Year 10 Option Subjects

Knowledge Organiser

January - April 2025

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.

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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

Geography Year 10 Term 2 & 3 – The Changing Economic World – Page 1 – The Development Gap

Key words

- **Birth rate** The number of births in a year per 1000 of the total population.
- **Commonwealth** The Commonwealth is a voluntary association (group) of 53 independent and equal sovereign states, which were mostly territories of the former British Empire.
- **Death rate** The number of deaths in a year per 1000 of the total population.
- **De-industrialisation** The decline of a country's traditional manufacturing industry due to exhaustion (running out) of raw materials, loss of markets and competition from NEEs.
- **Development gap** The difference in standards of living and wellbeing between the world's richest and poorest countries (between HICs and LICs).
- Fairtrade When producers in LICs are given a better price for the goods they produce. Often this is from farm products like cocoa, coffee or cotton. The better price improves income and reduces exploitation (misuse).
- **Globalisation** The process which has created a more connected world, with increases in the movements of goods (trade) and people (migration and tourism) worldwide
- **Human Development Index (HDI)** A method of measuring development in which GDP per capita, life expectancy and adult literacy are combined to give an overview.
- **Infant mortality** The average number of deaths of infants under 1 year of age, per 1000 live births, per year.
- **Information technologies** Computer, internet, mobile phone and satellite technologies
- **Intermediate technology** The simple, easily learned and maintained technology used in a range of economic activities serving local needs in LICs.
- **International aid** Money, goods and services given by the government of one country or a multiple groups such as the World Bank or International Monetary Fund to help the quality of life and economy of another country.
- **Microfinance loans** Very small loans which are given to people in the LICs to help them start a small business.
- **North-south divide** Economic and cultural differences between Southern England and Northern England
- **Post-industrial economy** The economy of many economically developed countries where most employment is now in service industries.
- **Science and business parks** Business Parks are purpose built areas of offices and warehouses, often at the edge of a city and on a main road. Science parks are often located near university sites, and high-tech industries are established. Scientific research and commercial (sales) development may be carried out in co-operation with the university.

KPI 1 What is development?

Development is the progress of a country in terms of economic growth, the use of technology and human welfare.

What are the types of development?

- *Economic Development* - This is progress in economic growth through levels of industrialisation and use of technology.
- *Social Development* - This is an improvement in people's standard of living. For example, clean water and electricity.
- *Environmental Development* -This involves advances in the management and protection of the environment.

KPI2 Measuring development

These are used to compare and understand a country's level of development

Economic indicators examples:

- Employment type The proportion of the population working in primary (extracting raw materials), secondary (manufacturing), tertiary(services) and quaternary (research and design) industries
- Gross Domestic Product per capita This is the total value of goods and services produced in a country per person, per year.
- Gross National Income per capita An average of gross national income per person, per year in US dollars

Social indicators examples:

- Infant mortality The number of children who die before reaching 1 per 1000 babies born.
- Literacy rate The percentage of population over the age of 15 who can read and write.
- Life expectancy The average lifespan of someone born in that country

Mixed indicators:

- Human Development Index (HDI) A number that uses life expectancy, education level and income per person.

KPI3 Variations in the level of development

- *Low Income Countries (LICs)* Poorest countries in the world. GNI per capita is low and most citizens have a low standard of living.
- *Newly Emerging Economies (NEEs)* These countries are getting richer as their economy is progressing from the primary industry to the secondary industry. Greater exports leads to better wages.
- *High Income Countries (HICs)* These countries are wealthy with a high GNI per capita and standards of living. These countries can spend money on services.

KPI4 - Causes of uneven development

Development is globally uneven with most HICs located in Europe, North America and Oceania. Most NEEs are in Asia and South America, whilst most LICs are in Africa.

Physical factors affecting uneven development

- Natural Resources; fuel sources such as oil, minerals and metals for fuel, availability for timber, access to safe water.
- Natural Hazards; risk of tectonic hazards, benefits from volcanic material, frequent hazards undermines redevelopment.
- Climate; reliability of rainfall to benefit farming, extreme climates limit industry and affects health, climate can attract tourists
- Location/Terrain; landlocked countries may find trade difficulties, mountainous terrain makes farming difficult.

Human factors affecting uneven development

- Aid: can help some countries develop key projects for infrastructure faster. Can improve services such as schools, hospitals and roads. Too much reliance might stop other trade links becoming established.
- Trade: Countries that export more than they import have a trade surplus. This can improve the national economy. Trading goods and services is more profitable than raw materials.
- Education: Education creates a skilled workforce meaning more goods and services are produced. Educated people earn more money, meaning they also pay more taxes. This money can help develop the country in the future.
- Health: Lack of clean water and poor healthcare means a large number of people suffer from diseases. People who are ill cannot work so there is little contribution to the economy. More money on healthcare means less spent on development.
- Politics: Corruption in local and national governments. The stability of the government can affect the country's ability to trade. Ability of the country to invest into services and infrastructure.
- History: Colonialism has helped Europe develop, but slowed down development in many other countries. Countries that went through industrialisation a while ago, have now develop further.

KPI 5 Consequences of Uneven Development

Levels of development are different in different countries. This uneven development has consequences for countries, especially in wealth, health and migration.

- Wealth People in more developed countries have higher incomes than less developed countries.
- Health Better healthcare means that people in more developed countries live longer than those in less developed countries.
- Migration If nearby countries have higher levels of development or are secure, people will move to seek better opportunities and standard of living.

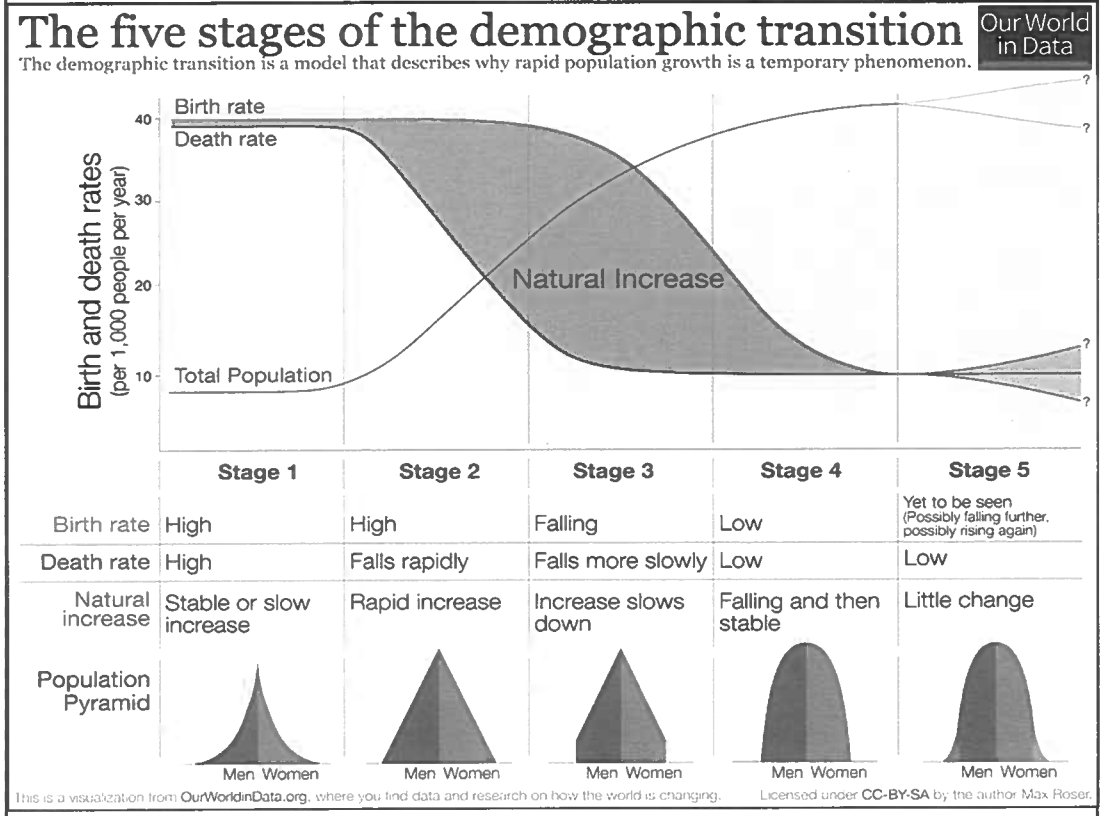
Geography Year 10 Term 2 & 3– The Changing Economic World – Page 2 – The Development Gap

KPI 6 The Demographic Transition Model

The demographic transition model (DTM) shows population change over time. It studies how birth rate and death rate affect the total population of a country. It can show change over time as a country develops.

Currently the following places fit into each stage of the DTM@

- Stage 1: Amazonian Tribes
- Stage 2: LICs such as Sierra Leone
- Stage 3: NEEs such as India
- Stage 4: HICs such as the UK
- Stage 5: Some HICs such as Japan, Germany



KPI 7 Reducing the Global Development Gap

Microfinance Loans
This involves people in LICs receiving smalls loans from traditional banks.
+ Loans enable people to begin their own businesses
- Its not clear they can reduce poverty at a large scale.

Foreign-direct investment
This is when one country buys property or infrastructure in another country.
+ Leads to better access to finance, technology & expertise.
- Investment can come with strings attached that country's will need to comply with.

Aid
This is given by one country to another as money or resources.
+ Improve literacy rates, building dams, improving agriculture.
- Can be wasted by corrupt governments or they can become too reliant on aid.

Fair trade
This is a movement where farmers get a fair price for the goods produced.
+ Paid fairly so they can develop schools & health centres.
-Only a tiny proportion of the extra money reaches producers.

Technology
Includes tools, machines and affordable equipment that improve quality of life.
+ Renewable energy is less expensive and polluting.
- Requires initial investment and skills in operating technology

Debt Relief
This is when a country's debt is cancelled or interest rates are lowered.
+ Means more money can be spent on development.
- Locals might not always get a say. Some aid can be tied under condition from donor country.

KPI 8 Case Study: Reducing the Development Gap In through Tourism in The Gambia

Location and Background: Gambia is an LIC located on west coast of Africa. Location makes it an attractive place for visitors to explore the tropical blue seas, skies and palm filled sandy beaches in the winter.

Benefits of Tourism:

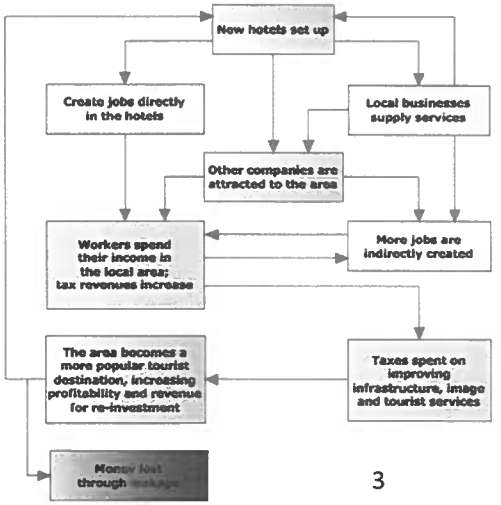
- In 20% of GDP comes from tourism
- Gambia has few natural resource deposits and relies heavily on remittances from workers overseas and tourist receipts
- 150,000 people visit per year

Development Problems:

- Tourists do not always spend much money outside their resorts.
- Ebola and terrorist threats have had a detrimental effect on tourist numbers
- Tourism is seasonal many a winter sun destination

How has tourism created the multiplier effect?

- Jobs from tourism have meant more money has been spent in shops and other businesses.
- Government has invested in infrastructure to support tourism.
- Poverty rates declines from 58% to 48%
- Health improvements



Geography Year 10 Term 2 & 3– The Changing Economic World – Page 3 – The Changing Economy in NEEs and HICs

KPI 9 Location & Importance of an NEE - INDIA

- Located in Asia
- 6th largest economy in the world
- 1.38 billion people
- Bollywood. They produce 1200 movies each year for an international market
- Access to Europe through the Suez Canal
- A member of the G20 group

KPI 10 Impacts of India's development

- Economic: Many factory jobs are for unskilled, young women on minimum pay. India's middle class is growing with more managerial and well-paid jobs, e.g. in IT
- Social: The quality of life has not improved for all Indians many live in slums. However, life expectancy has improved from 57 years in 1990 to 68 years in 2015. Indian school-age children can expect to stay in school 4.4 years longer than in 1990

KPI 11 - Environmental Problems of Industrial Development

- India has massively increased its greenhouse gas emissions as manufacturing has grown.
- In Bangalore problems are caused by industrial growth as harmful pollutants have entered the city's 200 lakes.
- Mining and oil extraction also cause problems because in Mumbai in 2010 6,000 barrels of oil leaked endangering local birds.

KPI 12 The role of TNCs in India

Transnational Corporations usually locate in foreign countries in order to take advantage of; tax incentives, access to a wider market, cheap labour and laxer environmental laws.

One example of a TNC in India is Coca-Cola.

Benefits of Coca Cola in India:

- Coca-Cola offer training and education.
- Coca-Cola runs some community schemes in Africa and SE Asia.
- Coca-Cola employs more than 25,000 people in India.
- Indirectly, Coca-Cola has created an estimated 150,000 jobs in related industries.

Problems of Coca Cola in India:

- Coca-Cola draws around 510,000 litres of water each day from boreholes and open wells leading to water shortages in many areas.
- Harvests dropped by 40% because fields not irrigated properly

KPI 13 Aid & Debt relief in India

<u>Bottom Up Project Biogas</u>

Bangalore University found that many families (mainly women and girls) were using most of their time collecting fuel instead of any paid work or education. The solution to this is to use cow dung. Cow dung produces biogas.

+ Biogas does not produce smoke so less health issues, eat is instant so cooking is quicker. Young girls now have time to go to school and women have the chance to do paid work. Once the biogas has been extracted the leftover dung is now a rich fertiliser so can be used to improve farming.

- Project relies on not for profit organisations so if the funding for the project runs out then villages could be left without any help. Not every village has a cattle farm near by so those who don't either have to buy the dung at a cost to them selves or are unable to invest in biogas.

<u>**Top Down Project Sardar Dam**</u>

Indian government built the Sardar super dam. Much of India has seasonal uneven rainfall with some areas getting no rainfall for 5 months of the year. As the population of India rises so to does demand for water.

+ Dam has provided electricity for over one million homes and businesses, a reliable supply of drinking water for over 25 million people. Farmers can use water to irrigate their land, improving their crops and in turn their diet and income.

-234 villages were flooded resulting in 40,000 people being uprooted. The environment has also been disturbed.

KPI 14 The UK Economy

Importance: The UK has one of the largest economies in the world. The UK has global transport links i.e. Heathrow and the Eurostar.

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KPI 15 Causes of Economic Change

- **Primary sector**: Raw materials are extracted from the land and sea. These jobs include famers, miners, fishermen etc.
- **Secondary sector**: Making things from raw materials (manufacturing). These jobs include factory workers, steel workers, builders of houses, roads and railways.
- **Tertiary sector**: Providing a service to others. Jobs include teachers, doctors, refuse collectors, shop assistants.
- **Quaternary sector**: Involves research and development. In this sector people have high levels of expertise and skills such as developing new technology or types of medical treatment.

Why has the UK's economy changed?

- De-industrialisation (*loss of the secondary sector)* and the decline of the UK's industrial base.
- Globalisation has meant many industries have moved overseas, where labour costs are lower.
- Government Policy Government privatisation and decisions to invest in supporting vital businesses

KPI 16 Move towards Post-Industrial Economy

- The quaternary industry has increased, whilst secondary has decreased.
- Numbers in primary and tertiary industry has stayed the steady.
- Big increase in professional and technical jobs.

KPU 17 Science and Business Parks

Cambridge Science Park: A major quaternary industry on the outskirts. Good transport access to the A14 and M11. A good location for sourcing highly educated workers from Cambridge University. Staff benefit from attractive working conditions. Attracts clusters of related high-tech businesses.

KPI 18 Change to a Rural Landscape

An area of population growth South Cambridgeshire

Cambridge growing - Current population 155,000 but will increase to 175,000 by 2026

- Social Impacts: Rising house prices have caused tensions in villages. Villages are unpopulated during the day causing loss of identity. Resentment towards poor migrant communities.
- Economic Impacts: Lack of affordable housing for local first time buyers. Sales of farmland has increased rural unemployment. Influx of poor migrants puts pressures on local services.

An area of population decline Outer Hebrides

- Despite a small population increase in recent years, there has been an overall decline of more than 50% since 1901 due to outward migration.
- Social Impacts: School closures, ageing population
- Economic Impacts: Services are closing, most small farms only provide work for a few days a week. Has been an increase in tourism BUT current infrastructure cant support the scale needed to provide an alternative income.

KPI 19 Improvements to Transport

- Road improvements: Building of a south west superhighway (A303) by spending £2bn to widen the road.
- Railway improvements: London Crossrail costing £16.8bn to improve journey times across London and bring an additional 1.5 million people within 45 minutes of central London.
- Airport improvements: Build a new runway at Heathrow airport at a cost of £18.6 bn. Predicted to bring more jobs
- and money to the UK. Many people are concerned about the noise from a new runway.
- Port improvements: Liverpool2 building cost £400 million and has doubled the ports capacity to 1.5 million containers each year.

KPI 21 UK North/South Divide

Evidence for a North South Divide:

- - Lower life expectancy in North, e.g. life expectancy in Manchester 2013 = 71.8 (male) and 77.8 (female). Higher life expectancy in South, e.g. male life expectancy in East Dorset 2013 = 83.1, female life expectancy I Kensington and Chelsea = 84.7.

Solutions:

1. Businesses such as the BBC have moved their businesses to cities in the North.
2. Enterprise Zones have been created to encourage new businesses.
3. The government has proposed improved transport links including a high speed railway link connecting major northern cities.

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 were 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 curst 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 silts 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 500km 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 warning 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.

Year 10 Term 2 French – Ma vie scolaire + En pleine forme

1	My favourite subject is drama.	Ma matière préférée c'est le théâtre.
2	I love to sing and I am good at it.	J'adore chanter et je suis fort(e) en ça.
3	You must not use your mobile in class.	Il ne faut pas utiliser son portable en classe.
4	It's unfair because it is useful for schoolwork.	C'est injuste parce que c'est utile pour le travail scolaire.
5	I've learnt a lot of things	J'ai appris beaucoup de choses.
6	He never forgot his homework.	Il n'a jamais oublié ses devoirs
7	My primary school was called Saint Theresa.	Mon école primaire s'appelait Saint Thérèse.
8	When I was little, I used to like English.	Quand j'étais petit(e), j'aimais l'anglais.
9	Before, I used to live in the north of Scotland.	Avant, j'habitais dans le nord de l'Écosse.
10	Next year I am going to continue to improve my French.	L'année prochaine je vais continuer à améliorer mon français.
11	For breakfast I drink coffee.	Pour le petit-déjeuner je bois du café.
12	In the evening, we eat fish and vegetables.	Le soir, on mange du poisson et des légumes.
13	I am sad because I don't get on well with my dad.	Je suis triste car je ne m'entends pas bien avec mon père.
14	I am stressed all the time with exams.	Je suis tout le temps très stressé(e) avec les examens.
15	Can I help you?	Je peux vous aider?
16	I'm ill and I have a headache.	Je suis malade et j'ai mal à la tête.
17	I am going to eat more fruit.	Je vais manger plus de fruits.
18	I am going to be more patient with my sister.	Je vais être plus patient(e) avec ma soeur.
19	When I was a teen, I didn't have a lot of friends.	Quand j'étais ado, je n'avais pas beaucoup d'amis.
20	I wasn't happy.	Je n'étais pas heureux (euse).

Year 10 Term 2 Spanish - Mi gente, mi mundo + Mi estilo de vida

1	My grandfather is cooking food in the kitchen.	Mi abuelo está cocinando comida en la cocina.
2	I am like my dad because we are both tall.	Soy como mi padre porque los dos somos altos.
3	I'm interested in fashion and art.	Me interesan la moda y el arte.
4	I follow writers on social media.	Sigo escritores en las redes sociales.
5	I get on very well with my best friend.	Me llevo superbien con mi mejor amigo.
6	We have a lot in common.	Tenemos mucho en común.
7	I think that I am hardworking and responsible.	Pienso que soy trabajador(a) y responsable.
8	I use social media to share photos.	Uso las redes sociales para compartir fotos.
9	Young people spend too much time online.	Los jóvenes pasan demasiado tiempo en línea.
10	The internet can have negative effects on one's health.	El internet puede tener efectos negativos en su salud.
11	I have a healthy life and a good diet.	Tengo una vida sana y una dieta buena.
12	I get up early and I do exercise.	Me levanto temprano y hago ejercicio.
13	I have breakfast at seven in the morning.	Tomo el desayuno a las siete de la mañana.
14	My favourite dinner is fish and vegetables.	Mi cena favorita es pescado con verduras.
15	In the past, I used to do swimming.	En el pasado, hacía natación.
16	I used to be active and I used to have lots of energy.	Era activo(a) y tenía mucha energía.
17	I am ill. I have a headache.	Estoy enfermo(a). Tengo dolor de cabeza.
18	My ears really hurt me.	Me duelen mucho los oidos.
19	If I stop eating fast food	Si dejo de comer la comida rápida
20	I will sleep better and I will have more energy.	Dormiré mejor y tendré más energía.

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 non-alcoholic 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 - Term 2 - Identity

Formal Elements	Definition	Example	Painting Techniques
Line	A mark that connects two or more points.	These can be straight, curved, short or long. Specific types of line include: outline (generally a black line that goes around an image) and continuous line (a line in which you do not take your pencil/pen of the page)	**Impasto** Paint is laid on an area of the surface in very thick layers, usually thick enough that the brush or painting-knife strokes are visible. **Sgraffito** Scratching away paint while it's wet to expose the underpainting. It's especially useful when depicting scratches, hair, grasses and the like. You can use almost any pointed object for this – try rubber shaping tools or the end of a brush **Dry Brushing** This is a method of applying colour that only partially covers a previously dried layer of paint. Add very little paint to your brush and apply it with very quick, directional strokes. This method tends to work best when applying light paint over dark areas/dried paint and is useful for depicting rock and grass textures. **Wet-in-Wet** Start by brushing water (and only water) onto your paper. Then dip your brush in paint and spread it over the water wash. The paint will feather and diffuse like magic. **Adding texture with Salt** When salt is sprinkled on a wet wash, it starts to gather the watercolour pigments and makes the coolest texture. The effect will vary depending on the size of the grains of salt and the wetness of the paper **Underpainting** An underpainting is essentially a monochrome wash that's used for the first layer of the painting. You'll add layers of transparent washes over the underpainting, which gives realistic and luminous effects
Tone	The lightness or darkness or something.	For darker tones use a higher grade B pencil. For architectural drawings you should use a H pencil as this will give your crisper lines without tone smudging.	
Colour	Colour is what you see when light reflects of something.	Primary Colours - can't be made by mixing colours together (Red, Yellow & Blue) Secondary Colours - mix two primary colours together (Green, Orange & Purple) Tertiary Colours - mix a primary and secondary colour together (Blue + Green = Turquoise) Complementary Colours - Colours opposite each other on the colour wheel (Orange/ Blue, Green/Red and Purple/Yellow)	
Texture	How something looks or feels.	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 Adjectives to describe different textures - fluffy, rough, smooth, soft, bold, uneven, slimy, faint, chalky, tacky etc.	
Pattern	A symbol, shape or colour that repeats.	Man-made patterns are designed by humans, natural patterns are formed by nature. Patterns can be orderly, uniform, geometric, random or symmetrical.	
Shape & Form	Shape is 2D. Form is 3D.	2D shapes include rectangles, squares and triangles. Geometric shapes are angular and have straight lines. Organic shapes have curved lines. 3D shapes include cylinders, spheres and cubes.	

Keywords		Key Process to develop ideas	Tips, Tools & Techniques	Artists that explore Identity
Observational Drawing	Drawing something from real life in front of you.	**Copy of an Artwork** Copying the style and technique of an artist's work to enable you to understand the process of how it has been made. **Own Interpretation** Developing your own work by applying artist style or technique to your own ideas. **Refining Ideas** Annotating and evaluating experiments and as a result making decisions to improve work. **Annotating** Writing about and evaluating your own and others' work.	**Blender Stick** A paper stump that allows you to blend tones. **Blending** The smooth transition between tones. **Grid Method** Using a grid to ensure you draw in proportion. **Shading Techniques** Hatching, Cross-Hatching, Stippling and Scumbling. **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.	• **Beau Bernier Frank** • **Barbara Kruger** • **Molly Crabapple** • **Frida Kahlo** • **Cindy Sherman** • **Sandra Chevrier** • **Shirin Neshat** • **Tracy Emin** • **Pepon Osorio** • **Jenny Saville** • **Kehinde Wiley** • **Alexandra Ievasseur** • **Aldo Tambellini** • **Loui Jover**
Primary & Secondary Sources	Primary = real objects or your own photos that you have taken yourself Secondary = an image from the internet or books			
Proportion	The size and relation of objects to one another. Using the grid-method is one way of helping you draw using accurate proportions.			
Landscape	A piece that depicts a view of some sort e.g. mountains, the sea, fields, woodlands, buildings etc.			
Portraiture	Drawing/ painting or photograph of someone			
Still Life	A piece that depicts an object or group of objects.			
Cultural Identity	Cultural identity is the identity of belonging to a group. It is part of a person's self-conception and self-perception and is related to nationality, ethnicity, religion, social class, generation, locality or any kind of social group that has its own distinct culture.			

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 Billy Elliot is Physical theatre. This is done by male characters within the performance as they are showing the message, Men don't dance.

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.

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

Colour schemes

Warm colours: E.g. red, orange and yellow

Cool colours: E.g. Blue, grey and green

Complementary colours: Colours opposite each other on the colour wheel

Harmonious colours: Colours next to each other on the colour wheel

Neutral/ earthy tones: E.g. browns, creams and beige

Monochromatic: Only one colour with multiple tones

Photoshop edits

New layer- 

Ctrl– shift– N

Adjustment layer- 

Camera settings

A-DEP Automatic Depth of Field

M Manual

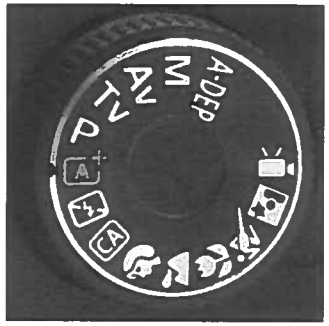
AV Aperture – Priority

TV Shutter —Priority

P Programmed Automatic

Scene Intelligent Auto

No Flash



Filming

Night Portrait

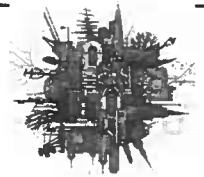
Sports

Macro

Landscape

Portrait

Creative Auto

Formal element	Meaning	Artwork example	Relevant artist/ photographer
Pattern	There are patterns all around us if we only learn to see them. Emphasizing and high-lighting these patterns can lead to striking shots – as can high lighting when patterns are broken.		JON MEASURES
Texture	Photographs of two dimensional objects yet with the clever use of 'texture' they can come alive and become almost three di-mensional. You want the viewer to imagine how the object feels.		ANSEL ADAMS
Shape	The way subjects connect to each other in a photo forms shapes that draw the eye from subject to subject. If your subject is already triangular or diamond-shaped (like a pyra-mid), the viewer's eye will automatically focus on that shape.		MAN RAY
Rule of Thirds	A 3x3 grid used by photographs to create a composition that feels right. Objects that fall on or near the lines are considered to have the best impact.		ERNST HAAS
Abstract	It is taking a subject and forcing the viewer to look at it in a different way. This may cause the subject to lose its original mean-ing or purpose. It may even render the sub-ject unreal, abnormal and not of this world. The subject could lose all literal meaning and be reduced to only shape, light, texture		PAUL STRAND

Martin O'Neill

Martin O'Neill is a British non traditional illustrator that works in a collage style through the use of screen printing, photo copying, painting and digital manipula-tion.
He uses a range of images to present a theme and includes the use of text to both present imagery and create an image.

Digital photo manipulation

Using Affinity Photo 2:

Scaling– Ctrl T and then you can scale, position and rotate your photo.

Selecting colours—The Eyedropper tool can sample colours from anywhere in an image and add them to your Swatches panel.

Fixing imperfections—Small changes- select spot healing tool.

Click on the imperfection you want to remove.

Bigger changes- Select clone stamp tool.

Use Alt to select what you want to use to cover the imperfect with (e.g. part of the background). Then use the clone stamp tool to paint over the imperfection.

Removing the background—Use quick selection tool .

Select what you want to keep.

To deselect parts hold Alt and click on them.

Once happy, copy and paste your selection. (Ctrl C, Ctrl V)

Then make the layer with the background invisible or delete it.

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.

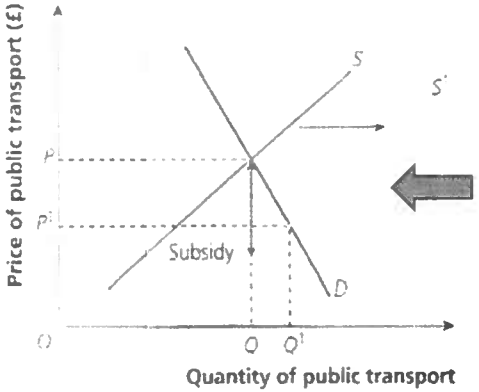


Figure 3.8.3 The effect of a subsidy on public transport

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

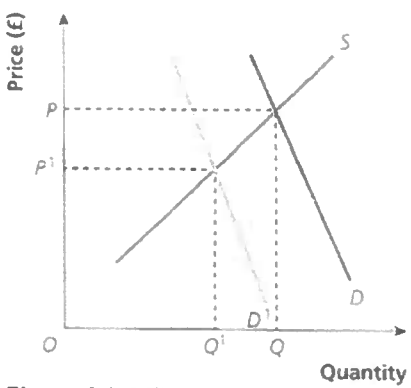


Figure 3.8.9 The effect of anti drink-driving campaigns on alcoholic drinks sold in pubs

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

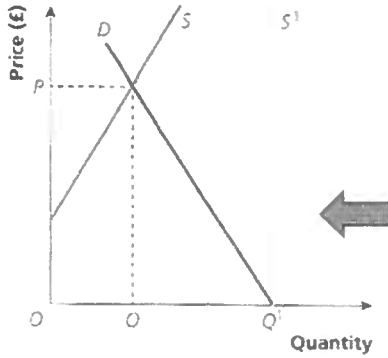


Figure 3.8.5 The effect of state provision on education

Diagram – example of market failure – education. Schools would not be provided to all by free market. Market supply curve S. Government provides (S1) to all at cost 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. Example subsidies for makers of solar panels.
aws and regulations restrict/prevent production to reduce negative impacts e.g. pollution laws.

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

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

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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 1.4.3 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 1.4.2 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

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

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

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

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

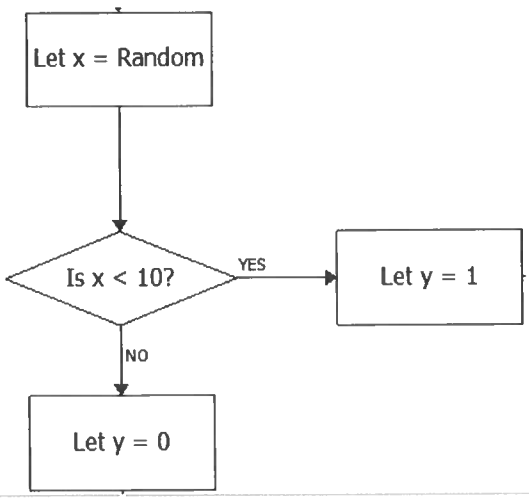
Using + operator for adding a = 1 b = 2 c = a + b print(c) -> 3	 a ← 1 b ← 2 c ← a + b OUTPUT c
Using + operator for concatenation a = 'Hello ' b = 'World' c = a + b print(c) -> Hello World	 a ← 'Hello ' b ← 'World' c ← a + b OUTPUT c

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
```



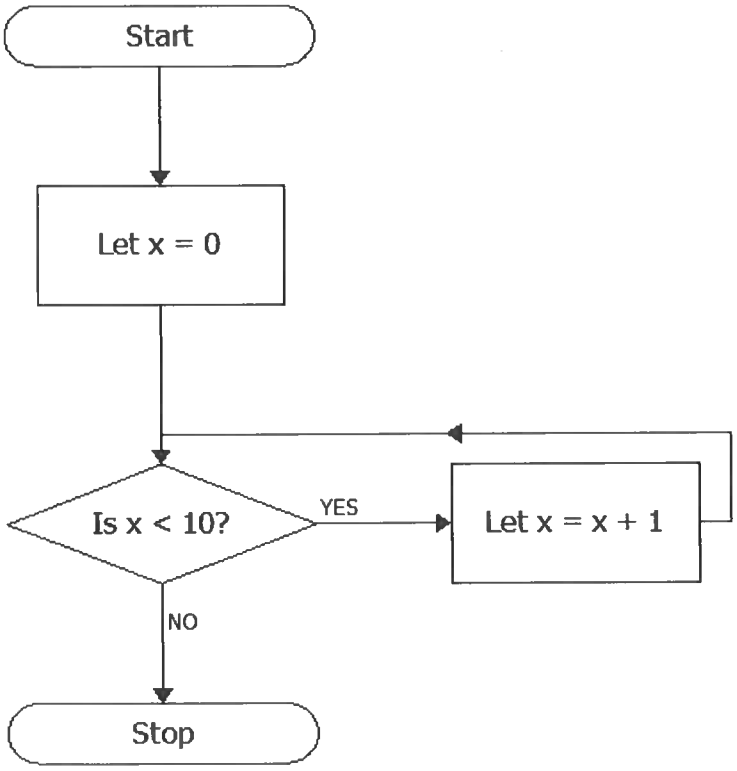
IF ...	IF i > 2 THEN
	j ← 10
	ENDIF
		if i > 2:
		j=10

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:

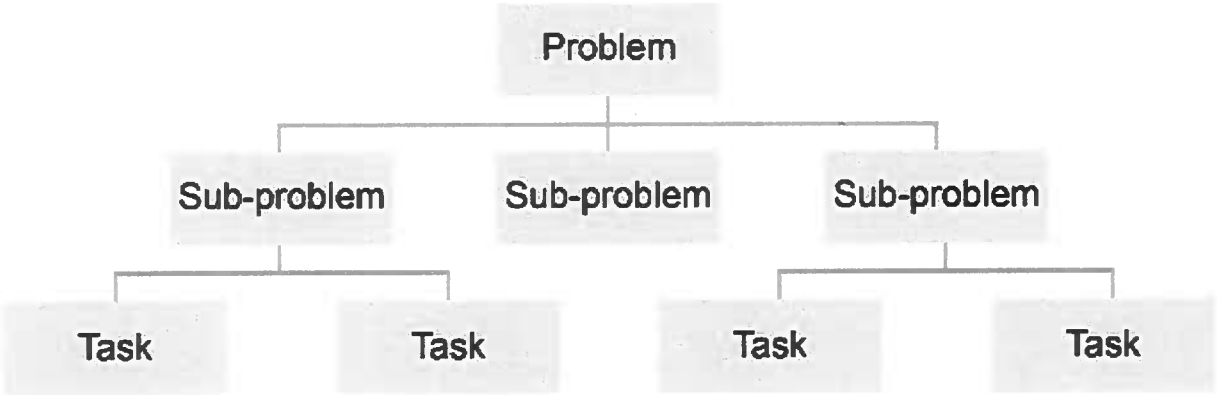
- within a certain range
- in correct format
- the correct length
- The correct data type (eg float, integer, string)

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.

Year 10 Unit 6 Algorithms	
Lesson 1	**Computational Thinking** **Algorithm** - An algorithm is a set of instructions for solving a problem or completing a task **Abstraction** - Abstraction involves removing unnecessary detail from a problem so that you can focus on the essential components **Decomposition -** Decomposition involves breaking down a large problem into smaller subproblems Then the sub-problems can be broken down further until each small task is manageable  **Algorithmic thinking** - A problem-solving method using computer science techniques, where possible solutions are developed and presented in a way that can be understood by humans and computers. Structure Diagram

Lesson 2

Searching Algorithms

Linear Search

A linear search requires going through each item in the list, one by one.

apple	banana	dog	egg

To find 'dog' look at each word in the list:

Is "dog" == "apple"? No

Is "dog" = "banana"? No

Is "dog" = "dog"? Yes – item found

A linear search will, however, be very slow for searching a complete dictionary

Binary Search

Ali	Ben	Carl	Joe	Ken	Lara	Mo	Oli	Pam	Stan	Tara

The quickest way to find if a particular name is in a sorted list is to do a binary search

Suppose we are searching for the name Mo

1. Examine the middle one first. This is Lara

Ali	Ben	Carl	Joe	Ken	Lara	Mo	Oli	Pam	Stan	Tara

2. If the item you are looking for is the middle item then you can stop.
3. If the item you are looking for is less than the middle item you can discard all of the items from the middle item up.
4. If the items you are looking for is greater than the middle item, discard all of the items from the middle item down.

5. Mo is greater than Lara so we now discard the lower half of the list. We are now left with the list below.

6. Mo is less than the mid point "Pam" so we discard names from "Pam" upwards. We now only have two names left.

7. The 'middle' name is taken to be to the left of the middle point. Which in this case is "Mo". We have now found the item we are looking for.

In a binary search, the size of the list is halved each time an item is examined. This is known as "**Divide and Conquer**".

Lesson 3

Sorting Algorithms

Bubble sort

- Start with the leftmost item
- Compare this item with the one next to it
- If the one next to it is less, swap the items
- Repeat for all the other items
- At the end of one pass through the list, the largest item is at the end of the list
- Repeat the process until the items are sorted

Suppose you have a list of numbers to be sorted:

9	5	4	15	3	8	11	2

Bubble sort – First pass

Each item is compared with the one on its right, and swapped if it is larger At the end of the first pass the largest item bubbles through to the end of the list

9	5	4	15	3	8	11	2
5	9	4	15	3	8	11	2
5	4	9	15	3	8	11	2
5	4	9	15	3	8	11	2
5	4	9	3	15	8	11	2
5	4	9	3	8	15	11	2
5	4	9	3	8	11	15	2
5	4	9	3	8	11	2	15

Bubble sort – Second pass

The process completed in pass 1 is repeated and by the end of the second pass the second largest item bubbles through to the end.

5	4	9	3	8	11	2	15
4	5	9	3	8	11	2	15
4	5	9	3	8	11	2	15
4	5	3	9	8	11	2	15
4	5	3	8	9	11	2	15
4	5	3	8	9	11	2	15
4	5	3	8	9	2	11	15

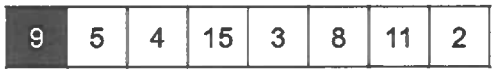
More passes are done until all the items are in the correct order.

Insertion Sort

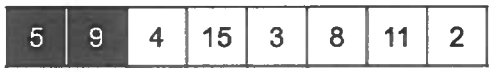
This algorithm sorts one data item at a time. It is similar to how you might sort a deck of cards. One item is taken from the list, and placed in the correct position. This is repeated until there are no more unsorted items in the list

List to be sorted:

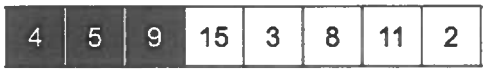
Leave the first item at the start:



5 is now inserted into the sorted list:



4 is now inserted into the sorted list:



15 is now inserted into the sorted list:

3 is now inserted into the sorted list:

8 is now inserted into the sorted list:

11 is now inserted into the sorted list:

2 is now inserted into the sorted list:

Merge Sort

The following shows how to merge two sorted lists together.

- Read item from list A
- Read item from list B.
- Write smaller to output list.
- Read next item from the list that held the smaller value.
- Repeat until all items written to output list

6	8	13	20

2	7	11	16

Read item from list A 6
Read item from list B 2
} Compare and write smaller item to output

Output list

2							

Read item from list A 6
Read item from list B 7
} Compare and write smaller item to output

2	6						

Read item from list A 8
Read item from list B 7
} Compare and write smaller item to output

2	6	7					

Read item from list A 8
Read item from list B 11
} Compare and write smaller item to output

2	6	7	8				

Continue with the rest of the comparisons

2	6	7	8	11	13	16	20

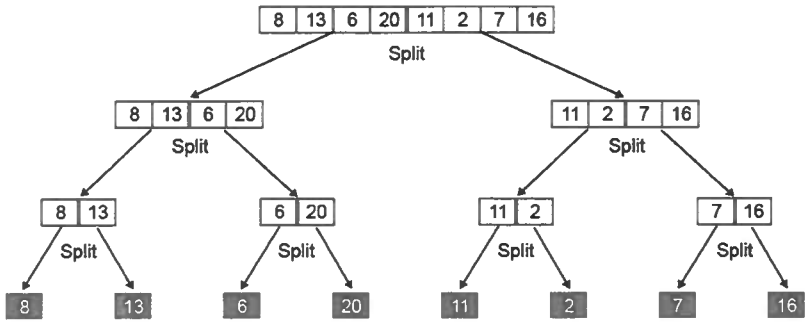
Merge sort continued

This is much more efficient than the bubble sort

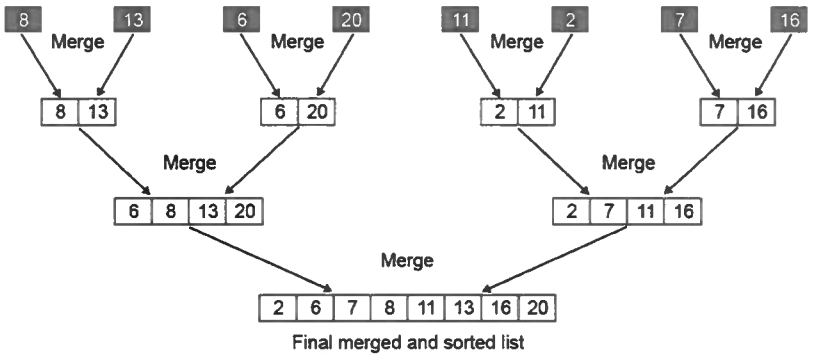
The basic steps are:

- Divide the unsorted list in two
- Continue to divide these lists into two until there is just one item in each list
- Now merge each list back until there is only one
- list remaining – which will be the fully sorted list

Merge sort part 1



Merge sort part 2



Lesson 4

Flowcharts

What is an algorithm?

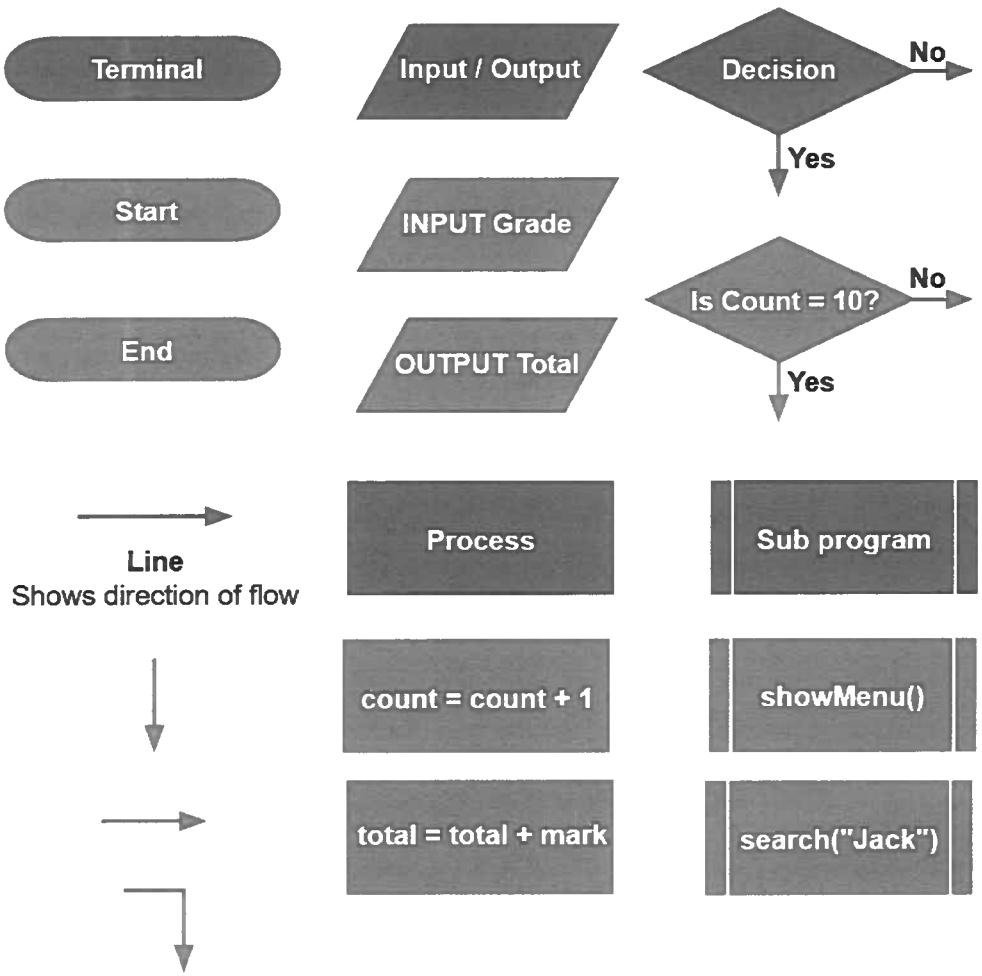
We use 'algorithms' every day without even being aware of it.

- Have you ever made a cup of tea?
- followed directions to a destination?
- taken part in a school play?

An algorithm is a series of steps to solve a problem or carry out a task. There are two common 'tools' to help plan and write down the steps needed:

- Flowcharts
- Pseudocode

Flowchart symbols



Lesson 5 **Pseudocode**

Data types

Data type	Description	Example
INTEGER	A whole number	`1475, 0, -5`
REAL	A number with a decimal point	`56.75, 6.0, -2.456, 0.0`
BOOLEAN	Either TRUE or FALSE	`TRUE, FALSE`
CHARACTER	A single alphabetic or numeric character	`'a', 'K', '4', '@', '%'`
STRING	A sequence of one or more characters	`"Jo Hobson", "123"`

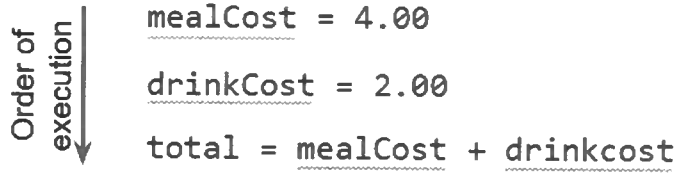
Boolean operators

The following operators are used to compare two values

>	greater than
>=	greater than or equal to
<	less than
<=	less than or equal to
==	equal to
!=	not equal to

Pseudocode is a kind of structured English for describing algorithms. It allows a programmer to focus on the logic of the algorithm without being distracted by the exact syntax of the programming language. You will see pseudocode statements written in a consistent style in exam questions, but you can use alternative statements so long as the meaning is clear. You may see the exam board style of pseudocode referred to as OCR Exam Reference Language or ERL

Sequence - The statements are executed one by one, in the order they are written



Selection - An **IF** statement is a type of selection statement. The next statement to be executed depends on whether the condition being tested is TRUE or FALSE

```
hoursPerNight = int(input("How many hours a night
                          do you sleep?"))
if hoursPerNight < 8 then
    print("That's not enough!")
else
    print("That's plenty!")
endif
```

Execute this if TRUE

Execute this if FALSE

The switch/case statement - The switch/case statement is used if there are several possible options to be tested

```
switch optionChosen:
   case 1:
      print("You chose option 1")
   case 2:
      print("You chose option 2")
   case 3:
      print("You chose option 3")
   default:
      print("Please select a valid choice")
endswitch
```

Execute if optionChosen is 1

Execute if optionChosen is 2

Execute if optionChosen is 3

Execute if no cases match

Assignment pseudocode - To assign a value to a variable, you can write statements such as:

```
total = 0
cost = adult * 2 + child * 3
counter = counter + 1
```

Pseudocode for input/output - Most programs that you will write will ask the user to enter some data, and then accept the user input and assign it to a variable. The pseudocode used in an exam will look like this:

```
firstName = input("Please enter your name")
```

Iteration - Iteration means repetition. There are three types of iteration statement that you need to know

for ... next

while ... endwhile

do ... until

Some languages such as Python do not have the do ... until statement but you still need to know it.

for ... next loop Use this when you want to execute the loop a specific number of times	**while ... end while** Use this when you want to execute the loop while a certain condition is true.	**do ... until** Use this when you want to keep on executing a loop until a certain condition is TRUE. The condition is tested at the end of the loop.

`total = 0`
`for counter from 1 to 7`
`maxTemperature = input("Enter max temperature: ")`
`total = total + maxTemperature`
`next counter`
`averageWeeksTemp = total / 7`
`print("This week's average is:")`
`print(averageWeeksTemp)`
	`password = ""`
	`while password != "rE5Bh9dP"`
	`  password = input("Enter password")`
	`endwhile`
	`print("Correct password")`
		`password = ""`
		`do`
		`  password = input("Enter password")`
		`until password == "rE5Bh9dP"`
		`print("Correct password")`

Lesson 6

Interpreting algorithms

Using a trace table

1. The value of each variable is recorded as it changes.

```
num = 3
n = 0
while n < 4
    num = num + n
    n = n + 1
endwhile
print(num)
```

num	n	n < 4	OUTPUT
3	0	TRUE	

2.

```
num = 3
n = 0
while n < 4
    num = num + n
    n = n + 1
endwhile
print(num)
```

num	n	n < 4	OUTPUT
3	0	TRUE	
3	1	TRUE	

3.

```
num = 3
n = 0
while n < 4
    num = num + n
    n = n + 1
endwhile
print(num)
```

num	n	n < 4	OUTPUT
3	0	TRUE	
3	1	TRUE	
4	2	TRUE	

4.

```
num = 3
n = 0
while n < 4
    num = num + n
    n = n + 1
endwhile
print(num)
```

num	n	n < 4	OUTPUT
3	0	TRUE	
3	1	TRUE	
4	2	TRUE	
6	3	TRUE	

5.

```
num = 3
n = 0
while n < 4
    num = num + n
    n = n + 1
endwhile
print(num)
```

num	n	n < 4	OUTPUT
3	0	TRUE	
3	1	TRUE	
4	2	TRUE	
6	3	TRUE	
9	4	FALSE	9

Creating a trace table

A trace table is useful for:

- Determining the purpose of an algorithm
- Finding the output of an algorithm
- Finding errors in an algorithm

To draw a trace table, make a column for each variable used, in the order in which they appear. You don't need to fill in a value for a variable which does not change in a particular row

Determining the function of an algorithm

The algorithm finds the average of the areas of the triangles

- Assume the user enters values 8, 3, 6, 5, 10, 6

```
total = 0
for count = 1 to 3
    base = input()
    height = input()
    area =
(base*height)/2
    total = total + area
next count
result = total / 3
print(result)
```

total	count	base	height	area	output
0	1	8	3	12	
12	2	6	5	15	
27	3	10	6	30	
57	4				**19**

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:

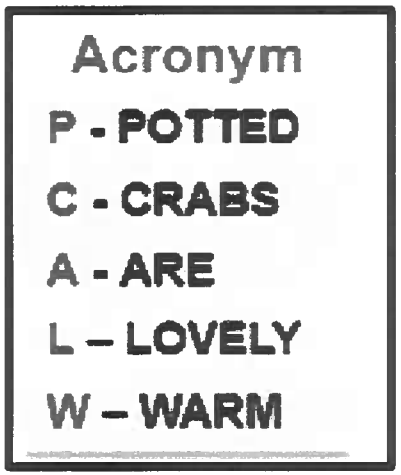
-Children's competitions are based on age as children differ greatly in body size and physical development with each year.

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