.
Visual Texture - implied sense of texture that the artist creates through the use of various artistic elements such as line , shading, and color.
Physical Texture - texture you can actually feel with your hand

Pattern
A symbol, shape or colour that repeats. Man-made patterns are designed by humans, natural patterns are formed by nature.

Shape/Form
Shape is 2D e.g. rectangles. Form is 3D e.g. cubes, spheres etc.

Colour Theory

Primary Colours
Colours that can't be mixed/ made from other colours e.g. red, yellow and blue.

Secondary Colours
Colours that can be made by mixing two primary colours.
Red + Blue = Purple
Yellow + Blue = Green
Yellow + Red = Orange

Tertiary Colours
Colours that can be made by mixing a primary and secondary colour together e.g. Blue + Green = Turquoise.

Complementary Colours
Colours that are opposite each other on the colour wheel.
Blue & Orange
Red & Green
Purple & Yellow

Analogue/ Harmonious Colours
Colours that are next to each other on the colour wheel e.g. Red, red-orange and orange.

Tints/ Shades
Tint - Adding white to a colour to make it lighter.
Shades - Adding black to a colour to make it darker.

Tips, Tools & Techniques

Grid-Method
A method of drawing to recreate, enlarge or reduce an image ensuring accurate proportions.

Blender Stick
A paper stump that allows you to blend tones.

Blending
The smooth transition between tones.

Tints
Adding white to a colour to make it lighter.

Tones
Adding black to a colour to make it darker.

Shading Techniques
Hatching, cross-hatching, stippling and scumbling.

Keywords & Concepts

Proportion
In portraits = the size and relation of face features on the face. It is where key features are placed in your drawing to show correct distance between each face feature.

Portraiture
The art of drawing or taking a photo of a person.

Expression
Expression means showing an emotion e.g. happy, sad, moody, shocked.

Facial Features
Eyes, Nose, Mouth

Characterisation
The distinct features of a person eg things in your portrait that show a trueness to the person's character.

Juxtaposition
Two things that are placed together to create a contrasting effect.

Symbolism
Using images to suggest specific ideas or feelings e.g. a skull often suggests death.

Identity
The fact of being who you are.

Drama - Base work

Five Key Acting Skills

Facial Expressions - How can we show emotions through our faces? Eye contact, eye brows, straight, emotions, gritting teeth, tense, relaxed, wrinkled, creased, staring, twitching.

Voice - How can we use our voice in performance? Tone, pitch, pace, emotion, volume, projection, dialogue, dialect, accent, intonation, whistling, SFX, interjection.

Posture - How can we use our bodies to help us create performance? Posture, blocking, positioning, front on, side on, emotions, age, open or closed.

Gestures - These are movements with meaning, how can we use them in performance? Hands, arms, speed, clicking, rubbing, waving, mannerisms.

Movement - How can movement be used to create performance? Speed, pace, acceleration, gait, mannerisms, special awareness, stage presence.

Key Terminology

Script - The written words and stage direction which are spoken and performed in a play. A script will be written by a writer and then given to a director to create a performance.

Director - This is the person who is in charge of the actors and performers. The director will tell the actors how they want them to perform and move in each scene. They will block the performance.

Blocking - When creating a performance you must first plan where all the actors are going to be standing and moving to on the stage. You must also plan what set and props are going to be used in your performance. This is called Blocking.

Stage Direction - Text in a script which tells you what you need to be doing while performing. Some scripts may have more stage directions than others. Some directors may also decide not to ue all of the stage directions because they have their own ideas for what the performers should be doing.

Characterisation - Using a variety of skills, improvisation techniques and background information to become your character. These skills are your 5 key acting skills. It is important you fully understand the character you are performing. You MUST remember, you are no longer yourself when acting. You become someone else.

Performance Discipline - Maintaining extremely high and professional levels of focus and concentration throughout rehearsals and performance. This involves being on task at all times, not laughing or giggling when you are acting. It is crucial to stay focused when performing.

Ensemble - A group of performers all working together in a performance.

Freeze Frame - When a scene 'freezes' for a moment to allow the audience to really explore the moment. It is like pressing pause on live action.

Tableaux - A collection of still images which create a performance. It is like looking through a photo album.

Immersive theatre - Audience are included in the performance but don't know what is going to happen. Actors my talk to or ask the audience questions about what is happening in the performance.

Example Self-evaluation

STRENGTH During my performance, I wanted to show how my character was really angry with another character. To do this, I scrunched my eyebrows together and tilted my head slightly forward, using facial expression to show my annoyance. I also had a very big frown and narrowed whilst making a low pitched noise to display my frustration. This was successful because the audience could clearly see how angry my character was when seeing their friend after having an argument.

AREA FOR IMPROVEMENT During my performance, I wanted to show how my character was really happy to see someone. To do this, I slowly waved my hand and had a slight smile on my face whilst quietly saying 'Hello' in a soft tone. My intention was to show how I was happy but wanted to show it in a subtle way. However, the audience were confused by this and thought that my reaction was too small. If given the chance to perform this moment again, I would make my gestures much bigger, my movements quicker and my facial expressions much more exaggerated so that the audience can see my excitement much more clearly.

Drama Y10 Billy Elliot

Billy Elliot plot

Billy Elliot is set in the county town of Durham. It follows the story of a young boy who discovers he has a love for dance, yet he faces a backlash from his family and the community he lives in.

The play is set during the 1980's Miners strike. It is a musical which makes many reference to the conservative government at the time.

The performance starts with the audience being informed that the Miners are going on strike. We then are introduced to the main character and his best friend Michael, who don't seem to understand what is happening around them.

We learn that Billy lives with his Dad, Brother and Grandma, his mam passed away a few years ago.

After arriving late to a boxing class he is forced to stay behind. A ballet class then enters the hall and he takes part. As the show goes on he stop going to boxing and continues to go to the ballet class. The dance teacher, Mrs Wilkenson, convinces Billy to Audition for the Royal Ballet school. However, is firstly denied by his family. Due to the on going circumstances with the strike.

After some time his dad goes against his community and family and supports Billy in his dream. Billy auditions and gets into the Ballet school.

The performance ends with the Miners finding out that they have lost their fight against the government and are forced back to work.

Background of the play

Written by Lee Hall, Billy Elliot is set at a time when English communities were divided by the political landscape at the time. Lee Hall was raised in Newcastle which was an area hit hard by the mining strikes of the time.

Throughout the whole performance the theme of social class is very apparent. There are many instances of the issues faced by working class committees highlighted throughout the performance. An example of this is during the song Solidarity. We see the struggle between Miners and Police officers who are clashing on the picket line. This is combined with a ballet class, showing us the innocence of the children and Billy, while such turmoil is happening around them.

There was a large gap between working and middle class in Britain, even before the industrial decline. The Miners and the police are class stereotypes. A lot of working class people struggles finically, even if they were in work or on the dole. The Middle class were largely unaffected by the industrial decline and strikes at the time. There was also a class divide in education, whether you went to a public and private schools often decided your job in the future. We can see this when Billy goes to audition for the Ballet School.

Families were expected to have a 'nuclear' structure- a mother, a father and their children. Single-parent families like Billy's were very uncommon and he finds a mother like figure in Mrs Wilkenson.

Key Terms

Foreshadowing - Warning or indication of a future event
Pathos - Appeal to emotion
Multi-role- One actor playing a two or more roles
Motif- A repeated idea throughout the story
Dialogue - Conversation between two or more characters
Tension - Dramatically used to build suspense
Humour - Language used for amusing/comic effect
Dramatic Irony - When the audience know something that the characters do not
Songs - Contain lyrics that are set to music to give audience more information
Stage Directions - Instructions indicating how the actor should move/speak
Cyclical Structure - Finishes a similar way to how the text began
Prologue - A separate introduction that reveals some of the plot
Atmospheric - A distinctive mood/feel to the scene
Parallels - Similarities in the text—almost a replication of events
Tragedy - A play dealing with tragic events and having an unhappy ending for main characters.

Performance Style

Billy Elliot is a Musical. Meaning it regularly has songs which forward the performance. With most musicals the performance will end on a positive note dispute what has happened in the show.

Epic Theatre is another style used in this performance, it is a theatre style created by Bertolt Brecht to push a political message and highlight issues within society.

Billy Elliot is extremely political, with many references to the conservative government during the 1980's. The audience see the struggle that many people went through. There is also mention of real people, which again makes the performance Epic theatre.

Gestus and Spass is also used in this performance. This can be clearly seen in the song Expressing yourself. Billy and Michael are singing about the importance of people being able to express themselves in any way they want to which is a very serious topic. As they do massive puppets of different types of clothing are seen on stage.

A third technique we see used in Blood Brothers is Multi-Rolling. This is a technique where one actor will play more than one character or more than one actor will play the same character.

Year 10 Photography—Unit 1 Term 2

AO1- Assessment objective 1 – Develop ideas through investigations, demonstrating critical understanding of sources.

Artist Research!!

Evidence can include:

Artist research, contextual research, analysis of artist artwork, thumbnail sketches showing composition.

Grading criteria for level 9:

Demonstrate independent critical investigation and in-depth understanding of sources to develop ideas convincingly.

AO2- Refine work by exploring ideas, selecting and experimenting with appropriate media, materials, techniques and processes.

Experimenting!!

Evidence can include:

Photoshoots, investigating different techniques, annotating of your contact sheet, post production editing.

Grading criteria for level 9:

Effectively apply a wide range of creative and technical skills, experimentation and innovation to develop and refine work

AO3-Record ideas, observations and Insights relevant to intentions as work progresses.

Annotations!!

Evidence can include:

Photoshoot plans, thumbnail sketches, storyboards, visual analysis of photography.

Grading criteria for level 9:

Record and use perceptive insights and observations with well-considered influences on ideas

Ao4-Present a personal and meaningful response that realises intentions and demonstrates understanding of visual language.

Final Response!!

Evidence can include:

A personal and purposeful response to an artist/ context. response should be informed by the study of artists/ techniques.

Grading criteria for level 9:

Demonstrate advanced use of visual language, technique, media and contexts to realise personal ideas

Photography techniques

Composition: How objects are arranged in the frame/ photo.

Rule of thirds—Using a grid to off centre the focal point.

Symmetry and Balance—using mirroring or contrasting numerous small object against one bigger object.

Diagonals and Triangles—creating a sense of depth.

Leading Lines—to guide the viewers eye to the focal point and around the photo.

Negative Space—to frame the focal point.

Minimalism—'Less is more'. Simplistic colours and layout.

Frame within a Frame—creates depth and draws the eye into the photo.

Camera settings

A-DEP Automatic Depth of Field

M Manual

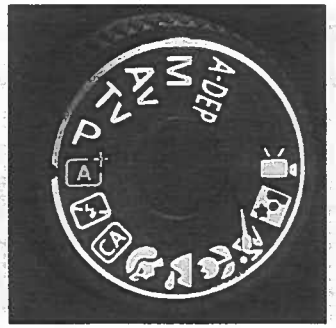
AV Aperture – Priority

TV Shutter —Priority

P Programmed Automatic

Scene Intelligent Auto

No Flash



Filming

Night Portrait

Sports

Macro

Landscape

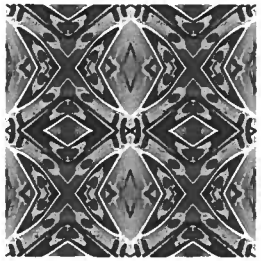
Portrait

CA Creative Auto

Edward Weston

Edward Weston was a 20th century photographer born in the 1880s. He mainly photographed natural objects during the 1920s such as a gnarled tree and a pepper.

Weston intended to make simple and everyday objects unusual.



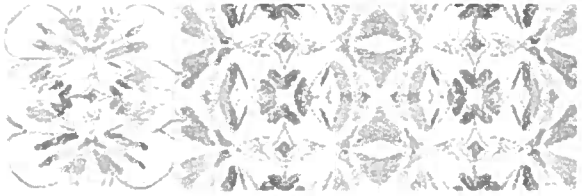
Using a PhotoBox.

You can create a PhotoBox to place your object into, which gives you an plain and even background to your photographs.

Repeat pattern

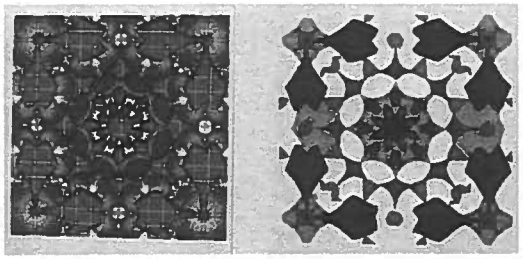
Repeat patterns are patterns where a group of elements repeat themselves as the pattern extends.

Oil pastel misprinting



1. Cover the back of the picture with oil pastel,
2. Turn picture around and tape on top of the surface created.
3. Using a sharp pencil draw over each part of the tree as if you were tracing it.

Stencilling



1. Create a successful pattern by ensuring that the shapes interact and overlap .
2. Start to remove sections of your pattern.
3. When each layer has the correct sections removed, use it as a stencil to apply coloured ink.

The 3 types of portraits:

A standard posed portrait.:

In a standard portrait, the subject is completely aware of the camera. The photographer intentionally includes flattering light, posing, considered environment and eye contact.

An anonymous / environmental portrait:

In this scenario, the subject may not be aware of the camera. The photographer isn't asking for eye contact, instead looking for details and the relationship between the environment and the subject.

A creative portrait:

With a strong direct gaze to the viewer, creative portraits are usually shot at a wide aperture (blurred background), drawing all attention to the subject only. They show personality and hint at who the model is.

Lighting techniques:

Split lighting:

This is where half the face is lit and the other half is in shadow. This is created by having the light source to the side of the model. As the light is to the side, it only hits one side of the face. This creates quite serious, commanding portraits, due to the high contrast.

Rim-lighting:

This is where the light comes from behind the model and is seen around the edge of the models outline. This is created by having the light directly behind the model, with the photographer in front of the model. The model blocks most of the light besides a bit which frames the model and almost creates a halo or glow effect.

Butterfly lighting:

This is where the angles of the face are enhanced, such as cheekbones and jawline. The is created by having the light source above and slightly in front of the model, so it points down at them. Due to the light being high it hits the high points of the face and casts the hollows in shadow. This is the most flattering lighting technique out of the three.

BTEC Music - Year 10 - Component 1: Exploring Musical Products & Styles

Key Terminology

Melody - a sequence of single notes that is musically satisfying; a tune.
Harmony - the combination of simultaneously sounded musical notes to produce a pleasing effect.
Tonality - the character of a piece of music as determined by the key in which it is played.
Rhythm - a strong, regular repeated pattern of movement or sound.
Structure - refers to the arrangement and order of the parts or sections of the music.
Instrumentation - the particular instruments used in a piece of music.
Texture - refers to the effect of the different layers of sound in a piece of music, and the relationship between them.
Timbre - the character or quality of a musical sound.
Production - the process by which music is created, captured, manipulated, and preserved so that it can be distributed and enjoyed.

Musical Styles - Popular

Reggae - a style of popular music which uses syncopation (off-beat rhythms), originating in Jamaica. Reggae became widely known in the 1970s through the work of Bob Marley; its lyrics are much influenced by Rastafarian ideas. Reggae songs were largely based on increasingly politicised lyrics that addressed social and economic injustice - This is due to the Rastafarianism influence which advocated for equal rights and justice. Besides Marley and the Wailers, groups who popularised the fusion of Rastafari and reggae were Big Youth, Black Uhuru, Burning Spear (principally Winston Rodney), and Culture.

Britpop - British pop music of the mid 1990s that was typically influenced by the Beatles and other British groups of the 1960s and perceived as a reaction against American grunge music. Various bands were involved in Britpop such as, Pulp, from Sheffield, which was fronted by veteran rocker Jarvis Cocker and had its biggest hit with the single "Common People", but it was essentially about Oasis and Blur. What the two bands had in common was a belief in the classic guitar-based pop song with a sing-along chorus and a love of fashionable sportswear.

BTEC Music - Year 10 - Musical Products & Styles

Musical Styles - World Music/Jazz & Blues

Delta Blues - a style of blues originating in the Mississippi Delta, typically featuring slide guitar. The form is dominated by fiery slide guitar and passionate vocalising, with the deepest of feelings being applied directly to the music. Its lyrics are passionate as well, and in some instances remain the highest flowering of blues songwriting as stark poetry. The form continues to the present time with new performers working in the older solo artist traditions and style. In its earliest form, the style became the first black guitar-dominated music to make it onto phonograph records back in the late '20s.

Samba Music - The initial birth of samba music took place sometime in the early 19th century, with its roots stemming from African drumming traditions. Enslaved African people brought over to Brazil retained the influence of their own musical elements such as polyrhythms and syncopated patterns. It's now an integral part of Rio De Janeiro's famous yearly Carnival festival, at which many samba schools compete against one another.

Examples of Stylistic Features

Instrumentation: instrumental techniques, type of ensemble, alternative instrumentation, sonic features, electronic sounds.
Texture: solo, duet, homophonic, polyphonic, unison.
Timbre: sonic features, electronic sounds, FX.
Tonality: major scale, minor scales, blues scale, pentatonic scale, modes, ragas, exotic scales.
Scales and modes: major scale, minor scales, blues scale, pentatonic scale, modes, ragas, exotic scales.
Harmony: major and minor triads, power chords, 7th chords, sus chords, extended chords, suspensions, inversions, chord sequences, arpeggios, broken chords.
Rhythmic techniques: metre, tempo/bpm, syncopation, swing, one drop/skanking, polyrhythms, hemiola, phasing.
Structure: verse/ chorus, 12-bar blues, through-composed, bridge, intro, outro, ABACAD.
Melodic techniques: conjunct, disjunct, chromatic, diatonic, phrasing, repetition, sequence, ornamentation, motifs, round/canon, riffs, hooks, head, improvisation.
Production: microphone use, recording styles, sampling, FX, looping, controllerism, turntablism, quantisation, sequencing, automation.

BUSINESS: *Creating informed, discerning employees, consumers and future leaders*

Topic 1.3.1 Business Aims & Objectives

Key Vocabulary

Aims – a long term goal a business wants to achieve

Objectives – more specific measurable steps

Financial aims – goals related to money, e.g. survival, profit levels

Non-financial aims – goals related to non-monetary aspects, e.g. ethical or environmental issues

Survival – having enough sales to cover costs and still be trading

Profit – when revenue is greater than costs

Sales volume – the number of products sold

Market Share – the percentage of total sales that one business has

Ethical – morally correct

Shareholder – an individual who owns part (a share) of company

Dividend – the percentage of profit that is paid to shareholders of a company each year

Core Knowledge

What is an Aim?

Aims are long term goals. Objectives are more specific measurable, time constrained steps. The best objectives are **SMART**.

SMART – **S**pecific, **M**easurable, **A**chievable, **R**ealistic, **T**ime-framed

Examples of Aims:

- **Financial** Aims: Survival, maximise or increase profit, growth, increase dividends to shareholders
- **Non-financial** aims: ethical, e.g. no animal testing, achieve customer satisfaction, achieve a personal challenge or independence

Why set objectives?

Objectives help a business to have a focus, allow them to monitor progress, and to set individual objectives for employees to motivate them

Don't be a "man on the street"

- All businesses aim to make a profit – not true! Social objectives can be important and so can personal objectives
- Businesses will change their objectives over time – don't assume that they always are aiming for the same thing

Wider Business World

Tesco – used to aim to have more than 50% of its revenue from non-food. Changed after Aldi and Lidl gained 10% market share between them

M&S – aims are about environment and sustainability not profit

Dyson – James Dyson had a personal objective: to be successful rather than profitable

Synoptic Links

Enterprise – the non-financial rewards for entrepreneurs are similar to non-financial objectives

Financial data – understanding the difference between survival (break-even) and profit

Ownership – only companies will have shareholders; smaller businesses are more likely to have personal objectives

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Topic 1.4.1 Business Ownership

Key Vocabulary

Unlimited liability – where the owner's responsibility for debts has no limit, so personal possessions are at risk

Limited liability – owner's responsibility is limited to the amount of the original investment

Sole trader – a business owned and run by one person

Partnership – a business jointly owned by 2-20 people

Silent partner – a person who invests into your partnership but does not run it

LTD – a private limited company

Shareholder – someone who owns part of a company (LTD or PLC)

Employees – people who work for your business

Franchising – allowing others to use your business name

Franchisee – someone who buys into a franchise

Franchisor – a person or business who allows others to buy into their franchise business

Incorporated – where the business is a separate legal entity to the owners

Core Knowledge

There are various ways a business can be owned, amongst them

- Sole traders
- Partnerships
- Private limited companies
- Franchise

Don't be a "man on the street"

- Not all businesses are called companies
- Not all business owners are shareholders
- Limited liability means you don't need to pay bills; this is <u>only</u> the case in the event of the business failing
- Sole traders <u>can</u> still have employees

Wider Business World

Franchise examples include Subway, BSM, JoJingles

LTDs include New Look, Eddie Stobbart

Synoptic Links

Risk and reward – an entrepreneur will need to consider the risk of financial loss

Business growth – why a business might choose to change ownership

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Topic 1.4.2 Business Location

Key Vocabulary

Location – where a business operates

Proximity – nearness to; how near you are to something

Market – the customers / people and businesses who will buy your products

Labour – staff who work for you

Raw materials – the things a business needs to make its products

Primary sector – businesses that extract and provide raw materials from the land, sea or air

Secondary sector – businesses that convert raw materials into a finished product

Tertiary sector – service-based businesses

Core Knowledge

Business location is where the business operates. This may be a fixed location on online.

For some businesses the location is more important than others. A business will need to consider

- The nature of the business
- What sector it operates in
- The market / customers' needs
- Type and amount of labour required, i.e. near to labour if skilled labour is needed, and concentrated in a specific area
- Type, size, amount of materials required to produce the product
- Competitors – locate close when customers visit an area for a specific purpose, e.g. a town centre for a night out
- Costs – city centre locations are more expensive than out of town locations

The internet has had a significant impact on location. Small businesses can now use online sites such as ebay and etsy.

Using e-commerce can reduce fixed costs, and allow a business to offer a greater choice, but the business must have efficient distribution systems and an effective returns service

Don't be a "man on the street"

- Not all retailers sell online as well
- Ebay is for business sellers as well as second hand items
- Cheapest location is not always best

Wider Business World

Amazon – arguably the most successful internet based business

Primark – most of the stores in large town centres to benefit from being near customers

Beauticians / hairdressers – often set up close to competition to benefit from passing trade

Medical research – often located near to a large university

Synoptic Links

Technological influences – the introduction of the internet meant that businesses no longer needed a fixed premises

Marketing mix – location costs can affect price; internet affects the place element

Globalisation – some businesses can now choose to locate in different parts of the world

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Topic 1.4.3 Marketing Mix

Key Vocabulary

Product – the actual specific item produced by the business

Price – what the customer will pay for the product

Promotion – the mix of methods that are used to persuade customers to buy

Place – how and where the product gets to the consumer from the supplier

Customer – person or business that buys the product

Consumer – the end user of the product

Retailer – a business that buys from the manufacturer and sells then onto the customer

Wholesaler – a business that buys in bulk from manufactures and sells in smaller quantities to retailers

e-tailer – an online retailer

USP – unique selling point; something that is unique to that product and makes it stand out against the competition

Target market – the specific group of customers a business is targeting in terms of gender, income, lifestyle, age

Core Knowledge

Also referred to as the 4Ps. All factors must work together to enable a product to be successful.

- **Product** – this must meet the customer needs and be developed based on market research. A business will need to consider its range, brand and USP. The design, aesthetics and function must all work together
- **Price** – what will be charged. This must be appropriate for the target market, and quality of the product. Usually high quality products have higher prices.
- **Promotion** – the combination of activities that create awareness, boost sales, build a brand and communicate features, including advertising, special offers, publicity and public relations
- **Place** – the methods that are used to get the product from the manufacturer to the consumer, for example through a specialist shop, the internet or a general retailer

Changing customer needs will impact on a marketing mix. For example, an increase in customers wanting plant-based food, will mean that food manufacturers will need to develop new products.

Changes in technology, have impacted on all aspects of the marketing mix: a business can use social media to conduct research to develop products; customers can compare prices more easily; promotion can be digital.

Don't be a "man on the street"

- Place is not the same as location
- Promotion is not just advertising
- Lower priced products do not always sell more; quality is also important

Wider Business World

Apple – price, place, product and promotion all link

Chanel – will not allow Superdrug of cheaper retailers to stock its perfume

RyanAir / EasyJet – their prices are much lower than other airlines. Consider how their product and promotion reflects this

Synoptic Links

Technological influences – the introduction of the internet has affected the place

Customer needs – the product needs to meet these

Market research – will need to be effective for the business to decide on each P

External influences – may affect customer income, affecting the price a business can charge

BUSINESS: *Creating informed, discerning employees, consumers and future leaders*

Topic 1.4.4 Business Plans

Key Vocabulary

Business plan – a detailed documents setting out the marketing and financial thinking behind a proposed business

Entrepreneur – an individual who combines the factors of production to create a product, often taking risks

Aims – the long term goals of a business

Target market – the specific group of consumers a business is aiming to sell their product to

Revenue – the income from sales of the products

Costs – items such as rent, rates that a business must pay

Profit – revenue minus costs

Cash flow forecast – a prediction of the inflows and outflows of money the business will have each month

Sources of finance – places, businesses or people that a business can get money from in order to pay start-up and running costs

Location – the place where a business operates

Marketing Mix – a combination of the 4 Ps; product, price, place and promotion

Core Knowledge

Why plan?

- To reduce risk of failure
- To encourage investors
- Forces the entrepreneur to consider all aspects of the business
- Provides something to refer to and provide direction

Contents

- The business idea
- Aims and Objectives of the business
- Target market
- Forecast revenue, costs and profit
- Cash flow forecast
- Sources of finance
- Location
- Marketing Mix

Limitations

Planning does not guarantee success

Problems can arise if the plan is not flexible and include contingency plans

Don't be a "man on the street"

- A plan will guarantee an investment – not the case. Banks and venture capitalists are experienced and will be able to spot unrealistic forecasts
- A lot of research will need to go into a plan. An entrepreneur can not write one overnight or without extensive research

Wider Business World

Watch Dragon's Den – who has a business plan? Are they more likely to get investors?

Synoptic Links

Aims and Objectives – what is the purpose of writing these

Marketing Mix – need to be included

Market research – types that can be done and reasons why it is necessary

Risks and rewards – planning reduces the risk to an entrepreneur

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Topic 1.5.1 Stakeholders

Key Vocabulary

Stakeholder – anyone with an interest in the business

Shareholder – someone who owns part of a company (LTD or PLC)

Employees – people who work for your business

Customer – someone who buys from your business

Manager – someone with a position of responsibility within a business organisation

Supplier – someone or a business that provides stock or materials to a business

Local community – the people who live around the business

Pressure group – an organisation that will campaign for something specific, e.g. workers rights, environmental protection

Government – political power that can set laws and regulations that a business must follow

Conflict – when stakeholders groups do not want the same thing from a business

Core Knowledge

Stakeholders are anyone interested in the activities of a business.

Each group is interested for different reasons, e.g. employees want to be paid a reasonable income and have job security.

Stakeholders are affected by business activity, e.g. local community is affected by the noise, pollution and traffic congestion, but may gain job opportunities or community sponsorship.

Each stakeholder group can influence a business, e.g. customers can write reviews of the business

Stakeholder groups may want different things and so there may be conflict between their needs. A business will need to manage this to try to satisfy as many stakeholder groups as possible.

Don't be a "man on the street"

- Don't confuse stakeholders and shareholders
- Stakeholders are not one collective group
- Managers and owners are not the same thing
- Not all business owners are shareholders

Wider Business World

Plane Stupid is a pressure group that campaigns against increasing air travel

Greenpeace is a well known environmental pressure group

Synoptic Links

Ownership – sole traders and partnerships have owners / LTDs have shareholders

Customer needs – meeting these is important

Ethical & environmental considerations – pressure groups can influence these

Subject: GCSE PE 1.2 a

Components of Fitness-

Know the following components of fitness-

Cardiovascular Endurance/Stamina
-Definition- Cardiovascular endurance is the ability to continuously exercise without tiring.
-Practical examples where it is important
Running/aerobics/swimming/fast walking/cross country skiing
-Know Suitable Tests
Cooper 12 minute run/walk test,
Multi-stage fitness test

Muscular Endurance
-Definition- Muscular endurance is the ability of the muscle or muscle groups in the body to repeatedly contract or keep going with without rest.
-Practical examples where it is important
Cross-country running, long distance cycling, long distance swimming, rugby/football/hockey full games
-Know Suitable Tests
Press up test, sit up test.

Speed
-Definition- Speed is the ability to move all or part of the body quickly.
-Practical examples where it is important
Athletics e.g. 200m sprint
Swimming e.g. 50m freestyle
Squash- running to the front of the court to retrieve drop shot
-Know Suitable Tests
30m Sprint test

Strength
-Definition- Strength is the amount of force a muscle can exert against a resistance.
-Practical examples where it is important
Sprinting- strong arm action, rugby- driving forward in scrum, cycling, strong leg action
-Know Suitable Tests
Grip strength dynamometer test
1 Repetition Maximum (RM)

Power
-Definition- Power is the ability to perform strength based movements quickly
-Practical examples where it is important
Triple jump in Athletics, throwing in Athletics, tackling in rugby
-Know Suitable Tests
Standing broad jump
Standing vertical jump

Flexibility
-Definition- Flexibility is the amount or range of movement that you have around a joint.
-Practical examples where it is important
Gymnastics-achieve splits, dance- make a lunge in performance, hockey- stretch to make tackle, table tennis- perform smash
-Know Suitable Tests
Sit and reach test

Agility
-Definition- Agility is how quickly you can change direction under control and maintaining speed, balance and power.
-Practical examples where it is important
Trampolining and gymnastics- perform a sequence, netball- pass when leaping in air, volleyball- jump quickly to block
-Know Suitable Tests
Illinois agility test

Balance
-Definition- Balance is the ability to maintain equilibrium, whether stationary or moving.
-Practical examples where it is important
Gymnastics- to perform a somersault on beam, hockey- maintain balance when taking penalty flick, dance- hold arabesque position.
-Know Suitable Tests
Stork stand test

Co-ordination
-Definition- Co-ordination is the ability to move different limbs at different times or do more than one task effectively at the same time.
-Practical examples where it is important
Dance, tennis and other racket sports, gymnastics, team games like football/netball.
-Know Suitable Tests
'Wall throw test'.

Reaction Time
-Definition- Reaction Time is the time is take for you to initiate an action or movement in response to a stimuli.
-Practical examples where it is important
Sprint start in athletics, receiving a serve in tennis, football- goalkeeper saving a penalty.
-Know Suitable Tests
Reaction time ruler test

Subject: GCSE PE 1.2 b

Principles of Training-

Know the following definitions of principles of training and be able to apply them to personal exercise/training programmes:

Specificity- The training must be matched to the needs of the sporting activity and individual.
Example – A sprinter would carry out more anaerobic training because the event is mostly anaerobic in nature.

Overload- The body must work harder than normal so there is some stress and discomfort.

Adaptation and progress will follow Overload because the body will respond to the stress.
Example – in weight training the lifter will eventually attempt heavier weights or increase reps in order to create Overload.

Progression- Not only do we need to include Overload in our training, it must also become gradually more difficult.
Example a Weight Lifter will be able to increase the weight they can lift over time as they increase their intensity, duration and frequency of training.

Reversibility- Any adaptation that takes place as a result of training will be lost if you stop training.

Example - a track athletes VO2max and Strength will decrease if they injure themselves and are unable to train for a period in time.

Optimising Training-
Know the definition of the elements of FITT and be able to apply these elements to personal exercise/training programmes.

Frequency: The Number of Training Sessions Each Week
Example: an elite athlete may train every day whereas a lower level club player may train once a week.

Intensity: How Hard you Train
Example: a Sprinter might work really hard using HITT training for a short period of time whereas a long distance athlete will work at a lower intensity but over a longer period.

Time: How Long you Train for

Type: Which method of Training you use.

Know different types of training, definitions and examples of:

Continuous training- A method of training that seeks to maintain or improve Cardiovascular Endurance.
Example- long distance running, cycling or swimming

Fartlek training- Also known as 'SPEED PLAY' (Swedish) often used to maintain or improve aerobic endurance
Example-deal for team sports as it replicates the efforts of a player / athlete in a game like situation (run, walk, jog, sprint, rest, repeat).

Interval training- A type of training which features distinct periods of work followed by periods of rest.
Example- ideal for team sports- sprint 30m,

rest, repeat 5 times.

Circuit Training (Interval Training)- A method of training that incorporates different stations to stress / overload different muscle groups.
Example- Skipping – Press Ups – Squats – Dips – Crunches – Rest – Repeat

Weight Training (Interval Training)- A form of training that involves the use of resistance to overload muscle groups and force adaptations that grow muscle tissue.

Plyometrics (Interval Training)- A form of training that involves rapid and repeated stretching and contracting of muscles designed to increase strength and power.
Example- Any sport that involves sprinting, throwing and jumping will benefit from this type of training such as Basketball, netball or rugby.

High Intensity Interval Training (HIIT)- A Cardiorespiratory training technique that alternates brief speed and recovery intervals to increase the overall intensity of a work out.

Understand the key components of a warm up and be able to apply examples-
Component 1: **Pulse Raising** exercises - to slowly raise heart rate and gradually increase body temperature e.g. jogging / cycling

Component 2: **Mobility** exercises that take joints through their full range of movement e.g. high knees / arm swings

Component 3: **Stretching** can include static or dynamic type stretches e.g. lunges, walking hamstring stretch.

Component 4: **Dynamic Movements** that show a change in speed and direction e.g. shuttle runs

Component 5: **Skill Rehearsal** or practising the common movement patterns and skills that will be used in the activity e.g. dribbling drills for football, shooting in basketball.

Know the physical benefits of a warm up-
-Warms up the muscles & prepares the body for physical activity
-Increases Heart Rate (release of adrenaline)
-Increases blood flow and oxygen to working muscles
-Decreases the *likelihood* of injury and muscle soreness (DOES NOT *PREVENT* INJURY)
-Increase in Body Temperature (increased energy production)
-Increases Flexibility of muscles and joints
-Increases Pliability of ligaments and tendons
-Increases speed of muscle contraction

Understand the key components of a cool down and be able to apply examples-

Component 1: **Low Intensity Exercises.** Aimed to gradually lower Heart Rate and reduce the body's core temperature.
Examples - light jogging
Component 2: **Stretching.** Includes steady and static stretches which are held for longer than in the Warm Up, example 15 seconds.
Examples - hamstring stretch & triceps stretch

Know the physical benefits of a cool down-
The Cool Down is essential to an effective training session. Cool downs allow Oxygen to flush through muscle tissue and get rid of Lactic Acid.
The Cool Down is crucial in…
-Helping the body's transition back to resting state
-***Gradually*** lowering heart rate
-***Gradually*** lowering temperature
-Circulating blood and oxygen
-***Gradually*** reducing breathing (respiratory) rate
-Increasing the removal of waste products such as lactic acid
-Reducing the risk of muscle soreness and stiffness
-Reducing the risk of damage to joints
-Aiding recovery by stretching muscles

Subject: GCSE PE 1.2 c

Prevention of injury

Understand how the risk of an injury in physical activity and sport can be minimised and be able to apply examples-

Personal Protective Equipment-
Risks arising from some hazards can be limited by using Personal Protective Equipment.Many sports advise using protective equipment others require it's use in through legislation.
Example- shin pads in football, gum shield in Rugby.

Correct clothing/footwear-
Wearing the correct clothing and footwear for a sport/activity is very important. Clothing can protect from the weather (sun, heat, cold, rain, ice). Some activities/sports may have rules preventing the wearing of certain clothes that could be dangerous to self or others.
Example- ski salopettes.

Correct footwear is one of the most important and common safety features. Footwear can help give you stability on the various surfaces you perform on. Footwear can protect your feet. Footwear might also support the ankle joints etc.

Example- Football boots, ski boots

Appropriate level of competition-

Fitness Level:

-Ensure you are fit to take part in your chosen activity

-Ensure you have an appropriate skill level before taking part in your chosen activity

Weight Categories:

-E.g. Boxing / Martial Arts competitors are matched according to weight as well as ability.

-E.G Boxing: a 7ft 20 stone pro boxer can not safely take on a 5ft 8 stone opponent.

Mixed or Single Sex:

-In most sports men play with and against men and women against women (football / rugby – contact sports!)

-Based on fair competition as men naturally have more muscle than women, this can also be seen as a safety consideration.

Age:

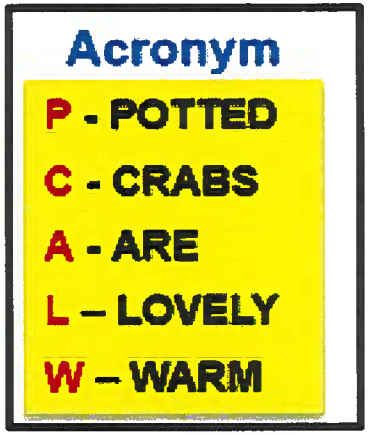
-Children's competitions are based on age as children differ greatly in body size and physical development with each year.

Lifting and carrying equipment safely-
Serious injuries can be caused before the activity even starts by carrying heavy or awkward sporting equipment incorrectly. Bend at the Knees NOT the back!

Use of warm up and cool down-
Warming up gradually prepares the body for physical activity and cooling down disperses lactic acid and returns the body to a resting state preventing soreness and aches.

5 Methods of Reducing Risk in Sport

1. **Personal protective equipment**
2. **Correct clothing/footwear**
3. **Appropriate level of competition**
4. **Lifting and carrying equipment safely**
5. **Warm up and cool down**



Know potential hazards in a range of physical activity and sport settings and be able to apply examples.

Sports Hall-
-Doors opening inwards
-Slippery floor – too polished
-Hard floor
-Apparatus stored at the sides
-Equipment left out/ not stored correctly
-Wooden floor – splinters
-Windows allow glare from sun
-Other participants

Fitness Centre-
-Broken equipment
-Open windows
-Free weights- trip/incorrect use
-Hard floor
-Other participants

Playing field-
-Litter- broken bottle/dog excrement
-Goal posts
-Poorly maintained fencing
-Uneven pitch surface (mole hills)
-Other participants

Artificial Outdoor Areas-
-Slippery surface of pitch
-Litter- broken bottle/dog excrement
-Poorly maintained fencing
-Other participants

Swimming Pool-
-Water
-Chemicals in the water
-Hard and slippery surface of surrounding area
-Other participants

Year 10 Economics Knowledge Organiser – Term 1

3.1.1.1 – ECONOMIC ACTIVITY

Economics is the science of choice. Choices by individuals (you), businesses, societies and governments.

The **central purpose** of economic activity is the production of goods and services to satisfy needs and wants

The **economy** is the system that attempts to solve the **basic economic problem:** that there is more need than there are resources. Therefore, all these wants and demands cannot all be met.

3.1.1.1 – ECONOMIC ACTIVITY

Needs - A need is any good or service that we require or that is necessary for our survival such as food and water.

Wants - A want is any good or service that is desired but is not necessary. For example, we need water to survive but we don't need a particular brand of water to stay fundamentally hydrated.

Scarce resources – not having enough of a resource to satisfy all wants.

3.1.1.1 – ECONOMIC ACTIVITY

The key economic decisions are: **what to produce, how to produce, and who is to benefit** from the goods and services produced

3.1.1.1 – ECONOMIC ACTIVITY

Three Economic Groups

Consumer – a person or group that directly uses a good or service.

Producer – a person, company or country that grows, makes or provides a good or a service.

Government – a political authority that decides how a country is run and sets the rules for markets.

3.1.2.2 – ECONOMIC SECTORS

Goods – a tangible product i.e. a product that can be touched e.g. a chocolate bar.

Services – an intangible product i.e. a product that cannot be touched e.g. financial advice.

3.1.1.3 – MAKING CHOICES - Opportunity Cost – the loss of other alternatives when one alternative is chosen i.e. the opportunity cost of building a new school could be not spending that money to build a new hospital instead.

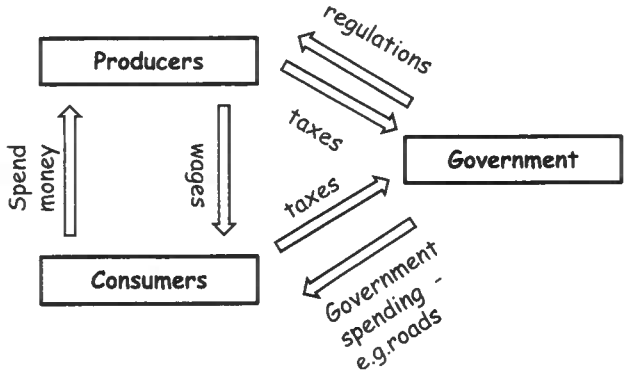
3.1.1.2 – FACTORS OF PRODUCTION

Factors of Production – resources in an economy that can be used to make goods and services.

Capital – human made aides to production e.g. machines and equipment. Reward to capital = **interest**.
Enterprise – the organisation of the other factors of production – involves risk. Reward to enterprise = **profit**.
Land – natural resources such as farm land, fish stocks or coal. Reward to land = **rent**.
Labour – the human input (mental & physical) into the production process. Reward to labour = **wages**.

3.1.1.2 – FACTORS OF PRODUCTION

Renewable resources – resources that can be replaced or replenished if not over used.
Non-renewable resources – resources that cannot be replaced once used i.e. finite resources.



3.1.2.2 – ECONOMIC SECTORS

Primary sector – the direct use of natural resources e.g. farming, fishing or mining.
Secondary sector – converting primary resources into finished goods e.g. manufacturing or construction.
Tertiary sector – providing services to consumers e.g. doctors, advertising companies, accountants.

3.1.2.1 – MARKETS & ALLOCATION

Markets – markets are a way for **buyers** and **sellers** to interact to **establish price**. Can be local, regional or global. Can be physical or online.
Factor market – a market for the factors of production e.g. the labour market.
Product market – a market for finished goods and services.
Market economy – an economy in which resources are allocated via the **market forces** of **supply** and **demand**.

3.1.2.2 – ECONOMIC SECTORS - Functions of price:

Rationing – means resources are consumed by those most willing (or able) to afford them.
Signalling – price giving a message to the consumer e.g. quality, scarcity.
Incentive – price telling consumers to consume less (i.e. taxes on soft drinks) or producers to consume more (i.e. large profits).

3.1.1.3 – MAKING CHOICES

Choices – all choices have both **costs** and **benefits**. These must be understood and weighed to make a rational choice. Choices will have economic, environment and social costs and benefits.
Economic choice – an option for the use of selected scarce resources.
Economic sustainability – the best use of resources to create growth.
Environmental sustainability – the best use of resources to protect the natural world and the resources within it.
Social sustainability – the best use of resources to improve quality of life for people.

Year 10 Economics Knowledge Organiser – Term 1

3.1.2.3 – SPECIALISATION & TRADE – specialisation means that countries and even individuals can **MAXIMISE** their own output by producing only what they are best at. This means they create the **MAXIMUM AMOUNT OF VALUE** possible for them. This value can be traded to obtain an amount of goods and services they would not reach without specialisation.

3.1.2.3 – SPECIALISATION & TRADE

Division of labour – dividing a complicated task up into smaller jobs in order to create efficiency, for example a F1 pit stop.

Specialisation – workers, firms, regions and countries concentrating on producing what they are best at/most efficient at producing.

Exchange – the act of swapping what we produce for what we want/need. This allows us to benefit from specialisation.

Money – money allows us to 'store' the value of what we produce so that we can exchange it in the future, **money** also allows us to compare the value of goods and services.

3.1.2.3 – SPECIALISATION & TRADE

Benefits of specialisation –

More efficient use of resources – more wants and needs met for less scare resources used

Higher output – increased total production

Higher productivity – workers become more productive a if they focus on smaller tasks

Higher quality – simplified processes and specialist workers means less mistakes

Less time wasted – less switching between tasks = less time used

Economies of scale – larger output leads to economies of scale (per unit cost savings because producers are bigger)

Increased satisfaction – workers can specialise in what they enjoy most

Increased standard of living – workers are more efficient so can exchange their labour (via money) for more goods and services than they otherwise would i.e. everyone earns more

3.1.3.1 DEMAND

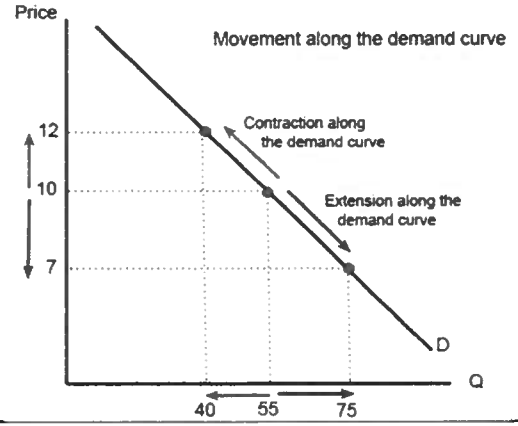
Demand – the quantity of a good or service that consumers are willing (and able) to buy at a given price.

Law of demand – for most products the quantity demanded will vary inversely with price i.e. as price rises demand falls. This is why the demand curve slopes downwards.

Individual demand – the demand for a good/service by an individual consumer.

Market demand – the demand for a good/service by all consumers.

3.1.3.1 DEMAND – Movement along the demand curve – movements along the demand curve only happen when there is a change in price.



3.1.2.3 – SPECIALISATION & TRADE

Costs of specialisation –

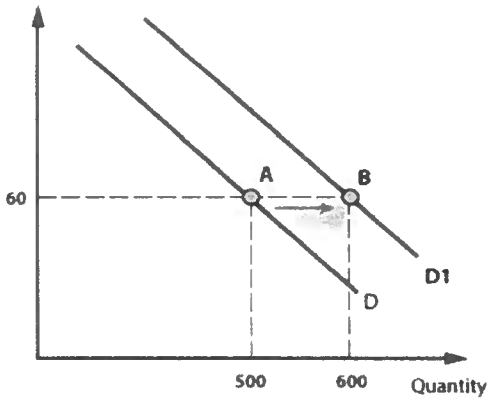
Dependency – workers, firms, regions and countries can become dependent on producing one good or service. What happens if demand for that good/service stops?

Failure of exchange – we all become dependant on trade – if it stops for some reason producers lack inputs and consumers lack goods and services

Bored workers – simplified processes can mean bored workers

Deskilling– as we specialise we lose skills and abilities we otherwise would have

Unemployment – specialised workers are dependent on demand for their particular skill or for the good/service they produce. If demand falls we have unemployed workers who may lack the skills to work elsewhere



3.1.3.1 DEMAND – Shifts of the demand curve – moving the demand curve to the right or left means something aside from price has changed demand for the product shown.

3.1.3.1 DEMAND – Changes that cause shifts of the demand curve:

Changes in the price of substitute goods – some goods are very similar to others so can be consumed instead. If the price of Pepsi rises Coca-Cola becomes more desirable. Therefore demand for Coc Cola at the current prices increases (the Demand curve shifts to the right).

Changes in the price of complimentary goods – some goods are usually consumed alongside other goods. If the price of printers fall ink cartridges becomes more desirable. Therefore demand for ink cartridges at the current prices increases (the Demand curve shifts to the right).

Changes in income – if incomes rises demand increases at any price – the demand curves shifts to the right.

Changes in interest rates – if interest rates decrease consumers an businesses save less and borrow more – demand increases for goods s the demand curve shifts to the right.

Changes in tastes/preferences – on a hot day demand for ice cream increases even though the price remains the same. If a new advert i released demand also increases at all prices. The demand curve shift to the right.

Population size – if immigration or birth rates increase demand for goods/services is higher. The demand curve shifts to the right.

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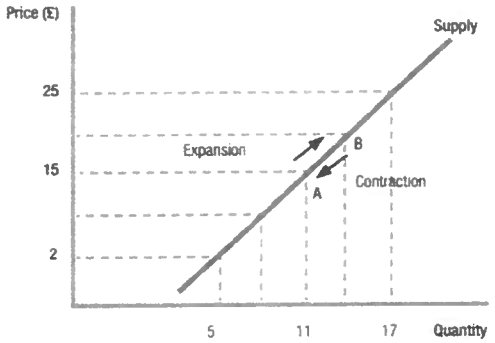
3.1.3.2 SUPPLY - Supply – the quantity of a good or service that producers are willing (and able) to supply at a given price.
Law of supply – for most products the quantity supplied will vary directly with price i.e. as price rises supply rises. This is why the supply curve slopes upwards.
Individual supply– the supply of a good/service by an individual producer.
Market supply – the supply of a good/service by all producers.

3.1.3.2 SUPPLY - Movement along the supply curve – movements along the supply curve only happen when there is a change in price and firms react to increase/protect profits.



3.1.3.2 SUPPLY - Shifts of the supply curve – moving the supply curve to the right or left means something aside from price has changed supply for the product shown.

3.1.3.2 SUPPLY
Joint supply – some goods are by-products of others, for example beef and leather. If the price of beef rises the supply of beef will rise (law of supply). This will also increase the supply of leather (supply curve shift to the right) even though the price hasn't changed.
Competitive supply – some goods are produced using the same factors of production, for example has to choose between planting potatoes or carrots. If the price of carrots falls more farmers will plant potatoes instead of carrots. This will shift the supply curve for potatoes to the right.

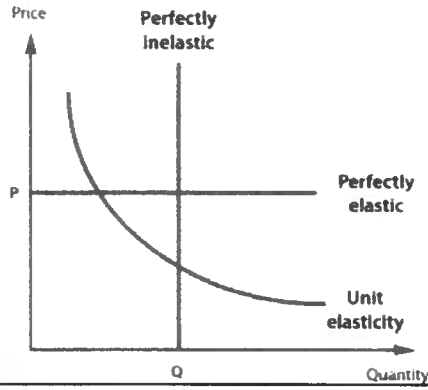
3.1.3.2 SUPPLY - Changes that cause shifts of the supply curve: Changes in the cost of production – if costs of inputs (raw materials/labour) decrease then firms have lower costs and will supply more at any price level. The supply curve shifts to the right.
Changes in technology – if new technology (new machines etc) makes costs lower then firms will supply more at any price level. The supply curve shifts to the right.
Changes in taxes – if taxes are lower costs are lower so firms will supply more at any price level. The supply curve shifts to the right.
Changes in subsidies – subsidies are payments made to firms by government to encourage production. An increase in subsidies means the supply curve shifts to the right.
Weather – some products will be produced in higher quantities if the weather is good. For example if the weather is good more crops will grow and the supply curve shifts to the right.
Number of firms in an industry – if more firms enter a market then more will be supplied at any price. The supply curve shifts to the right.
Prices of other goods – if the price of a product in **joint** or **competitive** supply changes this will shift the supply curve.

3.1.3.5 PED - how reactive quantity demanded is to changes in price. PED is shown by the slope of the demand curve.
Elastic demand - when the % change in quantity demanded is bigger than the % change in price i.e. the demand for the product is very sensitive to price changes.
Inelastic demand - when the % change in quantity demanded is smaller than the % change in price i.e. the demand for the product is not very sensitive to price changes.

$$PED = \frac{\%\Delta Q}{\%\Delta P}$$

Remember – in a busy nightclub you need to Q before you P.

3.1.3.5 PED
PED is calculated by dividing the % change in quantity demanded into the % change in price. **% change is calculated** by dividing the change (original amount – new amount) into the original number and multiplying by 100.



3.1.3.5 PED - Factors impacting on PED:
Substitutes – are there substitutes for the product or is it unique? Products easily substituted are price elastic.
% of income – is the product very cheap or very expensive? Products that are a very low % of income are less sensitive to changes in price i.e. if the price of a penny sweet changes you don't really care/notice.
Necessity/Luxury – if you cannot do without a product (e.g. petrol) you will not be able to demand less if the price goes up. A luxury can be cut back on so will be more price elastic.
Addiction/habit – addictive products (i.e. tobacco) are price inelastic.
Time – products are more inelastic in the short term, it takes time to change demand.

3.1.3.5 PED - PED and revenue – if a producer knows that their product is **price inelastic** then they can **increase price** without getting a large decrease in quantity sold. This would mean an **increase in total revenue**. If the producer knows that their product is **price elastic** they could **decrease their price** and receive a larger increase in quantity demanded. This could also mean an **increase in total revenue**.

PED less than 1 – the product is price inelastic, the closer to zero means more inelastic.
PED more than 1 – the product is price elastic.
PED is 1 – the product is unitary price elastic, changes in price result in the same % change in quantity demanded.
PED is 0 – the product is perfectly price inelastic, i.e. no price change will change demand.

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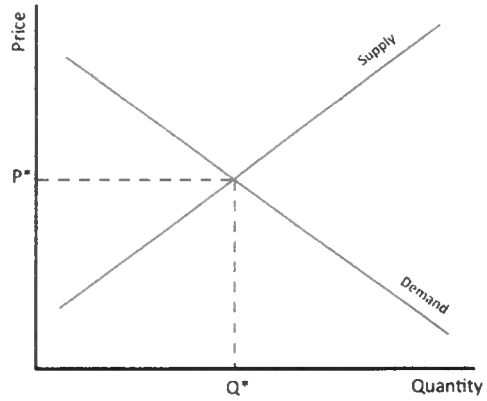
3.1.3.6 – PRICE ELASTICITY OF SUPPLY – Price Elasticity of Supply – how reactive quantity supplied is to changes in price. PES is shown by the slope of the supply curve.
Elastic supply – when the % change in quantity supplied is bigger than the % change in price i.e. the supply of the product is very sensitive to price changes.
Inelastic supply – when the % change in quantity supplied is smaller than the % change in price i.e. the supply of the product is not very sensitive to price changes.

$$PES = \frac{\%\text{ change in quantity supplied}}{\%\text{ change in the price}}$$



3.1.3.3 MARKET EQUILIBRIUM
Total revenue on S & D diagram –
Total Revenue = Sales Volume x Price. This can be calculated and also shown on a supply and demand curve.

3.1.4.1 – REVENUE & PROFIT
Total cost – all firm's costs added
Total revenue – all income of firm (sales)
Average cost – cost of producing a unit (TC/Q).
Average revenue – revenue from each unit (TR/Q).
Fixed cost – cost that does not change with output level e.g. rent.
Variable cost – cost that changes with output level e.g. cost of raw materia

3.1.3.3 MARKET EQUILIBRIUM – where the supply and demand curves meet is the equilibrium price and quantity in a market.

3.1.3.6 – PRICE ELASTICITY OF SUPPLY
Factors impacting on PES:
Availability of stock – can more of the product be obtained by producers quickly? If the product or the raw materials needed are abundant the product will be price elastic.
Spare production capacity – are producing firms at full capacity? Can they increase supply without large investment in machines/people? If they can increase production quickly supply is elastic.
Is production flexible? – an firms up production using different techniques? Switching between labour and capital? If so, the product will be more price elastic.
Time – products are more inelastic in the short term, it takes time to change supply.

3.1.3.6 – PRICE ELASTICITY OF SUPPLY
PES less than 1 – the product is price inelastic, the closer to zero means more inelastic.
PES more than 1 – the product is price elastic.
PES is 1 – the product is unitary price elastic, changes in price result in the same % change in quantity supplied.
PES is 0 – the product is perfectly price inelastic, i.e. no price change will change supply.

3.1.4.1 – REVENUE & PROFIT
Profit = total revenue – total costs of production.
Productivity – output per unit of input (usually per worker).
Business Objectives:
Profit maximisation – businesses seeking to gain as much profit as possible.
Sales growth – maximise number of units sold.
Increase market share – increase the percentage sold to by a firm of the total market that exists for good or service.
Social enterprise – a business that has a social objective – to do good.

3.1.4.2 – PRODUCTIVITY – Improving productivity –
New technology
Train workers
Improve worker morale (nicer conditions)
More effective managers

3.1.4.1 – REVENUE & PROFIT
Competition –
Businesses are motivated by profits – seek ways to lower costs and maintain/increase prices.
How do firms compete?
Price = offers, discounts.
Non-price = quality, advertising, loyalty rewards.

3.1.4.1 – REVENUE & PROFIT – Ethics (doing the 'right' thing) – Businesses paying taxes, equality of pay for staff, reduction of environmental impact, no exploitation of workers.

3.1.4.3 – ECONOMIES OF SCALE – cost advantages a business can gain by being bigger (reduces average cost).
Technical economies – buying bigger, more advanced machines
Purchasing economies – buying materials in bulk (get discount)
Marketing economies – buying more effective ads (TV etc.)
Financial economies – getting lower % on loans/access to stock market to raise money
Managerial economies – employ more/better managers
Risk bearing economies – can increase range of products/countries sold to. Means less business risk.

3.1.4.3 – ECONOMIES OF SCALE
Diseconomies of scale – cost disadvantages a business can bear by being bigger (increases average cost). **Types include:**
Communication – more people = more confusion/delay
Co-ordination/control – more departments/competing aims
Morale – workers feel less important so work less hard

3.1.5.1 MARKET STRUCTURE – Non-competitive market – few sellers or buyers, barriers to entry, differentiated products, super profits. **Monopoly** – a sole producer or seller of good or service. **Oligopoly** – a small number of firms control the majority of the market. **NB** – less competition = less/zero motivation to reduce costs.

Year 10 Economics Knowledge Organiser – Term 2

.1.5.1 MARKET STRUCTURE
'ompetitive market – Many buyers & ellers, No barriers to entry, Perfect ıformation, Homogenous products

3.1.5.3 – NON COMPETITIVE MARKETS – **Barriers to entry**
Patents, copyright, start-up costs, economies of scale, legislation etc.

.1.5.3 – NON COMPETITIVE MARKETS
mpact of non-competitive markets –
ligher prices – less incentive to reduce costs for producers
ower quality – less incentive to improve quality for producers
ess choice – less incentive for producers to innovate
usinesses are less efficient
n some cases super profits provide money for innovation
'overnment may intervene to prevent uncompetitive markets

.1.6.2 EXTERNALITIES – Impacts on third parties of conomic activity.
legative externalities – harmful effect to third party of conomic activities. Examples include pollution, noise, illness rom 2nd hand smoke.
ositive externalities – beneficial effect to third party of conomic activities. Examples include less pollution if others ide bikes, less healthcare taxes if other quit smoking.

.1.6.1 MISALLOCATION
egislation – laws to control how people and companies behave.
egulations – rules or directives to control how people and ompanies behave.

.1.6.1 MISALLOCATION – **State provision** – goods and ervices supplied directly by the government e.g. healthcare via IHS.
nformation provision – government provides information to eople and companies to change their behaviour e.g. anti-smoking ampaign.

.1.6.2 EXTERNALITIES
roduction externalities – arise from production of goods and services.
'onsumption externalities – arise from consumption of goods and services.

3.1.6.2 EXTERNALITIES –
Policies to correct for consumption externalities:
Indirect taxes upon products e.g. tax on fuel, tax on cigarettes. These aim to increase costs and therefore prices to reduce consumption and pay for damage caused by consumption.
Subsidies for products to reduce producer costs and therefore prices. These aim to reduce costs and therefore prices to increase consumption and gain benefits for society from consumption. Example – subsidies for green power generation.
Laws and regulations restrict/prevent consumption to reduce negative impacts e.g. age limits for alcohol, bans on hard drugs.
Government information campaigns information given reduces consumption (negative externalities) or increases consumption (positive externalities). Examples – healthy eating campaigns, anti smoking campaigns.

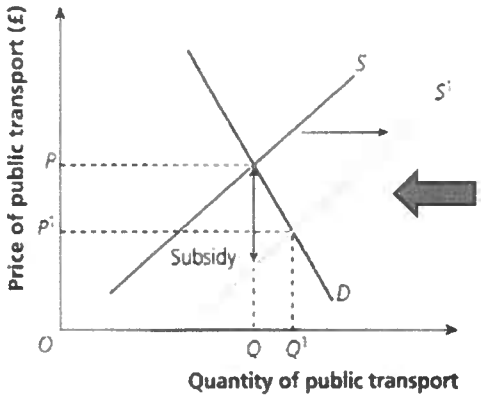


Figure 3.8.3 The effect of a subsidy on public transport

Diagram – shows subsidy reduces costs and therefore supply curve shifts to right. Result = lower price for consumers and higher consumption . Tax has opposite impact.

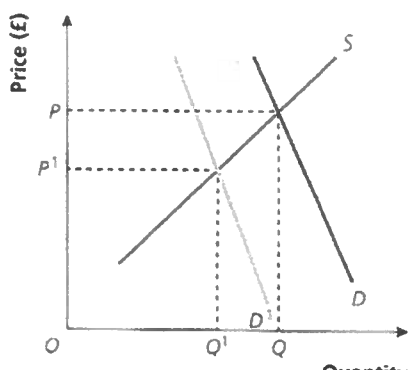


Figure 3.8.9 The effect of anti drink-driving campaigns on alcoholic drinks sold in pubs

Diagram – shows information reduces demand and therefore demand curve shifts to left. Result = lower price for consumers but lower consumption.

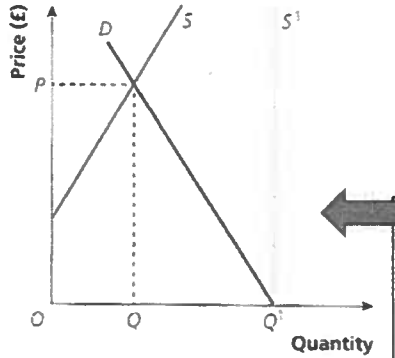


Figure 3.8.5 The effect of state provision on education

Diagram – example of market failure – educatior Schools would not be provided to all by free market. Market supply curve S. Government provides (S1) to all at cos of 0.

3.1.6.2 EXTERNALITIES – are an example of **market failure**. This means that they are costs or benefits that are not included in the prices set by markets.

.1.6.2 EXTERNALITIES – **Policies to correct for production externalities:**
ubsidies for products to reduce producer costs and therefore prices. These aim to reduce costs and therefore prices to increase consumption and gain benefits for society from consumption. Exampl subsidies for makers of solar panels.
aws and regulations restrict/prevent production to reduce negative impacts e.g. pollution laws.

GCSE Computer Science - -Y10 Term 1 Python Programming

Comment – Text within the code that is ignored by the computer. A Python comment is preceded by a #.

This is an example of a comment

Output – Processed information that is sent out from a computer

Python	**Pseudocode**
print("Hello World!") Hello World! print("Hello", "World!") Hello World! print("Hello"+"World!") HelloWorld! print("Hello\nWorld!") Hello World!	OUTPUT "Hello World"

Input – Data sent to a computer to be processed

print("Enter name")	OUTPUT "Enter name"
name=input()	name ← USERINPUT
print("Hello", name)	OUTPUT "Hello", name
print("Enter age")	OUTPUT "Enter age"
age=int(input())	age ← USERINPUT

Assignment - The allocation/setting apart and distributing of data values to variables/(numbers that change/things that change), constants, arrays/rows and other data structures so that the values can be stored.

- *Variable*– Value that can change during the running of a program. By convention we use lower case to identify variables (eg a=12)
- *Constant* – Value that remains unchanged for the duration of the program. By convention we use upper case letters to identify constants. (e.g. PI=3.141)

Data Types

Integer – Whole number	age = 12	age ← 12
Float (real) number – A number with a decimal point	height = 1.52	height ← 12
Character – A single letter, symbol or number	a = 'a'	a ← 'a'
String – multiple characters	name = "Bart"	name ← "Bart"
Boolean – Has two values: true of false.	a = True b = False	a ← True b ← False

Arithmetic Operators

Add	7 + 2 = 9	7 + 2
Subtract	7 – 2 = 5	7 - 2
Multiply	7 * 2 = 14	7 * 2
Divide	4 / 2 = 2	4 / 2
power	2 ** 3 = 8	2 ** 3
Integer division	7 // 2 = 3	7 DIV 2
Modulus (remainder)	7 % 2 = 1	7 MOD 2

Relational Operators – Allows the Comparison of values

Less than	<	<	7<2	-> False
Greater than	>	<	7 > 2	-> True
Equal to	==	==	7==2	-> False
Not equal to	!=	≠ or <>	7!=2	-> True
Less than or equal to	<=	≤	7<=2	-> False
Greater than or equal to	>=	≥	7>=2	-> True

Boolean Operators

AND	and	7 < 2 and 1 < 2	-> False
OR	or	7 < 2 or 1 < 2	-> False
NOT	not	not 7 < 2	-> True

Sequencing/(putting in correct order) represents a set of steps. Each line of code will have some operation and these operations will be carried out in order line-by-line

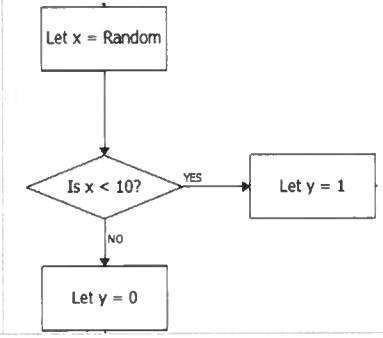
Using + operator for adding	
a = 1 b = 2 c = a + b print(c) -> 3	a ← 1 b ← 2 c ← a + b OUTPUT c
Using + operator for concatenation	
a = 'Hello ' b = 'World' c = a + b print(c) -> Hello World	a ← 'Hello ' b ← 'World' c ← a + b OUTPUT c

Random number

Random integer	import random random.randint(0,9)	RANDOM_INT(0,9)
Choice	random.choice('a','b','c')	
Random value from 0 to 1	random.random()	

Selection represents a decision in the code according to some condition. The condition is met then the block of code is executed/ ran/run otherwise it is not. Often alternative/ other choice blocks of code are executed according to some condition.

```
x=RANDOM_INT()
IF  x < 10 THEN
 y=1
ELSE
 y=0
ENDIF
```



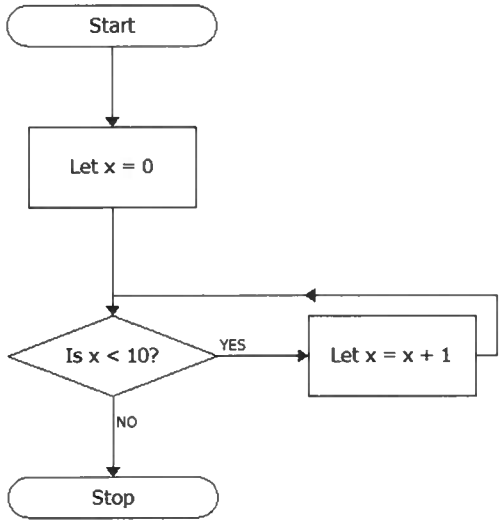
IF ...	IF i > 2 THEN
	j ← 10
	ENDIF
		if i > 2:
		j=10

IF ... ELSE ...	IF i > 2 THEN
	j ← 10
	ELSE
	j ← 3
	ENDIF
		if i > 2:
		j=10
		else:
		j=3

IF ... ELSE IF ... ELSE	IF i ==2 THEN
	j ← 10
	ELSE IF i==3
	j ← 3
	ELSE
	j ← 1
	ENDIF
		if i ==2:
		j=10
		elif i==3:
		j=3
		else:
		j=1

Iteration/ Cycle - Sometimes we wish the code to repeat a set of instructions
WHILE loops are used when the we do not know beforehand/ ahead of time the number of iterations/ cycles needed and this varies /differs/changes according to some condition.

```
x = 0
while (x < 10):
      x = x + 1
```



while True: print("Hello World")	WHILE TRUE OUTPUT "Hello World" ENDWHILE
a=0 while a<4: print(a) a=a+3	a ← 0 WHILE a < 4 OUTPUT a a ← a + 3 ENDWHILE

FOR loops are used when we know beforehand the number of iterations / cycles we wish to make.

for a in range(3): print(a)	FOR a ← 0 TO 3 OUTPUT a ENDFOR

Nested structures - Use constructs (e.g. WHILE, FOR, IF) inside another.

use a nested FOR loop to print out a grid	for i in range (10): for i in range (10): print ("x ",end="") print()

Use a nested while and if to print out only even numbers	i=0
	while i<51:
	if (i%2==0):
	print(i)
	i=i+1

Lists

Create a list	shapes=["square","circle"]
Access element by index pos	shapes[1] -> circle
Append item to list	shapes.append("triangle")
Remove item from list	shapes.remove("circle")
Remove item from list by index	shapes.pop(1)
Insert item into list	shapes.insert(2,"rectangle")
Number of elements in a list	len(shapes)
Get index pos of item in list	shapes.index("triangle")

Concatenating lists	shapesGroup1["square","circle"] shapesGroup2=["triangle"] shapes=shapesGroup1+shapesGroup2
Loop through list	for i in range(len(shapes)): print(shapes[i])
Reverse elements in a list	shapes.reverse()
Order elements in a list	shapes.sort()

2D lists - A list if lists

Create a 2D list	d = [[23, 14, 17], [12, 18, 37], [16, 67, 83]]
Another way to create a 2D list	a = [23, 14, 17] b = [12, 18, 37] c = [16, 67, 83] d = [a,b,c]
Access element by index position	d[1][2] -> 37

Strings

Get length of a string	len("Hello")	LEN("Hello")
Character to character code	ord("a") -> 97	ORD("a")
Character code to character	chr(101) -> 'e'	CHR(101)
String to integer	a=int("12")	a=INT("12")
String to float	a=float("12.3")	a=FLOAT("12.3")
integer to string	a=str(12)	a=STR(12)
real to string	a=str(12.3)	a=STR(12.3)

Concatenation -merge multiple strings together	a="hello " b="world" c=a+b print(c) ->hello world
Return the position of a character If there is more than 1 of the same character the position of the first character is returned.	student = "Hermione" student.index('i')

Find the character at a specified position	student = "Hermione" print(student[2]) -> r

sub strings - select parts of a string

Example	student="Harry Potter"	
Output the first two characters	print(student[0:2])	Ha
Output the first three characters	print(student[:3])	Har
Output characters 2-4	print(student[2:5])	Rry
Output the last 3 characters	print(student[-3:])	Ter
Output a middle set of characters	print(student[4:-3])	y Pot

*A negative value is taken from the end of the string.

Subroutines are a way of managing and organising programs in a structured way. This allows us to break up programs into smaller chunks.

- Can make the code more modular and more easy to read as each function performs / (does/completes) a specific / particular task / job.
- Functions can be reused within the code without having to write the code multiple times.

- **Procedures** are subroutines that do not return values
- **Functions** are subroutines that have both input and output

Procedure: *No input parameters or return*	SUB greeting() OUTPUT "hello" ENDSUB	def greeting(): print("hello") call: greeting()
Procedure: One input parameter, no return	SUB greeting(name) OUTPUT "Hello",name ENDSUB	def greeting(name): print("Hello",name) greeting("grey")

Function:
1 input parameter, and 1 return value
	SUB add(n)
	a ← 0
	FOR a ← 0 TO n
	a ← a + n
	ENDFOR
	RETURN a
	ENDSUB
		def add(n):
		a=0
		for a in range(n+1):
		a=a+n
		return a

Function: *Two input parameters, and 1 return value*	SUB (num1,num2) sum=num1+num2 return sum	def add(num1,num2): sum=num1+num2 return sum greeting(1,2)

The **scope / extent of/the range** of a variable / (number or thing that changes) determines / decides/figures out which parts of a program can access and use that variable / (number or thing that changes).

A **global variable / worldwide (number or thing that changes)** is a variable that can be used anywhere in a program. The issue with global variables / worldwide (numbers that change/things that change) is that one part of the code may inadvertently / accidentally and carelessly change modify the value because global variables / worldwide (numbers that change/things that change) are hard to track.

A **local variable / (number or thing that changes)** is a variable that can only be accessed within a certain block of code typically / usually within a function. Local variables are not recognized outside a function unless they are returned. There is no way of modifying or changing the behaviour of a local variable outside its scope / its range.

Global variables / Worldwide (numbers that change/things that change) need to be defined throughout the running of the whole program. This is an inefficient use of memory resources / useful things/valuable supplies.. Local variables are defined only when they are needed an so have less demand on memory. Local variables only exist within the subroutine.

Reading and writing files

Open file Whatever we are doing to a file whether we are reading, writing or adding to or modifying / changing a file we first need to open it using:

open(filename,access_mode)

There are a range of access mode depending on what we want to do to the file, the principal ones are given below:

Access Mode	**Description**
r	Opens a file for reading only
w	Opens a file for writing only. Create a new file if one does not exist. Overwrites file if it already exists.
a	Append / Add (to the end) to the end of a file. Create a new file if one does not exist.

Reading text files

read – Reads in the whole file into a single string	f=open("filetxt","r") print(f.read()) f.close()
readline – Reads in each line one at a time	f=open("file.txt","r") print(f.readline()) print(f.readline()) print(f.readline()) f.close()
readlines – Reads in the whole file into a list	f=open("file.txt","r") print(f.readlines()) f.close()

Writing text files

Write in single lines at a time	file=open("days.txt",'w') file.write("Monday\n") file.write("Tuesday\n") file.write("Wednesday\n") file.close()
Write in a list	say=["How\n","are\n","you\n"] file=open("say.txt",'w') file.writelines(say) file.close()

Data Validation Routines

Check if an entered string has a minimum length	OUTPUT "Enter String"
	s ← USERINPUT
	IF LEN(S) > 5 THEN
	OUTPUT "STRING OK"
	ELSE
	OUTPUT "TOO SHORT"
	ENDIF

Check is a string is empty	OUTPUT "Enter String"
	s ← USERINPUT
	IF LEN(S) == 0 THEN
	OUTPUT "EMPTY STRING"
	ENDIF

Check if data entered lies within a given range	OUTPUT "Enter number" s num ← USERINPUT IF num > 1 AND num < 10 OUTPUT "Within range" ENDIF

Authentication Routine

```
OUTPUT "Enter Username"
username ← USERINPUT
OUTPUT "Enter Password"
password ← USERINPUT

WHILE username != "bart" OR password !="abc"

 OUTPUT "Login failed"
 OUTPUT "Enter Username"
 username ← USERINPUT
 OUTPUT "Enter Password"
 password ← USERINPUT

ENDWHILE

OUTPUT "Login Successful"
```

Debugging / (finding and correcting mistakes in)

Syntax / (the set of rules for forming language) errors – Errors in the code that mean the program will not even run at all. Normally / (usually/ in a common and regular way) this is things like missing brackets, spelling mistakes and other typos.

Runtime errors – Errors during the running of the program. This might be because the program is writing to a memory location that does not exist for instance. eg. An array index value that does not exist.

Logical errors - The program runs to termination/ end/ending/firing, but the output is not what is expected. Often these are arithmetic/ math errors.

Test data

Code needs to be tested with a range of different input data to ensure / to make sure that it works as expected under all situations. Data entered need to be checked to ensure / to make sure that the input values are:

- within a certain range
- in correct format
- the correct length
- The correct data type (eg float, integer, string)

The program is tested using normal/ (usual/ commonly and regular/ healthy), erroneous / wrong or boundary / edge-related data.
Normal data - Data that we would normally expect to be entered. For example for the age of secondary school pupils we would expect integer values ranging from 11 to 19.

Erroneous data - Data that are input that are clearly wrong. For instance, if some entered 40 for the age of a school pupil. The program should identify this as invalid data but at the same time should be able to handle this sensibly which returns a sensible message and the program does not crash.

Boundary data - Data that are on the edge of what we might expect. For instance if someone entered their age as 10, 11, 19 or 20.

Abstraction	• Using symbols, variables etc. to represent a 'real world' problem in a computer program…
	• ...and removing/hiding unnecessary elements
	• e.g. a program is to be created to let users play chess against the computer.
	  ○ How is abstraction used in the creation of the game?
	  ○ Board is created as an array(s).
	  ○ Pieces are objects that have positions on the board
	  ○ The shape and style of the pieces may not be required.
	
	https://www.bbc.co.uk/bitesize/guides/z4rbcj6/revision/3

Decomposition	• The breaking down of large problems into a set of smaller problems:
	  ○ smaller problems are easier to solve
	  ○ they can be solved independently of the other problems
	  ○ they can be tested independently
	  ○ then combined to produce the full problem.
	• There is not always one right answer.
	• A problem could decompose in several valid ways.
	
	https://www.bbc.co.uk/bitesize/guides/z4rbcj6/revision/2

Algorithmic thinking	Identifying the steps involved in solving a problem.
Trace tables	• A trace table is used to test algorithms and programs for logic errors that appear when an algorithm or program executes. • The trace table simulates the steps of the algorithm/ program. • Each stage of the algorithm/program is executed step by step. Inputs and outputs, variables and processes can be checked for the correct value when the stage is completed. https://www.bbc.co.uk/bitesize/guides/z6m7xfr/revision/5

Maintainability of a program	Software should be easily understood by another programmer. When we write code, we should be using meaningful identifiers, indentation and internal commentary. This allows software to be easily updated or maintained at a later date. This is very important as we may not be working on the same code for a long period of time. It may be another programmer who has never seen our code before. If code is not readable, clear and formatted properly this would likely not be maintainable code. https://www.bbc.co.uk/bitesize/guides/zrrc2sg/revision/7
High-level language	High level programming languages are languages that are close to the spoken and written language of the programmer. https://www.bbc.co.uk/bitesize/guides/z6x26yc/revision/1
Translator	A translator is a program that converts source code into object code. Generally, there are three types of translator: https://www.bbc.co.uk/bitesize/guides/z6x26yc/revision/5
Interpreter	An interpreter translates source code into object code one instruction at a time. It is similar to a human translator translating what a person says into another language, sentence by sentence, as they speak. The resulting object code is then executed immediately. https://www.bbc.co.uk/bitesize/guides/z6x26yc/revision/5
Compiler	A compiler takes the source code as a whole and translates it into object code all in one go. Once converted, the object code can be run unassisted at any time. https://www.bbc.co.uk/bitesize/guides/z6x26yc/revision/5