

Haggerston School



Year 10 Knowledge Organiser Term 1 2023/2024

Aspiration Creativity Character

Knowledge **Organiser** - Guidance

- You must bring your Knowledge Planner to school every day in your school bag.
- You should place your Knowledge Planner on your desk at the start of every lesson so that you can refer to it when instructed by your teacher.
- If you lose your Knowledge Planner, you will need to purchase a replacement one from Student Services.
- **In the Study Centre**, you will use your Knowledge Planner to study the relevant subject's Knowledge Organiser and **learn** the information provided.
- Use your blue exercise book to make notes to help revise and learn the information provided in each Knowledge Organiser.

KS4 Knowledge Organiser - Contents

TERM 1	1
Art	2
Biology	3
Chemistry	5
Computer Science	7
Drama	13
DT	18
English	34
Geography	44
History	47
Maths	51
Music	52
PE	54
Physics	55
RE	59
Sociology	61
Spanish Foundation	67
Spanish Higher	69
Literacy knowledge Organiser	71

Term 1

1

Aspiration Creativity Character

HENRI MATISSE

1869 - 1954



French Artist

Henri Matisse was known for his use of **colour fluid expressions**.

Studied Art at the Academie Julian and was a student of William- Adolphe Bouguereau. He was an admirer of Chardin's work and his **impressionistic influences** came from the Australian painter John Peter Russell.

In 1898 he went to London to study William Turner's work. **Matisse immersed himself in works of other artists and displayed artwork of Rodin, Gauguin, Van Gogh and Cezanne** in his home for which he went into debt.

He made use of **Divisionism** which combines **colours optically instead of mixing the pigments physically**.

Periods:

Fauvism, Modernism, Impressionism, Post-impressionism, Neo-impressionism

Influences:

Paul Cezanne, Paul Gauguin, Paul Signac, John Peter Russell

Famous works:

- **La Peruche et la Sirene**
- **Blue Nude Series**
- **The Dance**
- **Icarus**
- **Women with a Hat**
- **Still life with a Magnolia**
- **The Red Room**

Impressionism developed in France in the nineteenth century and is based on the practice of painting out of doors and spontaneously 'on the spot' rather than in a studio from sketches. Main impressionist subjects were landscapes and scenes of everyday life

Impressionists: Mary Cassatt, Paul Cézanne, Edgar Degas, Édouard Manet, Claude Monet, Camille Pissarro, Pierre-Auguste Renoir, Alfred Sisley

Fauvism is the name applied to the work which is characterised by strong colours and fierce brushwork.

Famous fauvists: Albert Marquet, Charles Camoin, Louis Valtat, Jean Puy, Maurice de Vlaminck, Henri Manguin, Raoul Dufy, Othon Friesz, Georges Rouault, Jean Metzinger, Kees van Dongen and Georges Braque

The fauvists were interested in the scientific colour theories developed in the nineteenth century – particularly those relating to **complementary colours**.

Complementary colours are pairs of colours appear opposite each other on scientific models such as the colour wheel, and when used side-by-side in a painting make each other look brighter.

COLOR AND LINE

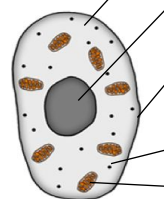
Throughout his career, Matisse searched for a way to unite the formal elements of color and line. On the one hand, he was known as a master colorist: from the non-realistic palette that earned him the designation of a **fauve or "wild beast"** in the first decade of the twentieth century, to the light-infused interiors of his so-called "Nice period" of the 1920s, he followed a course of what he described as "construction by means of color." On the other hand, he was a master draftsman, celebrated for drawings and prints that describe a figure in fluid arabesque lines; "my line drawing is the purest and most direct translation of my emotion," he once said. Through the **cut-outs**, he was finally able to unite these two branches of his practice. He described the process of making them as both "cutting directly into color" and "**drawing with scissors**."

Practical application of art history:

1. Create a drawing of your hand in one of the styles you've learned about from this knowledge organiser.
2. Create sketches of your surroundings (room, objects such as chairs, tables, books, your pencil case, etc), people in the simplified cut out style.
3. Create a composition on your table (books, stationary, clothing) and sketch it in the style of one of the above mentioned art movements. Use colour (e.g. green or red pen, colouring pencils, felt tips, highlighter)
4. Every piece of work should be evaluated using art vocabulary. Compare your work to the artists' examples.

Self Quiz:

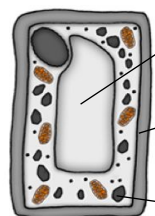
1. Can you describe Fauvism and Impressionism?
2. List their characteristics
3. List key artists associated with each movement
4. What is Divisionism?
5. What are the most famous works created by H. Matisse?



animal cell

cytoplasm	<i>site of chemical reactions in the cell</i>	gel like substance containing enzymes to catalyse the reactions
nucleus	<i>contains genetic material</i>	controls the activities of the cell and codes for proteins
cell membrane	<i>semi permeable</i>	controls the movement of substances in and out of the cell
ribosome	<i>site of protein synthesis</i>	mRNA is translated to an amino acid chain
mitochondrion	<i>site of respiration</i>	where energy is released for the cell to function

plant cell



permanent vacuole	<i>contains cell sap</i>	keeps cell turgid, contains sugars and salts in solution
cell wall	<i>made of cellulose</i>	supports and strengthens the cell
chloroplast	<i>site of photosynthesis</i>	contains chlorophyll, absorbs light energy

how a cell changes and becomes **specialised**
Undifferentiated cells are called **STEM** cells

animal cell differentiation

early stages of development only for repair and replacement

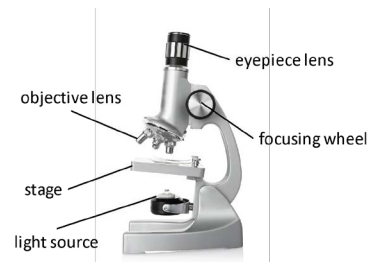
plant cell differentiation

all stages of life cycle the stem cells are grouped together in meristems

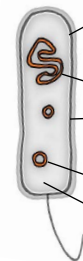
Cell differentiation

Microscopy

magnification M = $\frac{\text{size of image I}}{\text{real size of the object A}}$



Feature	Light (optical) microscope	Electron microscope
Radiation used	Light rays	Electron beams
Max magnification	~ 1500 times	~ 2 000 000 times
Resolution	200nm	0.2nm
Size of microscope	Small and portable	Very large and not portable
Cost	~£100 for a school one	Several £100,000 to £1 million plus



cell membrane	<i>site of chemical reactions in the cell</i>	gel like substance containing enzymes to catalyse the reactions
bacterial DNA	<i>not in nucleus floats in the cytoplasm</i>	controls the function of the cell
cell wall	<i>NOT made of cellulose</i>	supports and strengthens the cell
plasmid	<i>small rings of DNA</i>	contain additional genes
cytoplasm	<i>semi permeable</i>	controls the movement of substances in and out of the cell

Bacterial cells are much smaller than plant and animal cells

Prokaryotes simpler organisms



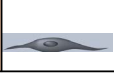
AQA Cell Structure

Eukaryotes complex organisms

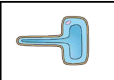

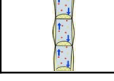
contains all the parts of animal cells plus extras

Specialised cells

specialised animal cells

nerve		<i>carry electrical signals</i>	long branched connections and insulating sheath
sperm		<i>fertilise an egg</i>	streamlined with a long tail acrosome containing enzymes large number of mitochondria
muscle		<i>contract to allow movement</i>	contains a large number of mitochondria long

specialised plant cells

root hair		<i>absorb water and minerals from soil</i>	hair like projections to increase the surface area
xylem		<i>carry water and minerals</i>	TRANSPIRATION - dead cells cell walls toughened by lignin flows in one direction
phloem		<i>carry glucose</i>	TRANSLOCATION - living cells cells have end plates with holes flows in both directions

PREFIXES

Prefix	Multiple	Standard form
centi (cm)	1 cm = 0.01 m	$\times 10^{-2}$
milli (mm)	1 mm = 0.001 m	$\times 10^{-3}$
micro (µm)	1 µm = 0.000 001 m	$\times 10^{-6}$
nano (nm)	1nm = 0.000 000 001 m	$\times 10^{-9}$

better hope – brighter future

largest
↑
smallest

cell	The smallest structural and functional unit of an organism.
nucleus	A structure that contains genetic material and controls the activities of the cell.
chromosome	A thread like structure of coiled DNA found in the nucleus of eukaryotic cells.
DNA	A polymer made up of two strands forming a double helix.
gene	A section of DNA that codes for a specific protein or characteristic.

Small intestines	<i>Villi – increase surface area, Good blood supply – to maintain concentration gradient, Thin membranes – short diffusion distance.</i>
Lungs	<i>Alveoli– increase surface area, Good blood supply – to maintain concentration gradient, Thin membranes – short diffusion distance.</i>
Gills in fish	<i>Gill filaments and lamella – increase surface area, Good blood supply – to maintain concentration gradient, Thin membranes – short diffusion distance.</i>
Roots	<i>Root hair cells - increase surface area.</i>
Leaves	<i>Large surface area, thin leaves for short diffusion path, stomata on the lower surface to let O₂ and CO₂ in and out.</i>

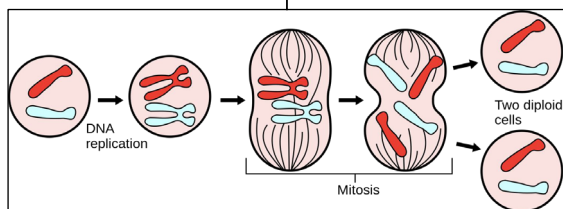
ADAPTATIONS FOR DIFFUSION

The greater the difference in concentrations the faster the rate of diffusion.

Cells divide in a series of stages. The genetic material is doubled and then divided into two identical cells.

MITOSIS AND THE CELL CYCLE

Stage 1	Growth	Increase the number of sub-cellular structures e.g. ribosomes and mitochondria.
Stage 2	DNA Synthesis	DNA replicates to form two copies of each chromosome.
Stage 3	Mitosis	One set of chromosomes is pulled to each end of the cell and the nucleus divides. Then the cytoplasm and cell membranes divide to form two cells that are identical to the parent cell.



Mitosis occurs during growth, repair, replacement of cells. Asexual reproduction occurs by mitosis in both plants & simple animals.

AQA
Cell Biology 2

Cell division

STEM CELLS

Undifferentiated cell of an organism

Divides to form more cells of the same type, and can differentiate to form many other cell types.

Transport in cells

Diffusion <u>No</u> energy required	<i>Movement of particles in a solution or gas from a higher to a lower concentration</i>	E.g. O ₂ and CO ₂ in gas exchange, urea in kidneys. Factors that affect the rate are concentration, temperature and surface area.
Osmosis <u>No</u> energy required	<i>Movement of water from a dilute solution to a more concentrated solution</i>	E.g. Plants absorb water from the soil by osmosis through their root hair cells. Plants use water for several vital processes including photosynthesis and transporting minerals.
Active transport <u>ENERGY</u> required	<i>Movement of particles from a dilute solution to a more concentrated solution</i>	E.g. movement of mineral ions into roots of plants and the movement of glucose into the small intestines.

Human Embryonic stem cells	<i>Can be cloned and made to differentiate into most cell types</i>	Therapeutic cloning uses same genes so the body does not reject the tissue. Can be a risk of infection
Adult bone marrow stem cells	<i>Can form many types of human cells e.g. blood cells</i>	Tissue is matched to avoid rejection, risk of infection. Only a few types of cells can be formed.
Meristems (plants)	<i>Can differentiate into any plant cell type throughout the life of the plant.</i>	Used to produce clones quickly and economically, e.g. rare species, crop plants with pest /disease resistance

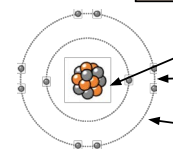
Treatment with stem cells may be able to help conditions such as diabetes and paralysis. Some people object to the use of stem cells on ethical or religious grounds

better hope – brighter future



Atoms, elements and compounds

Atom	<i>The smallest part of an element that can exist</i>	Have a radius of around 0.1 nanometres and have no charge (0).
Element	<i>Contains only one type of atom</i>	Around 100 different elements each one is represented by a symbol e.g. O, Na, Br.
Compound	<i>Two or more elements chemically combined</i>	Compounds can only be separated into elements by chemical reactions.



Central nucleus	Contains protons and neutrons
Electron shells	Contains electrons

Name of Particle	Relative Charge	Relative Mass
Proton	+1	1
Neutron	0	1
Electron	-1	Very small

Electronic shell	Max number of electrons
1	2
2	8
3	8
4	2

Relative electrical charges of subatomic particles

7 Li 3	Mass number	<i>The sum of the protons and neutrons in the nucleus</i>
	Atomic number	<i>The number of protons in the atom</i> Number of electrons = number of protons

Mixtures	<i>Two or more elements or compounds not chemically combined together</i>	Can be separated by physical processes.
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Method	Description	Example
Filtration	<i>Separating an insoluble solid from a liquid</i>	To get sand from a mixture of sand, salt and water.
Crystallisation	<i>To separate a solid from a solution</i>	To obtain pure crystals of sodium chloride from salt water.
Simple distillation	<i>To separate a solvent from a solution</i>	To get pure water from salt water.
Fractional distillation	<i>Separating a mixture of liquids each with different boiling points</i>	To separate the different compounds in crude oil.
Chromatography	<i>Separating substances that move at different rates through a medium</i>	To separate out the dyes in food colouring.

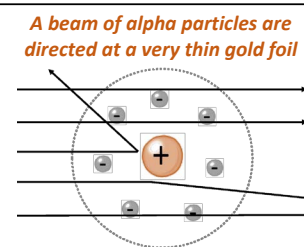
AQA GCSE Atomic structure and periodic table part 1

Pre 1900		<i>Tiny solid spheres that could not be divided</i>	Before the discovery of the electron, John Dalton said the solid sphere made up the different elements.
1897 'plum pudding'		<i>A ball of positive charge with negative electrons embedded in it</i>	JJ Thompson 's experiments showed that showed that an atom must contain small negative charges (discovery of electrons).
1909 nuclear model		<i>Positively charged nucleus at the centre surrounded by negative electrons</i>	Ernest Rutherford's alpha particle scattering experiment showed that the mass was concentrated at the centre of the atom.
1913 Bohr model		<i>Electrons orbit the nucleus at specific distances</i>	Niels Bohr proposed that electrons orbited in fixed shells; this was supported by experimental observations.

The development of the model of the atom

James Chadwick	<i>Provided the evidence to show the existence of neutrons within the nucleus</i>
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Rutherford's scattering experiment



Most of the alpha particles passed right through.
A few (+) alpha particles were deflected by the positive nucleus.
A tiny number of particles reflected back from the nucleus.

Chemical equations	<i>Show chemical reactions - need reactant(s) and product(s) energy always involves and energy change</i>	Law of conservation of mass states the total mass of products = the total mass of reactants.
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Word equations	<i>Uses words to show reaction</i> reactants \square products magnesium + oxygen \square magnesium oxide	Does not show what is happening to the atoms or the number of atoms.
Symbol equations	<i>Uses symbols to show reaction</i> reactants \square products $2\text{Mg} + \text{O}_2 \square 2\text{MgO}$	Shows the number of atoms and molecules in the reaction, these need to be balanced.

Relative atomic mass

Isotopes	<i>Atoms of the same element with the same number of protons and different numbers of neutrons</i>	^{35}Cl (75%) and ^{37}Cl (25%) Relative abundance = (% isotope 1 x mass isotope 1) + (% isotope 2 x mass isotope 2) \div 100 e.g. $(25 \times 37) + (75 \times 35) \div 100 = 35.5$
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better hope – brighter future



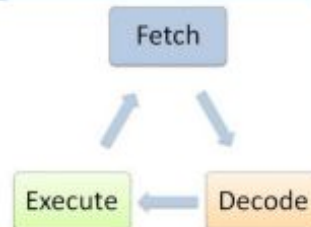
1.1 SYSTEMS ARCHITECTURE

KEY CONCEPTS

- Computer systems take data (input), process it and then output it.
- **Embedded systems** are computers built in to other devices like washing machines. They are dedicated to a single task so they are efficient.
- **Clock speed:** the number of instructions a processor can carry out per/second. Higher clock speed = faster CPU.
- Number of **Cores:** The more cores a CPU has the more instructions it can carry out at once (multitasking). More cores = faster processing.
- **Cache size:** A larger cache gives the CPU faster access to more data

FETCH - DECODE - EXECUTE CYCLE

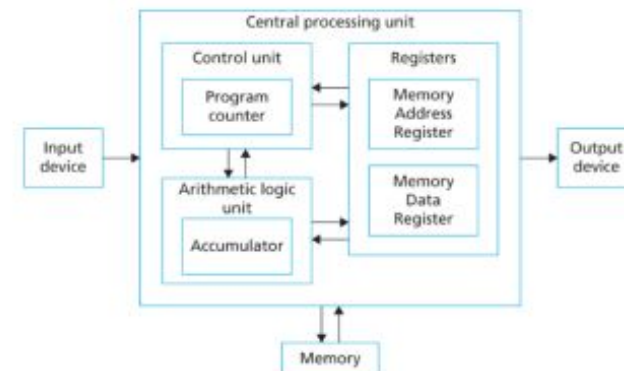
CPU **fetches** instruction from the RAM (Copies memory address to MAR, copies Instruction to MDR & adds 1 to PC. CU **decodes** the instruction from the MDR. Instruction is **executed** by the CU. The next instructions is fetched and The cycle repeats.



EXAM QUESTIONS

1. Explain how cache size, cores and clock speed affect the performance of the CPU.
2. Define what is meant by an embedded system
3. What is the purpose of the ALU?
4. Explain the role of the CPU registers (MAR and MDR)
5. Explain how the fetch decode execute cycle works

THE CENTRAL PROCESSING UNIT (CPU)



Control Unit (CU): executes instructions and controls the flow of data in the CPU.

Program counter: holds the memory address for the instruction of each cycle.

Arithmetic Logic Unit (ALU): does all of the calculations and logic operations.

Accumulator: holds the result of any calculations in the ALU.

Cache: very fast memory that stores regularly used data so that the CPU can access it quickly.

MAR (Memory Address Register): holds the address about to be used by the CPU.

MDR (Memory Data Register): holds the actual data or instruction being processed by the CPU.

1.2 MEMORY and 1.3 STORAGE

RANDOM ACCESS MEMORY (RAM)

- RAM is the computer's main memory that holds the data, programs and files while they are being used.
- RAM is volatile (power off = the data is lost)
- The CPU will fetch instructions from the RAM in the fetch - decode - execute cycle.
- When the RAM is full the computer uses **VIRTUAL MEMORY**. It uses the secondary storage as temporary RAM so that the computer can continue running (but slowly).

READ ONLY MEMORY (ROM)

- The ROM is on a chip build into the motherboard
- It contains the BIOS (boot up sequence for the computer)
- ROM is non-volatile (data still stored after power is off)

TYPES OF STORAGE

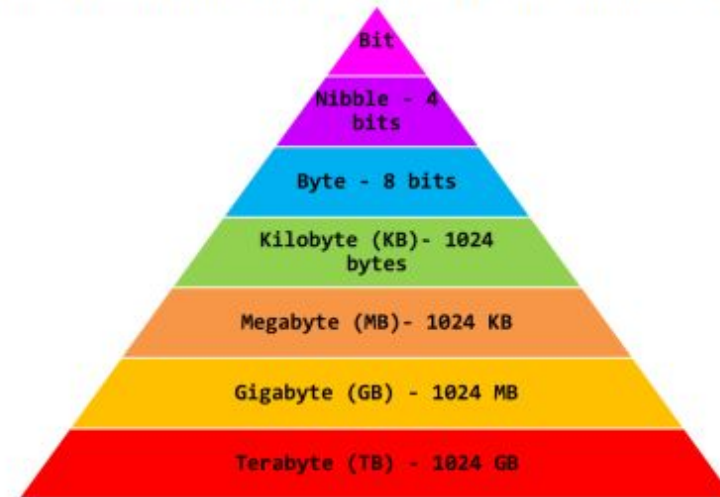
- Secondary Storage: where all data including the programs are stored when they are not being used.

Storage	Key Information
Hard Disk Drive (HDD)	Magnetic, has moving parts, large capacity, lower cost than SSD
Solid State Drive (SSD)	Flash memory, no moving parts, more robust than HDD, faster and more expensive than HDD
Flash memory	e.g. USB memory sticks, memory cards.
Optical Storage	e.g. CDs, DVDs. Cheap, portable and fairly robust.
Magnetic tape	Used for archive storage (backups). Very large capacity, low cost, slow.

Storage device comparison factors: speed, cost, durability, robustness, capacity and portability.

STORAGE CAPACITY

Some storage methods such as a HDD or SSD have a large capacity (they can store lots of data. Other devices such as CDs and SD cards have smaller capacity. Measurements of capacity are shown below:



1000 instead of 1024 could be used when doing your conversion calculations, because you will not be allowed a calculator in your exam.

EXAM QUESTIONS

1. Explain how the RAM works with the CPU in the fetch - decode - execute cycle
2. Explain the difference between volatile and non-volatile memory giving an example of each
3. Tom is buying a new laptop, he is not sure whether to get a magnetic HDD or SSD. Discuss the benefits and drawbacks of each.

2.2 PROGRAMMING TECHNIQUES

DATA TYPES

Data Type	Definition
String	Text eg: "Hello"
Integer	Whole number eg: 32
Float/Real	Decimal number eg: 1.2
Boolean	Two values eg: true or false
Character	A single character eg: b

VARIABLES AND CONSTANTS

Variable - A value which may change while the program is running. Variables can be local or global.

Local Variable - a variable which can only be used within the structure they are declared in.

Global Variable - a variable which can be used in any part of the code after they are declared

Constant - A value which cannot be altered as the program is running.

OPERATORS

Operator/Function	Definition
Exponentiation	Raises a number to a power eg: 2**3 OR 2 ^3 (=2 ³)
Quotient/DIV	Gives the whole number after a division
Remainder/MOD	Gives the remainder part of a division
==	Is equal to
! or <>	Is not equal to
<	Is less than
>	Is more than

ARRAYS

One-Dimensional Arrays- this is like a list. In this example an array has been created called students. The list can hold 3 items (as shown).

```
array students [3]
students [0] = "Bob"
students [1] = "Dave"
students [2] = "Bob"
```

This command would print the second item (1) From the array. It would print "Dave".

```
print(students[1])
```

Two-Dimensional Arrays - these are lists within lists (like a table)

```
Grades=[["Bob", "22%", "44%"], ["Dave", "85%", "100%"]]
```

The code above creates the 2D array. The code Below would output:
"Bob's first test score was 22%"

	0	1	2
0	Bob	22%	44%
1	Dave	85%	100%

```
print("Bob's first test score was " + Grades [0, 1])
```

2.2 PROGRAMMING TECHNIQUES CONTINUED

PROGRAMMING CONSTRUCTS



Sequence

A Sequence is when there are programming steps that are carried out one after another.



Selection

Selection is where there are different paths in your code eg: IF, ELIF, ELSE



Iteration

Iteration is when there is repetition (loops) in code. This could be a WHILE loop (do something WHILE a condition is met) or a FOR loop (do something for a set number of times)

This count-controlled loop would print "Hello World" 8 times.:

```
for i=0 to 7
  print ("Hello")
next i
```

These condition controlled loops would check if a password's correct:

```
while answer != "letmein123"
  answer=input("Enter password")
endwhile
```

```
do
  answer=input("Enter password")
until answer=="letmein123"
```

STRING MANIPULATION

0 1 2 3
W o r d

The characters in a string are numbered starting with position 0.

Function	Purpose
x.length	Gives the length of the string
x.upper	Changes the characters in the string to upper case
x.lower	Changes the characters in the string to lower case
x[i]	Gives the character in position i. Eg: x[2] = "r"
x.substring(a,b)	Gives the characters from position a with length b. Eg: x.substring(1,2) = or
+	Joins (concatenates) two strings together

FILE HANDLING

Myfile=openRead("myfile.text")	Opens the file in read mode
Myfile=openWrite("myfile.text")	Opens the file in write mode
Myfile.writeline ("Hello")	Writes a line to the file
Line1=myfile.readLine()	Reads one line of the file
Myfile.close()	Closes the file
endOfFile()	Used to determine the end of a file

IF/ELSE AND SWITCH/CASE FOR SELECTION

IF ELSE	SWITCH/CASE
<pre>If choice == "a" then print("You chose A") elseif choice=="b" then print("You chose B") else print("Unrecognised choice")</pre>	<pre>Switch entry: case "A": print("You chose A") case "B": print("You chose B") default: print("Unrecognised choice")</pre>

Beginner's Python Cheat Sheet - Lists

What are lists?

A list stores a series of items in a particular order. Lists allow you to store sets of information in one place, whether you have just a few items or millions of items. Lists are one of Python's most powerful features readily accessible to new programmers, and they tie together many important concepts in programming.

Defining a list

Use square brackets to define a list, and use commas to separate individual items in the list. Use plural names for lists, to make your code easier to read.

Making a list

```
users = ['val', 'bob', 'mia', 'ron', 'ned']
```

Accessing elements

Individual elements in a list are accessed according to their position, called the index. The index of the first element is 0, the index of the second element is 1, and so forth. Negative indices refer to items at the end of the list. To get a particular element, write the name of the list and then the index of the element in square brackets.

Getting the first element

```
first_user = users[0]
```

Getting the second element

```
second_user = users[1]
```

Getting the last element

```
newest_user = users[-1]
```

Modifying individual items

Once you've defined a list, you can change individual elements in the list. You do this by referring to the index of the item you want to modify.

Changing an element

```
users[0] = 'valerie'
users[-2] = 'ronald'
```

Adding elements

You can add elements to the end of a list, or you can insert them wherever you like in a list.

Adding an element to the end of the list

```
users.append('amy')
```

Starting with an empty list

```
users = []
users.append('val')
users.append('bob')
users.append('mia')
```

Inserting elements at a particular position

```
users.insert(0, 'joe')
users.insert(3, 'bea')
```

Removing elements

You can remove elements by their position in a list, or by the value of the item. If you remove an item by its value, Python removes only the first item that has that value.

Deleting an element by its position

```
del users[-1]
```

Removing an item by its value

```
users.remove('mia')
```

Popping elements

If you want to work with an element that you're removing from the list, you can "pop" the element. If you think of the list as a stack of items, pop() takes an item off the top of the stack. By default pop() returns the last element in the list, but you can also pop elements from any position in the list.

Pop the last item from a list

```
most_recent_user = users.pop()
print(most_recent_user)
```

Pop the first item in a list

```
first_user = users.pop(0)
print(first_user)
```

List length

The len() function returns the number of items in a list.

Find the length of a list

```
num_users = len(users)
print("We have " + str(num_users) + " users.")
```

Sorting a list

The sort() method changes the order of a list permanently. The sorted() function returns a copy of the list, leaving the original list unchanged. You can sort the items in a list in alphabetical order, or reverse alphabetical order. You can also reverse the original order of the list. Keep in mind that lowercase and uppercase letters may affect the sort order.

Sorting a list permanently

```
users.sort()
```

Sorting a list permanently in reverse alphabetical order

```
users.sort(reverse=True)
```

Sorting a list temporarily

```
print(sorted(users))
print(sorted(users, reverse=True))
```

Reversing the order of a list

```
users.reverse()
```

Looping through a list

Lists can contain millions of items, so Python provides an efficient way to loop through all the items in a list. When you set up a loop, Python pulls each item from the list one at a time and stores it in a temporary variable, which you provide a name for. This name should be the singular version of the list name.

The indented block of code makes up the body of the loop, where you can work with each individual item. Any lines that are not indented run after the loop is completed.

Printing all items in a list

```
for user in users:
    print(user)
```

Printing a message for each item, and a separate message afterwards

```
for user in users:
    print("Welcome, " + user + "!")

print("Welcome, we're glad to see you all!")
```

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Beginner's Python Cheat Sheet — If Statements and While Loops

What are if statements? What are while loops?

If statements allow you to examine the current state of a program and respond appropriately to that state. You can write a simple if statement that checks one condition, or you can create a complex series of if statements that identify the exact conditions you're looking for.

While loops run as long as certain conditions remain true. You can use while loops to let your programs run as long as your users want them to.

Conditional Tests

A conditional test is an expression that can be evaluated as True or False. Python uses the values True and False to decide whether the code in an if statement should be executed.

Checking for equality

A single equal sign assigns a value to a variable. A double equal sign (==) checks whether two values are equal.

```
>>> car = 'bmw'
>>> car == 'bmw'
True
>>> car = 'audi'
>>> car == 'bmw'
False
```

Ignoring case when making a comparison

```
>>> car = 'Audi'
>>> car.lower() == 'audi'
True
```

Checking for inequality

```
>>> topping = 'mushrooms'
>>> topping != 'anchovies'
True
```

Numerical comparisons

Testing numerical values is similar to testing string values.

Testing equality and inequality

```
>>> age = 18
>>> age == 18
True
>>> age != 18
False
```

Comparison operators

```
>>> age = 19
>>> age < 21
True
>>> age <= 21
True
>>> age > 21
False
>>> age >= 21
False
```

Checking multiple conditions

You can check multiple conditions at the same time. The and operator returns True if all the conditions listed are True. The or operator returns True if any condition is True.

Using and to check multiple conditions

```
>>> age_0 = 22
>>> age_1 = 18
>>> age_0 >= 21 and age_1 >= 21
False
>>> age_1 = 23
>>> age_0 >= 21 and age_1 >= 21
True
```

Using or to check multiple conditions

```
>>> age_0 = 22
>>> age_1 = 18
>>> age_0 >= 21 or age_1 >= 21
True
>>> age_0 = 18
>>> age_0 >= 21 or age_1 >= 21
False
```

Boolean values

A boolean value is either True or False. Variables with boolean values are often used to keep track of certain conditions within a program.

Simple boolean values

```
game_active = True
can_edit = False
```

If statements

Several kinds of if statements exist. Your choice of which to use depends on the number of conditions you need to test. You can have as many elif blocks as you need, and the else block is always optional.

Simple if statement

```
age = 19

if age >= 18:
    print("You're old enough to vote!")
```

If-else statements

```
age = 17

if age >= 18:
    print("You're old enough to vote!")
else:
    print("You can't vote yet.")
```

The if-elif-else chain

```
age = 12

if age < 4:
    price = 0
elif age < 18:
    price = 5
else:
    price = 10

print("Your cost is $" + str(price) + ".")
```

Conditional tests with lists

You can easily test whether a certain value is in a list. You can also test whether a list is empty before trying to loop through the list.

Testing if a value is in a list

```
>>> players = ['al', 'bea', 'cyn', 'dale']
>>> 'al' in players
True
>>> 'eric' in players
False
```

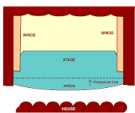



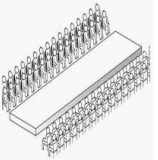

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GCSE Drama – Theatre

Stage Type	What does it look like?	Advantages and disadvantages
Proscenium arch		Advantages: Excellent sight lines, excellent staging and set possibilities, traditional form of theatre. Disadvantages: Audience feel removed because of fourth wall, set can be limited to existing structure.
End on		Advantages: Excellent sight lines, more inclusive experience than PA for the audience. Disadvantages: Quite minimal so limits set
Thrust		Advantages: Audience have an immersive and inclusive experience, visually interesting. Disadvantages: sight lines and limited set and staging.
Theatre in the round		Advantages: Audience have an immersive and inclusive experience, visually interesting. Disadvantages: sight lines and limited set and staging.
Traverse		Advantages: Audience have an immersive and inclusive experience, visually interesting, audience can see each other Disadvantages: sight lines mean audience might see two different shows, limited set and staging.
Promenade		Advantages: Audience have an immersive and inclusive experience, locations can complement the work, an alternative theatre experience. Disadvantages: non-linear, fragmented plot, break intension.

Self Quiz: **LOOK, COVER, WRITE, CHECK & CORRECT**

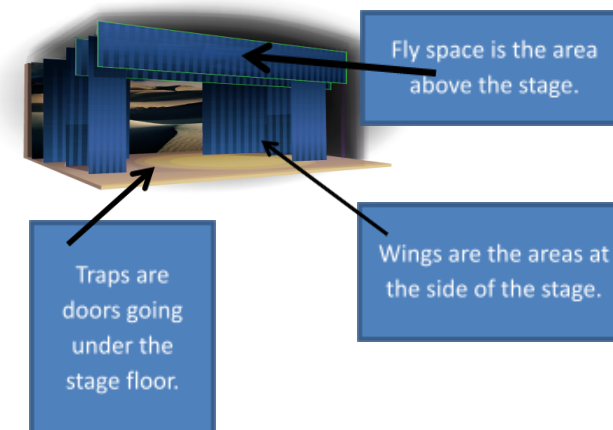
List the stage types and describe the audience position.

Identify advantages and disadvantages for both.

Draw and label a stage





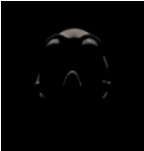
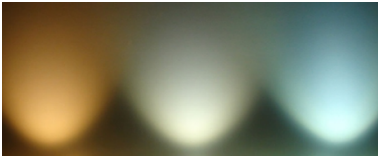

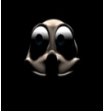




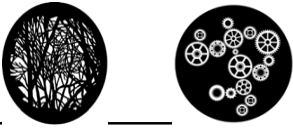


Wooden flats create set walls.



Traps are doors going under the stage floor.

Wings are the areas at the side of the stage.

Theatre Lighting

1. Lanterns and lighting states		2. Lighting and lighting angles	3. Colour and effects
Fresnel – A common lantern with soft edges. A series of fresnels can evenly cover the stage with light to create a 'wash'. Coloured gels can be used. Barn doors can be used to focus the light.		Front light Back light  	 Warm Neutral Cool
Profile – This lantern is long and thin and can be used to create spotlights. A shutter and gate mechanism allow control over the beam of light to sharp or soft edge. Gobos can be used with profile lanterns.		Down light Up light  	Coloured lighting gels 
Flood – This lantern produces a clear wide-angled light, but there's little control over the spread of the light. Coloured filters can be used with this lamp.		Side light 	Gobos create patterns 
Par can produces a strong beam of light that is suitable for creating bold colours on stage. Par cans can be identified by their rounded shape. Coloured filters can be used with this lantern.		Hand held lighting and pendant bulbs hanging in fly space. 	Strobes rapidly pulse to create a special effect (for example to make the actors appear like they are moving in slow motion).
Keywords: lantern, lighting states, colour, intensity, soft focus, sharp focus, shadows, series, beam.			
Self Quiz – LOOK, COVER, WRITE, CHECK, & CORRECT lanterns and lighting states table			
<ol style="list-style-type: none"> List the reasons lighting is used in theatre. Reflect on a theatre production you've seen. Can you identify the lighting used? What was the reason for this decision? What was the effect on the audience? 			

Vocabulary of Voice

Monotone – One tone

Clarity – All words are audible and enunciated (said fully and clearly)

Volume – Loud or quiet

Accent – Changes in way you say words depending on where you live and/ or social class

Pace (speed), pause (stopping for a moment) and pitch (high or low)

Emphasis – making certain words stand out

Intonation – The rise and fall of the voice

Tone – the feeling in your voice

Component 1 Questions

What was your initial response to the stimuli and what were the intentions of the piece?

What work did your group do in order to explore the stimuli and start to create ideas for performance?

What were some of the significant moments during the development process and when rehearsing and refining the work?

How did you consider genre, structure, character, form, style and language throughout the process?

How effective was your contribution to the final performance?

Were you successful in what you set out to achieve?

Genre - a category or 'type' given to plays based upon the conventions used e.g. tragedy, comedy, farce and melodrama.

Structure –The arrangement of, and relationship between, the parts of a play e.g. scenes, acts and cyclical.

Character - a person portrayed in a drama, novel, or other artistic piece.

Form and style – Drama techniques

Language - Words

GCSE DRAMA – COMPONENT 1

Vocabulary of Physicality

Every – Eye contact: Looking at the audience or another performer

Friday – Facial expressions: using your face to express feelings

My – Movement: moving your body/ body parts from one place to another

Naughty – Non-verbal communication: communicating meaning without using words

Brother – Body language: using your body to communicate meaning

Puts – Pace (speed) and pause (stopping for a moment)

Grandma's – Gesture – the way you move your hands

Massive – Mannerisms: something someone does with face or body repeatedly

Slippers – Stillness: no movement

Sentence Stem

As a performer,

As a director,

As a designer,

Describe – to use drama words to create a picture of what you did/ saw.

When we/ I/ they (link to "extract" and describe the drama).

Analyse – in depth understanding drawing out layers of meaning.

Evaluate – a well justified judgement.

This effectively communicates (explain/ analyse the drama with link to purpose/ intentions) to the audience.

Challenge: Vary evaluative word by identifying what it made the audience think and feel e.g. shocking.

Self Quiz – LOOK, COVER, WRITE, CHECK & CORRECT

Use the acronym and mnemonic to help you remember key vocabulary and definitions.

Use the definitions to ensure you understand the questions you will answer in your portfolio.

Think about recent practical work, use the sentence stems to describe , analyse and evaluate the process and performance.

Context – what was happening at the time the play was written and set		Plot – the story	
1912	1945		
Edwardian era, or ‘Golden Age’, the time period in which the play is set.	Post WW1 (1914-1918) WW2 (1939-1945) Britain, the time in which the play was written and first performed.	Act One	The play opens with a celebratory dinner party. Sheila and Gerald are to be married and Birling and Company will work closer with Crofts Ltd.
The British Empire – A military power.	Britain suffered the effects of two world wars.		Birling holds court and begins to make a series of statements we, as the audience, know to be fallacious.
Britain was a global economic power however high exploitation of working classes.	Two recessions since 1912 resulted in economic instability for all, declining industry and high unemployment.		The Inspector enters and informs the party of the suicide of Eva Smith. Starting with Birling, he begins to interrogate the family.
Social Inequality Rigid social hierarchy benefitting upper classes. Little social mobility. No welfare state.	Increased power of working classes through trade unions (an organisation of workers who join forces and become an official organisation working to protect workers’ rights e.g. fair pay and better working conditions). Trade unions grew in power in the early 19th century particularly after WW2.		The Inspector interrogates Sheila and the incident at Milward’s is outlined.
Conservative and liberal domination in politics for two centuries.	The Labour Party won the General Election in 1924, 1929 and, overwhelmingly, in 1945.	Act Two	The Inspector focuses his line of inquiry towards Gerald and the name Daisy Renton is first introduced. Gerald’s affair is exposed.
Support for working classes provided by charities.	Labour introduce the welfare state and the creation of the NHS (1945-48)		Mrs Birling recounts the request for financial assistance made by a pregnant ‘Mrs Birling’ and shows no remorse for the refusal that she herself orchestrated.
Gender inequality. Rigid, stereotypical gender roles. Men had more sexual freedom.	Increased gender equality. Gender roles are less distinct with more women in the workplace to take the roles previously filled by men before the war e.g. police officer. Women won the right to vote in 1928.		The Inspector, via a series of leading questions, induces Mrs Birling to say that the man responsible for the pregnancy should be punished and forced to take responsibility. Eric enters.
Deeply entrenched capitalist system.	More awareness of socialism.	Act Three	Eric tells of a series of liaisons and how he has stolen money from Mr Birling to support the mother of an unborn child.
Deeply entrenched inequality benefitting Tsars in Russia.	1917 – Russian revolution and the emergence of communist state.		The Inspector proportions the blame to each of the characters and performs his final speech.
Melodrama and musical comedies are popular for many.	AIC first performed in Russia in 1945 then London in 1946. British theatres bombed and damaged, relocated, opening and closing erratically. Musicals, detective thrillers, Shakespeare revivals and films are popular. Emergence of serious dramas exploring political and social issues. AIC had a mixed response from the audience.		The family squabbles and points fingers. Gerald re-enters to suggest the whole thing was a hoax. The old, and Gerald, take this as a cue to alleviate any responsibility whereas the young are repentant. The phone rings...
Dramatic techniques: Tension – a feeling of nervousness, anxiety and excitement; climax – build up of tension; cliff hanger - a dramatic and exciting ending leaving the audience uncertain and creating suspense; dramatic irony – audience aware of something the characters are not; foreshadowing – subtle hints or predictions of later action; symbolism – one thing meaning, or representing, another; didactic – telling/ teaching; status – power or position of a character; coup de theatre (a dramatically sudden action or turn of events); well made play (genre) – popular in 19th century taking the audience and characters on a journey from ignorance to knowledge ending with a return to order; morality play (genre) – allegorical play presenting a lesson about good conduct and character; detective thrillers or ‘whodunnit’ play (genre) – a detective story in which the audience is given the opportunity to engage in the same process of deduction as the protagonist in the investigation of a crime.			

Daldry's production – You are pretending as a director/ designer that YOU ARE HIM and these are YOUR IDEAS. Do NOT reference him.			
Set description– naturalistic and symbolic	Analysis	Lighting – real lighting and stage lighting	Analysis
Doll's house on stilts. House opens up at front, steps down to stage floor, house tips and falls, furniture breaks, crockery shatters, performed on/ through wreckage.	Cloistered, unrealistic life of Edwardian upper classes. Reality and truth exposed; difficult, unsettling to face responsibility and a need for change; less distinct class and gender boundaries.	Priestley's lighting stage direction: "The lighting should be pink and intimate until the INSPECTOR arrives and then it should be brighter and harder." Fresnel lantern with soft pink gel, light from open fire, chandelier, table lamps, candelabra. Series of Fresnel lanterns creating a wash of strong, cold white light.	Cloistered, celebratory, comfortable, warm. Then harsh, difficult to hear, interrogation, exposing the truth and reality.
Cobblestones, rubble and debris on stage floor.	War time Britain - time written and first performed; the blitz.	Cyclorama projection: clouds moving, weather changing, night and day.	Creates atmosphere (pathetic fallacy) and sense of time passing.
Cyclorama projection: clouds moving, weather changing, night and day.	Creates atmosphere (pathetic fallacy) and sense of time passing.	Contrast between dimly lit, cool white light on stage with warm glow from doll's house	Contrast in social class, ignorant of the harsh reality of life for many in Edwardian Britain.
Telephone box tilted in stall box, street lamps and radio downstage.	All characteristics of 1940s Britain.	House lights in the auditorium come on for, 'Millions and millions of Eva Smiths...' speech.	Timeless message about equality and collective responsibility applicable for characters and audience.
Costume description	Analysis	Props and stage furniture description	Analysis
Birling men: typical Edwardian dinner dress for men, tail coats, dinner jacket, trousers, waistcoat, pristine white short and white bow tie.	Represents upper social class, wealth, privilege, cloistered, superior and detached.	Inspector's notebook, photograph of Eva.	Interrogation, control and omniscience.
Birling women: Typical Edwardian long evening gowns, satin, lace, beading, chiffon, burgundy, long white gloves, hair pinned up and jewellery (pearls, brooch).	Represents upper social class, wealth, privilege, colourised, superior and detached.	Glasses, cigar.	Represents upper class – social status, wealth, privilege.
Inspector Goole: Typical dress of 1940s, beige trench coat, modest 1940s brown suit and trilby.	From the future, generic class, 1940s a time of economic uncertainty after 2 world wars.	Mahogany dining furniture. Cut glass port glasses and decanter.	Represents upper class – social status, wealth, privilege.
Edna: Drab beige & brown, dress of 1940s, apron, scarf in hair.	A unique position, a servant of time but complicit with IG.	Staging and stage space desc. Doll's house centre stage. Family descends from doll's house for interrogation. Elements of 1940s downstage.	Self-importance, capitalism Hierarchy, facing reality, foreshadowing future. Moving forward, a need for change, audience in future.

Self Quiz: LOOK, COVER, WRITE, CHECK & CORRECT design description and analysis

1. Can you add another idea for set; lighting; costume; props and stage furniture; and, staging and stage furniture.

Year 10/Term 1

Food Preparation & Nutrition

Macronutrients: Nutrients that are needed in large amounts

Micronutrients: Nutrients that are needed in small amounts

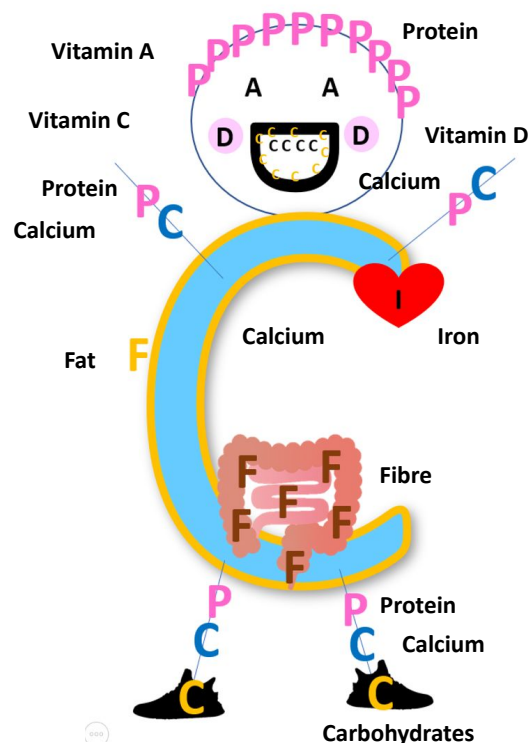
Complementary Actions: Some nutrients need to work together for the body to utilise them fully. For instance

Vitamin c is needed to **absorb iron** and **vitamin D** is needed to **absorb calcium**

Protein:

Proteins fall into 2 groups: HBV (High Biological Value) and LBV (Low Biological Value). HBV contain all the essential amino acids that the body needs whereas LBVs are missing more than one.

HBV: Meat, Dairy, Fish, Eggs, Chicken, Quorn, Tofu, Soya
LBV: Chickpeas, Lentils, Nuts, Kidney beans, cereals (wheat, rice etc) and peas.



Try to remember the Nutrients person, when thinking about the functions of nutrients in the body

Vitamin A:

needed to maintain healthy eyes & see in dim light.

Vitamin C:

needed by the body to fight infections. Most fruit contains vitamin C, especially citrus fruits.

Needed also to absorb iron

Vitamin D:

Needed by to maintain healthy skin
And needed to absorb calcium

Nutrient	Function	Source
Carbohydrates	-Broken into Starch and Sugar -Starch foods are called complex carbohydrates and release energy over a long period of time. -Sugar are called simple carbohydrate. They release energy quickly. Lactose, Fructose and Sucrose are all Sugars.	
Fibre	-Prevents constipation -Absorbs poisonous waste from digestive food -Stays undigested but helps move digested food through our system	
Protein	-Helps repair and grow new cells (muscles and body tissue) -Provides some energy	
Fat	-Insulates the body from the cold -Cushions your bones and organs from any damage caused by knocks. -Stores energy	
Vitamins	Unlike the other nutrients, they are only needed in small amounts. They are generally used to: -Controls chemical reactions -Keeping the body healthy and preventing some diseases linked to a poor diet -Regulate the function and repair of cells	
Minerals	Unlike the other nutrients, they are only needed in small amounts. They are generally used to: -Turn the food we eat into energy -Build strong bones and teeth -Control body fluids	
Water	-Our bodies are 65% water. It is vital for our body to stay hydrated. -Chemical reactions in our cells take place in water. -Waste products are passed out of our bodies in water. -Our blood transports substances that are dissolved in water. -Water is in sweat that cools us down	

Whole grain foods are high in **fibre**. It can also be found in the skins of fruits

Saturated fats = bad fats. Found in meat, dairy, processed and fried foods

Unsaturated fats = good fats.

Both should be eaten in small amounts as fat is energy dense

Iron found in red meat and spinach. Needed to create red blood cells.

Vitamin C is needed to absorb iron

Calcium found in all dairy foods. Needed to grow and maintain bones, teeth and fingers nails.

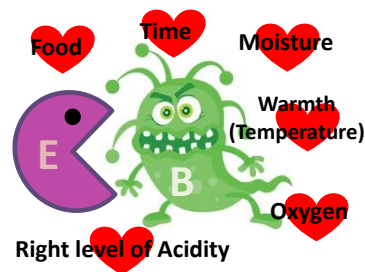
Vitamin D is needed so calcium can be absorbed

Year 10/Term 1

Food Preparation & Nutrition

Food Spoilage

When a food deteriorates in quality or becomes unsafe to eat it is called **spoiled**. This can happen through natural **decay** caused by **enzymes** or **bacterial contamination**. Both **enzymes** and **bacteria** need the right **conditions** to work. If these conditions are changed then the rate of food spoilage will change. Speeding up if in excess or slowing down if reduced.



Above: **Conditions** needed to cause Food Spoilage (**FAT-TOM**)

When foods become spoiled they change texture, shape, taste and their aroma will become more pungent. Strawberries will become very soft, furry, they may start to grow fur, shrink in size whereas bread becomes dry and starts to grow mould



Bacteria: pathogenic micro-organism that can cause illness if consumed.

Enzymes: Biological catalysts in living things that speed up chemical reactions. Depending on the circumstance the chemical reaction could start the process of decay, ripening and also browning*.



***Enzymic Browning:** The discolouration (browning) in fruit and veg due to the reaction of enzymes with cut flesh (e.g half an apple) and oxygen.

Consider where would you store vegetables to make them last longer?

Food Poisoning: an illness that is caused by consuming food or water that has been contaminated by specific **pathogenic bacteria** (examples of which are below)

Campylobacter: found in raw poultry and meat, milk and untreated dirty water
E. Coli: found in beef (especially mince beef) raw milk (milk that has not been heat treated), dirty water.

Salmonella: found in raw and undercooked poultry, eggs and raw milk

Listeria: soft cheeses, cheese made from unpasteurised milk, salad vegetables and pates

Staphylococcus Aureus: found on people (especially on hands, nose, mouth, skin, in cuts and skin infections), raw milk, cold cooked meats and dairy products

Contamination: The transfer and subsequent presence of harmful bacteria or chemicals in food or preparation area. There are 4 types of contamination:



Biological Contamination: Any transfer of bacteria from human, animal or food to food or preparation area. Including sneezing, coughing, blood, pus/transfer of bacteria from animal to their food product -meat, eggs, milk/transfer of bacteria from unclean hands

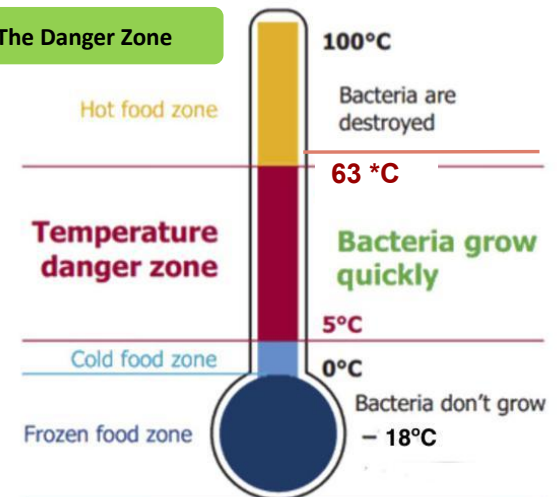
Cross contamination: is an example of biological contamination, it refers to the transfer of bacteria from raw meat to ready to eat foods

Physical Contamination: when a tangible object (you can see or feel) falls into food eg. hair, finger nails, plasters, plastic, dirt. Physical contaminants can act as vehicles to transfer of bacteria

Chemical Contamination: any transfer of chemicals eg, bleach, pesticides, cleaning product and perfume.

The Danger Zone

- The **temperature danger zone** is between 5°C and 63°C, when it is easiest for harmful bacteria to grow in food
 - Minimise the time that food spends at these temperatures in order to keep food safe
 - Refrigerated food needs to be kept at 5°C or below
 - Hot food needs to be kept at 63°C or above



High Risk Foods



High Risk Foods are foods that have the ideal conditions for the growth of bacteria. They often are high in protein and moisture. Preventing **cross contamination** is especially important when using high risk foods.

NB: The risk is reduced when food is cooked thoroughly however can return unless consumed or stored correctly. Think **FAT-TOM**!

ACCESS FM Analysing a Product

Aesthetics

Does the product look good?
Does it make good use of colour and texture?
What has inspired its appearance?
(E.g. is it organic? Is it industrial?)

Cost

What is the estimated cost of the product?
What is the retail price?
What is the relationship between the two?
Is the product affordable?
Does it offer value for money?
What is the product's cost in relation to the income of potential buyers/users?

Safety

How has the designer considered safety issues in the products design?
Think about the ways it is being used and how different parts have been joined together.
Are there any risk assessment issues in relation to the use of the product?

Size

Are the product's proportions appropriate for its use?
If you increased or decreased the products size, would it look or function better?

Customer

Who is the product designed for?
How and where would they use it?
What effect will it have on their lives and relationships?
Will it add value?
How is the product promoted to attract customers?
Has the designer considered how people will interact with the product?
Does the product target a particular age group or sector of people?
What assumptions have been made about the potential buyers/users?

Environment

What is the product's impact on the environment?
What happens to the product after use?
How long will it last?
What factors limit/lengthen its life span?
Can it be repaired? Can parts be replaced?
How easily can it be recycled?
Who would pay for the cost of recycling?

Function

Does the product do the job it was intended to do?
How does it work?
How easy is it to use?
What effects will using it have, including those beyond intended use and user?

Material

What materials are used to make the product and why?
Would another type of material work better?
What impact could the designers choice of material have on the environment?
Where do the materials and other resources needed for production come from?
Are they likely to run out?

Annotating Design Ideas

What do you like / dislike about the appearance?	How do you think this design appeals to your target user?	How is this design environmentally friendly / sustainable?	Have you labelled the design with measurements?	Are there any safety issues you need to point out?
What could you do to make this design look better?	Annotating Design Ideas			What are the functions/features of this design idea?
What materials are you going to use to create this design?				Why have you chosen these materials?
What joints/fixings will be used to create this design?				How could you make this design safer?
What tools/machines/ processes could be used to create this?				Are there any functions / features you could add?
What could you do to make this design more sustainable?	What finishes would you apply to this design to achieve its appearance?	What could you improve about the design?	Why are you using the materials you have suggested?	How are you going to make sure it is accurate?

Evaluating and testing - Testing and evaluation should be continually carried out and used to modify a designer's ideas throughout the whole **iterative design** process

Client feedback - Have a clear idea of what the target users are looking for, initial ideas may have been misinterpreted

Target market feedback - Honest and critical feedback at the prototype stage can offer developments

Expert opinion - Professionals in industry can provide insightful and appropriate feedback

Analysing testing results - To record their findings, designers will take pictures and written notes from observations of users operating or wearing their product, as well as gathering users' opinions on this experience.

Qualitative data - is information that cannot be measured and is often based on opinion, for example favourite colour

Quantitative Data - is information that can be measured and written down with numbers, for example length

Face to face - **conversational interviews** give designers the chance to ask questions and help users form an opinion by offering options for new iterations

Against specification - This is where a specific list of **criteria** is written that a designer can follow as a set of rules. During the iterative design process, this specification should be referenced to and designs evaluated against it to ensure the final solution is the best fit.

What are you describing?

Line
Colour
Shape
Form
Pattern
Decoration
Surface
Texture
Space
Functional elements
Prototype
Features
Motion

harmony
balance
emphasis
neutral
integrated

Descriptive words

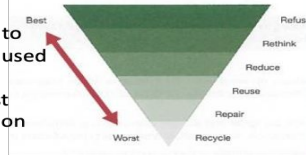
feminine - masculine
futuristic - nostalgic
elegant - not elegant
mature - immature
dynamic - static
simple - complex
streamlined - rugged
steady - unsteady
contemporary - traditional
avant-garde - conservative
formal - casual
delicate - rough
dazzling - ordinary
rational - emotional
reliable - unreliable
innovative - imitative
heavy - light
varied - monotonous
truthful - exaggerated
consistent - inconsistent

aggressive - submissive
old - young
cold - warm
comfortable - uncomfortable
excited - calm
strong - weak
soft - hard
organic - mechanical
smooth - sharp
flat - curved
straight - fluid
functional - ornamental
detailed - plain
volume/ bulbous/ bulging
unified
stylized
peculiar
rare
innovative/novel/radical
unity

Sustainability and the 6 R's

The 6 R's

The 6 Rs are an important checklist. They are used by designers to reduce the environmental impact of products. They can also be used to evaluate the environmental impact of other products. The hierarchy of sustainability places the strategies that are best for the planet about those that have a greater negative impact on the environment.



1. Refuse

The first stage in the process is to ask whether the proposed product, part, purchase or even journey is required at all. Asking the question 'Is it really necessary?' can play a major role in reducing the demand on materials. Simply not using something saves 100% of what you have chosen not to use. Example include:

- Using your own carrier bag rather than purchasing a new one.
- Walking or cycling to school instead of being driven.
- Not using products such as some pesticides that are known to be harmful to the environment.
- Not eating (or using) products that are over-farmed, over-fished or on the endangered list.

2. Rethink

Consumers have a growing number of choices to make about where and on what they spend their income. Greener and more sustainable options are not always the cheapest or the best, but making informed decision and rethinking ones spending power can play a huge part in conserving resources.

Deciding on the design of a product, e.g. the materials being used in its production, will directly affect its sustainability. The types of questions designers need to ask are:

- Are the materials locally sourced?
- Are they sustainably produced?
- Is it essential to use this material, of which there is a finite supply?

By rethinking how the product is likely to be made, the product can often be redesigned in a more responsible way.

3. Reduce

Reduction is often the result of having re-thought a design or action. Materials and energy are saved due to efficient manufacturing practices and the use of clever design, incorporating sustainable materials.

- Modern materials that are lighter and stronger than traditional ones have contributed to the miniaturisation of products, saving material and energy in manufacture and use.
- Reducing the complexity or number of parts a product uses and reducing the number of different materials in a product makes recycling easier.
- In factories, schools and hotels, fitting motion sensitive lighting and smart heating systems can significantly reduce energy usage.
- Many large companies employ staff to conduct 'energy walks' to turn off unused appliances and lights and to ensure windows and doors are shut to conserve heat.

4. Reuse

Reusing products multiple times for the same purpose is also known as **primary recycling**. Reusing a product in a different way from the one it was designed for is known as **secondary recycling**. The classic glass milk bottle is reused many times before it reaches the end of its useful life, as which point it is recycled. A plastic milk bottle, however, is intended to be used only one, although it can have many different subsequent uses.

Donating to and buying from charity shops extends the life of products and in recent years there has been a resurgence of in products having second lives, thanks to websites such as eBay, Freecycle or Gumtree.



It is also becoming popular for furniture and other household items to be **upcycled** with a coat of paint and some minor repairs or adaptations, extending their useful life by many years.

5. Repair

Being able to repair a product when it is broken or worn is a way of extending its life and delaying the purchase of a new one. Repairing is a positive option over replacement as it means that only some parts of the product are replaced. This creates jobs for skilled people who conduct repairs and stimulates a spare parts market.

Unfortunately, repairing products has become harder over years. Growing number of products are not design to be repaired. There are a number of reasons why items may be designed this way, but it is usually because they are cheaper to replace than repair. Some products, especially modern electronic products, are designed to last only a few years as technology dates quickly and older products will be superseded by newer, faster, more efficient models. This is called **planned obsolescence**.

6. Recycle

Tertiary recycling, although a very important stage, is lower down the hierarchy of preferred options because most materials that are recycled this way tend to be of lower quality than the original material. It takes a lot of energy to recycle materials.

This form of recycling requires the reprocessing of the material and in many cases involves chemicals and/or heat to recover the recycled materials. In an ideal world, tertiary recycling would remove all recyclable materials from our household waste so that only biodegradable materials would be left. Only very few parts of the world are set up to cope with this level of processing.

7. Sustainability

Our planet has to provide all of our basic human needs, such as food, shelter and warmth.

Designers now have a much better understanding of which materials are sustainable and which are not. The general principle is that resources fall into two categories:

Finite resources – are ones which are in limited supply or cannot be reproduced.

Non-finite resources – are ones which are in abundant supply and are unlikely to be exhausted.

8. Recyclable materials

Once all useful and recyclable materials are removed, the majority of the remaining waste is organic matter and can be processed in one of two ways; '**Recover**' or '**Rot**'. Food waste and garden waste can be processed at a high temperature and turned into compost. The waste can also be buried in **landfill** sites where the resulting methane gas from the rotting matter is collected and burned and used to generate heat or electricity in the same way.

Materials

1. Woods

Man-Made Woods

Medium density fibreboard (MDF)	Description Has a smooth, even surface • Easily machined and painted • Available in water and fire resistant form • Often veneered or painted to improve its appearance	Uses • Furniture and interior panelling
Chipboard	Description Made from chips of wood glued together with urea formaldehyde (glue) • Usually veneered with an attractive hardwood or covered in plastic laminate	Uses • Kitchen and bedroom furniture • Shelving and general DIY Work
Plywood	Description A very strong board, constructed of layers of veneer or plies, which are glued together with the grains at 90° to each other. • Interior and exterior grades available.	Uses • Furniture making • Boat building and exterior work
Hardboard	Description A very cheap particle board • Can have a laminated plastic surface	Uses • Kitchen unit and furniture back panels







Hard Woods

Oak	Description • A very strong, light-brown wood • Open grained • Very hard, but quite easy to work with	Uses • High quality furniture • Beams used in building • Veneers
Mahogany	Description • Reddish-brown in colour • Easy to work with	Uses • Indoor furniture • Shop fittings • Bars • Veneers
Beech	Description • A straight-grained hardwood with a fine texture • Light in colour • Very hard but easy to work with • Can be steam bent	Uses • Furniture • Toys • Tool handles
Ash	Description • Open grained • Easy to work with • White cream colour, often stained black • Can be laminated (i.e. skied into veneers which are glued together)	Uses • Tool handles • Sports equipment • Furniture • Ladders • Veneers

Soft Wood

Pine	Description • Pale-yellow coloured with dark lines and a fine, even texture. • Medium in weight • Stiff and stable • Inexpensive	Uses • Readily available for DIY work • Mainly used for constructional work and simple joinery • Furniture
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2. Plastics

Acrylic		Properties: • Hard wearing • Will not shatter • Can be coloured • Bathtubs, School Projects, Display signs
Polypropylene		Properties: • High impact strength • Softens at 150°C • Can be flexed many times without breaking • School chairs, Crates
High Impact Polystyrene (HIPS)		Properties: • Light but strong • Widely available in sheets • Used for casings of electronic products
Polythene (LDPE)		Properties: • Weaker and softer than HDPE • Lightweight • Carrier Bags + Squeazy Bottles
Polythene (HDPE)		Properties: • Stiff strong plastic • Used for pipes and bowls • Buckets
Urea formaldehyde		Properties: • Colourless plastic • Can be coloured • Door and cupboard handles, Electrical fittings



3. Material Properties

Strength The ability of a material to stand up to forces being applied without it bending, breaking, shattering or deforming in any way.
Elasticity The ability of a material to absorb force and flex in different directions, returning to its original position.
Ductility The ability of a material to change shape (deform) usually by stretching along its length.
Malleability The ability of a material to be reshaped in all directions without cracking.
Hardness The ability of a material to resist scratching, wear and tear and indentation.
Toughness A characteristic of a material that does not break or shatter when receiving a blow or under a sudden shock.

3. Metals

Aluminium	Properties: • Light Weight • Light grey in colour • Can be polished to a mirror like appearance • Rust resistant	
Mild Steel	Properties: • Heavy • Dark grey in colour • Rusts very quickly if exposed	
Stainless Steel	Properties: • Heavy • Shiny appearance • Very resistant to wear / rust.	
Cast Iron	Properties: • He method pig iron with some quantities of other metals • Strong in compression. • Brittle	
Copper	Properties: • Reddish brown metal. • Soft • Excellent conductor of heat and electricity	
Brass	Properties: • Yellow metal • Hard • Alloy	

4. Composites

Carbon Fibre	GRP Fibreglass
Expensive in comparison to other materials.	GRP is composed of strands of glass which are woven to form a flexible fabric. The fabric is normally placed in a mould and polyester resin is added.
Very good strength to weight ratio.	Glass reinforced plastic is lightweight and has good thermal insulation properties. It has a high strength to weight ratio
Used in the manufacture of high end sports cars and sports equipment.	
	

Papers and Boards

1. Paper

Type	Description and uses
Layout paper	<ul style="list-style-type: none"> lightweight, thin white paper used for initial ideas takes colour media well low cost
Tracing paper	<ul style="list-style-type: none"> thin, translucent paper making copies of drawings high cost
Cartridge paper	<ul style="list-style-type: none"> good quality white paper available in different weights general purpose work can be used to make simple models medium cost
Bleedproof paper	<ul style="list-style-type: none"> smooth, hard paper used with water-based and spirit-based felt-tip pens medium cost
Grid paper	<ul style="list-style-type: none"> printed square and isometric grids in different sizes a guide for quick sketches and working drawings low cost

2. Selection of materials or components

When selecting materials and components considering the factors listed below:

- Functionality: application of use, ease of working
- Aesthetics: surface finish, texture and colour.
- Environmental factors: recyclable or reused materials, product mileage.
- Availability: ease of sourcing and purchase.
- Cost: bulk buying.
- Social factors: social responsibility.
- Cultural factors: sensitive to cultural influences.
- Ethical factors: purchased from ethical sources such as FSC.

What is the FSC? <http://www.fsc-uk.org/en-uk/about-fsc/what-is-fsc/fsc-principles>

3. Boards

Type	Description and uses
Corrugated card	<ul style="list-style-type: none"> strong and lightweight used for packaging protection and point of sale stands available in different thicknesses
Duplex board	<ul style="list-style-type: none"> large foam-based board different finishes available including metallic and hologrammatic used for food packaging, e.g. take-away pizza boxes
Foil lined board	<ul style="list-style-type: none"> quality cardboard with a aluminium foil lining ideal for ready made meals or take away meal cartons The foil retains the heat and helps keep the food warm
Foam core board	<ul style="list-style-type: none"> very light, very stiff and very flat. It has a white, rigid polystyrene foam centre, with smooth white paper laminated onto both faces. It is easy to cut with a knife, a mount cutter or on a wall cutter great for modelling
Ink jet card	<ul style="list-style-type: none"> Has been treated so that it will give a high quality finish with inkjet ink available in matt and gloss
Solid white board	<ul style="list-style-type: none"> top quality cardboard made from quality bleached wood pulp. used for hard backed books and more expensive items excellent print finish

4. Paper and Boards- Stock sizes and weights

Paper and board is available in sizes from A0 (biggest) to A7 (smallest). The most common size is A4.

Each size is half the one before, eg A4 is half the size of A3.

They are also sold by weight:

GSM – grams per square metre.

Card thickness or calliper is traditionally measured in **Microns**. 1000 **Microns** = 1mm, so the higher the value, the thicker the card or paper.



5. Properties of paper and boards.

Type	Weight or thickness	Uses	Relative cost (10= high)
Newsprint	50gsm	Newspapers	1
Layout Paper	60gsm	Sketches and tracing	3
Tracing Paper	70 gsm	Tracing	4
Sugar Paper	90gsm	Cheap mounting work	2
Inkjet/Photo paper	150-230gsm	Photos/Presentations	9
Board (Card)	230-750 microns	Model-making	5
Mount Board	230-1000 microns	Model-making, High picture quality mounting	9
Corrugated Card	3000-5000 microns	Packaging protection	5

7: KEY WORD FOCUS

You should be able to explain the meaning of each of these words by the end of this rotation.

GSM	Grams per Square Metre
Microns	Thickness of paper or card. 1000microns = 1mm thickness

Textiles

1. Fabrics

Natural Fabrics

Cotton	Soft, good absorbency, prints well, machine washable, strong breathable	Origins from the Cotton Plant.	Uses: Jeans, towels, Shirts, dresses, underwear
Wool	High UV protection, flameproof, breathable, durable insulating	Origins from Sheep.	Uses: Jumpers, Coat, blankets
Silk	Smooth, Soft, Strong	Origins from the silk worm.	Uses: Wedding dresses, lingerie.
Linen	Strong, cool in hot weather	Origins from the flax plant	Uses: Trousers, tops.
Leather/Suede	Strong, hardwearing, durable.	Origins from the skin of animals, mainly cows.	Uses: Jackets, Trousers, Shoes.

Synthetic fabrics

Polyester	Durable, wrinkle resistant, stain resistant	Uses: Shirts, jackets. Also used in safety belts, conveyor belts and tyre reinforcement.
Polyamide (Nylon)	Durable, high abrasion resistance	Uses: Sportswear, carpets.
Elastane (Lycra)	Stretchy, durable, high stain resistance	Uses: Sportswear, Swimwear, tights.
Viscose	Soft, comfortable, absorbent, easily dyed.	Uses: Dresses, linings, shorts, shirts, coats, jackets and outerwear.
Acrylic	Absorbent, retains shape after washing, easily dyed, resistance to sunlight.	Uses: Jumpers, tracksuits, linings in boots.

1. Fabrics

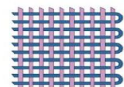
Blended and mixed Fabrics

These fabrics take on the positive characteristics of their combinations


Cotton/Polyester	Easy care and crease resistant	Uses: School shirts.
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2. Fabric Construction



Woven

Plain Weave	Extremely strong and hard wearing	
Twill Weave	Extremely high strength and abrasion resistant.	


Knitted

Knitted fabrics	Stretchy, soft and comfortable.	
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Non-Woven

Bonded Fabrics	These are webs of fibres held together by glue or stitches.	
Felted Fabrics	Felt is made by combining pressure, moisture and heat to interlock a mat of wool fibres.	


3. Care Labels

 Washing Label- will usually have a max. temp number included

 Hand Wash only

 Do not wring out

 Tumble Dry

 Iron on low heat. The more dots the higher the heat setting

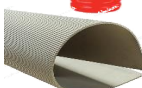
 Do not bleach

Smart and Modern Materials

1. Modern Materials

1. Corn Starch Polymers – plastics that are **biodegradable** and not toxic to the environment. They are easy to recycle.

Name	Uses	Characteristics
Poly(lactic acid) (PLA)	<ul style="list-style-type: none"> Disposable food and drink containers 3D Printed Items 	<ul style="list-style-type: none"> Smooth or textured finish. Easy to Colour Easy to mould Fully biodegradable
Poly(hydroxybutyrate) (PHB) Biopol™	<ul style="list-style-type: none"> Bottles Pots Disposable food containers 	<ul style="list-style-type: none"> Smooth or textured finish. Easy to Colour Easy to mould Fully (but slowly) biodegradable.



2. Flexible MDF – Is made from wood pulp fibres in the same way as standard MDF, with the addition of grooves cut along the length of the board leaving about 2mm of the MDF intact which allows the MDF to become flexible.

3. Titanium – Pure titanium does not react with the human body and is used by the medical profession for artificial joints and dental implants. It has a high strength to weight ratio and has excellent corrosion resistance.

4. Graphene – thinnest material ever discovered, a million times thinner than a human hair, 200 times stronger than steel. It is transparent, impermeable and highly conductive.

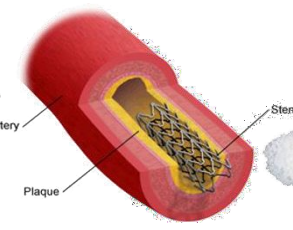
5. Nanomaterials - Their use in electronics has helped miniaturisation whilst improving conductivity. IN the textiles industry, they have been used as protective coatings to improve water resistance and give UV protection.

6. Metal Foams - Porous metal structures, often made from Titanium and Aluminium use as little as 25% of the mass. This makes them extremely lightweight but retaining most of the properties of the base material.

2. Smart Materials

A material that reacts to an external stimulus or input to alter its functional or aesthetic properties.. They can react to heat, light, pressure, moisture and electricity.

Name	Stimulus	What is does?	Uses
2.1 Thermochromic pigments	Heat	Changes colour when heat is applied.	<ul style="list-style-type: none"> Flexible thermometers Temperature indicators Novelty goods
2.2 Photochromic pigments & particles	UV Light (Natural Light)	Changes colour in sunlight/UV Light	<ul style="list-style-type: none"> Transition Lens Sunglasses Nail varnish Clothing Novelty goods
2.3 Shape memory alloy Nitinol	Heat or Electricity	Returns to original/pre set shape when heated to 70°C or electricity is applied.	<ul style="list-style-type: none"> Glasses Frames Fire Sprinklers Dental Braces Surgical Stents
2.4 Polymorph	Heat	Becomes mouldable by hand when heated to 62°C	<ul style="list-style-type: none"> Personalisation of products Repairs Prototyping & Modelling
2.5 Quantum Tunnelling Composite	Pressure	Varies the amount of electrical current depending on pressure applied.	<ul style="list-style-type: none"> Touch sensitive pads Wearable technology Variable speed controls
2.6 Piezoelectric Material	Movement, stress or electricity	Stress or movement produces electrical signal or <i>vice versa</i> .	<ul style="list-style-type: none"> Mobile phone speakers and microphones Gas Lighters ignition spark
2.7 Litmus Paper	Levels of PH in substances.	Changes colour depending on chemical balance.	<ul style="list-style-type: none"> Scientific experiments Soil testing for gardener/farmers Testing swimming pools and fish tanks



New and Emerging Technologies

New technologies are those that are currently being developed or will be developed in the next 5 to 10 years, and which will alter the business and social environment.

Examples: **Fuel-cell vehicles** Zero-emission cars that run on hydrogen.



Additive manufacturing

The future of making things, from printable organs to intelligent clothes



Automation and the use of robotics

As industry has grown new and emerging technologies have changed the way designers, architects and engineers work.

Intelligent machines and robotics have replace machine operators and engineers.

The development of work now almost always involves the use of **Computer Aided Design (CAD)**.

This software can carry out complex tasks such as virtual stress testing this is called **Computer Aided Testing (CAT)**.

Designs can be produced to look 3D so customers can give opinions before **prototyping** begins.

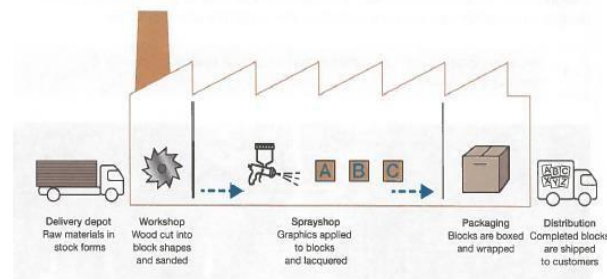
Buildings and the place of work

The development of the internet has changed how data is transferred. This has lead to people being able to work together remotely (from different buildings or countries).

Projects can be sent to machines using **computer aided manufacturing (CAD)** techniques including **computer numerical control (CNC)** machines such as laser cutters and rapid prototyping (RPT) machines such as 3D printers.

Physical layout of buildings for production should be logical to increase efficiency. This will reduce unproductive time, movement and waste materials.

Here is an example of a simplified production line that might produce wooden blocks.



Enterprise

An idea that is developed into a business proposal for a product that has commercial viability.

Products developed in this way require a patent to protect the idea so that other companies cannot use it without permission this is called a registered trademark.



Co-operatives

A farm, business, or other organization which is owned and run jointly by its members, who share the profits or benefits.

Crowdfunding

Funding a project or venture by raising money from a large number of people who each contribute a relatively small amount, typically via the Internet.

Virtual marketing and retail

Virtual marketing the use of search engines positioning and ranking, banner advertising, e-mail marketing and social media in order to reach a wider audience to promote a product.



Fairtrade

Trade between companies in developed countries and producers in developing countries in which fair prices are paid to the producers.

People, Culture and Society

People

Consumer Choice

Growth of global manufacturing has led to a wider variety of products being available, prices of products are kept low because of the wider competition.

Technology Push

Advances in technology and science lead to the development of new products. Research and Development (R&D) Departments are used within large companies to ensure they can create new and exciting products.

1993 APPLE NEWTON PDA



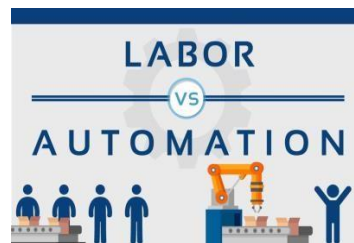
1996 PALM SERIES



2012 SAMSUNG GALAXY



Advances in touchscreen technology



Society

Companies putting the environment and people before profit. Examples:

- Carbon Neutral Products
- Use of renewable materials
- Reduction of carbon emissions/greenhouse gasses
- Use of recycled materials
- Products designed to be 100% recyclable
- Promotion of Fairtrade
- Reduction of transportation
- Non profit organisations that reinvest money to support good causes
- Consideration to designing products for the elderly or disabled
- Consideration to different religious groups

4 main ways to consider the population when designing

Type of Production	Example
One size fits all	Door Frames Baths
A range of sizes to cover all	Shoes Clothes
Adjustability to allow use by all	Car Seats Shower head height
Adaptability to support location or user	Children's booster seats Car roof bars

Culture

A combination of ideas, beliefs, customs and social behaviours of a society or group of people.

Fashion and Trends


Designers developing products that are influenced by 'the latest thing'.

Faiths and Beliefs

Designers being responsible for the impact their design choices may have on a community.

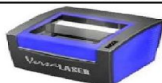
Production techniques

1. CAD – Computer Aided Design

Advantages of CAD	Disadvantages of CAD
Designs can be created, saved and edited easily, saving time	CAD software is complex to learn
Designs or parts of designs can be easily copied or repeated	Software can be very expensive
Designs can be worked on by remote teams simultaneously	Compatibility issues with software
Designs can be rendered to look photo-realistic to gather public opinion in a range of finishes	Security issues - Risk of data being corrupted or hacked
CAD is very accurate	 CAD Software
CAD software can process complex stress testing	

2. CAM – Computer Aided Manufacturing

Advantages of CAM	Disadvantages of CAM
Quick – Speed of production can be increased.	Training is required to operate CAM.
Consistency – All parts manufactures are all the same.	High initial outlay for machines.
Accuracy – Accuracy can be greatly improved using CAM.	Production stoppage – If the machines break down, the production would stop.
Less Mistakes – There is no human error unless pre programmed.	Social issues . Areas can decline as human jobs are taken.
Cost Savings – Workforce can be reduced.	



Laser Cutter



Robots



Barcode Scanner



AGV – Automated Guided Vehicle

3: Production Techniques

3.1 Flexible Manufacturing Systems (FMS) :

involves an assembly of automated machines commonly used on short-run batch production lines where the products frequently change.

3.2 Lean Manufacturing: It aims to manufacture products just before they are required to eliminate areas of waste including:

- Overproduction
- Waiting
- Transportation
- Inappropriate processing
- Excessive inventory
- Unnecessary motion
- Defects

3.3 Just In Time (JIT) : Items are created as they are demanded. No surplus stock of raw material, component or finished parts are kept.

Advantages of JIT	Disadvantages of JIT
No warehousing costs	Reliant on a high quality supply chain
Ordered secured before outlay on parts is required	Stock is not available immediately off-the-shelf
Stock does not become obsolete, damaged or deteriorated	Fewer benefits from bulk purchasing

4. Scales of Production

One off: when you make a unique item

Batch: when you make a few/set amount

Mass: when you make thousands

Continuous: open ended production

1.Planned obsolescence - Planned

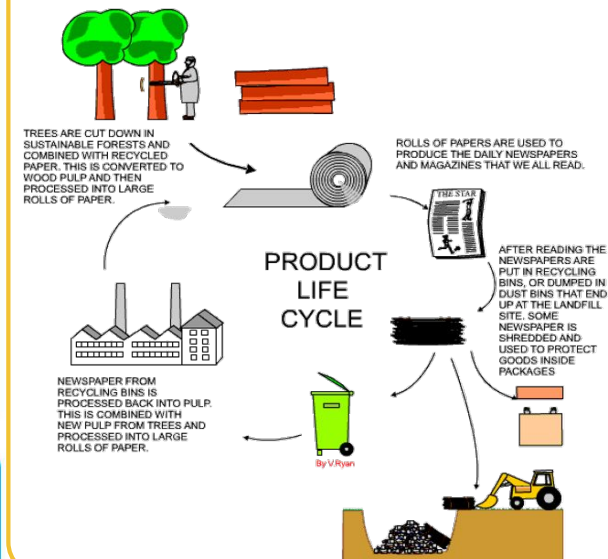
obsolescence is when a product is deliberately designed to have a specific life span. This is usually a shortened life span.

2.Design for maintenance - Products are often designed to be thrown away when they fail...

This can be achieved by designing products that can be repaired and maintained.

3.Disposability – Some products are designed to be disposable.

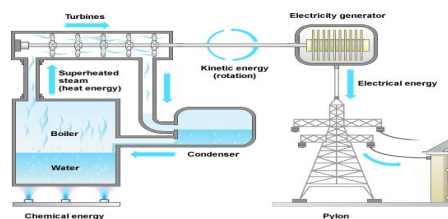
4. Product Lifecycle -



Energy systems

Energy Types

1. Fossil Fuels – Non-renewable energy

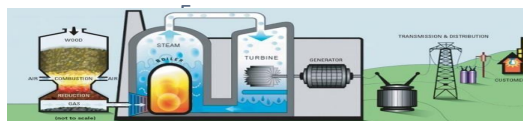


In a thermal power station fuel such as coal, oil or gas is burned in a furnace to produce heat - chemical to heat energy.

- this heat is used to change water into steam in the boiler.
- the steam drives the turbine - heat to kinetic energy
- this drives the generator to produce electricity - kinetic to electrical energy.

Some experts believe that fossil fuels will run out in our lifetime.

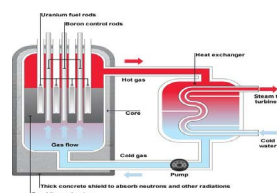
Energy Types 2. Biomass Energy –Renewable



Biomass is an industry term for getting energy by burning wood, and other organic matter. Burning biomass releases carbon emissions, but has been classed as a renewable energy source in the EU and UN legal frameworks, because plant stocks can be replaced with new growth.

3. Nuclear Energy – Renewable energy

Energy Types



The main nuclear fuels are **uranium** and **plutonium**. In a nuclear power station nuclear fuel undergoes a controlled chain reaction in the reactor to produce heat - nuclear to heat energy.

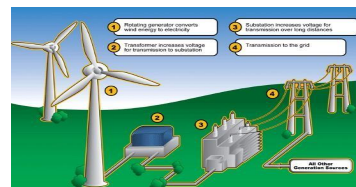
- heat is used to change water into steam in the boiler.
- the steam drives the turbine (heat to kinetic energy)
- this drives the generator to produce electricity - kinetic to electrical energy.

Energy Types

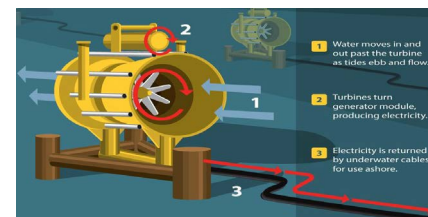
8. Batteries

Alkaline batteries are the most common type of domestic batteries, they are disposable but contain chemicals that are bad for the environment. Fortunately more and more battery recycling banks are appearing now where most of the battery can be reused. **Rechargeable batteries** are better for the environment and more economical in the long run (High initial purchase price). Their lifespan decreases with every charge.

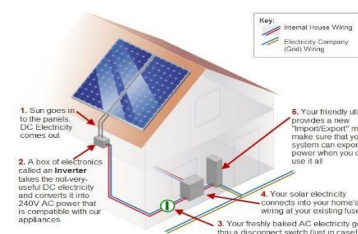
Energy Types 4. Wind energy



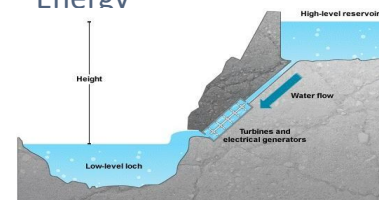
Tidal energy



5. Solar Energy – Renewable Energy



7. Hydroelectricity – Renewable Energy











- In a hydroelectric power station water is stored behind a dam in a reservoir. This water has gravitational potential energy.
- The water runs down pipes (potential to kinetic energy) to turn the turbine
- The turbine is connected to a generator to produce electricity (kinetic to electrical energy).

Mechanical devices





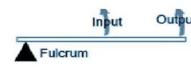

1: Mechanical Devices - Motion

There are four types of motion:

Linear Motion is movement in one direction along a straight line.		
Oscillating Motion This motion is similar to reciprocating motion, but the constant movement is from side to side along a curved path.		
Rotary Motion Examples of circular motion include a ball tied to a rope and being swung round in a circle.		
Reciprocating Motion , this is repetitive up-and-down or back-and-forth linear motion.		

2: Mechanical Devices – Levers

There are three classes of levers.

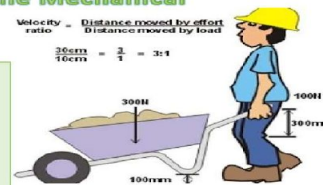
Class One A class one lever has its input on one side of the fulcrum and its output on the other.		
Class Two A class two lever has its input at one end of the lever, its output in the middle and fulcrum at the other end.		
Class Three A class three lever has its output at one end of the lever, its fulcrum at the other with its input in the middle.		

5: How to work out the Mechanical Advantage

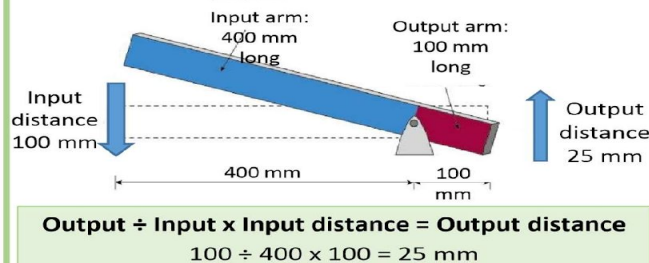
Or use the following formula:

$$MA = \frac{\text{Load}}{\text{Effort}} = \frac{300N}{100N} = 3$$

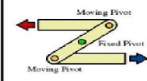
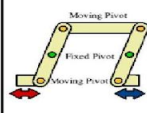
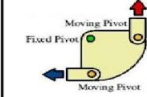
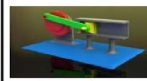

This is written as 3:1 or just MA of 3



4: How to work out a levers distance of travel



3: Mechanical Devices – Linkages

Reverse motion linkage	The reverse motion linkage changes the direction of the input motion so that the output travels in the opposite direction. If the input is pulled the output pushes and vice versa. It uses a central bar held in position with a fixed pivot (fulcrum) that forces the change in direction and two moving pivots which are connected to the input and output bars.	
Parallel motion or push/pull linkage	The push/pull linkage maintains the direction of the input motion so that the output travels in the same direction. If the input is pulled the output is pulled and so on. It uses three linking bars, four moving pivots and two fixed pivots.	
Bell crank linkage	The bell crank linkage changes the direction of the input motion through 90 degrees. It can be used to change horizontal motion into vertical motion or vice versa. It uses a fixed pivot and two moving pivots.	
Crank and slider	The crank and slider linkage changes rotary motion into reciprocating motion or vice versa. It uses a crank which is held with a fixed pivot. A connecting rod uses two moving pivots to push and pull a slider along a set path.	
Treadle linkage	The treadle linkage changes rotary motion into oscillating motion or vice versa. It uses a crank which is held with a fixed pivot. A connecting rod uses two moving pivots and a further fixed pivot to create a windscreen wiper motion.	

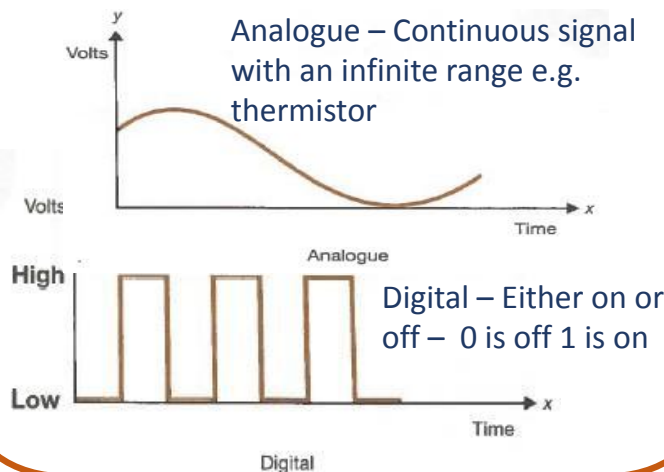
Electronic systems and processing

1. Processes

Components that process electronic signals and enable output devices to perform tasks. This is controlled by an integrated circuit (IC) e.g. A microcontroller



2. Digital and Analogue Signals



3. Counters

Counters – Keep count of how many times something occurs, output information to a **seven segment display**.



4. Programming

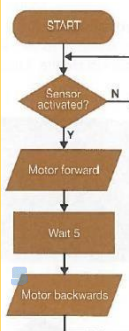
Micro controllers also called Peripheral interface controllers (PICs) can be programmed to perform differently by a computer.

Timers

Devices used to perform specific tasks. 2 types monostable and astable.

Monostable – output turned on for a set period of time e.g. Automatic doors

Astable – fluctuates between on and off – oscillating output e.g. Seatbelt alarm in a car



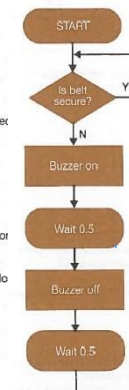
Start:

Decision: Has the motion sensor (PIR) connected to the input been activated?
If NO, continue to wait for the PIR to be triggered by movement.
If YES, continue with the program.

Output: The motor turns on and opens the doors.

Process: Delay for 5 seconds; the motor is on long enough to open the door and let people through.

Output: The motor turns on again in reverse and the doors automatically close.
The circuit loops back to the top awaiting the next trigger of the PIR.



Start:

Decision: Has the seatbelt been fixed into the seatbelt clip?
If YES, loop back to the start of the program.
If NO, continue with the program sequence.

Output: The buzzer turns on.

Process: Delay for 0.5 seconds; the buzzer stays on during this time.

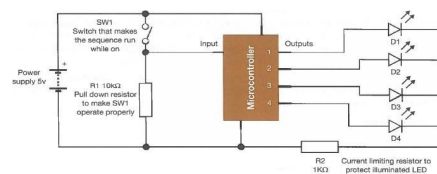
Output: The buzzer turns off.

Process: Delay for 0.5 seconds; the buzzer stays off during this time.

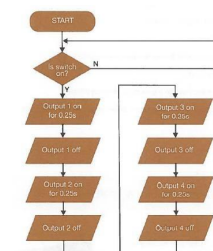
The circuit loops back to the top to check if the driver still has seatbelt unfastened.

5. Programming 2

Microcontrollers – How a microcontroller would control a bike light.



Program for the microcontroller to make LED's flash in sequence



Start:

Decision: Has the lighting sequence start switch connected to the input been activated?
If NO, continue to wait for the switch to be triggered by the user.
If YES, continue.

Output and process: The first LED connected to output 1 turns on for 0.25 seconds.
Output: The first LED connected to output 1 turns off.

These steps repeat for LEDs 2, 3 and 4.

The circuit loops back to the top to check if the switch has been activated.

KS4

Textiles

As a means to further develop your critical thinking and interpretation/analytical skills, as well as a means to develop your cultural capital and creativity, it is important for you to expose yourself to the work of a range of Textile designers/artists. This year, two of the Textiles artists you will be looking at are discussed below:

Billie Zangewa

Billie Zangewa (born in 1973 in Blantyre, Malawi) is a half-Malawian, half-South African artist who hand sews silk fabrics to create collage tapestries, and who now lives in Johannesburg. Since 2004, her art has featured in international exhibitions including at the Paris Art Fair at the Grand Palais in Paris. Zangewa's work is autobiographical and centralizes Black femininity and everyday domesticity and motherhood. Her artistic approach is indicative of the artist's expressing resistance to the oppression she faces through self-love.

Zangewa works primarily with raw silk offcuts in intricate hand-stitched collages, creating figurative compositions that explore her intersectional identity in the contemporary context and challenge the historical stereotyping, objectification and exploitation of the black female body. Working in a flat, colourful style, she depicts narratives concerned with experience: both personal and universal. These narratives do not make grand gestures or even overt political statements, but rather focus on mundane domestic preoccupations; universal themes connecting us to each other. Almost always the protagonist in her works, Zangewa becomes a heroine whose daily life is revealed through the scenes she illustrates.

Zangewa's finished tapestries celebrate imperfection with their raw, irregular edges and often large pieces seemingly cut out of the tapestry that seem to impede on the scene. This tactic also works to break any illusions of the work being painted on canvas.



Sheila Hicks

Sheila Hicks (born 1934) is an American artist. She is known for her innovative and experimental weavings and sculptural textile art that incorporate distinctive colours, natural materials, and personal narratives. Working primarily with fibre; Hicks creates vibrant and dynamic sculptures and wall hangings that refer to traditional artisan textiles such as weaving, knitting, knotting, and braiding. Her fibre forms – with their bright colours – whether shaped into vertical cords, disks, or horizontal tubes, present a visual experience.



KS4

Textiles

In Textiles Design we use a range of specialist techniques in order to decorate textiles to make them more aesthetically pleasing and interesting. The information below explains some of the techniques you will explore this year.

Tufting

Tufting is the act of a needle punching through a backing material in the form of a loop. The traditional method is to stretch Monks Cloth over a frame and punch yarn through it using a tufting gun or tufting needle. Depending on loop heights, these loops can add texture, dimension, and, if cut, the "cut pile" can add a velvet like appearance to the tufted area.



Fabric Painting

Fabric painting simply refers to any painting done on a fabric. It encompasses everything from ancient artifacts with intricate resist paintings to the painting a young child may do on a t-shirt. Fabric painting has been around for thousands of years.



3D Shibori

3D Shibori is a technique for adding texture and shaping textiles. You wrap items into fabric, secure them with thread and set them with heat, and in this way the process leaves a "memory on cloth" – a permanent record, whether of patterning or texture, of the particular forms of resistance to the change. Cloth holds the memory of action performed on it!



Wet Felting

Wet felting involves creating rectangular fabric made of several layers of wool (not plant or synthetic fibres because those won't felt well), applying water and mild soap, and sponging or agitating the wool to encourage the fibres to lock together.



Lino Printing

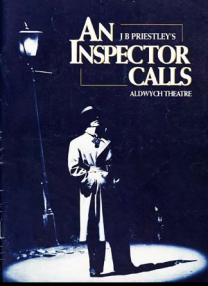
Lino Printing is a form of block printing that involves carving a pattern or design into a linoleum, rubber or vinyl surface that can then be printed from. The recesses carved out leave the design in relief and it is the raised design that the ink is applied to and then transferred to the paper when pressure is applied by hand or printing press.

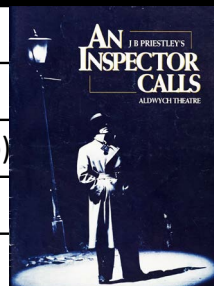


Screen Printing

Screen printing, also known as silk screening or silkscreen printing, is the process of transferring a stencilled design onto a surface using a mesh screen, ink, and a squeegee (a rubber blade). The basic process of screen printing involves creating a stencil on a mesh screen and then pushing the ink to create and imprint the design on the below surface.



Act	Plot	KS4 English Literature 2023-24	Character	Vocabulary	Context
One	<i>The play opens with a celebratory dinner party. Sheila and Gerald are engaged and Birling and Company will work closer with Crofts Ltd. On the surface, the atmosphere is happy and light-hearted.</i>		The Inspector	Capitalist: a business person	John B Priestley was born into a working class family in Yorkshire. Priestley was a socialist and concerned about social inequality in Britain. During WWII he broadcast a popular weekly radio programme which was cancelled by the BBC for being too left wing . Priestley supported the Labour Party.
	<i>The ladies leave the men to have a 'man to man' chat. Mr Birling lectures Gerald and Eric that a man needs to look after himself and his family and not worry about the wider community.</i>		Mr Arthur Birling	Conservative: traditional values	
	<i>Inspector Goole enters and informs the party that he has come to investigate the suicide of a young working-class girl called Eva Smith. Starting with Birling, he begins to interrogate the family.</i>		Mrs Sybil Birling	Didactic: teaching (a moral lesson)	
	<i>After seeing a photograph, Birling admits that he used to employ Eva Smith but discharged her when she became one of the ring-leaders of a strike asking for higher wages. Birling refuses to take any responsibility.</i>		Sheila Birling	Dramatic irony: when the audience know something that the characters do not	The Edwardian era – the play is <u>SET</u> in Britain in 1912. Thought of as a 'Golden Age' because it was a period of peace and prosperity when Britain was powerful. In reality, there was a rigid social hierarchy and the lower and upper classes were very divided. Only men who owned property could vote – no women were allowed to vote, and there was little help from government for people in poverty.
	<i>Sheila enters and the Inspector moves on to question her. When she is shown a photograph of Eva, Sheila admits that it was her fault that Eva was sacked from Milwards. She feels terribly guilty and responsible for Eva's death. When the Inspector states that Eva, in despair, changed her name to Daisy Renton, Gerald reaction reveals that he knew her too.</i>		Eric Birling	Elitist: one who believes that society should be led by the upper classes	
Two	<i>Gerald's affair is exposed: he confesses that he met "Daisy Renton" at the local Variety Theatre bar and 'rescued' her from Alderman Meggarty. Gerald ended the affair when he had to go away on business. Sheila hands back her engagement ring but respects Gerald's honesty. In contrast to her daughter, Mrs Birling is scandalised. Gerald leaves to go for a walk.</i>		Gerald Croft	Empathetic: feeling / understanding for others	Post-war values – the play was <u>WRITTEN</u> in 1945. Britain had become a more equal society – by 1928 all men and women over 21 could vote. The country had been through two world wars and a global economic recession (1930s) which increased unemployment and poverty. People from different classes had fought together in the war – there was now a desire for change and a strong sense of collective social responsibility.
	<i>Inspector Goole now shows a photograph to Mrs Birling. She grudgingly admits that Eva had come to ask for financial assistance from the Brumley Women's Charity Organisation because she was pregnant. Mrs Birling was the chairwoman and persuaded the committee to turn down the girl's appeal because she had the impudence to call herself Mrs Birling.</i>		Eva Smith / Daisy Renton	Euphemism: a soft word in place of a harsh one	
	<i>Mrs Birling shows no remorse for refusing to help Eva Smith. Mrs Birling denounces the father of the child, claiming it is his responsibility and that he needs to be made an example of. Sheila is horrified as she (and the audience) realises that Eric is involved. Eric enters.</i>		Edna	Foreshadowing: a warning of a future event	
			Key Themes		 Hierarchy: a society where people are ranked by status Infantilize: treat like a child Patriarchy: a society where men are in power Socialist: one who believes in sharing of wealth in society Social conscience: feeling responsible for others in society Status quo: the existing state of things
			Responsibility		
		Social Class			
		Age (the generation gap)			
		Gender			
		Inequality			
Three	<i>Eric confesses his involvement with Eva Smith: he had met her in the same bar, had got drunk and had accompanied her back to her lodgings where he almost turned violent before she let him in. When she discovered that she was pregnant she refused to marry Eric because she knew he didn't love her, but she did accept gifts of money from him until she realised it was stolen - Eric admits that he stole the money from Mr Birling's office.</i>		Dramatic devices and terminology		Morality Play – religious plays written in the Middle Ages which teach the audience how to behave and warn against the dangers of sin. Priestley makes his morality play secular by having the moral judge be a police inspector rather than God.
	<i>The Inspector delivers his message about responsibility then leaves. Mr and Mrs Birling are concerned about covering up their involvement, whereas Sheila and Eric are aware of the personal tragedy and feel guilty.</i>		Cyclical structure	Lighting	
	<i>The Birlings gradually begin to question whether the Inspector was real. Sybil and Arthur agree that it makes all the difference; Eric and Sheila disagree as even if he was a fake, what he's shown them is real.</i>		Stage directions	Dramatic irony	
	<i>Gerald re-enters. He has also had suspicions and found out that there is no Inspector Goole on the police force, which Birling confirms with a phone call. The older Birlings, and Gerald, take this as a cue to alleviate any responsibility whereas the young are repentant and continue to protest that they need to learn a lesson about their responsibility.</i>		Props and costume	Cliffhanger	
	<i>Then the telephone rings. Mr Birling answers it: an inspector is on his way to ask questions about the suicide of a young girl...</i>		Symbolism	Entrances and exits	



LP2 Q5 Knowledge Organiser**AQA English Language Paper 2 Section B**

Overview: This task requires you to write an engaging article, speech or letter. The tasks are non fiction style but you can make up your facts and examples. You should make sure your tone and ideas are suitable for the audience you are writing for. The question will be on a similar theme to the texts you will look at in section A of the paper.

Marks available: 24 marks for content and organisation and 16 marks for SPaG accuracy.

How to revise:

1. Self quiz this knowledge organiser
2. Self quiz and practise using the AFOREST techniques
3. Plan and write your answers to these practice questions

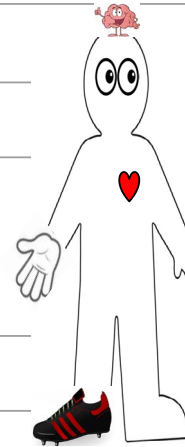
'Cars are noisy, dirty, smelly and downright dangerous. They should be banned from all town and city centres, allowing people to walk and cycle in peace.'
Write a letter to the Minister of Transport arguing your point of view on this statement.






'We should all have to give at least 10% of the money we earn to charity.'
Write a speech for school arguing your point of view on this statement.

Grade 8-9 tips:






- Use a blend of persuasive devices and figurative devices.
- Try using humour and irony to create a convincing tone.
- Regularly read opinion pieces (or columns) in the news.
- Have one idea or image that you refer to throughout, or craft an extended metaphor.

Vocabulary	Meaning
unorthodox	Unusual
unquestionably	Definitely
ludicrous	Ridiculous
extraordinary	Unusual
nonetheless after all	In spite of
indisputably	without doubt
ideology	System of beliefs
status quo	The way things have always been
ethics	Rules about right and wrong
hypocrisy	Claiming to be one thing but doing the opposite (to be a hypocrite)
paradox	A contradictory statement
ambitious	Having desire to succeed
usurp	Take by force
treachery	Betrayal of trust





**How to Structure your Writing: The Body Plan**

Section	Techniques	Paragraph Starter
The handshake : A powerful introduction 	Direct address Refer to the purpose of the piece: (readers / audience / name of the person if it's a letter')	<i>Imagine a world where...</i>
The brains of the matter: Sound knowledgeable 	Facts and statistics The opinion of an expert	<i>Evidently, ...</i>
Appeal to the heart : An emotive argument 	Emotive language Anecdote (personal or about a real/made up other person)	<i>Take (me / name of person) ...</i>
Kick the opposing argument off the pitch 	Acknowledge the other side of the argument but state why your case is stronger	<i>While some people may say...</i>
Look to the future: Finish with a call to action 	Imperative language Refer to the purpose of the piece: <i>Readers, as you put down this magazine I want you to...</i> <i>Audience members. As you leave this assembly hall today I want you to...</i> (Name of person) as you finish reading this letter I want you to...	

An Inspector Calls

Quote	When	What to say?
Act 1: Stage Direction: The general effect is substantial and heavily comfortable 	The opening of the play before the audience has been introduced to the Birling family.	<ul style="list-style-type: none"> • Adjective 'substantial' and adverb 'heavily' suggest the excessiveness of the Birling family—they have more than they need. • This establishes the Birling family as members of the bourgeoisie which contrasts the character of Eva Smith and the reduced circumstances of the 1945 audience members in post-war Britain
Before the Inspector's arrival: <i>lighting is "pink and intimate"</i> After the Inspector's arrival: <i>lighting is "brighter and harder"</i>	Act 1 stage directions before and when the Inspector enters.	<ul style="list-style-type: none"> • Adjective 'pink' connotes a soft, flattering atmosphere; 'intimate' connotes privacy - the Birlings do not see their own flaws and isolate themselves from the poor of society. • The change in lighting is symbolic of the Inspector exposing the family's behaviour. It symbolises how the Birlings, and audience alike, facing up to the problems of social injustice and inequality in their society.
Act 1: Stage Directions Half shy, half assertive (Eric) Half playful, half serious (Sheila) 	Descriptions given of Eric and Sheila in the stage directions	<ul style="list-style-type: none"> • Contrasts of 'shy' and 'assertive', and 'playful' and 'serious' show that Eric and Sheila do not have fully-formed characters - the younger generation they have potential to change. • For Eric, his assertiveness could be how he challenges the capitalist mindset of his father and his ignorant views on the world. • For Sheila, her seriousness could challenge the view on the role of women in marriage and society more generally.
Act 1: Mr Birling: As if we're all mixed up like bees in a hive - community and all that nonsense 	Towards the beginning of act 1 when Mr Birling is delivering sanctimonious lectures to Eric and Gerald.	<ul style="list-style-type: none"> • Dramatic irony shows Mr Birling to be a fool as in 1945, the election of a Labour prime minister helps Britain to value the concept of "community" • Simile 'like bees in a hive' conveys Birling's derogatory attitude towards society and the idea of working together. The noun 'nonsense' reinforces his dismissive tone.
Act 1: Mr Birling: If you don't come down sharply on some of these people, they'd soon be asking for the earth. 	When the Inspector is interrogating Mr Birling about his attitude towards worker strikes.	<ul style="list-style-type: none"> • Adverb 'sharply' conveys Birling's/ upper classes' lack of empathy for the hardships of the working classes. It also reflects his selfish capitalist mindset. • Birling's use of hyperbole that workers would be 'asking for the earth' further demonstrates his ignorance in understanding the importance of workers' rights and equal pay.
Act 1: Sheila: But these girls aren't just cheap labour, they're people. 	When Sheila first hears about the suicide and Mr Birling is unsympathetic	<ul style="list-style-type: none"> • Adjective 'cheap' demonstrates Sheila's acknowledgement that the working classes are exploited and shows she is starting to sympathise. • Pronoun 'they're' however shows that she still views the lower classes as the 'other' and something disconnected from her life.





An Inspector Calls Fundamentals

<p>Act 1</p> <p>Sheila: (Hysterically) Why-you fool-he knows...You'll see. You'll see. (She looks at him almost in triumph. He looks crushed.)</p>	<p>When Sheila has realised Gerald has had an affair and he wants her to let it lie.</p>	<ul style="list-style-type: none"> Stage direction 'hysterically' shows Sheila has reached a moment of realisation which will allow her to challenge the world around her. Repetition of 'you'll see' shows she understands something that Gerald doesn't and contrasts with her passiveness in her relationship with him at the beginning The contrast between 'triumphant' and 'crushed' suggests her empowerment.
<p>Act 2</p> <p>Mrs Birling: I consider I did my duty... you have no power to make me change my mind</p> 	<p>When the Inspector is interrogating Mrs Birling about her part in Eva's death.</p>	<ul style="list-style-type: none"> Assertive and pompous tone of Mrs Birling suggests that she is close minded and refuses to see the wrong in what she has done. There is irony in the word 'duty' because she is suggesting that it was her duty to protect her pride rather than the wellbeing of a young woman and her unborn child
<p>Act 3</p> <p>Eric: I wasn't in love with her or anything-but I liked her-she was a good sport</p> 	<p>When Eric is explaining his relationship with "Daisy Renton" and how he took advantage of her.</p>	<ul style="list-style-type: none"> Eric's tone is dismissive in saying 'he wasn't in love with her or anything' His reference to Eva as a 'good sport' shows his disrespectful attitude towards women-Daisy serves as a form of entertainment for Eric, someone he used and 'played.' It contrasts the respect Eva shows for Eric in not revealing him to be the father of her baby.
<p>Act 3</p> <p>The Inspector: We don't live alone. We are members of one body.</p>	<p>During the Inspector's final exit speech which addresses the audience as well as the family.</p>	<ul style="list-style-type: none"> Short sentences reflect the Inspector's direct and clear tone in conveying his final message to the Birlings and audience. The metaphor of society being a body communicates the idea that the Birlings and audience alike must take care of each organ (section of society) for it to be successful and prosper. All body parts are equally important.
<p>Act 3: Sheila: I tell you-whoever that Inspector was, it was anything but a joke. You knew it then. You began to learn something. And now you've stopped</p> 	<p>Towards the end of the play when the Inspector has exited</p>	<ul style="list-style-type: none"> Sheila's use of short sentences emphasise her abrupt and urgent tone in warning Mrs Birling that she has failed to learn from the Inspector's message. She has now fully taken on the beliefs of the Inspector about society. Repetition of the pronoun 'you' is forcing Mrs Birling to realise her accountability for her own actions. It could also be used to show Priestley addressing conservative audience members or the older generation.
<p>Act 3: <i>Stage Direction: The telephone rings sharply. There is a moment's complete silence.... As they stare guiltily and dumbfounded the curtain falls</i></p> 	<p>The very end of the play, just as the Birling family believe that the Inspector was a hoax.</p>	<ul style="list-style-type: none"> Repetition of the 'sharp' ringing noise echoes the Inspector's entrance and suggests to the audience that the Birling's celebrations will once again be cut short as they have failed to learn from their mistakes. Cliffhanger ending of the 'guilty' stare and 'silence' implores the audience to consider what the consequences will be if they don't take responsibility for their actions and challenge the status quo.

An Inspector Calls Fundamentals





Character Fundamentals

Sheila Birling

Quote	When?	What to say
Act 1-Stage Directions Half playful, half serious (Sheila) 	Descriptions given of Eric and Sheila in the stage directions	<ul style="list-style-type: none"> • Contrasts 'playful' and 'serious' and Sheila do not have fully-formed characters - the younger generation they have potential to change. • 'Half' could foreshadow that she will change her views and become more progressive as she is not a whole yet. • For Sheila, her seriousness could challenge the view on the role of women in marriage and society more generally.
Act 1 "Yes go on mummy" 	Act 1 when Sheila is referring to her mother	<ul style="list-style-type: none"> • Sheila's language also reflects her increasing maturity as she begins the play saying "mummy" using a lot of personal pronouns to highlight her selfish, childlike attitude at the start of the play. • As the play progresses she refers to Mrs Birling as "mother" which reflects this change and perhaps she doesn't feel as intimate with her mother and has lost respect for her because of the way she is behaving.
Act 1 Sheila: But these girls aren't just cheap labour, they're people. 	When Sheila first hears about the suicide and Mr Birling is unsympathetic	<ul style="list-style-type: none"> • Adjective 'cheap' demonstrates Sheila's acknowledgement that the working classes are exploited and shows she is starting to sympathise. • Pronoun 'they're' however shows that she still views the lower classes as the 'other' and something disconnected from her life.
Act 1 Sheila: (Hysterically) Why-you fool-he knows...You'll see. You'll see. (She looks at him almost in triumph. He looks crushed.)	When Sheila has realised Gerald has had an affair and he wants her to let it lie.	<ul style="list-style-type: none"> • Stage direction 'hysterically' shows Sheila has reached a moment of realisation which will allow her to challenge the world around her. • Repetition of 'you'll see' shows she understands something that Gerald doesn't and contrasts with her passiveness in her relationship with him at the beginning • The contrast between 'triumphant' and 'crushed' suggests her empowerment.
Act 3 Sheila: I tell you-whomever that Inspector was, it was anything but a joke. You knew it then. You began to learn something. And now you've stopped 	Towards the end of the play when the Inspector has exited	<ul style="list-style-type: none"> • Sheila's use of short sentences emphasise her abrupt and urgent tone in warning Mrs Birling that she has failed to learn from the Inspector's message. She has now fully taken on the beliefs of the Inspector about society. • Repetition of the pronoun 'you' is forcing Mrs Birling to realise her accountability for her own actions. It could also be used to show Priestley addressing conservative audience members or the older generation.





An Inspector Calls

Eric Birling

Quote	When?	What to say
Act 1-Stage Directions Half shy, half assertive (Eric) 	Descriptions given of Eric in the stage directions	<ul style="list-style-type: none"> • Contrasts of 'shy' and 'assertive', show that Eric is not yet a fully-formed character - the younger generation they have potential to change. • For Eric, his assertiveness could be how he challenges the capitalist mindset of his father and his ignorant views on the world.
Act 1: "Why shouldn't they try for higher wages? We try for the highest possible prices" 	Eric questions his father in Act 1	<ul style="list-style-type: none"> • Defending socialist actions - has the potential to change. • Third person pronoun "they" contrasts with "we" conveys the separation that exists. • Eric, fair, sees lower class as on the same level as his class, contradicts father, revealing hypocrisy of upper class
Act 3 Eric: I wasn't in love with her or anything-but I liked her-she was a good sport 	When Eric is explaining his relationship with "Daisy Renton" and how he took advantage of her.	<ul style="list-style-type: none"> • Eric's tone is dismissive in saying 'he wasn't in love with her or anything' • His reference to Eva as a 'good sport' shows his disrespectful attitude towards women-Daisy serves as a form of entertainment for Eric, someone he used and 'played.' It contrasts the respect Eva shows for Eric in not revealing him to be the father of her baby.
Act 3: "Then- you killed her. She came to you to protect me- and you turned her away- Yes, and you killed her... damn you, damn you" 	Eric has found his assertiveness and is standing up to his mother.	<ul style="list-style-type: none"> • Eric has changed and is standing up for himself. • Repetition of "you killed her" conveys Eric's anger and blame he has for his mother. • Broken dialogue and use of a dash show how Eric is overwhelmed with resentment for his family. This could symbolise resentment for capitalism and the upper classes.





An Inspector Calls Fundamentals

Mr Birling

Quote	When?	What to say
Act 1: Stage Direction: The general effect is substantial and heavily comfortable 	The opening of the play before the audience has been introduced to the Birling family.	<ul style="list-style-type: none"> • Adjective 'substantial' and adverb 'heavily' suggest the excessiveness of the Birling family-they have more than they need. • This establishes the Birling family as members of the bourgeoisie which contrasts the character of Eva Smith and the reduced circumstances of the 1945 audience members in post-war Britain
(explosively) (angrily) (sharply) (very sharply) (furious)	Stage directions to describe Mr Birling	<ul style="list-style-type: none"> • Stage directions emphasise Mr Birling's pompous and arrogant attitude. • Adverbs "sharply" and "angrily" symbolise the arrogance of the upper classes and their belief that they are top of the hierarchy.
Act 1: "unsinkable, absolutely unsinkable" 	During Mr Birling's speech in Act 1 where he declares there will be no wars and the Titanic will not sink.	<ul style="list-style-type: none"> • The Titanic is a microcosm for Edwardian society as passengers were completely divided by class • Dramatic irony - the audience knows Mr Birling is wrong and so will not trust him. • The Titanic is a metaphor for the Birling family: they are going about their lives unaware the 'iceberg' (Inspector and his lessons) will hit.
Act 1 Mr Birling: As if we're all mixed up like bees in a hive-community and all that nonsense 	Towards the beginning of act 1 when Mr Birling is delivering sanctimonious lectures to Eric and Gerald.	<ul style="list-style-type: none"> • Dramatic irony shows Mr Birling to be a fool as in 1945, the election of a Labour prime minister helps Britain to value the concept of "community" • Simile 'like bees in a hive' conveys Birling's derogatory attitude towards society and the idea of working together. The noun 'nonsense' reinforces his dismissive tone.
Act 1 Mr Birling: If you don't come down sharply on some of these people, they'd soon be asking for the earth. 	When the Inspector is interrogating Mr Birling about his attitude towards worker strikes.	<ul style="list-style-type: none"> • Adverb 'sharply' conveys Birling's/ upper classes' lack of empathy for the hardships of the working classes. It also reflects his selfish capitalist mindset. • Birling's use of hyperbole that workers would be 'asking for the earth' further demonstrates his ignorance in understanding the importance of workers' rights and equal pay.
Act 3: "Now look at the pair of them- the famous younger generation who know it all. And they can't even take a joke-"	Near the end of the play when Mr Birling believes there is no Inspector.	<ul style="list-style-type: none"> • Shows that the younger generation have taken responsibility and the older generation have not. • Highlights the rigid mindsets and stubbornness of the older generation. • Pronoun "them" further separates the two generations.


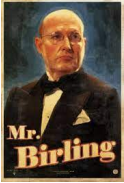

An Inspector Calls Fundamentals

Mrs Birling

Quote	When?	What to say
Act 1: Stage Direction: The general effect is substantial and heavily comfortable 	The opening of the play before the audience has been introduced to the Birling family.	<ul style="list-style-type: none"> • Adjective 'substantial' and adverb 'heavily' suggest the excessiveness of the Birling family-they have more than they need. • This establishes the Birling family as members of the bourgeoisie which contrasts the character of Eva Smith and the reduced circumstances of the 1945 audience members in post-war Britain
(grandly) (bitterly) (with sudden anger) (alarmed) (severely)	Stage directions to describe Mrs Birling.	<ul style="list-style-type: none"> • Stage directions emphasise Mrs Birling's pompous and arrogant attitude. • Adverbs "grandly" and "severely" symbolise the arrogance of the upper classes and their belief that they are top of the hierarchy.
Mrs Birling: "as if a girl of that sort would ever refuse money." 	Act 2 When the Inspector is asking Mrs Birling about her part in Eva's death.	<ul style="list-style-type: none"> • The prejudiced and pompous tone of "of that sort" suggests that she refuses to see the wrong in what she has done and does not take responsibility. • The word "girl" shows that women can also be sexist. Mrs Birling is prejudiced against Eva because she is female and working class. Shows she is elitist and hierarchial.
Act 2 Mrs Birling: I consider I did my duty... you have no power to make me change my mind 	When the Inspector is interrogating Mrs Birling about her part in Eva's death.	<ul style="list-style-type: none"> • Assertive and pompous tone of Mrs Birling suggests that she is close minded and refuses to see the wrong in what she has done. • There is irony in the word 'duty' because she is suggesting that it was her duty to protect her pride rather than the wellbeing of a young woman and her unborn child
Act 3: 'he certainly didn't make me confess – I had done no more than my duty' 	Once the Inspector has left.	<ul style="list-style-type: none"> • Adverb "certainly" connotes a smug tone. • Repetition of 'my duty' from earlier in the play shows that the older generation have a rigid mindset.




An Inspector Calls

Gerald Croft




Quote	When?	What to say
<p>(easy well-bred young man-about-town) (produces a ring case) (giving the case to her)</p> 	<p>Stage directions to describe Gerald</p>	<ul style="list-style-type: none"> Gerald clearly holds authority and appears at first to be the decision maker within his relationship with Sheila which symbolises the power held by the patriarchy. This is challenged when Sheila hands the ring back. "Man about town" could be a euphemism for male behaviour in the Edwardian era
<p>Act 1: GERALD [laughs]: You seem to be a nice well-behaved family - BIRLING: We think we are -</p> 	<p>The opening of the play when Priestley creates initial first impressions of the characters.</p>	<ul style="list-style-type: none"> These lines exemplify Priestley's love of dramatic irony: the last thing the Birlings have been is well-behaved The conspiratorial tone suggests the alliance between Gerald and Birling, two men who share the same capitalist, individualistic values, whose bond will become stronger after the Inspector's exit.
<p>Act 2: "all right – I did for a time. Nearly any man would have done"</p>	<p>Said in response to Sheila saying that Gerald must have 'adored' the role he had as benefactor of 'fairy prince' to Eva.</p>	<ul style="list-style-type: none"> He admits he did enjoy it and that he is human and thus of course frail. He uses 'any man' as an excuse. Priestley is stressing that common human weaknesses are shared by everyone despite supposed class differences.
<p>Gerald's character trajectory: Act 1: 'I don't come into this suicide business.' Act 3: 'Everything's all right now Sheila.' (Holds up the ring) How about this ring?</p> 	<p>The audience believes Gerald has or will change, however he does not.</p>	<ul style="list-style-type: none"> Gerald lets the audience down; we had hoped that he would change his attitudes, but he doesn't. Priestley conveys how ingrained self-centred attitudes and a desire to maintain the status quo were in the upper class, and how difficult it was to change them. Stage direction indicates that Gerald still believes he has control over Sheila.

An Inspector Calls

The Inspector

Quote	When?	What to say
Before the Inspector's arrival: <i>lighting is "pink and intimate"</i> After the Inspector's arrival: <i>lighting is "brighter and harder"</i>	Act 1 stage directions before and when the Inspector enters.	<ul style="list-style-type: none"> Adjective 'pink' connotes a soft, flattering atmosphere; 'intimate' connotes privacy - the Birlings do not see their own flaws and isolate themselves from the poor of society. The change in lighting is symbolic of the Inspector exposing the family's behaviour. It symbolises how the Birlings, and audience alike, facing up to the problems of social injustice and inequality in their society.
Act 1: "It is better to ask for the earth than to take it" 	The Inspector's response to Mr Birling	<ul style="list-style-type: none"> The Inspector acts as a mouthpiece for Priestley's socialist views and challenges the capitalist mindset of the Birling family.
Act 3 The Inspector: We don't live alone. We are members of one body 	During the Inspector's final exit speech which addresses the audience as well as the family.	<ul style="list-style-type: none"> Short sentences reflect the Inspector's direct and clear tone in conveying his final message to the Birlings and audience. The metaphor of society being a body communicates the idea that the Birlings and audience alike must take care of each organ (section of society) for it to be successful and prosper. All body parts are equally important.
The Inspector's entrances and exits For example at the end of act 1 when he walks in on Sheila and Gerald's conversation and his initial arrival at the Birlings' house	Throughout: the Inspector's entrances and exits are well-timed and significant	<ul style="list-style-type: none"> Priestley uses these to heighten the drama and tension and to interrupt and disrupt Goole is assertive throughout - he doesn't change like some of the other characters He arrives at a critical time – 'a man has to mind his own business and look after himself and his own' (Mr Birling) – 'We hear the sharp ring of a front doorbell.' The Inspector's role is to show that this is not the case.
Act 1: <i>INSPECTOR: ... what happened to her then may have determined what happened to her afterwards, and what happened to her afterwards may have driven her to suicide. A chain of events.</i>	Act 1 when the Inspector first outlines the nature of the moral crimes the Birlings have committed.	<ul style="list-style-type: none"> Each of the Birlings is responsible in part for Eva's death, and together they are entirely responsible. This construction is itself a metaphor for socialist Priestley's insistence that we are all bound up together and responsible communally for everyone's survival. The repetition in the Inspector's lines almost mirror the "chain" he is talking about.
Act 3 "Fire, blood and anguish" linked to Priestley's real life experience in the war 	The Inspector's final, dramatic speech to the Birlings (and the audience) before he exits	<ul style="list-style-type: none"> Priestley fought in the war so this was a relatively recent and very real memory for him. In an interview he said "the tradition of an officer class... [who] killed most of my friends..." The righteous anger of the inspector conveys his anger at the Birlings and the Crofts who represent the "officer class" who sent him and his friends over the top from positions of safety.

Paper 1: Coastal Management

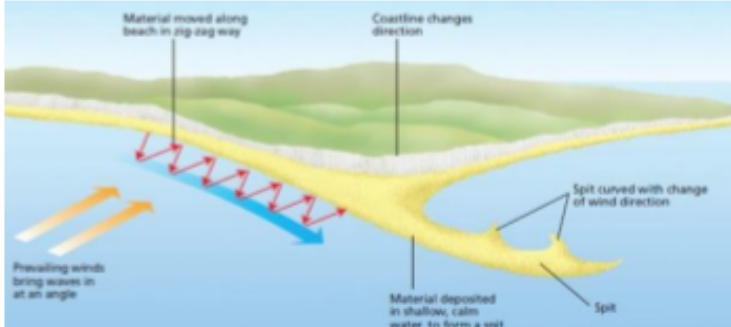
Relief of the UK		Areas +600m: Peaks and ridges cold, misty and snow common. i.e. Scotland
Key		Areas -200m: Flat or rolling hills. Warmer weather. i.e. Fens
Lowlands		
Uplands		

Types of Erosion	
The break down and transport of rocks – smooth, round and sorted.	
Attrition	Rocks that bash together to become smooth/smaller.
Solution	A chemical reaction that dissolves rocks.
Abrasion	Rocks hurled at the base of a cliff to break pieces apart.
Hydraulic Action	Water enters cracks in the cliff, air compresses, causing the crack to expand.

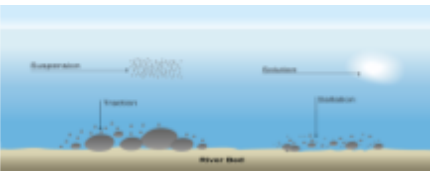


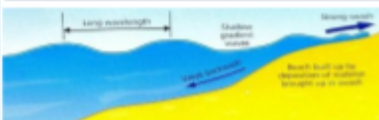

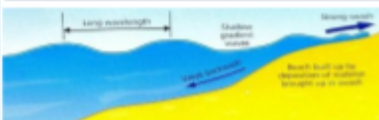

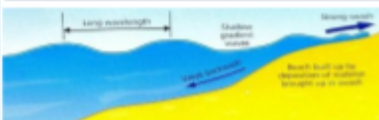

Types of Transportation	
A natural process by which eroded material is carried/transported.	
Solution	Minerals dissolve in water and are carried along.
Suspension	Sediment is carried along in the flow of the water.
Saltation	Pebbles that bounce along the sea/river bed.
Traction	Boulders that roll along a river/sea bed by the force of the flowing water.

Mass Movement	
A large movement of soil and rock debris that moves down slopes in response to the pull of gravity in a vertical direction.	
1	Rain saturates the permeable rock above the impermeable rock making it heavy.
2	Waves or a river will erode the base of the slope making it unstable.
3	Eventually the weight of the permeable rock above the impermeable rock weakens and collapses.
4	The debris at the base of the cliff is then removed and transported by waves or river.

| | |

Formation of Coastal Spits - Deposition	
Example: Spurn Head, Holderness Coast.	
<ol style="list-style-type: none">1) Swash moves up the beach at the angle of the prevailing wind.2) Backwash moves down the beach at 90° to coastline, due to gravity.3) Zigzag movement (Longshore Drift) transports material along beach.4) Deposition causes beach to extend, until reaching a river estuary.5) Change in prevailing wind direction forms a hook.6) Sheltered area behind spit encourages deposition, salt marsh forms.	

Paper 1: Coastal Management

<h3>Types of Weathering</h3> <p>Weathering is the breakdown of rocks where they are.</p> <table><tr><td>Carbonation</td><td>Breakdown of rock by changing its chemical composition.</td></tr><tr><td>Mechanical</td><td>Breakdown of rock without changing its chemical composition.</td></tr></table>		Carbonation	Breakdown of rock by changing its chemical composition.	Mechanical	Breakdown of rock without changing its chemical composition.	 <h3>What is Deposition?</h3> <p>When the sea or river loses energy, it drops the sand, rock particles and pebbles it has been carrying. This is called deposition.</p>	<h3>Formation of Bays and Headlands</h3>  <table><tr><td>1)</td><td>Waves attack the coastline.</td></tr><tr><td>2)</td><td>Softer rock is eroded by the sea quicker forming a bay, calm area causes deposition.</td></tr><tr><td>3)</td><td>More resistant rock is left jutting out into the sea. This is a headland and is now more vulnerable to erosion.</td></tr></table>	1)	Waves attack the coastline.	2)	Softer rock is eroded by the sea quicker forming a bay, calm area causes deposition.	3)	More resistant rock is left jutting out into the sea. This is a headland and is now more vulnerable to erosion.	<h3>Coastal Defences</h3> <h4>Hard Engineering Defences</h4> <table><tr><td>Groynes</td><td>Wood barriers prevent longshore drift, so the beach can build up.</td><td><ul style="list-style-type: none">Beach still accessible.No deposition further down coast = erodes faster.</td></tr><tr><td>Sea Walls</td><td>Concrete walls break up the energy of the wave. Has a lip to stop waves going over.</td><td><ul style="list-style-type: none">Long life spanProtects from floodingCurved shape encourages erosion of beach deposits.</td></tr><tr><td>Gabions or Rip Rap</td><td>Cages of rocks/boulders absorb the waves energy, protecting the cliff behind.</td><td><ul style="list-style-type: none">CheapLocal material can be used to look less strange.Will need replacing.</td></tr></table> <h4>Soft Engineering Defences</h4> <table><tr><td>Beach Nourishment</td><td>Beaches built up with sand, so waves have to travel further before eroding cliffs.</td><td><ul style="list-style-type: none">CheapBeach for tourists.Storms = need replacing.Offshore dredging damages seabed.</td></tr><tr><td>Managed Retreat</td><td>Low value areas of the coast are left to flood & erode.</td><td><ul style="list-style-type: none">Reduce flood riskCreates wildlife habitats.Compensation for land.</td></tr></table>	Groynes	Wood barriers prevent longshore drift, so the beach can build up.	<ul style="list-style-type: none">Beach still accessible.No deposition further down coast = erodes faster.	Sea Walls	Concrete walls break up the energy of the wave. Has a lip to stop waves going over.	<ul style="list-style-type: none">Long life spanProtects from floodingCurved shape encourages erosion of beach deposits.	Gabions or Rip Rap	Cages of rocks/boulders absorb the waves energy, protecting the cliff behind.	<ul style="list-style-type: none">CheapLocal material can be used to look less strange.Will need replacing.	Beach Nourishment	Beaches built up with sand, so waves have to travel further before eroding cliffs.	<ul style="list-style-type: none">CheapBeach for tourists.Storms = need replacing.Offshore dredging damages seabed.	Managed Retreat	Low value areas of the coast are left to flood & erode.	<ul style="list-style-type: none">Reduce flood riskCreates wildlife habitats.Compensation for land.
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<h3>Formation of Coastal Stack</h3>  <p>Example: Old Harry Rocks, Dorset</p> <table><tr><td>1)</td><td>Hydraulic action widens cracks in the cliff face over time.</td></tr><tr><td>2)</td><td>Abrasion forms a wave cut notch between HT and LT.</td></tr><tr><td>3)</td><td>Further abrasion widens the wave cut notch to form a cave.</td></tr><tr><td>4)</td><td>Caves from both sides of the headland break through to form an arch.</td></tr><tr><td>5)</td><td>Weather above/erosion below - arch collapses leaving stack.</td></tr><tr><td>6)</td><td>Further weathering and erosion leaves a stump.</td></tr></table>		1)	Hydraulic action widens cracks in the cliff face over time.	2)	Abrasion forms a wave cut notch between HT and LT.	3)	Further abrasion widens the wave cut notch to form a cave.	4)	Caves from both sides of the headland break through to form an arch.	5)	Weather above/erosion below - arch collapses leaving stack.	6)	Further weathering and erosion leaves a stump.	<table><tr><th>Size of waves</th><th colspan="2">Types of Waves</th></tr><tr><td rowspan="2"><ul style="list-style-type: none">Fetch how far the wave has travelledStrength of the wind.How long the wind has been blowing for.</td><th>Constructive Waves</th><th>Destructive Waves</th></tr><tr><td><p>This wave has a swash that is stronger than the backwash. This therefore builds up the coast.</p></td><td><p>This wave has a backwash that is stronger than the swash. This therefore erodes the coast.</p></td></tr></table> <p>How do waves form? Waves are created by wind blowing over the surface of the sea. As the wind blows over the sea, friction is created - producing a swell in the water.</p> <p>Longshore Drift Swash brings sediment up the beach at the angle of the prevailing wind, backwash brings the sediment back down due to gravity.</p>			Size of waves	Types of Waves		<ul style="list-style-type: none">Fetch how far the wave has travelledStrength of the wind.How long the wind has been blowing for.	Constructive Waves	Destructive Waves	<p>This wave has a swash that is stronger than the backwash. This therefore builds up the coast.</p> 	<p>This wave has a backwash that is stronger than the swash. This therefore erodes the coast.</p> 					
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Paper 2: The Global Pattern of urban change

Links: [BBC bite size](#) Oak National [Global urbanisation](#)

NEE Megacity case study: Rio de Janeiro	UK City: London	Urbanisation: increase in amount of people living urban areas such as towns or cities												
Location: South-east Brazil on Atlantic Ocean	Importance: Capital of England, London Stock Exchange	Mega city: A city with a population of 10 million or more												
Importance: UNESCO World Heritage Site, 2014 World Cup, 2016 Olympics	Urban Regeneration: Stratford	Rural - Urban migration: the movement of people from rural to urban areas												
Population: 12.5 million (metropolitan area):	De-industrialisation left it one of the most <u>deprived</u> communities in the country, where unemployment was high and levels of health were poor. Regeneration was part of a successful 2012 Olympic bid.	Push factor: causes someone to want to leave a place e.g. natural disasters, war												
Reasons for growth: Major industrial, commercial and tourist centre (jobs), healthcare, education, infrastructure e.g. water/electricity	<table border="1"> <thead> <tr> <th></th><th>2014</th><th>2021</th></tr> </thead> <tbody> <tr> <td>Unemployment</td><td>9.4%</td><td>5.8%</td></tr> <tr> <td>Life expectancy</td><td>75.7(male) 79.8 (female)</td><td>78.97 (male) 83.11 (female)</td></tr> <tr> <td>5 + good GCSE grades</td><td>62%</td><td>74%</td></tr> </tbody> </table>		2014	2021	Unemployment	9.4%	5.8%	Life expectancy	75.7(male) 79.8 (female)	78.97 (male) 83.11 (female)	5 + good GCSE grades	62%	74%	Pull factors: attracts some to a place e.g. job opportunities, better education.
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5 + good GCSE grades	62%	74%												
Where are the migrants from? Amazon basin (Brazil), South American countries, South Korea and China for new business opportunities, Skilled workers US & UK e.g HSBC	Social: New school -Chobham academy, 10,000 new homes	Natural increase: when birth rate exceeds the death rate												
Opportunities: Formal employment e.g. services, informal employment e.g. street vendors	Economic: 20,000 jobs by 2030 (few for local people though), Westfield, Here East	Regeneration: improving former industrial areas or housing to improve them												
Challenges: Favelas (Rochina largest) Favella unemployment up to 20%, traffic congestion, air pollution, water pollution, 25% poorest children not in school	Environmental: Olympic park has replaced contaminated land and waterways. New bike lanes and walkways.	Gentrification: wealthier (mostly middle-income) people move into, renovate, and restore housing and sometimes businesses in inner cities or other deteriorated areas formerly home to poorer people.												
Solutions: new sewage works, Pacifying Police Units, Complex de Alemão (cable car), Favela Bairro Project	East Village: Sustainable housing development - green roofs, rainwater used for flushing toilets, CHP - Combined heat & power is 30% efficient, half of homes affordable													

Migrants in Britain, c800-present

Summary: The study begins c800 AD, with the arrival of Viking settlements in England, and continues with a survey of key migrant groups in the medieval period and the way that these groups helped to shape social, religious and government structures that persisted for centuries. The study then follows the impact of the Reformation and expansion of trade in the early modern period, when changes in religion and global connections made migration to England desirable for different reasons. In the eighteenth and nineteenth centuries, the impact of Britain's industrialisation and its growing empire led to the arrival of migrants from its colonies, and elsewhere. This movement continued into the twentieth century and was encouraged by the creation of the Commonwealth, government legislation following the Second World War and global events in the late twentieth and early twenty-first centuries. Each of these significant migratory episodes had an impact in Britain and this will be considered alongside the experiences of migrant groups.

Key concepts c800–c1500: Migration in medieval England

1: The causes for migration	<p>Key factors impacting migration patterns:</p> <p>Government Anglo Saxon kingdoms were united under one government in 927 for the first time (the Kingdom of England). The Witan were the main council of advisers to Anglo Saxon rulers. These systems continued under the Normans after 1066. By 1500 England was governed by the monarch, his advisers and a parliament of Lords and Commons. This was only used when the monarch needed money or approval on an important law.</p> <p>Economics and Trade: Monarchs collected taxes England was rich in resources and its trading links with Europe grew in this period, making it more attractive for invaders and settlers</p> <p>Religion: Christianity had spread throughout England. People worshipped in churches, monks lived in monasteries and looked after the poor and the sick. By 1500 England was a Catholic Christian country and an important part of the Christian world (Christendom)</p> <p>Attitudes in Society : During this period England was a feudal country, meaning most people lived and worked on land owned by a wealthy and powerful lord or baron Most English people had no say in the law and lived in small villages where they worked on the land. Education was often limited and knowledge and understanding of the outside world was minimal</p> <p>Vikings: raided from 789, invaded and conquered to gain power, control and fertile land from agriculture. Arrived with the Great Viking army in 865 and eventually conquered and settled in the Dane Law Normans: Invaded in 1066 and were victorious under William the Conqueror at the Battle of Hastings. Jewish migrants: from 1070 onwards Jewish merchants were invited to lend money. They were exempt from the Pope's law that Christians could not charge other Christians interest on loans. They lent money to support castle building Low Country and Lombardy migrants: Rich Lombardian bankers arrived in the 1220s searching for profit. Weavers were invited in 1270 to boost trade.</p>
2: The experience of migrants	<p>Vikings - able to settle comfortably due to violent measures at first, and then the actions of King Cnut in allowing Anglo Saxons to keep positions of power Normans - settled successfully due to violence like in the Harrowing of the North, laws and systems such as the feudal system and the Forest laws Jews - settled comfortably at first due to their economic value, but were banished in 1290 after growing anti-semitism Low Country and Lombardians from Europe - settled comfortable due to economic value and impact on the cloth trade. Hanseatic League set up by North German Merchants. These groups were targeted due to economic jealousy in the 1380s</p>
3. The impact of migrants	<p>Vikings - impacted language, government/law. Introduced 'Things' and trials Normans - impacted language, landscape, land ownership - vital importance of the feudal system which fundamentally changed the structure of English society (kept key Saxon traditions but put Normans in charge Jewish loans supported monarchs (generated 8% of royal profit) and helped wealth to prosper (ending in 1290) Migrant Flemish weavers and merchants changed England's economy from primary to secondary, bankers from Lombardy made a trading centre</p>
4. Case study	<p>The conquest: York was built where two rivers meet, flowing out to the North sea - this made the town a very good location for trade. The rivers also meant there was a lot of fertile soil around for farming. The Vikings captured York in 866 and named the region Jorvik.</p> <p>The settlement: Before the Vikings York's population was around 1,000, however between 866 and 950 under the Vikings around 15,000 people migrated to York and it became an extremely multicultural city with Anglo-Saxons, Vikings, Irish, Scottish and Dutch people living all together.</p> <p>Trade: There were a huge amount of skilled tradesmen and craftsmen living in York, and archaeologists have discovered evidence of jewellery makers, potters, glassmakers, blacksmiths, metalworkers and many more. There were also people working in the mint, their job was to melt down silver and gold and making them into coins for trade.</p> <p>Viking York and Anglo Saxon England: Viking coins from Jorvik (York) have been found across England. In 927 the Anglo-Saxons took over York again, and there were ongoing battles for the next 27 years. Despite these ongoing wars and battles, the Anglo Saxons and Vikings seemed to have lived and traded quite happily together</p>

Key developments

c800	Viking raids on the north coast of England
866	York captured by Vikings
878	Peace was agreed between the Saxons and Vikings, leading to the establishment of the Danelaw
1016 -1035	Viking King Cnut rules over England.
1066	Norman Conquest put the Normans in control of England
1070	William I invited Jewish merchants from Rouen to settle in England
1100–35	Henry I issued a Charter of Liberties, defining the privileges of Jews and their legal status as the property of the king
1190, 1244, 1255	Massacres of Jews in York, London and Lincoln
1266	Henry III granted a charter to German Hansa merchants, giving them a lot of control over the English wool trade
1290	Edward I issued an edict expelling Jews and encouraged Italian bankers to come to Britain
1370	The Black Death reached England, creating a shortage of workers and artisans, which created encouraging conditions for European migrants
1469	The Hanseatic merchants' trading area in London, The Steelyard, was attacked.

Key words

Migrant - a person who arrives from another place
Migration - the act of moving from one place to another
Settle - to stay and establish roots in a place
Conquer - to overcome and take control
Colonise - to settle and take control over
Anglo Saxon - people who migrated from Europe and lived in England from the 5th Century
Viking - people from Scandinavian countries (Norway, Sweden, Denmark) invaded England in the 9th Century
Fertile - land that is able to support the growing and farming of food
Succession - the process of deciding who should be the next king or queen
Normandy - An independent state in North West France
Diaspora - The scattering of a population that had once all lived together
Jewries - areas where Jews lived and worked together within a town or city
Black Death - A pandemic that killed nearly 60% of the population of England
Jarldom - a large area of land ruled by a Viking Jarl (King)
Things - regions and local meeting to settle criminal disputes and make laws
Danelaw - area of England that Vikings settled in and ruled

Key concepts: c1500–c1700: Migration in early modern England	
1 The causes for migration	<p>Huguenot migrants were French protestants who were persecuted by Catholic France. Generally skilled workers with colleagues and friends in England</p> <p>Palatine migrant were poor farmers from Palatine and other German states - looking for work</p> <p>Jewish people came quietly back to England from 1656 having been invited by Oliver Cromwell</p> <p>Africans had been living in England since before 1500, some had escaped slavery, others had escaped Spain</p> <p>Most Indian immigrants were brought to England by the families with whom they worked in India, other were sailors who jumped ship when arriving in England</p>
2 The experience of migrants	<p>Huguenot settlement was successful because they had a range of useful skills. They joined businesses already in existence in England being run by family and friends</p> <p>Palatines had few useful skills so they were eventually transported to Ireland and America</p> <p>Jews were quietly settled in England and worked at a range of jobs from selling rags to high level banking</p> <p>Gypsies were feared and hated; laws were passed to try and keep them out of England</p> <p>Africans and Indians more often worked as servants (suffered from discrimination)</p>
3 Impact of Migrants	<p>Huguenots skills in silk weaving boosted cloth trade; invested in bank of England and helped establish London as a major financial centre</p> <p>Jews were forbidden from entering many areas of work and so they concentrated on working as financiers and merchants</p> <p>Dutch migrant workers drained the Fens, creating thousands of acres of fertile land in the 1640s</p> <p>Individual migrants worked as artists in the royal courts, added words to the English language, wrote England history, printed books and changed fashion for rich people</p>
4 Case studies	<p>Sandwich and Canterbury both recognised that skilled Flemish and Walloon weavers could help its economy and trade</p> <p>Sandwich invited the Flemish, Canterbury later invited the Walloons</p> <p>These communities were very successful and improved trade in the area. They were allowed to set up their own churches and organise themselves</p> <p>There was some fear English businessmen would lose jobs to these groups. Because of this the Walloons in Canterbury created their own trades</p> <p>Huguenots:</p> <p>Huguenots settled and work in Soho and Spitalfields in London</p> <p>Huguenots silk weakening skills created work and prosperity</p> <p>Huguenot churches kept their culture alive, provided support and respectability</p>

Key developments	
1511	An illustration shows John Blanke, a trumpeter, providing evidence of Black migrants as independent workers in England
1517	'Evil May Day' riots in London
1530, 1554, 1562	Royal proclamations issued about the status of Gypsies
1560s	Walloon migrants (from modern Belgium)
1560s-1570s	John Hawkins led several voyages transporting Africans to the Americas; Britain's growing involvement in the slave trade resulted in some enslaved Africans being brought to Britain
1600	East India Company founded
1642-1651	English Civil War
1620–1650s	Cornelius Vermuyden carried out major projects to drain and reclaim land in England
1656	Oliver Cromwell re-admitted Jews to Britain
1660	Royal Africa Company founded
1685	French Protestants, called Huguenots, had settled in England after the St Bartholomew Day Massacre in 1572 but the number of migrants increased after 1685, when Protestantism was banned in France

Key words
<p>Feudal System - a system of of land lending that meant the monarch had total control over all levels of society</p> <p>Anti-Semitism - Hostility to and prejudice against Jewish people</p> <p>Hanseatic League - North German merchants who dominated commerce in Europe 13th-15th Century</p> <p>Mint - a place that legally produces coins</p> <p>Reformation - a movement that criticised and then eventually broke away from the Catholic church</p> <p>Rabbi - A Jewish religious leader and teacher</p> <p>Parish registers - a record of all the marriages, baptisms and deaths in an area</p> <p>Lascar - Indian sailor</p> <p>Royal Exchange - A centre of commerce for the City of London</p> <p>National Debt - the amount of money a government has borrowed</p> <p>Glorious Revolution - the removal of Catholic King James II, replaced by William Duke of Orange</p> <p>Huguenots - French protestants</p> <p>Palatines - Poor German protestants</p> <p>Flemish - a group of people from the region of Belgium</p> <p>Walloons - French speaking protestants from the Spanish Netherlands</p> <p>Guild - an association of craftspeople and merchants who had power over what was produced in their industry</p> <p>Protestant work ethic - the value attached to hard working</p> <p>Spitalfields - an area of trade in East London</p>

Key concepts: c1700–c1900: Migration in eighteenth- and nineteenth-century Britain	
1 The causes for migration	<p>Industrialisation resulted in internal migration from rural areas to towns</p> <p>Many catholics migrated from Ireland because of bad land management which had led to famine and starvation</p> <p>By 1750 Britain was the dominant slave trading nation forcing over 3 million black Africans to slavery in the West Indies and North America</p> <p>Jewish, Asian, German and Italian migrants chose to go to Britain because it was a country where they felt safer and more able to use their skills</p> <p>British Empire</p> <p>By 1900 Britain ruled one fifth of the world's land and a quarter of the world's population</p> <p>Britain took control of India from the east India Company in 1858</p> <p>Britain acquired a vast amount of land in Africa in the years after 1885 such as Egypt and Sudan</p> <p>Merchants in port cities like Liverpool became extremely rich from the trade of sugar - this was based on slave labour in the British colonies of the West Indies</p>
2 The experience of migrants	<p>Thousands of migrants in British cities lived in overcrowded, unsanitary tenement buildings. Poor Irish migrants worked as navvies and labourers. Many Jewish migrants worked in sweatshops. Until emancipation, Jews were not allowed to join Parliament.</p> <p>Some black Africans who had fought for the British in the American Civil War were deported to Sierra Leone. The James Somerset case established no enslaved person could be taken from Britain and sold</p> <p>Asian ayahs and lascars were often abandoned in Britain by those who brought them to the country</p> <p>European Germans and Italians found different ways of making a living and generally settled well</p>
3 The impact of migrants	<p>Black African played a large part in bringing about the abolition of the slave trade in 1807</p> <p>Irish and Italian navvies dug roads and canals and built docks and railways</p> <p>Jewish migrants established successful retail outlets such as Marks & Spencers</p> <p>Germans helped set up successful industrial companies. Italians brought street music and street food to Britain</p> <p>Individuals such as Marx, Engels and Reuter created new ideas and businesses</p>
4 Case studies	<p>Liverpool</p> <p>Largest and most successful ports in the world, cotton industry and trade with America made it very profitable</p> <p>Irish migrants arrived after famines, some to go to America, some to settle in Liverpool</p> <p>Liverpool life was tough but Irish migrants built a strong community and legacy</p> <p>Growing trade links meant sailors from India, China and Africa became common in the city, migrant communities developed bringing their own cultures to the city</p> <p>East End Jews</p> <p>Thousands of EE Jews arrived in crowded East End 1890-1900 particularly Whitechapel and Liverpool</p> <p>Much of the area was slum housing, little sanitation and poor working conditions, unions were against sweatshop labour</p> <p>Hostility towards Jews grew especially with the hunt for Jack the Ripper</p>

Key developments	
1709	German Palatine migrants settled temporarily near London
1789	Olaudah Equiano published his autobiography
1807, 1833	Legislation: abolition of slave trade (1807); abolition of slavery (1833)
1815-1858	Jewish Emancipation Acts
1829	Catholic Emancipation Act
1840s	Railway mania involving extensive construction of railway lines Famine in Ireland
1880s	Many Jews settled in the East End of London, often seeking refuge in response to pogroms in Russia

Key words
<p>Industrialisation - the development of industries in a country on a large scale (mass production in factories)</p> <p>Agriculture - farming crops or livestock</p> <p>Refugees - people fleeing war, conflict or persecution in another country</p> <p>Transatlantic slave trade - the trade of enslaved people from West Africa to the Americas and crops to Britain</p> <p>Famine - when there is little or no food</p> <p>Steam power - heating water to create power</p> <p>Urban - relating to a city or large town</p> <p>East India Company - private trading company that first opened the trading route between Britain and India</p> <p>Slums - informal housing, often of a very poor quality</p> <p>Relief - help given to poor people</p> <p>Tenement - a run down and overcrowded building</p> <p>Navvies - the men who dug canals and built railways</p> <p>Fenian - a member of the Irish Republican Brotherhood who wanted independence from Britain</p> <p>Sweatshop - a place where people worked long hours in poor conditions</p> <p>Abolitionist - people who campaigned to abolish the slave trade</p> <p>Chartist - a working class movement aiming to gain political rights</p> <p>Capitalist system - an economic system based on private ownership and profit</p> <p>Communism - a system where all property is owned by the community and each person contributes according to their ability and receives according to their needs</p>

Key concepts: c1900–present: Migration in modern Britain	
Causes of Modern Migration	<p>Parliament: Some women were given the vote in 1918, all women were given equal voting rights with men from 1928</p> <p>1948 parliament created the NHS - a free service paid for by taxation</p> <p>Legislation was passed protecting workers' rights e.g. Equal Pay Act 1970 and Equality Act 2010</p> <p>Legislation regarding nationality and migration was passed giving greater legal rights and protection e.g. Aliens Act 1905 and Race Relations Act 1965</p> <p>1975 Britain joined the EU allowing greater freedom of movement from Europe to the UK. Britain left in 2016</p> <p>Industry: World wars changed the demand on production and supply in Britain to keep the army equipped</p> <p>During WWII ports and factories needed rebuilding after bombing. Aeroplanes and turbine ships made moving from country to country easier. In 1980s many coal mining and ship building businesses closed because they couldn't compete with the cheap labour in other countries</p> <p>British Empire: Soldiers from across the Empire fought on the side of Britain in both world wars. After WWII the countries of the British Empire gained their independence. British Commonwealth was set up in 1926 - The Commonwealth had 54 member states and was seen by some as a 'family'</p> <p>Media and public attitudes: In 1900 Britain's population was largely white British, by 2000 most cities in Britain had become far more multicultural, with migrants groups playing a very central part to life there</p> <p>Increased migration and presence of migrant groups often led to a hostile reaction to change and far right, anti-immigrant parties like the National Front gained support</p> <p>Many welcomed migrants, but for many migrants prejudice and racism was part of everyday life</p> <p>National newspapers and television became a huge part of everyday life and had a vast impact on shaping public opinion. Many felt that parts of the media encouraged feelings of hostility and suspicion, however many in the media campaigned against prejudice</p>
Reasons for Migration	<p>War, Persecution as well as government action and the changing context of British society: the World Wars (WWI and WWII) encouraging the Kindertransport, the passage of enemy aliens and the arrival of refugees from Belgium)</p> <p>The end of the British Empire, and splitting of Pakistan and India leading to the arrival of many Asian migrants. decolonisation leading to the influx of Asian Migrants from Uganda (1972) and Kenya (1967)</p> <p>The Commonwealth; EU membership; legislation on immigration and nationality, including the Aliens Act (1905) and British Nationality Act and the joining of the 1973 Britain joined the European Economic Community (EEC) allowing people to move freely between member countries.</p> <p>United Nations Convention on Refugees. This meant that Britain and all other countries that signed had to offer asylum (protection to people fleeing another country out of fear or persecution). Numbers claiming asylum increased and by 2002 there were nearly 85,000 applications.</p>
2 The experience of migrants	<p>During the first world war many British Germans were interned as enemy aliens. In the Second World War there was much less enthusiasm for internment enemy aliens - Polish veterans however were welcomed</p> <p>Tension over jobs was an issue. Lascars took on many shipping jobs during the WWI. Returning seamen wanted their jobs back leading to violence in ports</p> <p>Groups like the BUF and BNP made racist campaigns against migrants. In April 1968 Enoch Powell's Rivers of Blood Speech called for sending immigrants back</p> <p>Violence was a continual problem, from the Battle of Cable Street (1936) to riots in Brixton (1981) Burnley 2001 and other towns and cities</p>
Impact of migrants	<p>Immigration was restricted by Acts in 1962, 1968 and 1971. Equality for migrants was addressed in Acts in 1965, 1968 and 1976</p> <p>Migrants worked in important industries, especially the NHS and transport, facing discrimination and racial abuse</p> <p>Migrants have taken part in political activism - BLM, social justice movements and Doreen Lawrence's story</p> <p>The far right National Front and BNP opposed immigration. They were opposed by pressure groups</p> <p>Migrants helped to change the appearance of cities and towns and to enrich the culture with festivals, music, art, sports achievements and food</p>
3 Case studies	<p>Bristol in the mid-twentieth century:</p> <p>Mass arrival in the 1940s-60s of Caribbean migrants led to discrimination in employment and housing - many landlords refused to rent leading to gathering in the St Paul's area</p> <p>The St Paul's Carnival began 1968 and is a yearly celebration of Caribbean culture</p> <p>1963 Bristol Bus Boycott saw mass action taken against the BBC's colour bar - resulting in mass media attention, involvement of the government and eventual changing of racist policies against hiring black drivers</p> <p>Leicester after 1945:</p> <p>Increased migration due to job availability, established Asian Welfare Societies and religious tolerance</p> <p>Council initially accepting of the community due to economic skill however declared the city was full in 1972, provoking angry reactions from trade Unions and National Front</p> <p>Huge economic impact of Asian businessmen who revived the failing merchant economy throughout the 80s and a visible cultural impact seen on the Golden Mile and in the Mela and Diwali celebrations</p>

Key developments	
1905	Aliens Act
1914-1918	First World War
1931	Dr Harold Moody established the League of Coloured Peoples
1936	Battle of Cable Street, London
1939-45	Second World War
1948	British Nationality Act; migrants from the Caribbean arrived in Britain on the Empire Windrush
1963	Bristol Bus Boycott
1965	Race Relations Act
1972	Ugandan Asians arrived in Britain
1973	Britain joined the European Economic Community
1981	Race riots in several British cities British Nationality Act

Key words
<p>Schochetim - a Jew who has been especially trained to slaughter animals</p> <p>Colonies - a colony is a country ruled by a larger one</p> <p>Dominions - a country that self-governs within the British 'Commonwealth' of nations</p> <p>Evacuees - children forced to leave their home for safety during war</p> <p>Windrush Generation - the generation of Caribbean migrants who came to rebuild Britain 1948-73</p> <p>Economic migrant - people migrating for a better standard of living and employment</p> <p>United Nations - an international organisation that aims to maintain world peace</p> <p>Asylum - protection provided by a country to someone who has fled their own country</p> <p>Brexit - Britain leaving the EU</p> <p>Interned - to hold someone prisoner for political reasons</p> <p>British Union of Fascists - A British political party formed in 1932</p> <p>National Front - a far right political party based on anti-immigrant and fascist views</p> <p>British National Party - far right fascist party founded 1982</p> <p>Decolonisation - granting colonies their independence</p> <p>Colour bar - denying an ethnic minority access to rights based on their race</p> <p>Institutional racism - racism embedded in an institution or organisation that influences the way in which people work there</p>

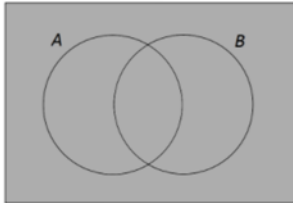
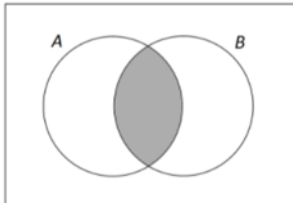
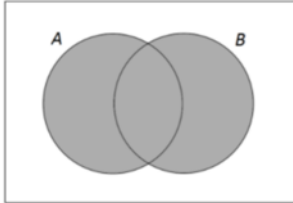
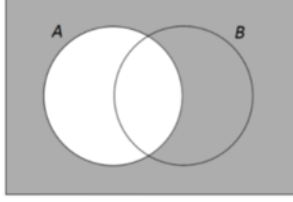
A: Algebraic notation

ab	$a \times b$
$3y$	$3 \times y$
a^2	$a \times a$
a^3	$a \times a \times a$
a^2b	$a \times a \times b$
$\frac{a}{b}$	$a \div b$
$t + t + t + t$	$4t$
$t^2 + t^2 + t^2$	$3t^2$

B: Probability

Probability	$\frac{\text{Number of successful outcomes}}{\text{Total number of possible outcomes}}$
$P(A)$	Probability of event A
$P(\text{not } A)$	$1 - P(A)$
Predicted number of outcomes	Probability \times number of trials
$P(A \text{ and } B)$	$P(A) \times P(B)$
$P(A \text{ or } B)$	$P(A) + P(B)$
Experimental probability	$\frac{\text{Frequency of event}}{\text{Total frequency}}$

**Maths Knowledge Organiser
Year 10 Cycle 1****C: Venn diagrams**

ξ	Universal set	
$A \cap B$	A intersect B A and B	
$A \cup B$	A union B A or B	
A'	Complement of A Not A	

D: Sequences

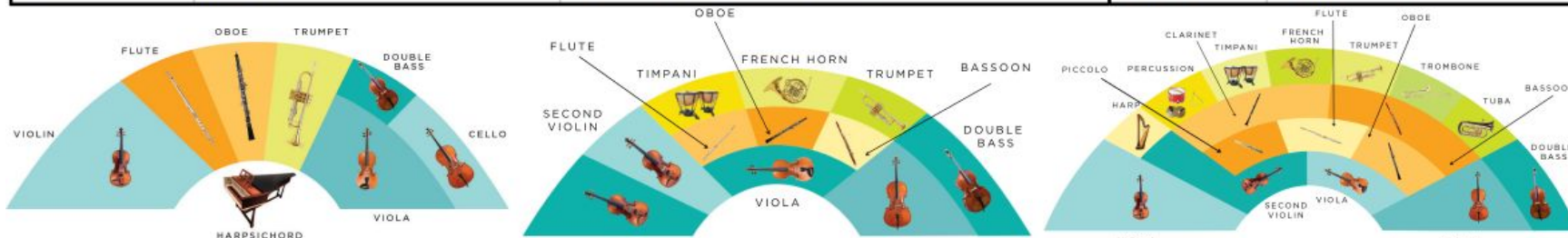
Square numbers	1, 4, 9, 16, 25, 36, 49, 64, 81, 100, 121, 144, 169, 196, 225...
Cube numbers	1, 8, 27, 64, 125, 216...
Triangular numbers	1, 3, 6, 10, 15, 21, 28, 36, 45, 55...
Fibonacci sequence	0, 1, 1, 2, 3, 5, 8, 13, 21, 34...

E: Percentages

Change a decimal to a percentage	$\times 100$
Change a percentage to a decimal	$\div 100$
Multiplier for increase of 15%	1. Add 15% to 100% 2. Divide by 100 (= 1.15)
Multiplier for decrease of 15%	1. Subtract 15% from 100% 2. Divide by 100 (= 0.85)
Percentage change	$\frac{\text{Actual Change}}{\text{Original Amount}} \times 100$
Compound growth and decay	Starting amount \times (multiplier) ⁿ where n is the number of years

AoS2: Concerto Through Time

What is a Concerto?		Key Terms	
1. Solo and Orchestra	Uses a solo instrument (solo concerto) OR a group of soloists (concerto grosso) with an orchestral	1. Acciaccatura	An ornament: a very quick, "crushed" grace note (before the main note)
2. Three Movements	1. Fast 2. Slow 3. Fast	2. Alberti Bass	A broken chord accompaniment figure, usually played in quavers
3. Virtuosity	The soloist shows off the capabilities of the instruments and or the solo performer	3. Appoggiatura	A slightly longer grace note
4. Metre	Common or Simple time most commonly used in concertos (4/4; 3/4; 6/8)	4. Cadenza	Orchestra stops whilst the soloist has a virtuosic solo section (sometimes improvised)
Baroque		Classical	
1600-1750	Corelli; Vivaldi; Bach	1750-1810	Mozart; Haydn; Beethoven
1. Small orchestra , consisting of strings and continuo section (bass line and chords)		1. Medium sized orchestra , with separate woodwind section including clarinets. No continuo	
2. Concerto Grosso very popular during this period		2. More likely to have horns and timpani used and contrasting dynamics with cresc and dim	
3. Diatonic harmony , mostly based on primary chords (I, IV, V)		3. Diatonic harmony still	
4. Heavy use of ornamentation		4. Use of equal length question and answer phrases , known as periodic phrasing	
5. Often uses contrapuntal texture and use of sequence a lot to develop melody		5. Melody and accompaniment main type of texture, with orchestra often playing homophonically	
6. Terraced dynamics due to the use of the harpsichord		6. Introduction of cadenzas at the end of the first movement in particular	
Romantic		Key Terms	
1810-1910	Brahms; Tchaikovsky; Mendelssohn	5. Chromatic Harmony	Harmony that uses complex chords, using notes that are not part of the scale (accidentals)
1. Large orchestra , more likely to include large brass and percussion sections		6. Concertino	The group of soloists in a concerto grosso
2. Brass instruments now have valves giving them a larger range		7. Concerto Grosso	A concerto with a group of soloists instead of just one
3. Solo concertos much longer , more virtuosic and cadenzas not longer improvised but written		8. Continuo	Continuous bass line, played by a bass instrument (cello) and a chord instrument (harpsichord)
4. More chromatic harmony , creating more dissonance , allowing more emotional/dramatic moods		9. Contrapuntal	Polyphonic. Lots of independent melodic lines playing together.
5. More contrasting dynamics, tonality and pitch used to create emotional/dramatic moods		10. Diatonic Harmony	Music in a major or minor key - often based around primary chords
6. Modulations to more distantly related keys.		11. Doubled	When the melody is played by another instrument
Changes to the Orchestra		12. Ground Bass	A short repetitive theme in the bass line whilst other parts vary over the top
Strings	Violin; Viola; Cello; Double Bass	13. Mordent	An ornament: changing quickly to the note above or below the main note.
Woodwind	Flute; Oboe; Bassoon	14. Ornament	Decorative notes, e.g.: acciaccaturas, appoggiaturas, trills etc
Brass	Trumpet; Horn (rarely used)	15. Ripieno	The orchestral backing in a concerto grosso
Percussion	Timpani	16. Rubato	Momentarily not keeping to strict tempo to allow a slight quicken/slow of expression
Other	Harpsichord	17. Sequence	When a melodic idea/motif is repeated higher or lower each time
		18. Terraced Dynamics	Either loud or soft. No crescendo or diminuendo
		19. Trill	An ornament: alternating quickly between two notes next to each other
		20. Tutti	A section of music where everybody plays
		21. Valves	On brass instruments they allow all notes to be played (as opposed to just the harmonic series)
		22. Virtuosic	Difficult to play/showing off

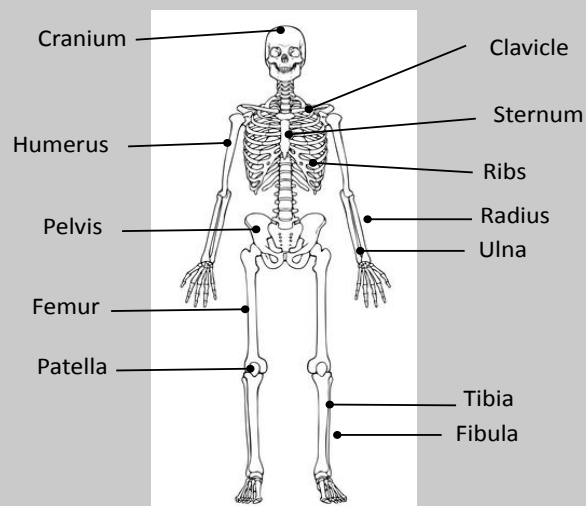


AoS3: Rhythms of the World

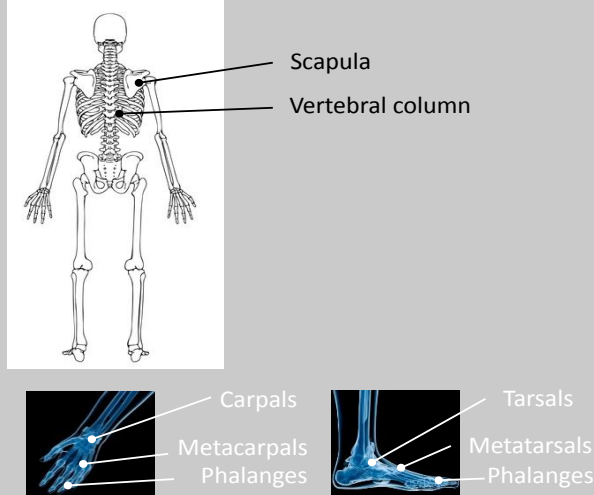
Indian Subcontinent					Key Terms	
Indian Classical					1. Accelerando	A gradual increase in tempo
1. It is highly improvised , with performers communicating with each other throughout the performance		2. Melodic lines are heavily ornamented using techniques such as pitch/note bend , runs and glissando		3. Famous performers include Ravi Shankar (sitar) and Alla Rakha (tabla)		
1. Raga	A set of pitches, similar to a scale, used as the basis of the improvised melody	5. Alap	The opening section - slow and only with the raga and drone instruments playing	9. Sarangli	A stringed, violin-like instrument played with a bow	
2. Drone	A repeated note or set of notes repeated throughout a piece	6. Gat	The main, middle section - a clear pulse is developed with the introduction of the tala	10. Bansuri	A wooden flute used in Indian Classical music	
3. Tala	A cycle of beats that repeat and are played by the tabla	7. Jhala	The fast climax of the piece	11. Sarod	A lute used in Indian Classical music	
4. Sitar	A stringed, guitar-like instrument. Its distinctive sound is due to a number of 'sympathetic strings'	8. Tanpura	A stringed instrument used to play the drone	12. Tabla	A pair of drums, with of a wide variety of sounds and pitches	
Bhangra	1. Vocal melodies have a small range , but are heavily ornamented using microtonal intervals	1. Dhol	Double-headed barrel drum, played with a strick	4. Synthesiser	An electronic keyboard instrument	
	2. Most modern bhangra follows a standard pop song structure , and contains shouts of 'Hol' on the off beats	2. Tumbi	A high-pitched, single-stringed instrument	5. Sampling	Taking an extract from one recording and using it in another	
	3. Famous performers include Punjabi MC	3. Chaal	The rhythm used in bhangra, played on the dhol and tumbi	6. Hamonium	A small keyboard instrument which requires pumping bellows to produce a sound similar to an accordion	
Mediterranean and Middle eastern					10. Polyrhythm	Many different rhythms played at the same time
Greek		Palestinian		Israeli		
1. Irregular time signatures (5/8, 7/8) are often used, but not always, with the use of irregular rhythms played using accented notes		1. Melodies are improvised around the maqam with lots of ornamentation . Vocals are highly melismatic		1. Israeli music tends to adopt more Western musical instruments , rather than Arabic, like Palestinian music		
2. Simple melodies with lots of ornamentation , often harmonised in thirds		2. Textures can be monophonic , however often heterophonic textures can be heard with multiple instruments playing and decorating melody lines at once		2. Melodies most often played on violin, clarinet or accordion with heavy ornamentation		
3. Major and minor chords used, with the tonic and dominant notes of the chord emphasised in the bass		1. Maqam	A set of pitches, similar to a scale, used as the basis of the improvised melody	3. Usually in 2/4 or 4/4, with a fast tempo for dancing, which has a gradual accelerando		
1. Bouzouki	A stringed instrument that is played using a plectrum, similar to a guitar.	2. Wazn	A rhythmic pattern of beats that repeat and are played by the tabla	4. Melody and accompaniment texture with chords played off-beat and bass playing every beat , often playing alternating tonic and dominant notes		
2. Defi	A Greek hand drum with bangles attached.	3. Oud	A pear-shaped stringed instrument played with a pick.	1. Hammer on	Sharply bringing a finger down on the fingerboard of a stringed instrument, causing a note to sound	
3. Doumbek	A goblet drum, similar to a djembe, but played with a lighter, faster touch.	4. Zither	Similar sounding to a harp, this string instrument is played on ones lap and plucked or strummed	2. Pull off	"Pulling" the finger off a string on a fingerboard of stringed instrument, causing a note to change in pitch	
Latin and South American					African Drumming	
Calypso		Samba			1. Learnt aurally African drumming relies on layers of ostinato which have a steady pulse	
1. Originally song often accompanied by one instrument with lyric that tell a story or commented on politics/society		1. In 2/4 or 4/4 it is highly polyrhythmic and uses call and response between the repinique player and the rest of the ensemble			2. Played for entertainment but also at special events such as weddings, births and funerals	
2. Famous calypso artists include Mighty Sparrow , but now calypso is more commonly associated with performance on steel pans		1. Agogo	A bell like instrument that can produce two pitches	7. Cowbell	1. Master Drummer The leader of the group in n African ensemble, often the most virtuosic of the group	
3. Simple harmony using the primary chords , often played in a major key		2. Apito	A whistle used in Samba	8. Culica	2. Agogo A bell like instrument that can produce two pitches	
4. Verse/chorus structure in 4/4 time with syncopated and dotted rhythms		3. Batacuda	African-influences Brazilian percussive style, played by an ensemble known as a bateria	9. Guiro	3. Dundun A large double headed drum played with a stick	
1. Tenor/ping ping	Highest pitch steel pans that play the melody	4. Clave rhythm	The rhythm used in Samba usually played on the claves	10. Repinique	4. Djembe A single headed, goblet drum that is played with the hands	
2. Altos/guitars/cellos	Steel pans that play the chords	5. Claves	An instrument consisting of two sticks beaten together	11. Surdo	5. Marimba A percussion instrument with wooden bars that are hit with mallets	
3. Bass	Low pitch steel pans that play the bass line of the music	6. Conga	Two tall drums of equal height but different diameters, which create different pitches	12. Timbale	6. Mbira A wooden board with metal tines on it that are plucked with thumbs	
					7. Shekere	A rattle made from a hollowed out gourd covered in beads
					8. Talking drum	A drum played with a hooked stick, and contains string that can be tightened and loosened to alter the pitch

The structure and functions of the skeletal system

Structure of the skeletal system



Structure of the skeletal system

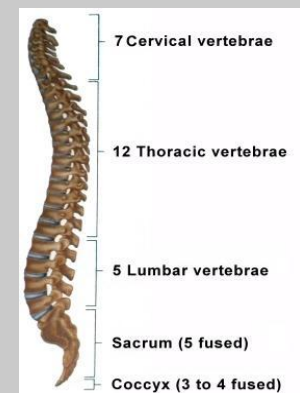


Vertebral Column

The vertebral column is divided into 5 sections. It is made up of irregularly shaped bones called vertebrae.

Each vertebra is protected with cartilage to prevent friction.

The vertebrae protects the spinal cord.



Function of the skeleton

- Protection of vital organs
- Muscle attachment
- Joints for movement
- Blood cell production (platelets, red and white)
- Storage of calcium and phosphorus

Classification of joint

- Pivot (neck – atlas and axis)
- Hinge (elbow and knee)
- Ball and socket (hip and shoulder)
- Condylod (wrist)



Connective tissue

Ligaments – attaches bone to bone to add joint stability.

Tendons – attaches muscles to bone and contributes to joint movement as a result of muscle contraction.

Classification of bones

Long (leverage)	Short (weight bearing)	Flat (protection + muscle attachment)	Irregular (protection and muscle attachment)
Clear shaft region to the bone. <i>i.e. femur, humerus & phalanges</i>	Light, small and very strong. <i>i.e. carpals, tarsals</i>	Broad surface area for muscle attachment. <i>i.e. cranium</i>	Assist the functioning of certain joints. <i>i.e. Patella/vertebrae</i>

Joint movements

Flexion	Adduction	Rotation	Dorsi-Flexion (ankle joint)
Decreasing the angle at a joint (bending)	Limbs moving towards the midline of the body.	A twisting/turning action around a joint.	When the toes are turned up to the body.
Extension	Abduction	Circumduction	Planter-Flexion (ankle joint)
Increasing the angle at a joint (straightening)	Limbs moving away from the midline of the body.	A combination of flexion, extension, adduction & abduction.	When the toes are pointed away from the body.

Mechanical	Force acts upon an object
Electrical	Electric current flow
Heat	Temperature difference between objects
Radiation	Electromagnetic waves or sound

Energy pathways

Change in thermal energy = mass X specific heat capacity X temperature change $\Delta E = m \times c \times \Delta \theta$

Specific Heat Capacity	Energy needed to raise 1kg of substance by 1°C	Depends on: mass of substance, what the substance is and energy put into the system.
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HIGHER: efficiency can be increased using machines.

Efficiency = $\frac{\text{Useful power output}}{\text{Total power input}}$

Efficiency = $\frac{\text{Useful output energy transfer}}{\text{Total input energy transfer}}$

Kinetic energy	Energy stored by a moving object	$\frac{1}{2} \times \text{mass} \times (\text{speed})^2$ $\frac{1}{2} mv^2$
Elastic Potential energy	Energy stored in a stretched spring, elastic band	$\frac{1}{2} \times \text{spring constant} \times (\text{extension})^2$ $\frac{1}{2} ke^2$ (Assuming the limit of proportionality has not been exceeded)
Gravitational Potential energy	Energy gained by an object raised above the ground	Mass X gravitational field strength X height mgh

System	An object or group of objects that interact together	EG: Kettle boiling water.
Energy stores	Kinetic, chemical, internal (thermal), gravitational potential, elastic potential, magnetic, electrostatic, nuclear	Energy is gained or lost from the object or device.
Ways to transfer energy	Light, sound, electricity, thermal, kinetic are ways to transfer from one store to another store of energy.	EG: electrical energy transfers chemical energy into thermal energy to heat water up.
Unit	Joules (J)	

Work	Doing work transfers energy from one store to another	By applying a force to move an object the energy store is changed.	Work done = Force X distance moved $W = Fs$
Power	The rate of energy transfer	1 Joule of energy per second = 1 watt of power	Power = energy transfer ÷ time $P = E \div t$ Power = work done ÷ time, $P = W \div t$

	Units
Specific Heat Capacity	Joules per Kilogram degree Celsius (J/Kg°C)
Temperature change	Degrees Celsius (°C)
Work done	Joules (J)
Force	Newton (N)
Distance moved	Metre (m)
Power	Watts (W)
Time	Seconds (s)

Useful energy	Energy transferred and used
Wasted energy	Dissipated energy, stored less usefully

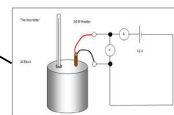
Prefix	Multiple	Standard form
Kilo	1000	10^3
Mega	1000 000	10^6
Giga	100 000 000	10^9

Energy stores and changes

AQA ENERGY – part 1

Closed system	No change in total energy in system
Open system	Energy can dissipate

Energy Conservation and Dissipation



Dissipate	To scatter in all directions or to use wastefully	When energy is 'wasted', it dissipates into the surroundings as internal (thermal) energy.
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Ways to reduce 'wasted' energy	Energy transferred usefully	Insulation, streamline design, lubrication of moving parts.
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Principle of conservation of energy	The amount of energy always stays the same.	Energy cannot be created or destroyed, only changed from one store to another.
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	Units
Energy (KE, EPE, GPE, thermal)	Joules (J)
Velocity	Metres per second (m/s)
Spring constant	Newton per metre (N/m)
Extension	Metres (m)
Mass	Kilogram (Kg)
Gravitational field strength	Newton per kilogram (N/Kg)
Height	Metres (m)

HIGHER: When an object is moved, energy is transferred by doing work.

Work done = Force X distance moved

Frictional forces cause energy to be transferred as thermal energy. This is wasted.

Reducing friction - using wheels, applying lubrication. Reducing air resistance - travelling slowly, streamlining.

better hope – brighter future

Using renewable energy will need to increase to meet demand.

Transport	Petrol, diesel, kerosene produced from oil	Used in cars, trains and planes.
Heating	Gas and electricity	Used in buildings.
Electricity	Most generated by fossil fuels	Used to power most devices.

Renewable energy makes up about 20% of energy consumption.

Fossil fuel reserves are running out.

Energy demand is increasing as population increases.

Power station – NB: You need to understand the principle behind generating electricity. An energy resource is burnt to make steam to drive a turbine which drives the generator.

Power station	Generates electricity	Fuel burnt releasing thermal energy	→	Water boils into steam	→	Steam turns turbine	→	Turbine turns generator	→	Generator induces voltage
National Grid	Transports electricity across UK	Power station	→	Step-up transformer	→	Pylons	→	Step-down transformer	→	House, factory

Non-renewable energy resource	These will run out. It is a finite reserve. It cannot be replenished.	e.g. Fossil fuels (coal, oil and gas) and nuclear fuels.
Renewable energy resource	These will never run out. It is an infinite reserve. It can be replenished.	e.g. Solar, Tides, Waves, Wind, Geothermal, Biomass, Hydroelectric

Using fuels

Energy resources

Global Energy Resources

AQA ENERGY – part 2

National Grid



Energy resource	How it works	Uses	Positive	Negative
Fossil Fuels (coal, oil and gas)	Burnt to release thermal energy used to turn water into steam to turn turbines	Generating electricity, heating and transport	Provides most of the UK energy. Large reserves. Cheap to extract. Used in transport, heating and making electricity. Easy to transport.	Non-renewable. Burning coal and oil releases sulfur dioxide. When mixed with rain makes acid rain. Acid rain damages building and kills plants. Burning fossil fuels releases carbon dioxide which contributes to global warming. Serious environmental damage if oil spilt.
Nuclear	Nuclear fission process	Generating electricity	No greenhouse gases produced. Lots of energy produced from small amounts of fuel.	Non-renewable. Dangers of radioactive materials being released into air or water. Nuclear sites need high levels of security. Start up costs and decommission costs very expensive. Toxic waste needs careful storing.
Biofuel	Plant matter burnt to release thermal energy	Transport and generating electricity	Renewable. As plants grow, they remove carbon dioxide. They are 'carbon neutral'.	Large areas of land needed to grow fuel crops. Habitats destroyed and food not grown. Emits carbon dioxide when burnt thus adding to greenhouse gases and global warming.
Tides	Every day tides rise and fall, so generation of electricity can be predicted	Generating electricity	Renewable. Predictable due to consistency of tides. No greenhouse gases produced.	Expensive to set up. A dam like structure is built across an estuary, altering habitats and causing problems for ships and boats.
Waves	Up and down motion turns turbines	Generating electricity	Renewable. No waste products.	Can be unreliable depends on wave output as large waves can stop the pistons working.
Hydroelectric	Falling water spins a turbine	Generating electricity	Renewable. No waste products.	Habitats destroyed when dam is built.
Wind	Movement causes turbine to spin which turns a generator	Generating electricity	Renewable. No waste products.	Unreliable – wind varies. Visual and noise pollution. Dangerous to migrating birds.
Solar	Directly heats objects in solar panels or sunlight captured in photovoltaic cells	Generating electricity and some heating	Renewable. No waste products.	Making and installing solar panels expensive. Unreliable due to light intensity.
Geothermal	Hot rocks under the ground heats water to produce steam to turn turbine	Generating electricity and heating	Renewable. Clean. No greenhouse gases produced.	Limited to a small number of countries. Geothermal power stations can cause earthquake tremors.

Christian Beliefs

Topic	Christian View	Importance	Impact on Christians Today
The Trinity	<ul style="list-style-type: none"> * The Trinity is the belief that God is three things in one, God the Father, Son and Holy Spirit 	<ul style="list-style-type: none"> * The Trinity is important as it shows the oneness of God – he is the Creator, Saviour and Guide * The Nicene Creed is a statement from the Church confirming the Trinity 	<ul style="list-style-type: none"> * Christians use the Trinity to guide their worship and belief – they can call on any part of God for help * They can be inspired by the loving relationship * Christians are baptised in the name of the Trinity
Creation	<ul style="list-style-type: none"> * Creationist Christians believe the world was created in 6 actual days by God * Liberal Christians believe God created the world by the Big Bang 	<ul style="list-style-type: none"> * Creation is important to Christians as they believe the Trinity was present - Jesus was the Word and the Holy Spirit was there to protect * Creation shows God's power/ love for humans 	<ul style="list-style-type: none"> * It is important that Christians today are stewards of the Earth and look after and protect God's creation * Christians also have a duty to have children and populate the Earth
The Incarnation	<ul style="list-style-type: none"> * Christians believe that Jesus Christ is the Son of God and came down to Earth in human form 	<ul style="list-style-type: none"> * Jesus came to this world to build a relationship with humans * It shows God loves the world and everyone in it 	<ul style="list-style-type: none"> * Christians believe that Jesus understands humans and our problems – he can sympathise with us and understand our suffering
The Last Days of Jesus Life	<ul style="list-style-type: none"> * Key events include, The Last Supper, Betrayal, Arrest, Trial, Crucifixion, Resurrection and Ascension 	<ul style="list-style-type: none"> * They teach of Jesus's last actions and of God's power and plan for humanity * They also show Jesus as a role model for others 	<ul style="list-style-type: none"> * Christians follow Jesus's examples in life and death – he taught them how to have a relationship with God through love and worship
Salvation	<ul style="list-style-type: none"> * Salvation is the belief that Jesus died for our sins. * Atonement means that Jesus restored the relationship between humans and God 	<ul style="list-style-type: none"> * It means everything Jesus taught is true * Humans sins are forgiven – people can have a true relationship with God * It shows there is an afterlife - heaven 	<ul style="list-style-type: none"> * Christians believe that Jesus's death allows them to have eternal life – but they must also live a good life * Christians have a duty to follow Jesus's example and live a good life to get into heaven
Eschatology	<ul style="list-style-type: none"> * Christians believe that when they die they will be judged by God and go to heaven or hell * Catholics also believe in purgatory 	<ul style="list-style-type: none"> * Jesus said that those who believe in him will have eternal life * It is a reward for faithful people * It offers hope for the future 	<ul style="list-style-type: none"> * Christians will try and live a good life to be rewarded by God in the afterlife * They will be comforted to know that if they are suffering there is a better place with God
The Problem of Evil	<ul style="list-style-type: none"> * There are two types of evil, moral and natural – evil existing in the world challenges God's existence 	<ul style="list-style-type: none"> * If God is all loving and powerful how can he allow evil things to happen? * This can challenge Christians beliefs 	<ul style="list-style-type: none"> * If God exists but isn't all powerful and loving – should Christians really worship him? * If he isn't all loving – should they still worship him? * If he isn't all powerful – should they still worship him?
Solutions to the Problem of Evil	<ul style="list-style-type: none"> * There are three Christian responses to evil: Biblical Solutions, Theoretical Solutions and Practical Responses 	<ul style="list-style-type: none"> * Biblical responses to look the Bible for solutions such as The Fall of Man and the story of Job * Theoretical responses look at how we can resolve the problem through Free Will * Practical responses are things we can do today 	<ul style="list-style-type: none"> * The Biblical and Theoretical solutions would restore a Christians faith * They may take part in Practical responses such as praying, raising money for charity or taking part in intercession groups

Christian Beliefs

Key Quotes	Linked Topics
<i>'I baptise you in the name of the Father, Son and Holy Spirit'</i>	Trinity
<i>'In the beginning was the Word'</i>	Trinity / Creation / Incarnation
<i>'All things have been created through him and for him. He is before all things, and in him all things hold together'</i>	Trinity / Creation
<i>'The Word became flesh and made his dwelling among us'</i>	Trinity/ Incarnation
<i>'Christ died for our sins according to the scriptures, that he was buried, that he was raised'</i>	Jesus's Last Days
<i>'He was taken up before their very eyes'</i>	Jesus's Last Day / Salvation
<i>'I am the way and the truth and the life. No one comes to the Father except through me.'</i>	Salvation / Eschatology
<i>'Whoever believes in him shall not perish but have eternal life'</i>	Salvation / Eschatology
<i>'My comfort in my suffering is this: Your promise preserves my life'</i>	Salvation / Eschatology / Evil & Suffering
<i>'The fear of the Lord – that is wisdom, and to shun evil is understanding'</i>	Evil & Suffering

Key Words	Meaning	Key Words	Meaning
Atonement	Restoring the relationship between God and humans	Trinity	The belief that God is made of 3 parts, the Father, The Son and The Holy Spirit
Eschatology	Christian teachings of life after death	Nicene Creed	The statement released by the Church that confirms the Trinity
Purgatory	The Catholic belief that there is a place in-between heaven and hell	Holy Spirit	The part of God that exits in the world as a guide to humanity
Immortal Soul	The view that the soul lives on after death and never dies	Omnipotent	God is all powerful
Day of Judgement	A time when God assesses a person's life and actions	Omnibenevolent	God is all loving
Moral Evil	Evil caused by humans	Omniscient	God is all seeing and all knowing
Natural Evil	Evil caused by nature	Eternal	God if forever – there is not beginning or end to him
Inconsistent Triad	The argument that God cannot be all loving and all powerful if evil exists in the world	Creationism	The belief that the Bible is 100% FACT and the world was created in 7 actual days
Intercession	When Christians gather to pray for those suffering	Liberal Christian	Is more open in their views. The Bible is a story to help guide us not fact
Vale of Soul Making	Humans have a choice in life to overcome evil and make good choices	The Word	Means Jesus
Omnipresent	God is always there	Free Will	Given by God - we can make our own choices and decisions in life
The Fall of Man	When Adam and Eve were banished from the Garden of Eden	Stewardship	Looking after the world so it can be passed onto the next generation
Original Sin	The idea that the first sin was committed by Eve which let evil into the world	Incarnation	When Jesus became flesh again - human
Repentance	Being sorry for your sins	Immanuel	'God with us'
		Crucifixion	When Jesus was nailed to the cross and left to die
		Ascension	When Jesus was take up to heaven
		Resurrection	Rising from the dead – God recreates a new body in heaven
		Salvation	When Jesus dies to save us from sin

Muslim Beliefs

Topic	Muslim View	Importance	Impact on Muslims Today
Muslim Beliefs	<ul style="list-style-type: none"> There are many schools of Islam who believe in the same beliefs and practices. Some differ – e.g. Sunni and Shi'a. 	Muslim beliefs are influenced by the following: Allah, Holy books (e.g. Qur'an and Hadith), Angels, Prophets (e.g. Prophet Muhammad - ProMo) Shariah law, The Ummah, 5 pillars.	
The Six Beliefs	<ul style="list-style-type: none"> 6 beliefs are the main beliefs of Sunni Muslims: Tawhid, Malaikah, Akhirah, Holy books, al-Qadr, Nubuwwah (prophethood) Shi'a Muslims accept some in their 5 roots. 	<ul style="list-style-type: none"> The 6 beliefs unite all Sunni Muslims They help Sunni Muslims understand Islam better. They support Sunni Muslims in how they should live their lives The 6 beliefs support what beliefs they should have. 	<ul style="list-style-type: none"> Muslims will recite the Tawhid in their prayers each day. They read the Qur'an and look to it for advice. Muslims live their lives knowing that Allah will judge them on their actions in their life.
The Five Roots of Usul as'Din	<ul style="list-style-type: none"> 5 roots are main beliefs of Shi'a Muslims: Tawhid, Adl (Allah's justice), Nubuwwah, Imamah (successors of Muhammad), Mi'ad – Judgement and resurrection. 	<ul style="list-style-type: none"> These unite Shi'a Muslims as they are the key beliefs. The 5 roots help Shi'as understand Islam better 	<ul style="list-style-type: none"> Shi'a Muslims will try to be aware of these beliefs so that they can become better Muslims and understand Allah and His teachings.
The Nature of Allah	<ul style="list-style-type: none"> Islam is a monotheistic religion – One God. Allah is understood by reading the Qur'an 8 characteristics: Tawhid (one), Immanence (Closeness), Transcendence (beyond understanding), Omnipotence (Powerful), Beneficence (loving), Mercy, Fairness and justice, Adalat (just) 	<p>Muslims feel that the characteristics of Allah help:</p> <ul style="list-style-type: none"> Understand him better and follow his teachings. Strengthen their relationship with Allah. Encourage Muslims to strive to be better. 	<ul style="list-style-type: none"> Allah is hard to understand because He is God, but the 99 names given to him help Muslims reflect on the roles he has and how this influences their lives. They will follow the way He wants them to live their lives.
Risalah	<ul style="list-style-type: none"> Risalah is the belief in messengers of Allah: Prophets. These include: Adam, Ibrahim, Isma'il, Musa, Dawud, Isa, Muhammad 	<ul style="list-style-type: none"> Prophets have been acting for Allah for 1000s of years. Muslims believe there are nearly 124,000 prophet but only 25 are mentioned in the Qur'an (these are Rasuls) 	<ul style="list-style-type: none"> Muslims follow the teachings of prophets when they read the Qur'an or learn about their history. Some important occasions involved prophets (Night of Power) and these are commemorated by Muslims today.
Holy Books	<ul style="list-style-type: none"> Muslims recognise 5 holy books (Kutub), although the Qur'an is the most important for Muslims, some Judeo-Christian books hold importance. Kutub – Qur'an, Sahifah - Scrolls, Injil - Gospel, Zabur - Psalms and Tawrat - Torah 	<ul style="list-style-type: none"> The Qur'an was believed to have been revealed by Allah to Muhammad over 23 years. The Qur'an (meaning 'recitation') is written in Arabic as it was when Muhammad heard it The Qur'an is split into Surahs (chapters) and is used for prayer and guidance. 	
Malaikah	<ul style="list-style-type: none"> Angels of Allah are messengers for God. They do not have free will or physical bodies but can take on human form when needed. 	Jibril – Revealed the message of the Qur'an to ProMo Izra'il – Angel of death – reminding Muslims of judgement Mika'il – Angel of Mercy and sustenance – rewards those who live good lives	<ul style="list-style-type: none"> Jibril – Muslims focus on the teachings of the Qur'an Izra'il – They live their life with judgement in mind. Mika'il – Muslims see it is possible to be rewarded after death
Al-Qadr	<ul style="list-style-type: none"> Al Qadr or predestination is important as it is the concept of fate or destiny – Muslims think that Allah can know and control everything. Accepted as one of 6 beliefs by Sunnis but not fully accepted by Shi'a Muslims. 	<p>Muslims focus their ideas of al Qadr on the day of judgement.</p> <ul style="list-style-type: none"> Once this day comes there is nothing more they can do. Everything is the will of Allah. Reacting the right way to this will mean a reward of judgement day. People are responsible for their own sins. 	<ul style="list-style-type: none"> Muslims want to live good lives to ensure reward in the afterlife They are constantly aware of their thoughts and actions in line with Allah and their obligations. They try to help others as it suggests in teachings.
Akhirah	<ul style="list-style-type: none"> Akhirah is life after death and is one of the most important beliefs in Islam. Death <input type="checkbox"/> Barzakh <input type="checkbox"/> Judgement <input type="checkbox"/> Al Jannah or Jahannam 	<ul style="list-style-type: none"> Muslims believe in the resurrection of all bodies for judgement. Barzakh is the stage between death and judgement. Two angels inspect the record of a person's life at judgement. Al Jannah is paradise and Jahannam is Hell. 	<ul style="list-style-type: none"> Muslims are aware that Allah is always watching. They will remember to ask for forgiveness from sin. Every action they perform is a way of worshipping God They try to be good Muslims.

Muslim Beliefs

Similarities and differences between Christian and Muslim views on Life after death	Similarities	Differences
	<ul style="list-style-type: none"> Life is a test Places of eternal reward and eternal punishment Resurrection 	<ul style="list-style-type: none"> Christians accept the sacrifice of Jesus to forgive the sins of humans. Muslims believe only the sinner can ask for forgiveness. Purgatory is not the same as Barzakh. Christians don't think angels record deeds of a person.

Key Quotes	Linked Topics
<i>'Believe in Allah, and His angels, and His books, and His messengers, and in the Last Day, and in the decree of Allah'</i> Hadith	Six beliefs (you can use any part of this quote)
<i>'He is God the One, God is eternal. He begot no one nor was He begotten. No one is comparable to Him'</i> Surah 112	5 roots, Tawhid
<i>'Every community has been sent a warner (prophet).'</i> Surah 35	Risalah
<i>The Qur'an is nothing less than a revelation that is sent to him (Muhammad).</i> Surah 53	Holy books
<i>'Take the straight path towards Him, the angels come down to them'</i> Surah 41	Malaikah
<i>'He has subjected the sun and the moon each to purpose its course for an appointed time; He regulates all things.'</i> Surah 13	Al Qadr
<i>'...every human being is free to choose between good and evil. However, in relation to religion, there are some spheres of destiny which are predetermined and unchangeable.'</i> Muslim Scholar, Mirza Tahir Ahmad	Human freedom and al-Qadr
<i>'Then they will say, "who will bring us back?" Say, "The One who created you the first time."'</i> Surah 17	Akhirah
<i>'The fire will scorch their faces and their lips will be twisted in pain.'</i> Surah 23	Judgement, Hell (Jahannam)

Key Word	Meaning	Key Words	Meaning
Akhirah	Life after death – when the Day of Judgement takes place	Allah	The Arabic name for God
Al-Qadr	Predestination – the belief that Allah has fixed some things in the universe that can't be changed	Hadith	Sayings of the Prophet Mohammed
Barzakh	Stage between death and the time of judgement	Qur'an	The Holy book of Islam
Resurrection	The belief that humans will be raised again in the next life	Shia Muslim	Muslims who believe that leaders should be related to the Prophet Mohammed
Khalifah	A religious leader representing Allah or a Prophet	Sunni Muslim	Muslims who believe that leaders don't have to be related to Mohammed – just good leaders
Surah	A chapter of the Qur'an	Tawhid	The belief in one God - Allah
The Six Beliefs	The six most important beliefs in Islam	Usul ad'Din	The Five Roots of Islam
Kutub	The Holy Books of Islam	Omnipotent	Allah is all powerful
Jannah	Paradise (Heaven)	Risalah	Communication through the Prophets
Jahannam	Hell	Prophet	A messenger chosen to pass on messages from Allah
Jibril	Angel: Communicates with the Prophets	Mohammed	The most important Prophet in Islam
Izra'il	Angel: The angel of death – takes souls to Allah	Revelation	Communication from Allah often through angels
Mika'il	Angel: Ensures life on Earth is maintained	Malaikah	Arabic name for Angels

Key introductory terms	
Sociology	The study of society. Sociologists look at a range of factors in someone's social world.
Society	A social grouping that shares the same geographical territory and has the same political authority and expectations.
Culture	The whole way of life of a group of people in society e.g. clothes, food, music.
Norms	These define appropriate and expected behaviour in different certain settings e.g. classroom, cinema, restaurant.
Values	Ideas and beliefs that people have about what is desirable and worth striving for e.g. privacy & respect
Socialisation	Learning the norms and values of your culture and society.
Primary socialisation	This takes place in early childhood and is where we learn basic behaviours and skills we need. Family are responsible.
Secondary socialisation	This takes place in later childhood and beyond, learn norms, values and culture. Agencies include education and media.
Nature	The idea that behaviour and characteristics are innate (we are born with them) and due to biology.
Nurture	The idea that behaviour and characteristics are learnt from our environment (sociologists believe this)
Social structures	These form society's framework and set limits and guide behaviour e.g. family, class.
Social processes	The ways that humans are affected by their interactions with others in society e.g. racism.
Social issues	These form society's framework and set limits and guide behaviour e.g. family, class.
Status	A person's social standing or position in society. This can be affected by gender, age, class etc.

Functionalist approach

Key sociologist: Durkheim

- * Society is positive and is in harmony
 - * There is value consensus – everyone agrees on what is important
 - * Society is like a human body, we need all parts of it to be able to function
 - * Agencies such as family, education and crime all help to keep society running smoothly and these are positive
 - * No group in society has more power than another group
- But... Functionalists are accused of viewing society too positively.

Marxist approach

Key sociologist: Karl Marx

- * Society is negative and is based on conflict
- * Capitalism creates a divide between two social classes
- * The ruling class (bourgeoisie) own the businesses and exploit the working class (proletariat) for profit
- * Family, education, crime etc. all work to keep the class divide and benefit the ruling class
- * The working class do not realise they are being exploited
- * The only way to overcome this inequality is a revolution (and society becoming communist)

Feminist approach

- * Society is negative and is based on conflict
- * Society is divided by gender and is based on patriarchy (male domination and power)
- * Men have power and dominance in society and women are oppressed
- * Family, education, crime etc. all work to keep the gender divide and exploit women
- * For example, women may be victims of domestic abuse and may be taught gender roles that limit their opportunities in society

Weber's approach

- * People's ideas, values and skills have more of an influence on their position in society than class and money
- * Status (someone's social position) is not always linked to their class/money
- * E.g. some people have high status but do not have a lot of money (junior doctors) whereas some people may have low status but lots of money (lottery winners)

Interactionist approach

- * Society does not influence everyone in the same way
- * Everyone's experiences are different, you can't generalise about behaviour
- * People can be labelled as something (e.g. clever, naughty) which can affect how they see themselves
- * People might accept and live up to the label through a self-fulfilling prophecy

New Right approach

- * Society should be based on traditional values such as marriage
- * People should not be reliant on welfare benefits as this can create an underclass
- * Nuclear families are the best type (with a married mum and dad) and lone-parent families can cause issues

Consensus vs. conflict theories

Consensus theories

- * These theories believe society is based on consensus (agreement) and is in harmony
- * Everyone shares the same norms and values and no one group has more power than another
- * E.g. functionalism

Conflict theories

- * These theories believe society is based on conflict (disagreement) and is divided
- * People in society have different norms/beliefs/values
- * Some groups have more power than others
- * E.g. feminism, Marxism

Sociology - KS4 Knowledge Organiser

Key methods terms

Aim	A general statement about what a sociologist expects to find out in research
Hypothesis	A prediction about what the sociologist expects they will find in research
Pilot study	A small test-run of a study which is carried out before the main study to check for any problems (e.g. equipment)
Sampling	How participants are chosen to take part in a study (e.g. volunteer, opportunity)
Primary data	Data which is collected first hand by the researchers (e.g. using a questionnaire or interview)
Secondary data	Data that already exists and is used by the researcher (e.g. official statistics, letters)
Quantitative data	Data which IS in the form of numbers
Qualitative data	Data which is NOT in the form of numbers and tends to be visual or in letters (e.g. diaries, photographs)
Validity	The accuracy of the findings – how truthful the data is.
Reliability	How consistent the findings are. If we repeated the study, would we find the same results?

Sampling methods

Random – all participants have an equal chance of being chosen (e.g. names out of hat)
 ✓ Less biased and likely to be more representative
 ✗ May not be fully representative – could choose all males
Volunteer – participants choose/self-select to take part (e.g. responding to an advert)
 ✓ Easy to gain a sample, less likely to drop out
 ✗ May not be representative – only certain people will agree
Opportunity – participants who are available are chosen
 ✓ Easy to gain a sample ✗ may not be representative
Stratified – participants chosen according to % in the population
 ✓ Most representative ✗ difficult for the researcher to do

Primary research methods

Method	Advantages	Disadvantages
Questionnaires	✓ Participants are likely to be honest as anonymous ✓ Can be given to a large sample so more representative	✗ Participants may not understand the questions ✗ May not be honest as want to appear desirable
Structured interviews (set questions)	✓ Can compare responses easily between participants ✓ Less likely to be biased as set questions	✗ May not get full detail or gain a deep understanding ✗ Cannot ask additional questions
Unstructured interviews (no set questions)	✓ Can get full detail and a deep understanding ✓ You can build rapport/relationship so may be more honest	✗ May not get full detail or gain a deep understanding ✗ Cannot ask additional questions
Group interviews	✓ Can gain a variety of opinions ✓ May be more honest as have group support	✗ Some participants might take over the interview ✗ Participants might be embarrassed to be honest
Participant observation (researcher joins group)	✓ May understand behaviour more as joining in ✓ Can ask questions to help with research	✗ Could be biased as too involved ✗ Difficult to note behaviour so may not be accurate
Non-participant observation (watches from a distance)	✓ Less likely to be biased as not involved ✓ Easier to note behaviour so more likely to be accurate	✗ May not get full understanding of behaviour as not involved in the group
Longitudinal study (follows a group over time)	✓ Can look at the influence of different factors over time ✓ Can gain detailed information of the group you study	✗ Participants may drop out of the study ✗ Sample is likely to be small so not representative

Secondary sources of data

Method	Advantages	Disadvantages
Official statistics (quantitative)	✓ Often large sample sizes – more representative ✓ Easy to analyse and compare over time as quantitative ✓ Likely to be accurate as collected by the government	✗ May not give reasons for behaviour (just trends) ✗ May not include all behaviours e.g. crime statistics may ignore the dark figure
Documents (qualitative) e.g. letters, diaries, school reports	✓ Lots of detailed data as qualitative ✓ Can find reasons behind behaviour	✗ May be small sample sizes and not representative ✗ May be time-consuming to analyse ✗ Could be biased and not valid

Triangulation and mixed methods

Where a sociologist uses more than one method to find out lots of information about a topic e.g. using a questionnaire, interview and observation. Is used to:
 Gain more data on a topic
 Check the validity/accuracy of the data
 ✗ But, the data may be difficult compare as it is collected using different methods.

Sociology - KS4 Knowledge Organiser

Paper 1 Families

Key terms

Breadwinner - The person in the family who earns the money, usually the male.

Cereal packet family - The 'ideal' nuclear family shown in the media and advertising.

Cohabitation - When two partners live together in a relationship without being married.

Commune - Self-contained and self-supporting communities where childcare, property etc. are shared.

Conjugal roles - The domestic roles of married partners-who does what in the home.

Domestic division of labour - The division of tasks such as housework and childcare in the family.

Double shift - When women are in full time employment and be responsible for household tasks.

Expressive role - Traditionally a woman's role in the family according to Parsons, where they look after the emotional needs of the family.

Extended family - A family which contains members beyond the nuclear

Family diversity - This means there are a range of families in society today e.g. lone-parent, reconstituted, same-sex.

Household - One or more people who live at the same address but may not related e.g. university students.

Instrumental role - Traditionally the male's role within the family to be the breadwinner and provide financially for the family.

Lone-parent family - A family of one parent and their dependent children Usually headed by the mother.

Neo-conventional family - A typical nuclear family but where both parents go to work.

Nuclear family - A family of one man and one woman with their dependent children. Patriarchy - Male power and dominance over women.

Reconstituted family - A family of one man and one woman with children from previous relationships.

Secularisation - A decline in religious belief and activity.

Stratified diffusion - How the roles adopted by those at the top of the social hierarchy (richer families) filters down to the rest of society.

Symmetrical family - Families which are equal on both sides where partners have joint roles

Sociological views of families

Functionalist	<p>The family is a key social structure as it performs several essential functions for individuals and society. Murdock argue it performs four vital functions:</p> <ol style="list-style-type: none"> 1. Sexual Function: regulates sexual behaviour that is approved by society, prevents breakdown and maintains stability 2. Reproductive function: creates the next generation to fill roles needed 3. Economic function: providing shelter, food & clothes, economic cooperation 4. Socialisation function: provides primary socialisation and learning of shared norms and values <p>Parsons – the family performs two important functions today</p> <ol style="list-style-type: none"> 1. Primary socialisation 2. Stabilisation of adult personalities (warm bath theory) <p>× Functionalists ignore the dark side of the family and the impact of diversity</p>
Marxist	<p>The family helps to maintain the class divide and benefits capitalism. This happens in three main ways:</p> <ol style="list-style-type: none"> 1. Inheritance: money and wealth is passed down in richer families through inheritance and is not shared with the working classes 2. Consumerism – families are targeted as consumers who buy products, children use 'pester power', profits go to the ruling class 3. Socialisation – children learn to accept hierarchy and that someone is in charge meaning they accept it in the workplace and don't revolt <p>Zaretsky – The family provides an 'illusion' that society is fair and this maintains capitalism as it prevents a revolution</p> <p>× Marxists ignore positive functions and that not all families benefit capitalism</p>
Feminist	<p>The family helps to maintain the gender divide and promotes patriarchy in society (male dominance and power). This happens through:</p> <ol style="list-style-type: none"> 1. Men acting as the breadwinner in the family (they usually earn more) so have more control and power 2. Women often have a double shift or triple shift and take on the majority of unpaid housework 3. Domestic abuse from men in the family 4. Gender socialisation in families teaching stereotypical roles for boys and girls <p>× Feminists ignore that some women may enjoy/choose the housewife role and that positive changes have been made</p>
New Right	<p>Nuclear families are the ideal family type and are the best for members and society because:</p> <ul style="list-style-type: none"> • They promote traditional values such as marriage • Children grow up with two role models (for better socialisation) • They are more likely to be financially stable and less likely to be reliant on benefits (and become part of the underclass) <p>They see lone-parent and same-sex families as causing problems for society</p>

Family diversity

	Increase or decrease	Reasons why
Nuclear	↓	Secularisation Increase in divorce Changing position of women
Reconstituted	↑	Increase in divorce Changing attitudes Greater individualism
Lone parent	↑	Increase in divorce Changing position of women Changing attitudes
Same sex	↑	Changing laws (gay marriage is legalised) Changing attitudes
Beanpole	↑	Increase in life expectancy Decrease in the birth rate
Neo-conventional	↑	Changes in law (equal pay) Changing attitudes Changing position of women
Cohabiting couple	↑	Changing attitudes Changing position of women Increase in divorce
One person household	↑	Increase in divorce Longer life expectancy Greater individualism

Alternatives to families

Living alone (increasing among younger and older individuals)

Living in a commune (shared property, resources, childcare etc.

An example: Living in a kibbutz

Sociology - KS4 Knowledge Organiser

Key studies
Rapoport and Rapoport (functionalist) Families are changing, there is increasing diversity Five different aspects of family diversity: organisational (eg internal divisions of domestic labour), cultural (beliefs and values), class (eg how the family's position in the social class system affects the availability of resources), life course (stage in the family life cycle) and cohort (historical period).
Parsons (functionalist) Family has two basic functions which are common to all families in all societies: primary socialisation of children and the stabilisation of adult personalities e.g. to give and receive emotional support
Young and Willmott (functionalist) Large scale social survey (over 2,000 respondents in Greater London and surrounding areas) Families are more symmetrical with both husband and wife make similar contributions to the running of the household eg shared chores and decisions. More common in working class families. Stage 4 is the 'managing director family'. This is work centred and the wife is responsible for home and children – more common in middle class families
Zaretsky (Marxist) The family also helps to maintain capitalism in society. He thinks that the family helps to provide an 'illusion' that society is fair and provides a safe haven away from exploitation at work. Women become responsible for personal relationships within the family. This cushions them from capitalism.
Delphy and Leonard (Feminist) Men benefit the most from the exploitation of women's labour. They believe that the family has a central role in maintaining patriarchy. Women are oppressed because even when wives have paid employment outside the home they still have to carry out household tasks which are not equally shared
Oakley (Feminist) Segregated conjugal roles adopted by men and women are part of the conventional family also known as the 'cereal' packet family. This contains married parents and at least one child, the father is the breadwinner and the mother stays at home to look after the house and children. This type of family may actually exploit women and support patriarchy.
Criticisms of families: isolation, loss of functions, lack of contact, dysfunctions, patriarchy

Changing patterns of marriage		
Trends	Reasons	Impacts
First time marriages are decreasing	Secularisation / changing attitudes Changing position of women Increasing cost of marriage	Less married nuclear families More cohabitating couples
Remarriages are increasing	Secularisation / changing attitudes Increase in divorce / changes to divorce laws	More reconstituted families Serial monogamy
Age of first time marriage is increasing	Changing position of women Increasing cost of marriage Changing attitudes	More couples cohabit before marriage
Increase in same-sex marriages	Changing attitudes Changes in law	
Is marriage still important?		
Yes Remarriages are increasing Same sex marriages are increasing Married persons tax allowance was introduced (policies encourage marriage) People still aspire to be married		No First time marriages are decreasing Cohabitation is more acceptable Divorce is increasing (suggesting marriage isn't valued) Some couples choose a civil partnership
Changing patterns of divorce		
Trends in divorce	42% of marriages end in divorce The divorce rate has increased compared to 30 years ago The divorce rate has declined slightly over the past 10 years but is still high	
Reasons for increases in divorce	Changes in law – Divorce reform act (1969) widened the grounds for divorce (to include irretrievable breakdown), waiting time for a divorce decreased from 3-1 years Changing attitudes – More acceptable to divorce Changing position of women – greater financial independence	
Sociological views of divorce	Functionalist – divorce can lead to fewer dysfunctional families and greater harmony. Divorce creates jobs to help the economy. Divorce shows people have higher expectations of marriage. Marxist – divorce is more common in working class families due to stress/inequality caused by capitalism, Feminist – divorce can be positive to allow women to escape patriarchal relationships.	

Changing relationships	
Families over time Pre-industrial: Extended families, worked as a productive unit, families performed most functions Industrial: Nuclear families, male took on breadwinner role, government took over functions from families Contemporary: Family diversity, diversity of roles, smaller families	
Gender roles Wilmott and Young: Families are more symmetrical with shared contributions and equal roles. Reasons for symmetrical families: changing attitudes, commercialisation of housework. Stratified diffusion: roles filter from middle to working class (will become less equal)	
Are gender roles more equal?	
Yes Symmetrical families – joint conjugal roles The New Man Women take part in decision making	No Double shift/triple shift The New Man is myth – women still responsible (men cherry pick) for housework/childcare Men still make the most important decisions ¼ women are victims of domestic abuse (evidence of patriarchy)
Parents and children Relationships in the past: Parents had authority, strict discipline, children ‘seen and not heard’ Relationships today: Parents show less discipline, children have more freedom, families are more child-centered Reasons for changes: women are having less children (families are more child-centered), greater emphasis on children’s rights, families more likely to be dual worker Toxic childhood: children poisoned by junk culture of media and food, leading to poor behaviour and development	
Extended families In pre-industrial era, extended families were important Extended families may be less important today due to: seeing less of each other (living far away), may only see for special occasions Extended families may still be important today due to: Grandparents helping with childcare, better technology to keep in contact, still common in some cultures	

Sociology - KS4 Knowledge Organiser

Key terms

Comprehensive school - A type of school introduced in 1965 where all students are educated together regardless of ability.

Correspondence principle - schools reflect the workplace and through learning routine and obedience, children are prepared to be exploited in capitalist life.

Cultural capital - The skills and knowledge middle class parents have that they can use to give their children an advantage in the education system.

Deschooling - An alternative form of education proposed by Illich where formal schools are replaced by other methods of education such as home schooling.

Ethnocentric curriculum - A curriculum (things that are taught) that focuses on a particular ethnicity

Formal curriculum - The subjects and topics that are directly taught in schools

Further education - Education after compulsory level
Gendered curriculum - How stereotypes and expectations about gender are promoted through both the formal and hidden curriculum.

Hidden curriculum - Things that are indirectly learnt in school (in and outside on lessons) e.g. competition.

Labelling - Attaching a name or trait to a person or group e.g. smart. This is often based on a stereotype

Marketisation - 1988 act and aimed to bring competition and choice into education

Material deprivation - When students lack the money and the things that money can buy to succeed

Meritocracy - The functionalist view that all students have an equal chance in education and success is based on ability and effort

Selective schools - Where students are selected for a school based on certain criteria such as academic ability or religion

Social capital - The networks of relationships/contacts that middle class parents have to help pupils succeed

Social cohesion - When individuals in society are brought together and share the same norms and values.

Social mobility - Movement up the social ladder (e.g. working class to middle class)

Vocationalism - Education focused on more practical or technical skills aimed at a certain job or career

Sociological views of Education

Functionalist	Education is positive as it prepares individuals for work and creates a stable society All pupils have an equal chance to succeed as education is based on meritocracy Durkheim - Education transmits shared norms and values, promoting social cohesion. Schools act like a 'mini society' encouraging cooperation. Parsons - Education acts as a 'bridge' between family and society, children are judged by 'universalistic standards' and have an equal chance to succeed. X Education may not benefit all students equally (due to class, gender)
Marxist	Education is negative as it helps to maintain the class divide and benefits the middle classes who have a better chance of succeeding. Education prepares working class pupils for low paid jobs and to accept capitalism. Bowles and Gintis - 'correspondence principle' - school corresponds to (reflects) the workplace through teaching obedience, accepting boredom and to be motivated by external rewards (qualifications or pay) X Could be outdated as pupils are prepared for a range of jobs today
Feminist	Education is negative as it helps to maintain the gender divide and transmits patriarchal values and ideas. Females learn to adopt the stereotypical 'expressive'/housewife role in society through gender stereotypes shown in textbooks, the majority of headteachers being male and being encouraged to take 'softer' subjects which could lead to lower paid jobs than males. X Could be outdated as girls are encouraged to take 'STEM' subjects and more females are becoming headteachers.

What is taught in schools

Formal/official curriculum - Things that are directly taught in schools (e.g. English/maths) and this is mainly through the National Curriculum in England	Hidden curriculum - Things that are indirectly taught in education (rules, routines, regulations) and competition, hierarchy and gender roles
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Functions of education

Serving the economy Education provides qualifications/skills which prepares pupils for jobs. This helps the economy as essential roles are filled in society.	Social mobility Education helps pupils move up the social class ladder through gaining qualifications and skills (through work and effort)	Social cohesion Education teaches shared norms and 'British' values which unites society and brings everyone together with shared beliefs.	Secondary socialisation Education is an agency of secondary socialisation teaching norms, values, beliefs, ideas through the formal curriculum and hidden curriculum.
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Sociology - KS4 Knowledge Organiser

Types of schools

State	Funded by the government (state) Free to attend (admissions by catchment) Teach the National Curriculum
Independent/private	Not funded by the government (state) Parents usually pay for their children to attend Do not have to teach the National Curriculum Usually have smaller class sizes and improved facilities / opportunities
Grammar	These select pupils based on academic ability Pupils must pass the 11+ to attend High ability pupils can be 'challenged' and 'stretched' in these schools
Faith	These select students if they are of a certain faith (e.g. Christian, Catholic, Muslim) Religious beliefs are promoted in school life and focused on in RE
Academies	These receive funding directly from the government (rather than the local authority) and have more control over how to spend it Do not have to follow the National Curriculum and may have different term dates
Free school	These can be set up by charities, universities, communities etc. and have control over how to spend funding, set term dates etc. Do not have to follow the National Curriculum and are 'all ability' schools
Special schools	These educate children with Special Educational Needs (SEN) and may follow a different curriculum Pupils can receive more one-one support and the use of special facilities/equipment

Alternatives to schooling

Deschooling - Illich believed schools should be replaced with alternative forms of education (e.g. homeschooling) where their learning is more personalised and less likely to promote capitalism

Homeschooling - Where children are educated at home by parents/tutors etc. rather than in school. They must receive a full time education and are inspected by the local authority. Gives children more personalised one-one support and less chance of behaviour issues.

Key studies
Durkheim (functionalist) Major function of education is the transmission of society's norms and values. Education (especially history) provides the link between the individual and society. School enables children learn to cooperate with those who are neither their family or their friends so they can function in society. Rules should be strictly enforced to promote self-discipline and for society to run smoothly.
Parsons (functionalist) School acts as a bridge between the family and society, taking over as the main agency of socialisation. Schools are based on meritocracy – ability and effort, not money. In school an individual is judged on universalistic standards. Schools socialise children into the basic values of the wider society, maintaining value consensus.
Bowles and Gintis (Marxist) Correspondence principle – Schools reflect the workplace, students are prepared for work e.g. accepting authority (hierarchy), this means that they don't question their position. They do not believe that schools are meritocratic. Class determines achievement.
Willis (Marxist) Conducted a participant observation of boys in a Midlands secondary school. Working class boys joined a counter school subculture where they avoided attending lessons and resisted any attempt to control their behaviour. They were not obedient. Willis concludes that this prepared them for the kinds of jobs that they would have in the future. These would be unskilled or semi-skilled and quite repetitive.
Ball (Interactionist) Conducted a participant observation at Beachside Comprehensive to look at the effect of setting / teacher expectations on achievement. Pupils in lower sets were more likely to be working class, were not given as much support, were labelled and more likely to be disruptive as a result.
Ball and Gerwitz (Interactionist) They used a range of methods to look at the effect of marketisation and parental choice. They found that increased parental choice and league tables led to pressure for schools to introduce setting and streaming and to focus on higher ability students to improve their exam results. Middle class parents were better able to use their choices to get their children into higher achieving schools.

Factors affecting achievement	
In school factors	Out of school factors
<p>Setting and streaming</p> <p>Setting – pupils are in different sets for different subjects, streaming – in the same ability set for all subjects</p> <p>Improves achievement – pupils in higher sets could be challenged</p> <p>Could decrease achievement in lower sets</p>	<p>Parental values</p> <p>1) Parents may value education and see it as important so encourage their child to work hard, get them a tutor etc.</p> <p>2) Parents may not value education and don't see it as important so don't encourage their children</p>
<p>Mixed ability teaching</p> <p>The opposite to setting/streaming where all abilities are taught together</p> <p>Improves achievement – higher ability could help lower ability but could mean they are not 'challenged' or are held back</p>	<p>Cultural deprivation</p> <p>Children may not learn the correct norms and values to succeed in education (could affect working class children)</p>
<p>Teacher expectations/labelling</p> <p>Teachers could label pupils because of stereotypes which could lead to a self-fulfilling prophecy</p> <p>Improves achievement – if pupils accept positive label, could decrease achievement if pupils accept negative label</p>	<p>Material deprivation</p> <p>Parents may 'lack money and the things that money can buy' so cannot afford resources for their child to succeed (e.g. revision books, a computer) or may not have a quiet place for them to study</p>
Subcultures / peer groups	
<p>Pupils may join subcultures who have their own set of norms and values</p> <p>Improves achievement – joining 'pro-school' subcultures which value education, working hard (more likely with females), could decrease achievement if join 'anti/counter school' subcultures who don't value education (more likely with males)</p>	
Ethnicity and achievement	
Trends	Chinese students are the highest performing ethnic group, black pupils and gypsy/Roma pupils are among the lowest performing (also white British)
Ethnicity is important	<p>Material deprivation – some ethnic groups are more likely to be living in low income households so pupils could lack money to buy resources and succeed</p> <p>Cultural deprivation – some cultures may not value education as highly as others (such as Chinese families) and so do not encourage/push pupils</p> <p>Ethnocentric curriculum – the national curriculum may only be focused on White British culture and show negative aspects of other cultures (e.g. in history) – could decrease motivation</p> <p>Teacher labelling – teachers may label some ethnicities - self-fulfilling prophecy</p>
Not important	<p>Higher % of ethnic minorities going to University</p> <p>Worst performing group = white, working class boys</p>

Sociology - KS4 Knowledge Organiser

Class and achievement	
Trends	Working class pupils achieve less 5 A*C grades than middle class pupils Achievement gap between FSM and non-FSM Working class less likely to go to University
Class is important	Material deprivation – w/c may lack resources to study Cultural deprivation/parental values – w/c parents may not value education as highly W/c parents may lack cultural capital (knowledge/skills) and social capital (social networks) to help their children succeed W/c pupils more likely to join counter school subcultures (Willis)
Class is not important	Functionalism – education is based on meritocracy (ability and effort not money) A higher % of w/c pupils are going to Uni Other factors (gender, ethnicity) more important

Gender and achievement	
Trends	Girls are more likely to achieve 5 A*-C than boys, girls outperform boys at A Level in most subjects
Gender is important	Gender socialisation – girls may be socialised to be more hard-working and obedient so are better suited to achieve in school (boys may be more boisterous and less hard-working) Teacher expectations – girls may be labelled as bright but boys could be labelled as lazy or trouble makers Subcultures – girls more likely to join pro-school whereas boys more likely to join anti-school
Gender is not important	Functionalism – all pupils have an equal chance Marxists – class is more important in achievement The gender gap in achievement could be narrowing

Policies in education	
To improve standards – Ofsted, league tables, academies	
To increase competition – Marketisation, league tables. Ofsted	
To improve opportunities for low income pupils – EMA, longer compulsory education	
To make education fairer – comprehensive system (1965) which replaced the tripartite system)	

Home, town, neighbourhood and region. (THEME 2) (Foundation)

1.1. ¿Cómo es tu ciudad o tu barrio? (What is your city/neighbourhood like?) / ¿Prefieres vivir en el campo o en la ciudad? (Do you prefer to live in the countryside or the city?) [Quizlet 1.1](#)

<p>Mi ciudad es... <i>My city is</i></p> <p>Mi barrio es <i>My neighbourhood is</i></p> <p>Lo mejor/peor de mi ciudad / barrio es que es... <i>The best/worst thing about my city / neighbourhood is that it is...</i></p>	<p>Moderna/a -modern Antigua/o-old Pequeña/o-small Grande -big Enorme- huge Maravilloso/a- Marvellous Asombroso/a- Astonishing</p>	<p>Prefiero vivir en la ciudad/ el campo <i>I prefer to live in the city / the countryside</i></p> <p>Mi hermano/hermana prefiere vivir en el campo / la ciudad <i>My brother/sister prefers to live in the countryside / city</i></p>	<p>Porque tiene... <i>Because it has</i> Dado que no tiene <i>Because it doesn't have</i> Puesto que tenemos <i>Because we have</i> Ya que no tenemos <i>Because we don't have</i></p>	<p>Un ayuntamiento (town hall) / Un castillo (a castle) Un cine (a cinema)/ La Oficina de correos (post office) Un mercado (a market) / Un museo (a museum) Un parque (a park) / Un polideportivo (a sports centre) Una gama amplia de restaurantes (a wide range of restaurants) Una biblioteca (a library) / Una bolera (a bowling alley) Una iglesia (a church) / mezquita (mosque)/ templo (temple) Una piscina (a swimming pool)/ Una carnicería (butcher's) comisaría (police station)/ librería (bookshop) pastelería (pastry shop) peluquería (hairdresser's)/ zapatería (shoe shop) tienda de ropa (clothes shop) Árboles (trees) / Animales (animals) / Tiendas (shops) Bosques (forest) / Lagos (lakes)/ Cultura (culture) Diversiones (fun things)/ calles amplias (wide streets)</p>
<p>Mi ciudad era <i>My city was</i></p> <p>Mi barrio era <i>My neighbourhood was</i></p> <p>Lo mejor de mi ciudad es que era <i>The best thing about my city is that it was</i></p>	<p>Agradable-Pleasant Bonito/a-Pretty Tranquilo/a -Calm Ocupada/o -Busy</p>	<p>Hace cinco años me gustaba más vivir en la ciudad <i>Five years ago I used to like more to live in the city because</i></p> <p>El año pasado me encantaba vivir en el campo <i>Last year I used to love to live in the countryside</i></p>	<p>Pero en el pasado no había <i>But in the past there wasn't</i> porque antes había <i>because before there was/were</i></p>	

1.2 ¿Qué te gustaría cambiar en tu ciudad/ tu barrio? (What would you like to change in your city/neighbourhood?) [Quizlet 1.2](#)

<p>En mi ciudad me gustaría construir más- <i>In my city I would like to build more</i></p> <p>Si tuviera la oportunidad, me gustaría tener- <i>If I had the opportunity, I would like to have</i></p>	<p>Institutos - schools hospitales - hospitals aparcamientos - parking lots cafetería - coffee shop/supermercado - supermarket agencia de viajes- travel agency oficina de turismo- tourist office gimnasios- gyms polideportivos- sports centres carnicería butcher's/ comisaría police station librería bookshop / pastelería pastry shop peluquería hairdresser's / zapatería shoe shop parque de atracciones- theme park</p>	<p>Además, si fuera posible, me gustaría mejorar- <i>in addition, if it were possible, I would like to improve</i></p> <p>Por otro lado, a mi padre le gustaría mejorar- <i>on the other hand, my father would like to improve</i></p> <p>Hemos decidido construir más- <i>we have decided to build more</i></p>	<p>las calles - the streets/ las avenidas - the avenues el carril bici- the bike lane / el metro- the underground la estación de trenes- the train station la estación de autobuses- the bus station las zonas peatonales- the pedestrian areas la plaza mayor- the main square las zonas rurales- the rural areas semáforos- the traffic lights el puente- the bridge /las fuentes- the fountains los edificios- the buildings / las casas- the houses</p>
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Home, town, neighbourhood and region. (THEME 2) (Foundation)

1.3. ¿Cómo es tu casa o tu piso? (How is your house/flat like?) [Quizlet 1.3](#)

Vivo en una casa adosada- <i>I live in a semi-detached house</i> Vivo en un bloque de pisos <i>-I live in a block of flats</i> Mi familia y yo vivimos en un chalet - <i>my family and I live in a detached house</i> Mi hermano y yo vivimos en una granja - <i>my brother and I live in a farm</i> Mi hermana vive en una casa con jardín - <i>my sister lives in a house with a garden</i>	Mi casa es... <i>My house is</i> Mi piso es... <i>My flat is...</i>	Moderna/o (<i>modern</i>) - Antiguo/a (<i>old</i>) Grande (<i>big</i>)- pequeño/a (<i>small</i>) Enorme (<i>huge</i>)/ Espaciosa/a (<i>spacious</i>) amplia/o / espaciosa/o (<i>spacious</i>) cómoda (<i>comfortable</i>) tradicional (<i>traditional</i>)	En la cocina hay... - <i>In the kitchen there is / there are...</i> un fregadero - <i>kitchen sink</i> un lavaplatos / lavavajillas - <i>dishwasher</i> un microondas - <i>microwave</i> En el salón hay... - <i>In the living room there is / there are...</i> una alfombra - <i>a carpet</i> un sillón / un sofá - <i>a sofa/couch</i> una mesa y sillas - <i>a table and chairs</i> unas plantas - <i>some plants</i> En el baño hay... - <i>In the toilet there is / there are...</i> un lavabo - <i>a sink/washbasin/ una ducha</i> - <i>a shower</i> una bañera - <i>a bath/ un espejo</i> - <i>a mirror</i> En el dormitorio hay... - <i>In the bedroom there is / there are...</i> una cama - <i>a bed/ unas cortinas</i> - <i>some curtains</i> armarios - <i>wardrobes/ estantes</i> - <i>shelves</i>	Además, está situado/a en el centro/sur/este/oeste/norte <i>In addition, it is located in the centre/south/east/west/north</i> Por otro lado, hay muchos de bosques / selvas <i>On the other hand, there are many woods / rainforests</i> Además, está cerca de volcanes / sierra <i>In addition, it is close to volcanoes / mountains</i> Pero estaba entre el desierto y la sierra <i>But it used to be between the desert and the mountain range</i>
	Mi casa ideal sería <i>My ideal house would be</i> Mi piso en el pasado era <i>My flat in the past was</i> Mi casa/ piso tiene... <i>My house/flat has...</i> Antes, mi casa / piso tenía <i>Before, my house /flat used to have</i> Mi casa ideal tendría <i>My ideal house would have</i>	tres dormitorios (<i>3 bedrooms</i>) dos cuartos de baño (<i>two bathrooms</i>) una cocina amplia (<i>a spacious kitchen</i>) un comedor (<i>a dining room</i>) un estudio(a study)/un salón(a living room) un aseo (a toilet) / un jardín (a garden) un sótano (<i>a basement / cellar</i>)		

Grammar Non-Negotiables: Key verbs in different tenses [Quizlet](#)

DPR9: Imperfect	DPR9: Preterite	DPR8: Perfect	DPR8: Present	DPR11: Conditional
había = there used to be teníamos = we used to have era = it used to be (description) estaba en = it used to be in (location) tenía = it used to have visitaba = I/he/she used to visit	Fui a = I went to tuve la oportunidad de = I had the opportunity to fuimos a = we went to visité = I visited visitamos = we visited mi hermano fue a = my brother went to	hemos invertido mucho dinero en = we've invested lots of money in hemos tenido problemas con = we've had problems with he decidido = I have decided Hemos decidido = we have decided Ha decidido = he/she has decided	hay = there is/are tiene = it has tenemos = we have tenemos que = we have to se puede = you can vamos = we go voy = I go Suelo ir = I usually go Solemos ir = we usually go	me gustaría visitar = I'd like to visit Me gustaría ir a = I would like to go to nos encantaría tener = we would like to have deberíamos = we should visitaría = I would visit Iría = I would go

Home, town, neighbourhood and region. (THEME 2) (Higher)

1.1. ¿Cómo es tu ciudad o tu barrio? (What is your city/neighbourhood like?) / ¿Prefieres vivir en el campo o en la ciudad? (Do you prefer to live in the countryside or the city?) [Quizlet 1.1](#)

Mi ciudad es... <i>My city is</i> Mi barrio es <i>My neighbourhood is</i> Lo mejor/peor de mi ciudad / barrio es que es... <i>The best/worst thing about my city / neighbourhood is that it is...</i> Lo que más/menos me gusta de mi ciudad / barrio es que es... <i>What I like the most/ the least about my city / neighbourhood is that it is...</i>	Moderna/a -modern Antigua/o -old Pequeña/o -small Grande -big Enorme - huge Maravilloso/a - <i>Marvellous</i> Asombroso/a - <i>Astonishing</i> Agradable -Pleasant Bonito/a -Pretty Tranquilo/a -Calm Ocupada/o -Busy	Prefiero vivir en la ciudad/ el campo <i>I prefer to live in the city / the countryside</i> Mi hermano/hermana prefiere vivir en el campo / la ciudad <i>My brother/sister prefers to live in the countryside / city</i>	Porque tiene... <i>Because it has</i> Dado que no tiene <i>Because it doesn't have</i> Puesto que tenemos <i>Because we have</i> Ya que no tenemos <i>Because we don't have</i>	Un ayuntamiento (town hall) / Un bar/muchos bares (bars/many bars) Un castillo (a castle) / Un cine (a cinema)/ La Oficina de correos (post office) / Un mercado (a market) / Un museo (a museum) Un parque (a park) / Un polideportivo (a sports centre) Un puerto (a harbour) / Un teatro (a theatre) Una gama amplia de restaurantes (a wide range of restaurants) Una biblioteca (a library) / Una bolera (a bowling alley) Una iglesia (a church) / mezquita (mosque)/ templo (temple) Una piscina (a swimming pool)/ Una playa (a beach) / Una pista de hielo (an ice rink)/ carnicería (butcher's)/ comisaría (police station)/ librería (bookshop) pastelería (pastry shop) peluquería (hairdresser's)/ zapatería (shoe shop) tienda de ropa (clothes shop) Árboles (trees) / Animales (animals) / Tiendas (shops) Bosques (forest) / Lagos (lakes)/ Cultura (culture) Diversiones (fun things)/ calles amplias (wide streets)
Mi ciudad era <i>My city was</i> Mi barrio era <i>My neighbourhood was</i> Lo mejor de mi ciudad es que era <i>The best thing about my city is that it was</i>		Hace cinco años prefería vivir en la ciudad <i>Five years ago I used to prefer to live in the city because</i> El año pasado prefería vivir en el campo <i>Last year I used to prefer to live in the countryside</i>	Pero en el pasado no había <i>But in the past there wasn't</i> Aunque en el pasado no teníamos <i>Although in the past we didn't have</i>	

1.2 ¿Qué te gustaría cambiar en tu ciudad/ tu barrio? (What would you like to change in your city/neighbourhood?) [Quizlet 1.2](#)

En mi ciudad me gustaría construir más- <i>In my city I would like to build more</i> Si fuera alcalde/alcaldesa, mejoraría - <i>If I were the mayor, I would improve</i> Si tuviera la oportunidad, construiría- <i>If I had the opportunity, I would build</i>	Centros educativos - <i>educational centres</i> hospitales - <i>hospitals</i> / floristería - <i>flower shop</i> aparcamientos - <i>parking lots</i> cafetería - <i>coffee shop</i> / supermercado - <i>supermarket</i> agencia de viajes - <i>travel agency</i> oficina de turismo - <i>tourist office</i> tiendas de segunda mano - <i>second hand shops</i> gimnasios - <i>gyms</i> polideportivos - <i>sports centres</i> carnicería <i>butcher's</i> / comisaría <i>police station</i> librería <i>bookshop</i> / pastelería <i>pastry shop</i> peluquería <i>hairdresser's</i> / zapatería <i>shoe shop</i> parque de atracciones - <i>theme park</i>	Además, si fuera posible, mejoraría <i>- in addition, if it were possible, I would improve</i> Por otro lado, a mi padre le gustaría mejorar- <i>on the other hand, my father would like to improve</i>	las calles - <i>the streets</i> / las avenidas - <i>the avenues</i> la red de transporte - <i>the transport network</i> el carril bici - <i>the bike lane</i> / el metro - <i>the underground</i> la estación de trenes - <i>the train station</i> la estación de autobuses - <i>the bus station</i> los pasos de peatones - <i>pedestrian crossings</i> las zonas peatonales - <i>the pedestrian areas</i> la plaza mayor - <i>the main square</i> las zonas rurales - <i>the rural areas</i> semáforos - <i>the traffic lights</i> el puente - <i>the bridge</i> / la rotonda - <i>the roundabout</i> las fuentes - <i>the fountains</i> / los bancos - <i>the benches</i> los edificios - <i>the buildings</i> / las casas - <i>the houses</i>
Mi ciudad ha cambiado mucho porque ahora tenemos - <i>my city has changed a lot because now we have</i> En mi barrio hemos construido- <i>In my neighbourhood we have built</i>		Hemos decidido construir más- <i>we have decided to build more</i> El alcalde/ la alcaldesa en mi ciudad ha decidido mejorar- <i>the mayor in my city has decided to improve</i>	

Home, town, neighbourhood and region. (THEME 2) (Higher)

1.3. ¿Cómo es tu casa o tu piso? (How is your house/flat like?) [Quizlet 1.3](#)

Vivo en una casa adosada- <i>I live in a semi-detached house</i> Vivo en un bloque de pisos <i>-I live in a block of flats</i> Mi familia y yo vivimos en un chalet <i>- my family and I live in a detached house</i> Mi hermano y yo vivimos en una granja <i>- my brother and I live in a farm</i> Mi hermana vive en una casa con jardín- <i>my sister lives in a house with a garden</i> Vivo de alquiler en un apartamento con mi hermano <i>I live renting an apartment with my brother</i>	Mi casa es... <i>My house is</i> Mi piso es... <i>My flat is...</i> Mi casa ideal sería <i>My ideal house would be</i> la casa de mis sueños sería- <i>my dream house would be</i> Mi piso en el pasado era <i>My flat in the past was</i>	Moderna/o (modern) - Antiguo/a (old) Grande (big)- pequeño/a (small) Enorme (huge)/Espaciosa/a (spacious) amplia/o / espaciosa/o (spacious) cómoda (comfortable) tradicional (traditional) Está* sucia/o (it is dirty) Está* limpia/o (it is clean)	En la cocina hay... <i>- In the kitchen there is / there are...</i> un fregadero - kitchen sink un lavaplatos / lavavajillas- <i>dishwasher</i> un microondas- <i>microwave</i> En el salón hay... <i>- In the living room there is / there are...</i> una alfombra- <i>a carpet</i> un sillón / un sofá- <i>a sofa/couch</i> una mesa y sillas - a table and chairs unas plantas- <i>some plants</i>	Además, está situado/a en un valle <i>In addition, it is located in a valley</i> Por otro lado, está lleno/a de bosques / selvas <i>On the other hand, it is full of woods / rainforests</i> Además, estaría rodeado/a de volcanes / sierra <i>In addition, it would be surrounded by volcanoes / mountains</i> Por otro lado, estaría a ... metros sobre el nivel del mar <i>On the other hand it would be... metres above sea level</i> Pero estaba entre el desierto y la sierra <i>But it used to be between the desert and the mountain range</i> Por otro lado, tiene unos impresionantes paisajes naturales <i>On the other hand, it has some amazing natural landscapes</i>
	Mi casa/ piso tiene... <i>My house/flat has...</i> Antes, mi casa / piso tenía <i>Before, my house /flat used to have</i> Mi casa ideal tendría <i>My ideal house would have</i>	tres dormitorios (3 bedrooms) dos cuartos de baño (two bathrooms) una cocina amplia y bien equipada (a spacious, well-equipped kitchen) un comedor recién renovado (a recently refurbished dining room) un estudio(a study)/un salón(a living room) un aseo (a toilet) / un jardín (a garden) un sótano (a basement / cellar)	En el baño hay... <i>- In the toilet there is / there are...</i> un lavabo- <i>a sink/washbasin/ una ducha-</i> <i>a shower</i> una bañera- <i>a bath/ un espejo-</i> <i>a mirror</i> En el dormitorio hay... <i>- In the bedroom there is / there are...</i> una cama- <i>a bed/ unas cortinas-</i> <i>some curtains</i> armarios- <i>wardrobes/ estantes-</i> <i>shelves</i>	

Grammar Non-Negotiables: Key verbs in different tenses [Quizlet](#)

DPR9: Imperfect	DPR9: Preterite	DPR8: Perfect	DPR8: Present	DPR11: Conditional
había = there used to be teníamos = we used to have era = it used to be (no) se podía = you could (not) la gente pensaba que = people used to think that estaba en = it used to be in (location) tenía = it used to have visitaba = I/he/she used to visit	Fui a = I went to tuve la oportunidad de = I had the opportunity to fuimos a = we went to visité = I visited visitamos = we visited mi hermano fue a = my brother went to Mi hermana pensó que = my sister thought that...	hemos invertido mucho dinero en = we've invested lots of money in hemos tenido problemas con = we've had problems with he notado cada vez más problemas con = I've noticed more and more problems with he decidido = I have decided Hemos decidido = we have decided Ha decidido = he/she has decided	hay = there is/are tiene = it has tenemos = we have tenemos que = we have to se puede = you can vamos = we go voy = I go Suelo ir = I usually go Solemos ir = we usually go	me gustaría visitar = I'd like to visit invertiría dinero en = I'd invest money in nos permitiría = it'd allow us to deberíamos = we should visitaría = I would visit Iría = I would go Visitaríamos = we would visit Iríamos = we would go

SPaG

Grammar: Write in sentences

A sentence is a group of words that make sense. Sentences start with a capital letter and end with a full stop, question mark or exclamation mark. All sentences contain **clauses**. You should try to use a range of sentences when writing. There are three main types of sentences.

Simple sentence: A sentence containing one main clause with a **subject** and a **verb**.

He **reads**.

Literacy **is** important.

Compound sentence: Two simple sentences joined with a **conjunction**. Both of these simple sentences would make sense on their own. Varying conjunctions makes your writing more interesting.

He **read** his book **because** it **was written** by his favourite author.

Literacy **is** important **so** students **had** an assembly about reading.

Complex sentence: A longer sentence containing a main clause and one or more **subordinate clause (s)** used to add more detail.

The main clause makes sense on its own. However, a subordinate clause would not make sense on its own, it needs the main clause to make sense. The subordinate clause is separated by a comma (s) and/or conjunction. The clause can go at the beginning, middle or end of the sentence.

He read his book **even though it was late**.

Even though it was late, he read his book.

He read his book, **even though it was late**, because it was written by his favourite author.

How can you develop your sentences?

1. Start sentences in different ways. For example, you can start sentences with adjectives, adverbs or verbs.

Adjective: **Funny** books are my favourite!

Adverb: **Regularly** reading helps me develop a reading habit.

Verb: **Looking** at the front cover is a good way to choose a reading book.

2. Use a range of **punctuation**.

3. **Nominalisation**

Nominalisation is the noun form of verbs; verbs become concepts rather than actions. Nominalisation is often used in academic writing. For example:

It is important to **read** because it helps you in lots of ways.

Becomes: **Reading** is beneficial in many ways.

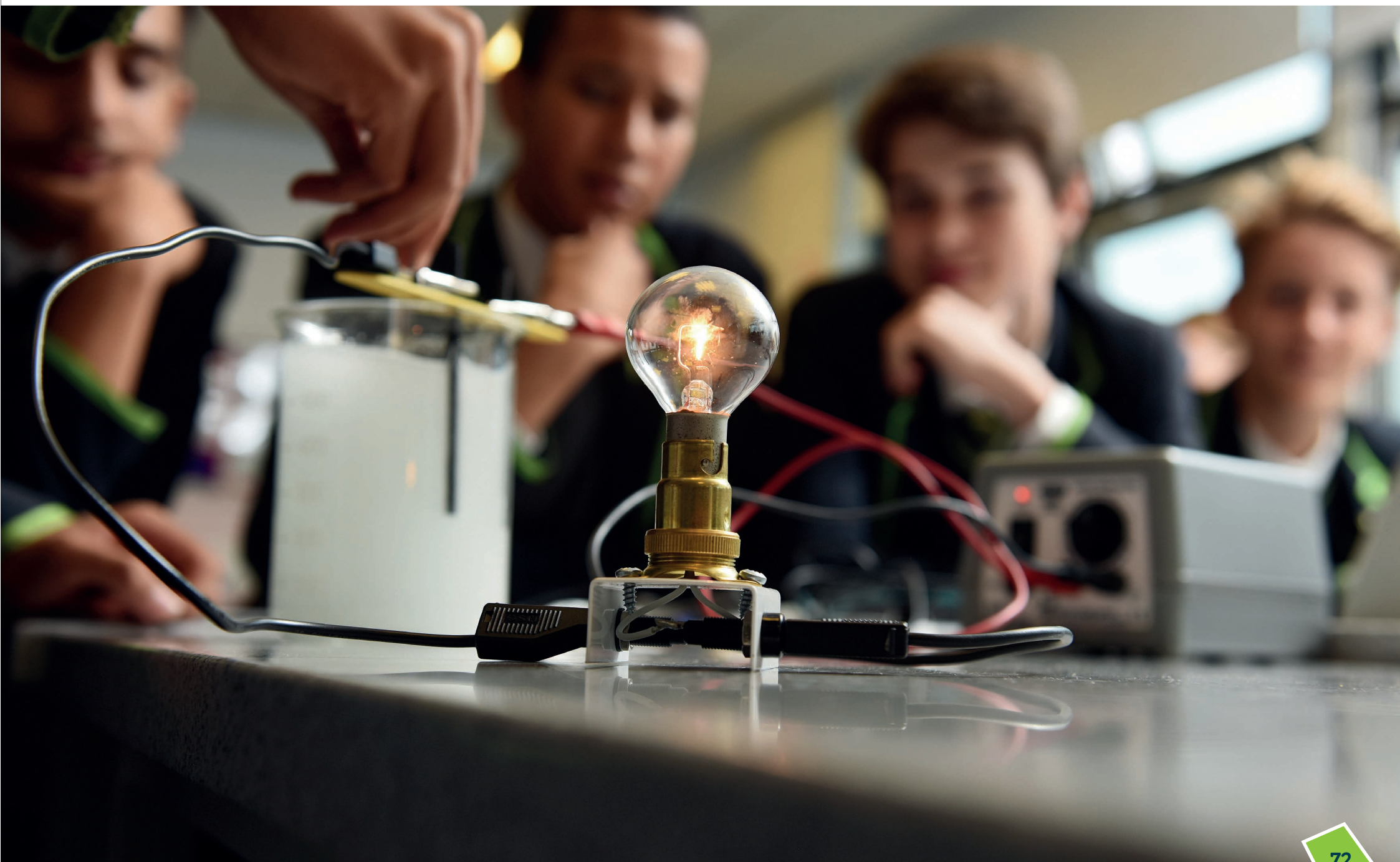
Germany **invaded** Poland in 1939. This was the immediate cause of the Second World War breaking out.

Becomes: Germany's **invasion** of Poland in 1939 was the immediate cause of the outbreak of the Second World War.

Connectives and Conjunctions

Cause And Effect	Because So Consequently Therefore Thus
Addition	And Also In addition Further (more)
Comparing	Whereas However Similarly Yet As with/ equally/ Likewise
Sequencing	Firstly Initially Then Subsequently Finally After
Emphasis	Importantly Significantly In particular Indeed
Subordinate	Who, despite, until, if, while, as, although, even though, that, which

Haggerston School





Year 10 Knowledge Organiser

Haggerston School

Aspiration Creativity Character