KNOWLEDGE ORGANISER

Year 9
Half Term 4

UNITY
ACADEMY BLACKPOOL

Name:

Tutor Group:

Academic Year:
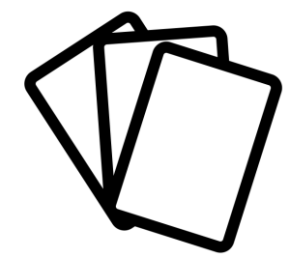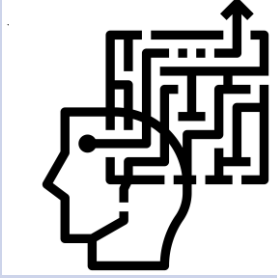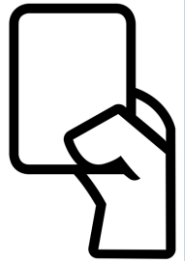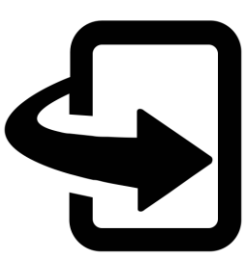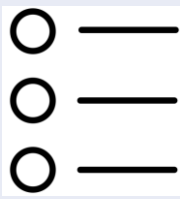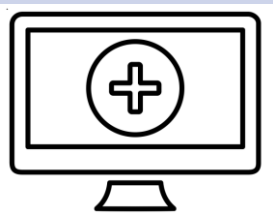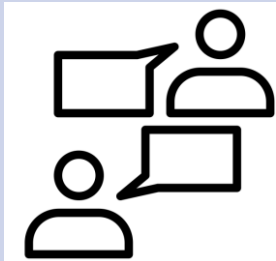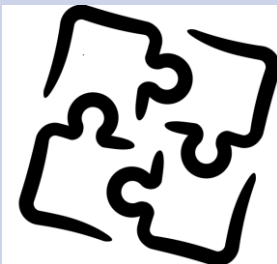
How to use your Knowledge Organiser

The aim of the knowledge organiser is to ensure that **ESSENTIAL KNOWLEDGE** is stored and retrieved over a long period of time.

You need to ensure that you keep your knowledge organiser in your bag, ready for revision, quizzing and to refer to at any time in all of your subjects.

	Look, Cover, Write, Check	Definitions to Key Words	Flash Cards	Self Quizzing	Mind Maps	Paired Retrieval
Step 1	Look at and study a specific area of your knowledge organiser	Write down the key words and definitions.	Use your knowledge organiser condense and write down key facts and/or information on your flash cards.	Read through a specific area of your knowledge organiser	Create a mind map with all the information that you can remember from your knowledge organiser.	Ask a partner or someone at home to have the quiz questions or flash cards in their hands.
Step 2	Flip the knowledge organiser and write everything you can remember.	Try not to use the solutions to help you.	Add diagrams or pictures if appropriate. Write the solutions on the back of the cards.	Turn over and answer the questions related to that area.	Check your knowledge organiser to correct or improve your mind map.	Ask them to test you by asking questions on the section you have chosen from your knowledge organiser.
Step 3	Check what you have written. Correct mistakes and add extra information. Repeat.	Check your work. Correct using red pen and add more information if appropriate.	Self quiz using the cards or ask some to help by quizzing you.	Turn back over and mark your quiz. Keep quizzing until you get all questions correct.	Try to make connections that links information together.	Either say or write down you answers.

Ratio

This is used to compare two or more amounts
Always draw boxes when dealing with ratio!

Writing a Ratio

The amount of one object compared with another. Eg there are 2 triangles to 5 squares

2:5

Simplifying Ratio

You simplify a ratio by dividing the numbers by the HCF (Highest Common Factor)

Simplify 6:12	Simplify 6:1.5
Divide both by 6	Multiply both sides by 2
1:2	12:3
Simplify 3:9:15	Divide both sides by 3
Divide all numbers by 3	4:1
1:3:5	

Sharing in a Ratio

Mr Musson and Mr Coren get **£72** pocket money. They share it in the ratio **5:3**.

Draw a total of 8 boxes (5 + 3 = 8)
Split the money evenly between each box (72 ÷ 8 = 9)

Mr Musson gets 5 boxes = 5 × 9 = £45
Mr Coren gets 3 boxes = 3 × 9 = £27

£45 for Mr Musson   £27 for Mr Coren

9	9	9	9	9	9	9	9

£72 in total

Ratio in the form 1:n

You need to divide **both** sides by the **same** amount until the correct number is down to 1

Write **7:21** in the ratio **1:n**

7:21

÷ 7   ÷ 7

1:3

Best Buys

Best Buy
This is about finding which item is better *value for money*
Example 1

A pack of 4 tins of baked beans cost £1.96

A pack of 6 tins of baked beans cost £3

*Hint: Find the cost of **one** tin from each pack*

£1.96 ÷ 4 = £0.49
= 49p per tin

£3 ÷ 6 = £0.50
= 50p per tin

Therefore the pack of 4 tins is better value for money

Example 2

Radox hand wash is on sale at Boots and Superdrug

Boots
500ml bottle costs £2.24

Superdrug
200ml bottle costs 90p

*Hint: multiply both to the **same** amount of hand wash*

× 2   500ml = £2.24   × 2
      1000ml = £4.48

× 5   200ml = 90p   × 5
      1000ml = £4.50

Therefore the bottle from boots is better value for money

KEY VOCABULARY/TERMS

Ratio, Proportion, Simplify, Share, Divide, Bar model, Best buy, Value, Unitary

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Ratio

For each of the following, write down the ratio of red squares to green circles. Give your ratios in their simplest forms.

(a) (b) (c)

Simplifying Ratio

Simplify the following ratios

(a) 4 : 6	(b) 14 : 8	(c) 15 : 10	(d) 6 : 15
(e) 30 : 10	(f) 12 : 16	(g) 6 : 18	(h) 45 : 10
(i) 12 : 28	(j) 24 : 36	(k) 25 : 60	(l) 27 : 63
(m) 48 : 60	(n) 120 : 260	(o) 8000 : 75	(p) 33 : 121
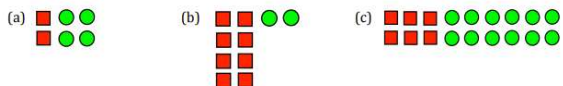
Sharing in a Ratio

(a) Share £20 in the ratio 2:3   (b) Share 15cm in the ratio 1:2

(c) Divide £24 in the ratio 1:3   (d) Share 35 sweets in the ratio 4:3

(e) Divide 55g in the ratio 3:2   (f) Divide 54kg in the ratio 1:5

(g) Share £210 in the ratio 2:5   (h) Share 120 hours in the ratio 5:7

Mark is making concrete.
Concrete is made by mixing cement, sand and gravel in the ratio 1:2:3.
Mark wants to make 300kg of concrete.

(a) How much cement does Mark need?
(b) How much sand does Mark need?
(c) How much gravel does Mark need?

Ratio in the form 1:n

Express each of the following ratios in the form 1 : n

(a) 2 : 3	(b) 5 : 4	(c) 4 : 10	(d) 10 : 7
(e) 8 : 13	(f) 5 : 81	(g) 100 : 131	(h) 200 : 77

Best Buys

For each pair, decide which is better value for money.

(a) 1 ticket for £8   or   3 tickets for £20

(b) 1 sandwich for £2.50   or   2 sandwiches for £5.20

(c) 2 pizzas for £12   or   4 pizzas for £28

(d) 3 doughnuts for 60p   or   6 doughnuts for £1

(e) 6 eggs for 96p   or   12 eggs for £1.80

Bethany wants to buy 9 chairs.
Which shop is best value for money?

Chair World
2 chairs for £30
or £18 each

Chair'R'us
4 chairs for £58
or £19 each

Land of Chairs
3 chairs for £46
or £20 each

KEY VOCABULARY/TERMS

Ratio, Proportion, Simplify, Share, Divide, Bar model, Best buy, Value, Unitary

The Crucible

Context

Religion	-Puritanism is a form of Christianity (Protestants) that originated in England during the early 1600s. They sought to purify the Church of England of Catholic practices. The Puritans were a religious group who had very strict rules about how people should behave and live. Eventually the English people became sick of them, and so many Puritans fled to America to escape religious persecution. - They settled in North America, more specifically Massachusetts, in 1620s. Their radical beliefs flourished in America and thus, they split from the Church of England in 1633.
Communism Vs McCarthyism (The Soviet Union and America)	-A system in which all property is owned by the community and each person contributes and receives according to their ability and needs. The ultimate goal is to establish a communist society, based upon the absence of social classes, money, and the state. - In the 1940s and 1950s there were intense rivalry between the Soviet Union and the United States (called the Cold War).After WW2, Americans became worried about the spread of Communism (Red Scare). This led to fears that Communists (also called the Reds) were infiltrating organisations as a way to undermine American values (as spies) by promoting propaganda and threatening American security. -The House Un-American Activities Committee (HUAC) was established in 1938 to identify threats and spies. -Senator Joseph McCarthy, leader of HUAC, gave a speech in which he accused a long list of people of being Communists (including those were not), thus sparking an anti-communist frenzy. Arthur Miller, writer of The Crucible, was also accused of being a Communist.
The Salem Witch Trials	-The Salem witch trials were a series of prosecutions of people accused of witchcraft in Massachusetts between February 1692 and May 1693.Practicing Christians believed that witches were followers of Satan who had traded their souls for his assistance and received powers to harm others. This Mass Hysteria was caused by a group of girls who claimed to be possessed by the devil and accused local women of witchcraft.
Patriarchal Society	-The Puritans believed women were more likely to sin and susceptible to damnation. Puritans believed women and men were equal in the eyes of God, but not to the Devil. - Women were subservient to men; her God-given duty was to serve her husband. Women were excluded from decision making, could not own property or conduct business. Their gender roles limited them to being only wives and mothers.

Big Ideas

The Danger of Ideology	An ideology is a rigid set of beliefs that defines what an individual or community thinks. In the Puritan theocracy of Massachusetts, a government run by religious authorities, the dominant ideology held that the Puritans were a chosen people that the devil would do anything to destroy. Since religious men ran their government, the Puritans considered all government actions to be necessarily "good," or sanctioned by Heaven. This meant that any attempt to question, obstruct, or otherwise resist any of the government's actions, no matter how ludicrous, destructive, or ill-informed, was considered by the government and other Puritans to be an attempt to overthrow God.
Reputation and Integrity	Reputation is the way that other people perceive you. Integrity is the way you perceive yourself. Several characters in *The Crucible* face a tough decision: to protect their reputation or their integrity. Parris, Abigail, and others protect their reputations. Rebecca Nurse and, eventually, John Proctor, choose to protect their integrity. In rigid communities like Salem, a bad reputation can result in social or even physical punishment. *The Crucible* argues that those most concerned with reputation, like Parris, are dangerous to society: to protect themselves, they're willing to let others be harmed and fuel hysteria in the process.

Key Quotes

"I look for John Proctor that took me from my sleep and put knowledge in my heart! I never knew what pretense Salem was, I never knew the lying lessons I was taught by all these Christian women and their covenanted men!" Abigail, Act I

"You must understand, sir, that a person is either with this court or he must be counted against it, there be no road between." Danforth, in Act III

"A man may think God sleeps, but God sees everything, I know it now. I beg you, sir, I beg you—see her what she is. " J Proctor, Act III

"Because it is my name! Because I cannot have another in my life! Because I lie and sign myself to lies!" J Proctor, Act IV

Transferable Knowledge

Biblical allusions	a reference within a literary work to a story, idea, or event that is related in the **Bible** or other **biblical** writings.
Political allegory	**Political allegories** are stories that use imaginary characters and situations to explore/ discuss real-life **political** events.
Realism	Theatre that focuses on real people, in real situations. The intention is to illuminate humankind's struggles and concerns in a straightforward way. The sets of realist plays evoke the typical workplace, towns, homes, society, basically everyday life.

The Crucible

Context

Religion	Read the notes on the previous page. Watch the following video: https://www.youtube.com/watch?v=qU9CIqtPclo Based on both sources of information, produce a page or Cornell notes titled: Context of The Crucible: Religion
Communism Vs McCarthyism (The Soviet Union and America)	Read the notes on the previous page. Watch the following videos: https://www.youtube.com/watch?v=N35IugBYH04 https://www.youtube.com/watch?v=lGVlDzu-_dg Answer the following question in your knowledge organiser: What is McCarthyism and how does it link to The Crucible?
The Salem Witch Trials	Read the notes on the previous page. Watch the following videos: https://www.youtube.com/watch?v=NVd8kuufBhM https://www.youtube.com/watch?v=7x5KesH3dzM&t=62s Produce a page of context notes on the Salem Witch Trials. Challenge: In the second video the narrator states: "The onset, and demise, of these atrocities came gradually, out of seemingly ordinary circumstances. The potential for similar situations, in which authorities use their powers to mobilise a society against a false threat, still exists today" Write an essay explaining whether you agree or disagree with this statement. You essay must be clear, persuasive and you must use evidence and examples to support your ideas.
Patriarchal Society	Watch the following video: https://www.youtube.com/watch?v=R0LXAC2PXuU Answer this question in your reflection log- what is patriarchy? Your notes should be detailed and you should explore the specific examples given in the video. Write a page of Cornell Notes titled: Patriarchy in The Crucible. Use the following link to support you: https://prezi.com/tcd6yfevyaq0/the-crucible-a-feminist-perspective/?frame=50391041951cfb2c0893ab99b75ebccd9b357125

Big Ideas

The Danger of Ideology	In your knowledge organiser answer the following question: How does Miller explore the danger of ideology? Use this link to support you: https://www.litcharts.com/lit/the-crucible
Reputation and Integrity	In your knowledge organiser answer the following question: How does Miller explore the idea of integrity? Use this link to support you: https://www.litcharts.com/lit/the-crucible

Key Quotes

"I look for John Proctor that took me from my sleep and put knowledge in my heart! I never knew what pretense Salem was, I never knew the lying lessons I was taught by all these Christian women and their covenanted men!" Abigail, Act I
- A student, having read the play, said "Abigail is vengeful, selfish, manipulative, and a magnificent liar. This young lady seems to be uniquely gifted at spreading death and destruction wherever she goes". Write two paragraphs explaining whether you agree or disagree. Remember to support all your ideas with evidence from the text.

"Because it is my name! Because I cannot have another in my life! Because I lie and sign myself to lies!" J Proctor Act IV
- A student, having read the play, said " I think John Proctor is a good man". Write one argument for this statement and one argument against.

Transferable Knowledge

Biblical allusions	Find 2 quotes from the text where Miller makes a biblical allusion. Explode these quotes looking at language and effect.
Political allegory	Complete a reflection log page explaining how The Crucible can be seen as a political allegory. Watch the following as support: https://www.youtube.com/watch?v=mWX2NtqGtJY
Realism	Watch the following video: https://www.youtube.com/watch?v=_GPEE8PdSS0. Produce a page of Cornell Notes entitled Realism in Art and Literature. You will need to research and define the term urbanisation before watching the video

Biology Knowledge Organiser Year 9: Cell Biology

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Bacterial Cell

Chromosomal DNA, Plasmid DNA, Flagellum (not always present), Cell membrane, Cell wall

Animal cell / Plant cell

Cytoplasm, Nucleus, Ribosome, Mitochondrion, Cell membrane, Chloroplast, Vacuole, Cell wall — Found in plant cells
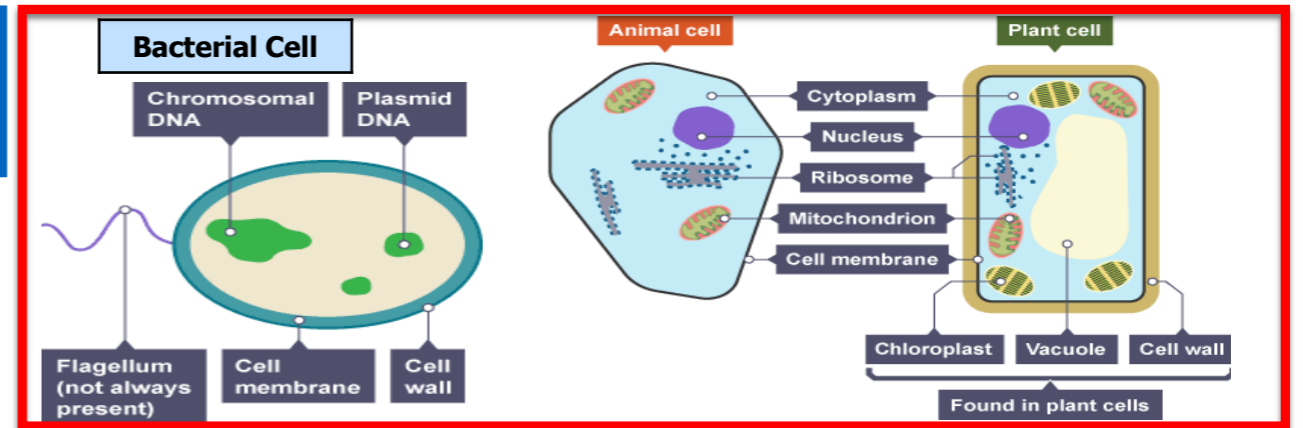
Section 1 - Cell Structure

Structure	Function	Eukaryotic Cells Animal Cells	Eukaryotic Cells Plant Cells	Prokaryotic Cells Bacterial Cells
1. Nucleus	Contains the **genetic information** that controls the functions of the cell.	Y	Y	
2. Cell Membrane	Controls what **enters & leaves** the cell.	Y	Y	Y
3 Cytoplasm	Where many cell activities & **reactions** happen.	Y	Y	Y
4 Mitochondria	Provides energy from **aerobic respiration.**	Y	Y	
5 Ribosomes	Make proteins- site of **protein synthesis**.	Y	Y	Y
6 Chloroplast	Where **photosynthesis** occurs.		Y	
7 Vacuole	Use to store water & other chemicals as **cell sap.**		Y	
8 Cell Wall	**Strengthens & supports** the cell (made of cellulose in plants)		Y	Y
9 DNA Loop	A loop of DNA **NOT** in a nucleus.			Y
10 Plasmid	A **small circle of DNA**, may contain genes associated with antibiotic resistance.			Y

Specialised cells

			Function	Features
Specialised animal cells	Nerve		*Carry electrical signals*	Long branched connections and insulating sheath
	Sperm		*Fertilise an egg*	Streamlined with a long tail. Acrosome containing enzymes. Large number of mitochondria
	Muscle		*Contract to allow movement*	Contains a large number of mitochondria. Long
Specialised plant cells	Root hair		*Absorb water and minerals from soil*	Hair like projections to increase the surface area
	Xylem		*Carry water and minerals*	TRANSPIRATION – dead cells. Cell walls toughened by lignin. Flows in one direction
	Phloem		*Carry glucose*	TRANSLOCATION – living cells cells have end plates with holes. Flows in both directions

Transport

Diffusion — *No* energy required	*Movement of particles in a solution or gas from a high to a low concentration*
Osmosis — *No* energy required	*Movement of water from a dilute solution to a more concentrated solution across a partially permeable membrane*
Active transport — *ENERGY* required	*Movement of particles from a low concentration to a high concentration*

Microscopy

eyepiece lens, objective lens, focusing wheel, stage, light source

$$Magnification = \frac{Image\ size}{Actual\ size}$$

Stem cells

Uses of stem cells:
- Replacing faulty blood cells;
- making insulin producing cells;
- making nerve cells.

Human Embryonic stem cells	*Can be cloned and made to differentiate into most cell types*
Adult bone marrow stem cells	*Can form many types of human cells e.g. blood cells*
Meristems (plants)	*Can differentiate into any plant cell type throughout the life of the plant.*

KEY VOCABULARY

chlorophyll	the green pigment contained in the chloroplasts	**hypotonic (osmosis)**	a solution that is less concentrated than the cell contents
electron microscope	Microscope that uses electrons to observe very small objects and cells in fine detail due to their higher resolution and magnification	**isotonic (osmosis)**	a solution that is the same concentration as the cell contents
eukaryotic cells	cells from eukaryotes that have a cell membrane, cytoplasm, and genetic material enclosed in a nucleus	**partially permeable membrane**	a membrane that allows only certain substances to pass through
hypertonic (osmosis)	a solution that is more concentrated than the cell contents	**resolving power**	a measure of the ability to distinguish between two separate points that are very close together

Self-quizzing questions:

Key vocabulary
1. What is chlorophyll?
2. What is the difference between a hypertonic and a hypotonic solution?
3. Define 'resolving power'
4. What is a partially permeable membrane?

Cell organelles
1. What is the function of cell membrane?
2. Name 3 organelles only found in a plant cell
3. Where is the DNA found in a plant and animal cell?
4. What is a plasmid?

Specialised cells
1. What is the function of sperm?
2. Name three specialised plant cells
3. How is the root hair cells adapted to its function?
4. What is the function of a xylem cell?

Transport in cells
1. Define diffusion
2. Define osmosis
3. Define active transport
4. Which type of transport requires energy?
5. Which type of transport involves a partially permeable membrane?

Microscopy
1. Recall the magnification equation
2. Name the 5 main parts of the microscope

Stem cells
1. Which type of stem cell can be found in plants?
2. Which type of stem cell can be made to differentiate into most other cell types?
3. Where are adult stem cells found?
4. State 3 uses of stem cells

Further opportunities
1. Compare light microscopes with electron microscopes. Use this link to help you:

https://www.youtube.com/watch?v=Lk1Mb1U11EY

2. Describe the process of mitosis
These resources on the Kay Science website will help you:

https://www.kayscience.com/vb2-cell-cycle.html

3. Write a method to outline how you would investigate osmosis.
These two lessons on Oak Academy will help you:
a) https://classroom.thenational.academy/lessons/osmosis-required-practical-part-1-70r6cr
b) https://classroom.thenational.academy/lessons/osmosis-required-practical-part-2-6gtk0d

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Atoms, Elements, Mixture and Compounds

Atoms : All substances are made of atoms.
An atom is the **smallest part of an element that can exist.**

Elements: **made of one type of atom only.** There are approximately 100 elements and they are represented by a chemical symbol e.g Oxygen O, Calcium Ca and Potassium, K
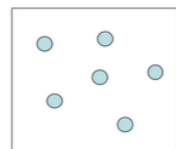
Element

Compounds: **contain two or more elements chemically combined** and are formed by chemical reactions e.g Sodium chloride NaCl; carbon dioxide CO_2
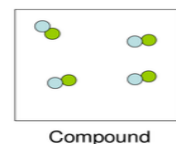
Compound

Mixtures: consists of two or more elements or compounds not chemically combined together e.g Air is a mixture of gases.

Mixture

The Atom
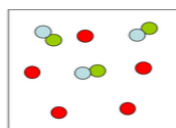
Electron
Proton
Neutron
nucleus
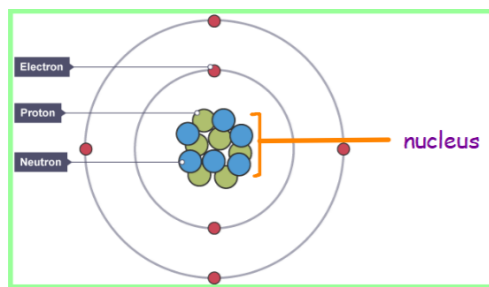
- Atoms are made up of protons and neutrons found a central nucleus.

- Electrons orbit the nucleus, in energy levels (electron shells)

- Atoms are very small, having a radius of about **0.1 nm** (1×10^{-10} m).

- The radius of a nucleus is less than 1/10 000 of that of the atom (about 1×10^{-14} m).

Separating Mixtures

Mixtures can be separated by physical processes.
These physical processes do not involve chemical reactions and no new substances are made.

Filtration
This technique separates substances that are insoluble in a solvent from those that are soluble

Beaker
Salt solution and sand
Filter funnel
Filter paper
Sand
Conical flask
Salt solution
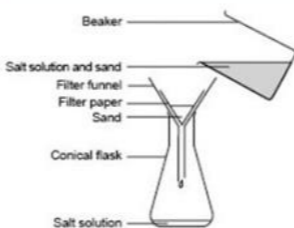
Example - filtering a mixture of sand, salt and water to collect the sand

Crystallisation
This technique separates a soluble substance from a solvent by heating

Evaporating basin
Gauze
Tripod
Bunsen burner
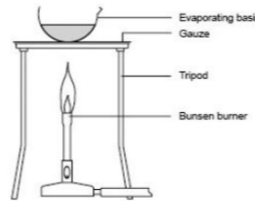
Example - crystallisation of sodium chloride from salt solution

Simple distillation
This technique separates a liquid from a mixture by evaporation follow by condensation
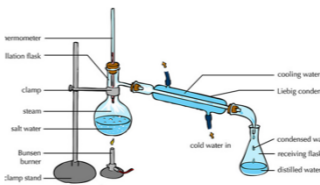
Example - obtaining water from sea water

Fractional distillation
This technique differs from distillation only in that it separates a mixture into a number of different parts, called fractions.
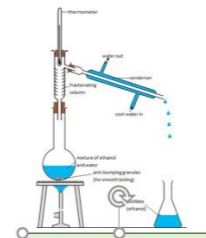
Example - obtaining ethanol from a mixture of ethanol and water

Chromatography
This technique separates small amounts of dissolved substances by running a solvent along absorbent paper
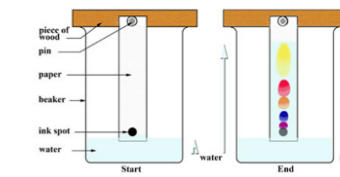
Example - separating the different colours in ink

Subatomic particles

	Mass	Charge	Location
Proton	1	+	nucleus
Neutron	1	0	nucleus
Electron	Very small	-	shells

Mass number = Number of **protons** and **neutrons** ➡ $^{7}_{3}Li$

Atomic number = Number of protons ➡

An atom has no overall charge so:
Number of protons(+) = Number of electrons (-)

Number of neutrons = mass number – atomic number
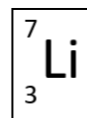
$^{7}_{3}Li$ Protons = 3
Electrons = 3
Neutrons = 4

Electronic structure

Third shell
Can hold up to 8 electrons
Second shell
Can hold up to 8 electrons
nucleus
First shell
Can hold up to 2 electrons
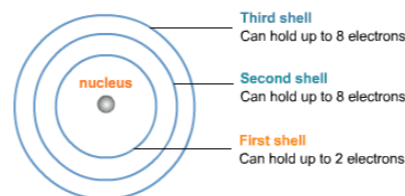
Development of the model of the atom

Democritus.
Atoms tiny spheres that can't be divided.

New **experimental evidence** may lead to a scientific model being changed or replaced.

⬇ Electron discovered
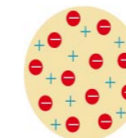
Thomson's plum pudding.
Ball of positive charge with electrons embedded.

Alpha particle scattering experiment ⬇
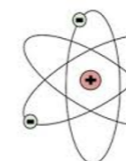
Rutherford nuclear model.
Electrons orbit a positive nucleus.

⬇

Bohr model.
Electrons orbit the nucleus at specific distances.

James Chadwick provided evidence for the existence of neutrons.

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Atoms, elements, compounds and mixtures

1. Define atom.
2. Approximately how many elements are there?
3. Define element.
4. Define compound
5. How are compounds formed?
6. Define mixture.
7. Give an example of
a) An element
b) A compound
c) A mixture

Separating mixtures

1. How can mixtures be separated?
2. Name 3 different methods of separating mixtures.
3. What does filtration separate? .
4. How is fractional distillation different to simple distillation?
5. What would we separate using chromatography?
6. Which method of separation would you use to separate a soluble substance from a solvent by heating?.

The Atom

1. Describe the structure of the atom
2. Which particles does the nucleus contain?
3. What is the radius of an atom in
a) Nanometres?
b) Metres?
4. Compare the radius of an atom with the radius of the nucleus.

Subatomic particles

1. Name the 3 subatomic particles in an atom.
2. Which particle has the smallest mass?
3. Which particle has a charge of +1?
4. Which particle has a charge of zero.
5. What does the atomic number tell us?
6. What does the mass number tell us?
7. What can be said about the number of protons and electrons in an atom?
8. How many electrons can each energy level hold?
9. Calculate the number of protons, neutrons and electrons in sodium (Na)

$$^{23}_{11}\text{Na}$$
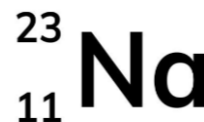
Development of the model of the atom

1. What leads to a scientific model being changed or replaced?
2. Who provided evidence for the existence of neutrons?
3. Describe the plum pudding model of the atom.
4. Describe the nuclear model of the atom.
5. What was the earliest model of the atom like?
6. Which scientist adapted the nuclear model by suggesting electrons orbit the nucleus at specific distances?

Further Opportunities

1. Research other uses of chromatography- why is it useful in real life?

2. Research the alpha particle scattering experiment – how did this experiment led to the model of the atom changing from the plum pudding model to the nuclear model?

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Periodic table

The elements in the periodic table are arranged in order **of atomic (proton) number** and so that elements with similar properties are in columns, known as groups.

Elements in the same group in the periodic table have the same number of electrons in their outer shell (outer electrons) and this gives them similar chemical properties.

noble gases

alkali metals

halogens

Groups

Transition metals (no group number)

Periods

* The Lanthanides (atomic numbers 58 – 71) and the Actinides (atomic numbers 90 – 103) have been omitted.
Relative atomic masses for **Cu** and **Cl** have not been rounded to the nearest whole number.

Metals   Non-metals

The majority of elements are metals. Metals are found to the left and towards the bottom of the periodic table. Non-metals are found towards the right and top of the periodic table

History of the Periodic table

Early Periodic tables were arranged in order of **atomic weight.**

☹ However some elements were not in the correct group so didn't follow the pattern.

A scientist called Dmitri **Mendeleev left gaps** in the periodic table for **undiscovered elements.**

☺ The elements were discovered that filled the gaps and proved him right.
Isotopes were discovered which explained why order based on weight didn't work. **proton) number.**

The Modern periodic table is arranged in order of **atomic (proton) number.**

Group 1 – Alkali metals
Have one electron in the outer shell.

Soft, low density metals.

Form 1$^+$ ions.

• React with oxygen to form **oxides**
• React with water to form the **hydroxide and hydrogen**
• React with chlorine to form **chlorides**

Get more reactive down the group as the outer electron is easier to lose as it is further from the nucleus.

Group 7 – Halogens

Have seven electrons in the outer shell.

Form 1$^-$ ions.

Non metals

Exist as diatomic molecules (pairs of atoms)

As you go down the group, melting and boiling point increase.

As you go down the group the reactivity decreases..

Group 0 – Noble gases

Unreactive (inert) as they have a full outer shell of electrons.

Boiling points increase as you go down the group.

Atomic mass increases as you go down the group.

Transition metals

Have the properties of 'typical' metals.
-Are shiny when freshly cut.
-Conduct electricity
Compared to group 1 metals, transition metals: -Have higher melting points
- Are more dense
- Are harder
- Are stronger
- Many transition elements form coloured compounds and are useful as catalysts.

KS4 Chemistry – Atomic Structure and the Periodic table (part 2)

The periodic table

1. What are the elements in the periodic table arranged in order of?
2. What is similar about elements in the same group of the periodic table?
3. How are group number and number of electrons in the outer shell linked?
4. Are groups vertical columns or horizontal rows?
5. What are group 1 called?
6. What are group 7 called?
7. Where are the transition metals in the periodic table?
8. Which group number are the noble gases?
9. Where are metals found in the periodic table?
10. Where are non-metals found in the periodic table?

Noble gases

1. Why are the noble gases unreactive?
2. What group number are the noble gases?
3. What happens to the boiling point and relative atomic mass of the noble gases as you go down the group?

Transition metals

1. Where are transition metals found in the periodic table?
2. Give 2 properties of transition metals.
3. Compare the transition metals to the alkali metals (group 1)

History of the periodic table

1. What were early periodic table arranged in order of?
2. Why were the early periodic tables not correct?
3. What did Mendeleev do?
4. Why were isotopes important?
5. What is the modern periodic table arranged in order of?

Alkali metals

1. How many electrons do group 1 have in the outer shell?
2. What properties of alkali metals have that are unusual for metals?
3. What happens to the reactivity of alkali metals as you go down the group? Extension: Explain why.2
4. What charge ions do alkali metals form? Extension: Explain why.
5. What is formed when alkali metals react with
a) Oxygen
b) Chlorine
c) Water

Halogens

1. How many electrons do the halogens have in their outer shell?
2. What charge ions do the halogens form? Extension: Why?
3. Are the halogens metals or non-metals?
4. The halogens exist as diatomic molecules – what does this mean? Extension: Explain why they exist as diatomic molecules.
5. What happens to the reactivity as you go down the group? Extension: Explain why.

Further Opportunities

1. **One of the uses of transition metals is as a catalyst- what are catalysts? Catalysts are also important in Biology- why?**

EBACC

French Knowledge Organiser key information

Year 9
Mon identité

Prior Knowledge

Most adjectives have a different feminine form.

masculine	feminine
patient	patiente
intelligent	intelligente
paresseux	paresseuse
sportif	sportive

Some adjectives are the same in the masculine and feminine forms.

masculine	feminine
sympa	sympa
pénible	pénible
drôle	drôle
égoïste	égoïste
timide	timide

on means 'we'. The verb form is the same as for il and elle.

on parle	we speak
on regarde	we watch
on va	we go
on rigole	we have a laugh

We

Possessive adjectives are the words for 'my' and 'your'. They change according to whether the noun they refer to is masculine, feminine or plural.

	masculine	feminine	plural
my	**mon** père	**ma** mère	**mes** parents
your	**ton** père	**ta** mère	**tes** parents

Avoir and Être

When talking about other people, the most
Common verbs to use are avoir and être which, when conjugated, look like this;

Avoir

J'ai	I have	Je suis	I am
Tu as	You have	Tu es	You are
Il a	He has	Il est	He is
Elle a	She has	Elle est	She is
On a	We have	On est	We have
Nous avons	We have	Nous sommes	We have
Vous avez	You have	Vous êtes	You are
Ils ont	They have	Ils sont	They are
Elles ont	They have	Elles sont	They are

aller (to go)
je vais
tu vas
il/elle/on va
nous allons
vous allez
ils/elles vont

You use the near future tense to talk about what you are going to do.

je vais porter	I am going to wear
tu vas porter	you are going to wear
il/elle va porter	he/she is going to wear
on va porter	we are going to wear

Verbes utiles

être*	to be	*irregular verbs
avoir*	to have	
écouter	to listen	
parler	to speak	
discuter	to discuss	
rigoler	to have a laugh	
aller	to go	
faire	to do*	
télécharger	to download	
regarder	to watch	
jouer	to play	
visiter	to visit	
achèter	to buy	
porter	to wear	
nager	to swim	
danser	to swim	

Venir* = to come
Je viens   I come
Tu viens You come
Il vient   He comes
Elle vient She comes
Nous venons We come
Vous venez You come
Ils viennent - They come
Elles viennent - They come

Le verbe aller dans le passé

We have learnt that when putting most verbs in French into the past tense, we use them with the verb avoir (to have), however, there is a group of verbs that go with être (to be) in the past tense. Aller is one of these verbs as seen below;

Je suis allé	I went
Tu es allé	You went
Il est allé	He went
Elle est allée	She went
On est allé	We went
Nous sommes allés	We went
Vous êtes allés	You went
Ils sont allés	They went
Elles sont allées	They went

Note the extra e/s on some of the past participles

Quel temps fait-il?

La météo - The weather
Quand…   When
S'... If

Il fait beau   It's fine

Il fait chaud   It's hot

Il pleut   It's raining

Il fait froid   It's cold

S'il fait froid, je regarde la télé.
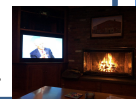
Reading

Associe les phrases aux dessins.

e.g. 1 = a

1. manger au restaurant
2. un tee-shirt bleu
3. des baskets
4. jouer au foot
5. aller au cinéma
6. un jean
7. faire du camping
8. un pantalon beige
9. un short orange
10. faire de la rando
11. une chemise blanche
12. aller à un concert
13. des bottes noires
14. un sweat à capuche noir
15. un pullover bleu

Lis les textes. Copie et remplis le tableau.
Read the texts. Copy and fill in the table.

	artist	opinion	other details
Quentin	*Lily Allen*		
Guillaume			
Gabrielle			

La musique, c'est ma passion. J'écoute du métal parce que j'adore ça. Je n'aime pas du tout la musique de Lily Allen. À mon avis, c'est nul.
Quentin

Moi, j'aime beaucoup la musique de Katy Perry parce que j'adore les paroles et les mélodies.
Guillaume

Je suis fan de Diam's. J'adore la chanson *Ma France à moi* parce que j'aime bien les paroles. J'aime aussi son look et je pense qu'elle est sympa et intelligente. Je n'aime pas la musique de Michael Bublé. Il est nul. Mais ma sœur adore sa musique. Moi, je n'aime pas les paroles.
Gabrielle

Grammar Practice

8 Which three sentences are correct? Correct the two sentences that are wrong.
1. J'ai joué au foot dans le parc.
2. J'ai regarde des DVD.
3. Je joué au volley avec mes copains.
4. J'ai aimé le film.
5. J'ai mangé du popcorn.

The perfect tense with *être*

To form the perfect tense of the verb *aller*, you use *je suis* (instead of *j'ai*) plus the past participle.

If you are a boy, you say:
je suis allé   I went

If you are a girl, there is an extra *–e* on the past participle:
je suis allée   I went

9 Find the five sentences in this word snake.

Hier soir, je suis allée en ville. Le weekend dernier, je suis allée au parc. Ensuite je suis allée au cinéma. Puis je suis allée au restaurant. Finalement, je suis allée au lit.

10 Translate these sentences into French.
1. I ate a pizza.
2. I went into town.
3. I watched a film.
4. I played table tennis.
5. I went to the cinema.

Writing

6 Choose the correct form of the near future tense to fill in the gaps.

Ce weekend, **1** je va faire/je vais faire du shopping avec mes copines et le soir, **2** je vas manger/je vais manger au restaurant.
Le dimanche, **3** je vais aller/je va aller au cinéma avec ma famille. **4** Je vais porter/Je vas porter ma jupe bleue. Et toi, qu'est-ce que **5** tu vais faire/tu vas faire?

7 Adapt the paragraph above to write about what you are going to do this weekend. Can you also write some sentences to say what you did last weekend (le weekend dernier) using the perfect tense with avoir and the phrase 'je suis allé' to say 'I went'?

WEEKEND PLANS
1. Walk my dog
2. Cuddle my dog
3. Talk to my dog
4. Watch tv with my dog

My weekend plans:

WEEKEND PLANS
NO PLAN

RE Knowledge Organiser
Religion and conflict

IN UNITY WE SUCCEED — ACADEMY BLACKPOOL

Religion as a cause

For centuries there has been conflict that has been fought in the name of religion, or had links to a religious belief. An example of this is the Crusades, a series of wars involving Christian and Muslim armies in the medieval period that took place when the Pope demanded the city of Jerusalem be taken under Christian control.

However, religion actually only accounts for 7% of all wars and only 2% of those killed in wars. This shows that religions can sometimes be seen to be a scapegoat, as although it has played a part in conflict in the past, it is only a small proportion of it.

Extremism

Throughout history there are events linked to religion that can be seen to be extremist. This means that certain actions are carried out that stem from religious views that are twisted in a way to have a more radical and extreme meaning.

In the last 50 years there have been examples of extremist views that have resulted in attacks linked to in a number of religions, for example in Northern Ireland in the 1990s and the 9/11 and 7/7 terrorist attacks carried out in New York and London. These were done in the name of different religions, however, religious leaders were quick to denounce these attacks as it was clear that they were due to a small group of radical believers in these religions.

Religious views on conflict

Each religion teaches peace when it comes to confrontation. An example of which can be seen below with the story of Buddha and Angulimala. Pacifism and non-retaliation are things that are promoted in many religious teachings. There are some cases in which conflict may be deemed permissible in religion, however. In Islam, Muslims are allowed to defend their faith through a Jihad. Jihad means 'struggle' and is only carried out if Muslims believe there is an attack on their beliefs or religion. These are very rare and conflict for any other reason is against the beliefs of Islam.

Religion as a resolution

Each religion does a lot to tackle issues such as conflict, by working together and denouncing any conflict carried out in the name of religion. Religions such as Buddhism believe in pacifism and the idea that people should abstain from violence at all costs. This is also taught in the Bible, as Jesus teaches his followers to 'turn the other cheek also' if they are struck. This teaches Christians to avoid retaliation and remain peaceful regardless of who they are around.

One example of religion working to resolve conflict is the work of religious leaders on the Good Friday Agreement, which brought an end to open conflict in the decades-long "Troubles" of Northern Ireland in 1998. Father Alex Reid, a Catholic, was able to convince John Hume of the Social Democratic and Labour Party and Gerry Adams of Sinn Fein to meet secretly together and begin on the road to a negotiated peace .

Similarly, four years earlier, Protestant Reverend Roy Magee was able to convince his community, including influential loyalists he ministered to and visited in prison, to adopt a ceasefire for a time in 1994.

Weapons of Mass destruction

During times of conflict there have been weapons that have been produced that cause destruction on a massive scale. Their creators may or may not have intended for this to be the case and usually these weapons are placed on the forbidden weapons list of the Geneva Convention.

One example of a Weapon of Mass Destruction is that of the Atomic Bomb. These were first used at the end of the Second World War when the USA used them on the Japanese cities of Hiroshima and Nagasaki. These bombs were created as part of the Manhattan Project, a project led by scientist Robert Oppenheimer. After these weapons were used, Oppenheimer expressed his regret and guilt. When he saw their destructive power he recalled the reaction of the group he was with, and stated: 'I remembered the line from the Hindu scripture, the Bhagavad-Gita. Vishnu is trying to persuade the Prince that he should do his duty, and, to impress him, takes on his multi-armed form and says, 'Now I am become Death, the destroyer of worlds. ' I suppose we all thought that, one way or another."

Conflict in Buddhism

The story of Buddha and Angulimala shows conflict in different ways, between people, right and wrong and also conflict of judgement. The story is about a student who's teacher gives him an impossible task because he believes he is evil. He asks him to collect 1000 fingers from people. This is given as a task to the student because the teacher knows the student liked to please him and achieve all his tasks. This is Angulimala.

He found that in order to take the fingers he had to kill people and soon everyone became scared of him. He stayed in the forest and attacked travellers that passed by. However, despite this, Buddha walked through the forest and when he was attacked by Angulimala he stopped him. The Buddha convinced him that what he was doing was wrong and Angulimala followed the Buddha back to his monastery and became a monk.

The story highlights that it is never right to take a life and be involved in conflict, but also that there is a resolution to conflict, whether it is physically or mentally.

KEY VOCABULARY/TERMS

Crusades, Extremism, Scapegoat Monastery, Angulimala, Jihad, Pacifism, The Troubles, Good Friday Agreement, Supremacy, Reverend, Papacy, Robert Oppenheimer, Los Alamos Laboratory, Bhagavad Gita, Vishnu

RE Knowledge Organiser
Religion and conflict

Quiz questions

What year was the Good Friday Agreement signed?	
What percentage of wars does religion account for?	
What was the name of the scientific group Robert Oppenheimer was involved in?	
What was Angulimala's task given to him by his teacher?	
What does the world Jihad mean?	
Give one quote from the Bible that shows Jesus' teaching on conflict?	
What does pacifism mean?	
What were the crusades?	
What religious scripture did Robert Oppenheimer quote when reflecting on the use of atomic weapons?	
Who ordered the Crusades to be carried out?	
When might a Jihad take place?	
Who secretly convinced the two opposing sides to seek peace in Northern Ireland in the 1990s?	
Which city did the Christian crusaders seek to control?	
What did Angulimala do after the Buddha stopped him?	
Which organisation bans certain Weapons of Mass Destruction?	
Give an example of an attack carried out by religious extremists	
Name a religion that believes in pacifism	
What was the quote that Oppenheimer used after the use of atomic weapons?	

History Knowledge Organiser
Year 9 - The changing World

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ACADEMY BLACKPOOL

Why did the Empire end? - Key reasons

Actions by people in the colonies – There were demonstrations against British rule in the 1920. Britain allowed Ireland partition (splitting into Northern Ireland and Ireland), it sent out a message to others in the Empire that they could leave. There were strikes in India, Egypt and Kenya against British rule.

Actions by people in Britain – In the 1960's people in Britain were more interested in freedom, rather than using force to keep people under control.

World Events – In 1931, Canada, Australia and New Zealand formed a new Commonwealth. The domination of the USA and the USSR (Russia) after WW2 showed that you didn't need to have an empire to be a world leader. The loss of countries such as Singapore and Burma during WW2 had changed people's attitudes on whether Britain could maintain an empire.

Trade and Economics - India became less important to the British Empire. The cost of keeping a large number of soldiers to defend the empire was too much. Exports focused from Western Europe and the USA, rather than the Empire.

Windrush Journey

Tilbury Docks, Essex
June 21 1948

Passengers allowed to disembark on June 22

Tampico, Mexico
66 passengers join (total on board: 859)

Bermuda
168 passengers join (total on board: 1,027)

Kingston
May 27 1948
599 passengers join (total on board: 793)

Trinidad
May 20 1948
194 passengers on board

Source: National Archives   PA

Windrush Timeline

1833	Abolishment of slavery in Britain, enslaved Africans were now free.
1931	Creation of the Commonwealth of Nations – known commonly as the Commonwealth.
21st June 1948	The Empire Windrush docks at Tilbury, Essex carrying passengers including 492 mainly from the Caribbean, hoping for a new life in Britain.
2018	A scandal concerning the "Windrush generation" that challenged the right for these migrants and their families to reside in the UK despite being promised.

Key People

Ira Aldridge (1807-1867) - He was one of the highest paid actors in the world at a time when black actors did not have the same opportunities as white actors.

John Edmonstone (1793-1822) - was a very important figure in the world of scientific research. The became a teacher at Edinburgh University, where he taught Charles Darwin.

Sir Learie Constantine (1901-1971) - Born in Trinidad, Learie Constantine would go on to become England's first black peer because of the work that he did for politics and racial equality.

Key Vocabulary

Mother Country	Commonwealth	Windrush Generation	Immigration	Decolonisation
The country that rules over its colonies.	A legacy of Empire which has King Charles as its head.	Those that came to the UK from (mainly) the West Indies at the invitation of the British government to live and work.	The process of moving to another country with plans to live there forever.	The process by which colonies become independent of the colonizing country e.g The British Empire after WW2

History Knowledge Organiser
Year 9 - The changing world

Quiz questions

1	What happened in 1833?	
2	What happened in 1931?	
3	What happened on 21st June 1948?	
4	What happened in 2018?	
5	Who was Ira Aldridge?	
6	What did Learia achieve?	
7	Why was John Edmonston important?	
8	How did people in colonies push for freedom?	
9	What is decolonisation?	
10	Where were there strikes in the Empire?	
11	What were the reasons that the British Empire ended?	
12	Where did Britain trade with instead of the Empire?	
13	How did the people in Britain feel about the end of Empire?	
14	What was the Empire Windrush?	
15	Why were the events of 2018 a scandal?	
16	Which Caribbean islands did the people of the Empire Windrush come from?	
17	What is a mother country?	
18	What is the Commonwealth?	

1 - Introduction

India has 30% of the population of Asia but only 7% of the land area.

Total population: 1.4 billion people

Population density: 469 per km²

Capital city: New Delhi

Official languages: Hindi and English

Dominant religion: Hinduism (80%)

Independence from British Empire: 15th August 1947 (remained part of the Commonwealth).

Physical environments:

Himalayan mountain range

Northern plains - Ganges valley

Hot desert

Deccan plateau

Coastal plains

Development indicators

Fertility rate: 2 per woman

Life expectancy: 71 (m) / 74 (f)

Literacy rate: 81%

Primary education: 95%

Secondary education: 69%

GNI: US$7,000 per person

Living in poverty: 10.2%

HDI: 0.633 (132nd out of 191)

2 - Rapid economic growth

India is a Newly Emerging Economy (NEE) with uneven development: states in the south and west are the most developed.

Changing industrial structure

% of GDP from	1980	2017	
Agriculture	36%	6%	Agriculture still employs 44% of the workforce
Industry	25%	20%	
Services	39%	74%	

Role of TNCs (Transnational corporations)

Attracted by a well educated workforce, government tax breaks and low wage bills.

Car manufacture: Hyundai and Honda

Call centres: Microsoft and Virgin Media

Opportunities

Creates jobs, training and education

Improves infrastructure

Taxes paid to government

Multiplier effect

Challenges

Poor conditions

Pollute environment

Profits go abroad

Overuse local resources

Managers are foreigners

3 -Rapid urban growth

India's cities are growing rapidly due to rural to urban migration fuelled by the changing economy.

Opportunities

Increased population means there is a large workforce.

This attracts companies who create better paid jobs

People earn money which is spent on local services and creates more jobs

Companies and workers pay taxes which are used to improve healthcare, education and infrastructure

Overall the quality of life improves

Challenges

Rapid rate of growth is not matched by growth in facilities and services.

Lack of affordable housing means migrants live in slums.

Lack of sanitation, or waste collection in slums which causes diseases to spread

Pressure on transport infrastructure causing congestion and high levels of pollution.

Huge informal economy means many work long hours, in poor conditions, for low pay.

4- Key terms

Development indicators - measures used to judge and compare levels of development

TNC - A large company which operates in more than one country

Informal economy - jobs which are not taxed or monitored by government

1 – Introduction

1. What percentage of Asia's population live in India?
2. What percentage of Asia's land area does India cover?
3. What is the population of india?
4. What is the population density of India?
5. What is the name of India's capital city?
6. What are the official languages of India?
7. What is the most dominant religion in India?
8. When did India gain independence from the British Empire?
9. Which international organisation is India a part of?
10. Name three physical environments found in India.
11. How does life expectancy of men and women in India vary?
12. Use the development indicators to describe the level of development of India.

3 – Rapid economic growth

1. What type of economy is India?
2. Where are levels of development highest?
3. What percentage of India's population are employed in agriculture?
4. Use the data in the table to sketch pie charts or divided bar charts to compare the industrial structure between 1980 and 2017
5. Describe how the industrial structure of India changed between 1980 and 2017.
6. Why have TNCs started to located factories and call centres in India?
7. Name three TNCs which operate in India.
8. What opportunities do TNCs bring to NEEs like India?
9. What Challenges do TNCs bring to NEEs like India?
10. What might taxes paid to government be used for?
11. Why is the fact that most managers are foreign be a challenge?

3 – Rapid urban growth

1. Why are India's cities growing rapidly?
2. What does the increased population provide for companies?
3. When companies locate in India what is created?
4. What is the impact of people earning more money?
5. Who pays taxes?
6. What are taxes paid to government used to do?
7. What happens the people's quality of life?
8. Has the growth of facilities and services kept up with population growth?
9. Why do many end up living in slums?
10. Why are rates of disease and illness so high in slums?
11. What problems are caused by an inadequate transport system?
12. What is the problem with the informal economy?

4- Key terms

1. What are development indicators?
2. What is a TNC?
3. What is the informal economy?

Computer Science
9.3 Python 1

IN UNITY WE SUCCEED

Overview

Python is a popular general-purpose programming language. It is used in machine learning, web development, desktop applications, and many other fields. Fortunately, Python has a simple, easy-to-use syntax. This makes Python a great language to learn when you are starting out in computer programming.

In this unit you will learn: how to write simple programs in Python; how to describe algorithms and programs; how to use arithmetic expressions, selection and 'randomness'; and how to use counting and iteration in Python.

What is a 'while' loop?

In Python you use a **while** loop when you need to repeat something, but don't know how many times it will need to be repeated.

This algorithm sums (adds up) a series of inputted numbers:

1. Set the total to 0
2. Set more numbers to 'yes'
3. While more numbers is 'yes', repeat these steps:
   - Input a number
   - Add the number to the total
   - Ask 'Any more numbers? Yes/No'
4. Say what the total is
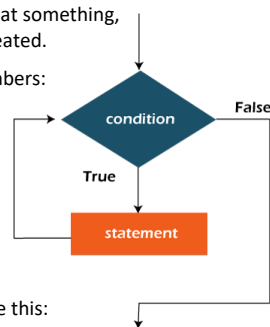
The Python (3.x) code for this algorithm would look like this:

```
total = 0
answer = "yes"
while answer == "yes":
    number = int(input("Type in a number: "))
    total = total + number
    answer = input("Any more numbers? yes/no ")
print("The total is: ")
print(total)
```

Steps that are part of the loop are **indented**. Indentation tells the computer which steps are to be iterated (repeated).

Relational operators in Python

==	equal to	a == 1	Does **a** equal 1?
!=	not equal to	b != c	Are **b** and **c** different?
<	less than	d < 3	Is **d** less than 3?
<=	less than or equal to	d <= 3	Is **d** at most 3?
>	greater than	d > 10	Is **d** greater than 10?
>=	greater than or equal to	d >= 10	Is **d** at least 10?

What is an algorithm?

An **algorithm** is a set of precise instructions, expressed in some sort of language (e.g. textual, visual).

Understanding the language is necessary in order to execute the instructions.

Executing these instructions is meant to solve a problem.

What is a programming language?

A **programming language** is an artificial language that a computer understands. The language is made up of series of statements that fit together to form instructions that tell a computer what to do.

python Programming

What are syntax errors?

A **syntax error** is a mistake in your program that prevents it from running (executing).

Syntax errors are like spelling and grammar errors but must be corrected if you want your program to work properly.

There are also other types of error besides a syntax error: logic errors & runtime errors.

What are variables?

You can use **variables** to store numbers.

```
pocket_money = 20
```

The variable 'pocket_money' is used to store how much pocket money you have. Right now you have £20.

As well as using fixed numbers in calculations and storing the answer in a variable, we can also use variables within the calculations themselves. In this example, the instruction uses the variable money_in_bank to calculate the answer and then stores the answer in a variable called total_money.

```
total_money = money_in_bank + 10
```

The variables represent any value we choose to assign to them.

A variable can hold a number, but it can also hold a **piece of text**. Just one letter is called a **character**. More than one character is called a **string**.

A text variable works in the same way as a number variable, with a few differences:

- text variables hold characters (letters, digits, punctuation).
- the data in text variables is placed in quotes.
- arithmetic calculations cannot be performed on text variables.

Consider the following Python (3.x) program that uses strings:

```
>>> message = "Hooray! It's my birthday!"
>>> print(message)
Hooray! It's my birthday!
```

Using If, Else If, and Else in Python

In programming, selection is implemented using **IF** statements.

Using **IF** and **ELSE** gives two possible choices (paths) that a program can follow. However, sometimes more than two choices are wanted. To do this, the statement **ELSE IF** is used.

This simple algorithm prints out a different message depending on how old you are. Using **IF, ELSE** and **ELSE IF**, the steps are:

- Ask how old you are
- IF you are 70 or older, say "You are aged to perfection!"
- ELSE IF you are exactly 50, say "Wow, you are half a century old!"
- ELSE say "You are a spring chicken!"

Python uses the statement **elif**, which stands for '**ELSE IF**.'

```
age = int(input("How old are you?"))
if age >= 70:
    print("You are aged to perfection!")
elif age == 50:
    print("Wow, you are half a century old!")
else:
    print("You are a spring chicken!")
```

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What I need to know:

Key facts

What will you be learning in this unit?
What is Python?
What is a syntax error?
What is an algorithm?
In computer programming, what is a loop?
Explain how you can use a variable to store a number in Python.
What are the differences between storing a number and storing text in a variable?
When do you need to use 'Else If' in Python and how do you write it in a Python program?
What is a programming language?
Within Python, what is the relational operator that means 'equal to'?
What is the relational operator for 'greater than or equal to' in Python?
Why are some parts of the code indented in Python?
What will happen if you have a syntax error in a program?
In a Python program to add up two numbers, how many variables would you need to use?
Explain why you can't perform arithmetic operations on text variables.
When would you use a 'while' loop in a Python program?
What does '!=' mean in Python?
What does the 'print' command do in Python?
How is selection implemented in Python?
What is the difference between a character and a string?
What does 'x != y' mean in Python?
What does 'executing' a program mean?
Create an algorithm for how to brush your teeth or for some other simple task.

1 What is selection?
- ○ Repeating a number of steps
- ○ A decision point in a program
- ○ The order in which instructions are carried out

2 Why is selection important?
- ○ Selection allows a number of steps to be repeated
- ○ Selection allows multiple paths through a program
- ○ Selection determines the order in which instructions are carried out

3 What is a statement?
- ○ A statement is a single instruction
- ○ A statement is a block of code
- ○ A statement is a repeated instruction

4 In programming how is selection implemented?
- ○ IF-OTHERWISE
- ○ IF-ELSE
- ○ DO-ELSE

5 How many paths through a program does an IF statement allow?
- ○ One path
- ○ Three paths
- ○ Two paths

6 Which statement is used to add further choices to a program in Python?
- ○ ELSE IF
- ○ DO OTHERWISE
- ○ elif

7 What does an IF statement represent?
- ○ A question
- ○ An answer
- ○ An iteration

8 What does an ELSE statement represent?
- ○ A question
- ○ The path to follow when the answer to the question is True
- ○ The path to follow when the answer to the question is False

9 What does ELSE IF represent?
- ○ An extra answer
- ○ An extra choice
- ○ An extra iteration

10 In programming what is the answer to an IF question?
- ○ Yes or No
- ○ Positive or Negative
- ○ True or False

SCAN ME

Do some research and then write a summary of each of the following keywords

Algorithm	Input	Selection	Output
Program	Output	Relational operators	Assignment
Programming language	Variables	Logical expressions	Execution
Program translation	Operators	Conditions	Walk-through
Program execution	Expressions	Randomness	
Interpreter	Integer data type	Selection	
Programming environment	String data type	Multi-branch selection	
		Relational operators	

INNOVATION

Year 9 Food Knowledge Organiser
Nutrition: Function of Nutrients in the body –
Protein and Carbohydrates

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Nutrients

Macronutrients
moderate amounts

Micronutrients
tiny amounts

carbohydrate | protein | Fat | Vitamins | Minerals

Sugars

HBV protein

Saturated fat

Fat soluble

Starches

LBV protein

Unsaturated fat

Water soluble

Fibre

Water
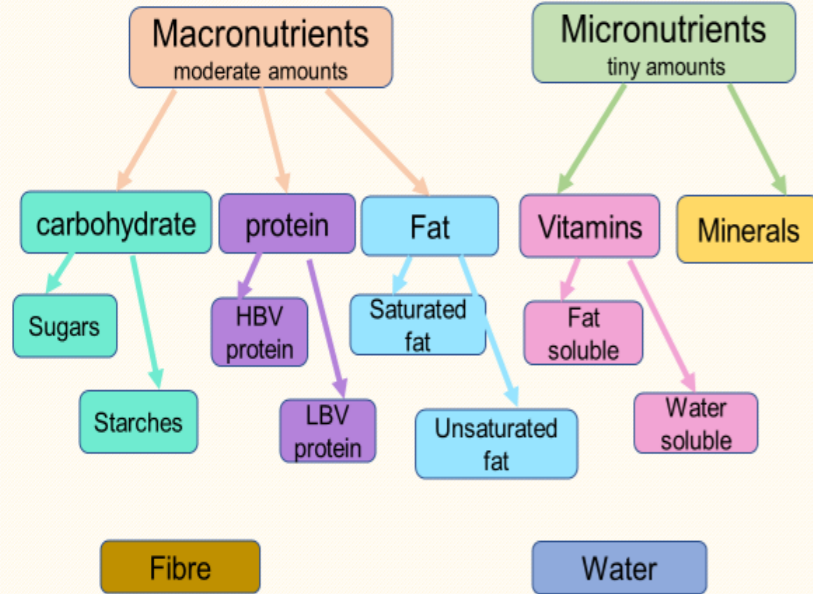
Protein

What is the function of protein?

- Protein provides the amino acids for the body to grow especially in children and pregnancy
- Protein is used to repair body tissues after illness, injury or surgery
- Produces enzymes for digesting foods
- A secondary source of energy for the body
- Protein contains a variety of amino acids with different forms of protein containing all or some of the amino acids needed by the body

Types of protein.

Proteins : HBV

Proteins that contain all the amino acids needed by the body are called High Biological value HBV – all animal sources except soya

Proteins : LBV

Plant proteins that contain some of the amino acids needed are called Low Biological value LBV – all plant sources. By eating a variety of LBV you can get all the amino acids needed

Carbohydrate

What is the function of carbohydrate?

- Carbohydrate provides an important source of energy for the body.
- Carbohydrate provides 16kJ per gram which is used both for energy to move and be active as well as energy for body processes such as breathing, heart beating
- Vitamin B (thiamine and riboflavin) help release the energy to the body
- All carbohydrates are converted to **glucose** when digested and this is converted to energy
- If the energy is not used up then it is stored as body fat

Carbohydrate Types

Carbohydrates: Sugars

- Sugar gives a fast release of energy that means your blood sugar levels go up
- Some foods contain natural sugars such as milk, fruit & honey.

Many foods such as fizzy drinks, cakes, biscuits & jam contain added table sugars. This is the sugar that can be bad for our health and our teeth!

Carbohydrate Types

Carbohydrates: Starches

Starchy foods provide a slow release of energy and help our blood sugar levels stay the same so we don't feel tired. (Also known as complex carbohydrates)

KEY VOCABULARY/ TERMS

High biological value, Low biological value, complex, complimentary, protein, carbohydrate, essential, starch

Year 9 Food Knowledge Organiser
Nutrition: Function of Nutrients in the body

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Protein	Carbohydrate
What is the role of protein in the body?	What is the role of carbohydrate in the body?
What is the difference between LBV and HBV proteins?	What is the difference between simple and complex carbohydrates?
What is the reference intake (RI) for protein?	Identify some food sources of simple and complex carbohydrates.
Identify some food sources of LBV and HBV proteins.	What happens if you don't eat enough/too much carbohydrate?
How do some people become protein deficient?	Are there any health problems associated with carbohydrate based foods?
What are the health problems if you become protein deficient?	What is the reference intake (RI) for carbohydrate?

KEY VOCABULARY/ TERMS
Learn the spelling of each word and look up any you do not know.

High biological value	Low biological value	Complex	Complimentary
Amino Acid	Essential	Starch	Deficient
Simple	Protein	Carbohydrate	Reference intake (RI)

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Key Vocabulary Learn the spelling and meaning of each word.	
Appliqué	A method where shapes are cut from fabric and sewn by hand or by machine onto a background to create an image or picture.
Transfer paint	– a special paint that is used to paint a design onto paper and then transferred onto fabric using the heat press.
Hand Embroidery	The art of working raised and ornamental designs on fabric with a needle.
Heat press	Large metal plates that lock together and are used instead of an iron to transfer the design from paper to fabric.
Fabric pens	Like felt tip pens but can be used on fabric and heat set with an iron.
Resist dyeing	A resist is something added to the fabric to stop it from absorbing the dye. Wax is used in batik, while string or rubber bands are used in the tie-dye process.
Machine embroidery	To use the sewing machine to create decorative stitching.
Free machine embroidery	To use the sewing machine to draw designs freehand.
Embellish	To add other decoration to the fabric.

Textiles Knowledge Organiser
Year 9 – Decorative techniques

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Key Vocabulary Write out the definition of the keywords.	
Appliqué	
Transfer paint	
Hand Embroidery	
Heat press	
Fabric pens	
Resist dyeing	
Machine embroidery	
Free machine embroidery	
Embellish	

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Environmental sustainability in design

What is Environmental sustainability in design?
Environmental sustainability in design is the process where designers and manufacturers consider the environmental impact of the products they create and produce.
Designers consider the 6 R's when considering the impact of their products.

FSC

6 R's
- Reuse
- Recycle
- Rethink
- Reduce
- Refuse
- Repair

Product Miles
Product miles in design and manufacture is the total distance a product takes from its place of manufacture to the place where it is bought by a consumer.

Carbon Footprint
The carbon footprint of a product is measured on the amount of carbon dioxide released in the manufacture and transport of a particular product.

The flat pack idea
A flat pack product involves the consumer assembling the product they have bought themselves by following instructions. This process is very popular in furniture and lighting.
This idea saves the manufacture time, reduces product miles and carbon footprints because the packaging is smaller and can be a cheaper option for the consumer.

Prototyping

A prototype is an early sample or model built to test a concept of a design idea in order to find areas of improvement.
We are prototyping our product to check that the size, function and safety features are correct.

Prototyping materials
There are many materials you can use to prototype your product. They all have two things in common, they are cheap and easy to use. Examples of prototyping materials are:
- Cardboards
- Styrofoam
- Balsa wood
- Polymorph

The material we will use is a cardboard called Grey board because it is:
- Cheap
- Easy to laser cut
- Relatively thick and strong

ASSESSMENT CRITERIA

Competence - How you complete and improve your work using the project activities.

Technical ability – How yow have used your CAD skill accurately to create a successful working pendant.

KEY VOCABULARY

Prototype, Product Miles, Sustainability

What are the 6 R's

-
-
-
-
-
-

Which one of the 6 R's is the most important and why?

....
....
....
....
....
....

Why is using a flat pack structure in our product good for the environment?

....
....
....
....

Give two reasons why you will make a full size prototype your product.

-

-

Sustainability

What do these symbols represent?

_____   _____

Write the definitions for the Key vocabulary words

-

-

-

Steampunk
ART Knowledge Organiser
Year 9 : Half Term 4

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ARTIST – EGYPTIAN ART

General information

Steampunk started in the 1970s as a type of literature. The steampunk philosophy combines Victorian-era optimism with modern creativity and self-reliance. Authors imagined a world in which Victorian-era fashion and technology existed in modern times. For example, a steampunk character might dress just like they're in Victorian England. But they would live in the modern world. Steampunk has gained quite a bit of popularity. Today, it's much more than literature. There are steampunk movies, television shows, and video games. You can also find steampunk art, fashion, and music! If you were in a steampunk world, you would see people dressed in fancy outfits and there would be waistcoats and pocket watches everywhere!

KEY VOCABULARY

Vintage - used to describe clothing, jewellery, etc. that is not new, especially when it is a good example of a style from the past
Industrial - The mass production of goods and materials.
Science-Fiction - written stories in which scientific ideas are accepted as fact, and usually set at some time in the future, or in some distant region of the universe.
Modification – the act of updating and making something different.

Steampunk

ART Knowledge Organiser
Year 9 : Half Term 4
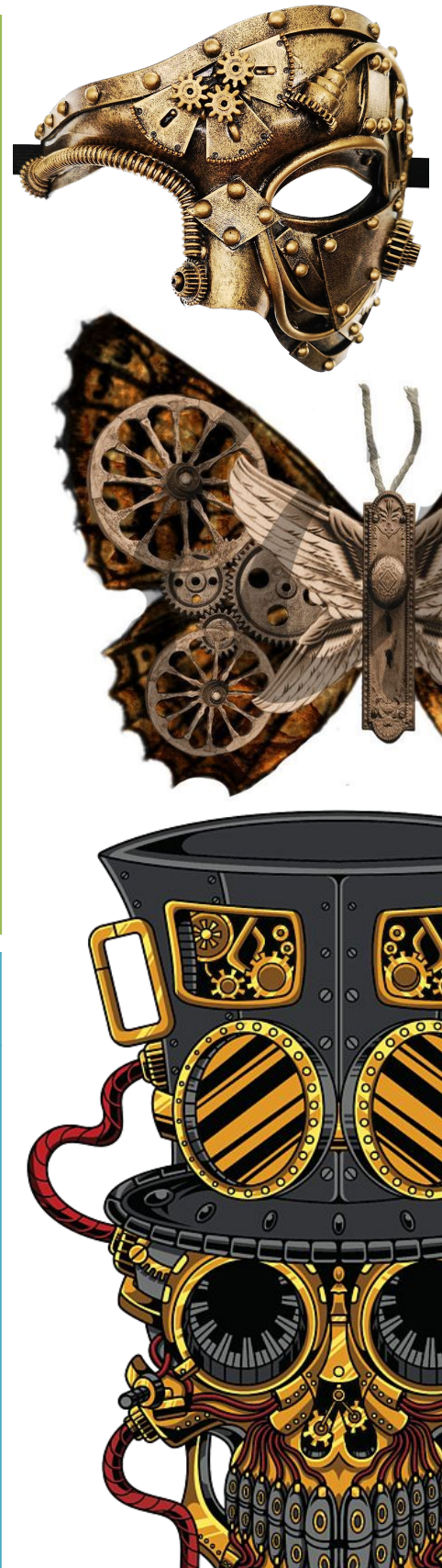
Please write out the questions and answer them in full sentences in your reflection logs.

1. What would be an appropriate way to decorate your research page for steampunk?

2. How did steampunk originate?

3. What do you like about steampunk work? Give reason for your answer.

4. What do you dislike about steampunk style? Give reason for your answer.

5. How would people be dressed if you visited a steampunk world?

6. As the steampunk style became more popular, where as it being used?

7. Please find the mistake and re-write the following sentence correctly:
- *"Steampunk is based on a world where the victorian era meets the modern world and everything is powered by electricity."*

8. What is the definition of Science-Fiction

KS3 | FITNESS - METHODS OF TRAINING

Big picture: To develop knowledge and understanding of the complex skills in Basketball

Methods of Training Protocols and Administration ▶

Strength - Hand grip dynamometer

- Grip with dominant hand
- Apply maximum force while arm is straight in front of the body
- Repeat three times while non-participant records the maximum force reading

Flexibility - Sit and reach test

- Remove shoes and position sit and reach box against the wall
- Keep knees completely locked and reach forward with one hand on top of the other
- Stretch and hold position for two seconds while non-participant records score

Reaction time - Ruler drop test

- Hold a 30 cm ruler above the open hand of the participant
- The 0 cm mark must be directly between the thumb and index finger
- Non-participant drops the ruler with no warning and participant catches
- The score is taken from where the top of the thumb hits the ruler after three tests provides an average

Power - Vertical jump test

- Participant stands sideways onto wall and measures height with an up-stretched arm
- Participant jumps as high as possible and marks wall at peak of the jump on three occasions
- The average distance between the standing and jumping height is taken as the score

Cardiovascular endurance - Multi-stage fitness test

- Mark out a 20 m course
- Participants must arrive at end line on the beep or wait for the beep before running back
- Participants must run until total exhaustion prevents completion of two to three shuttles

Coordination – Alternate hand wall toss test

- Participant stands exactly two metres from a smooth-surfaced wall
- Participant throws the ball with one hand and catches with the other and repeats
- Non-participant counts number of successful catches in 30 seconds

Balance - Standing stork test

- Participant places their hand on hips and one foot on inside knee of the opposite leg.
- Participant raises their heel and holds the balance for as long as possible.
- The score is taken as the total time the participant held the balance successfully.

Speed - 30 metre sprint test

- Mark out a 30 metre distance on an even, firm surface
- Participant takes a rolling start so that they are running at full speed as they hit the start line
- Ensure accurate timing by using two timers

HOMEWORK | SUPPORT | UNDERSTANDING

These questions, key terms and links can all be used for homework/home learning on this topic

Key Questions

1. How can you create your own fartlek training session?

2. What are reps and sets?

3. What how much rest do you need between reps and sets?

4. How can you amend your session to make it harder/ easier?

5. What components of fitness are we improving?

6. What is interval training?

7. What is SAQ training?

8. What athletes would use speed, agility and quickness training?

9. How might your health and fitness improve?

10. What can fitness scores tell you?

11. What specific fitness component have improved?

12. What sports men and women may use these fitness tests?

Key Terms

Fitness - the condition of being physically fit and healthy.

Component - a part or element of a larger whole.

Health - the state of being free from illness or injury.

Fartlek - the state of being free from illness or injury.

Interval - physical training consisting of alternating periods of high- and low-intensity activity.

SAQ - Speed/Agility/Quickness

Cardiovascular - relating to the heart and blood vessels.

Endurance - the ability to endure an unpleasant or difficult process or situation without giving way.

Terrains - a stretch of land, especially with regard to its physical features.

Aerobic - relating to, involving, or requiring free oxygen.

Anaerobic - relating to or requiring an absence of free oxygen.

Youtube Links

Strength - Hand grip dynamometer

Cardiovascular endurance - Multi-stage fitness test

Flexibility - Sit and reach test

Coordination – Alternate hand wall toss test

Balance - Standing stork test

Reaction time - Ruler drop test

Speed - 30 metre sprint test

Power - Vertical jump test

Fartlek Training

Interval Training

SAQ Training

KS3 | TAG RUGBY HANDS

Big picture: Demonstrate complex movements and show flair and originality in different activities

Basic Rules

Overview

TAG rugby is an invasion game in which two teams play against each other. In tag rugby Players carry the ball using their hands. To score points the aim is to ground the ball in goal areas. This is called a try.

Dodging - move passed the opponents with the ball

Handling - 2 hands on the ball at all times

Scoring - A try is scored when the ball is placed over the try line with both hands pushing the ball down.
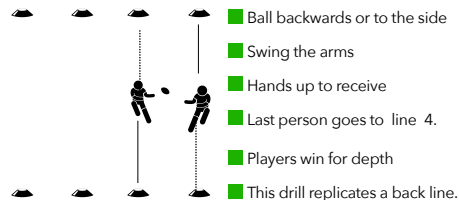
Team: Teams of 6 players.

The pitch

A tag rugby pitch can be between 35 and 70 metre long depending on the format.

Attacking

Passing

▶

Improve passing

To improve any skills you will need to practice. A good drill to improve passing as a group, is the 4 man line drill ('Passing along the line').
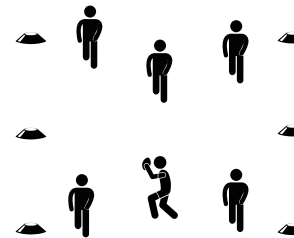
🟩 Ball backwards or to the side
🟩 Swing the arms
🟩 Hands up to receive
🟩 Last person goes to line 4.
🟩 Players win for depth
🟩 This drill replicates a back line.

Other passes in rugby

▶ Pop pass ▶	▶ Miss pass behind ▶
▶ Switch pass ▶	▶ Miss pass infront ▶
▶ Loop pass ▶	▶ Miss pass with loop ▶
▶ Miss pass ▶	▶ Switch pass with dummy ▶

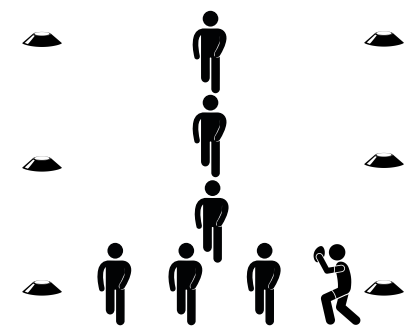## Defending

Game

Small Sided games

1v1, 2v2, 3v3 4v4 etc. can be classed as a small sided games. These games can be also overloaded to one side 1v2, 2v3, 4v2 etc. These will help develop both skills and rules within a contained environment.

Set play

We use set play to ensure we have strategically planned out a method of moving the ball forward.
It is important to pass the ball down the line to specific players.

Attacking

5 v 1 v 1 v 1

Attacking players move towards the defenders. Defenders stand in a straight line and take turns in trying to tag each player. Attacking players must work together dodging defenders and creating space.

Linking skills 🏃 🔗

These mini games/practices will help players improve and link skills in rugby. By linking skills such as attacking and passing you will employ better pace of the game.

HOMEWORK | SUPPORT | UNDERSTANDING

These questions, key terms and links can all be used for homework/ home learning on this topic

Key Questions

1. What is the object of the game of tag rugby?

2. How can a try be scored by a player?

3. Draw a tag rugby pitch with the markings.

4. What are the rules with passing the ball?

5. Why is a lateral/basic pass important?

6. What does dodge mean?

7. What is a forward pass?

8. What is set play?

9 How can you effectively attack in TAG rugby?

10. How do you create space in a game of TAG rugby?

Key Terms

Objective - *noun*
a thing aimed at or sought; a goal.

Knock on - *noun*
an act of knocking on, for which a penalty or scrum is awarded to the opposition.

Offside - *noun*
An act of gaining an advantage from being too far forward.

Goal line - *noun*
a line across a rugby field at or near its end, on which the goal is placed or which acts as the boundary beyond which a try or touchdown is scored.

Tag - *noun*
a label attached to someone or something for the purpose of identification or to give other information.

Lateral - *noun*
a pass thrown either sideways or back.

Strategy - *noun*
A plan of action designed to achieve a long-term or overall aim.

Communication - *noun*
the imparting or exchanging of information by speaking, writing, or using some other medium.

Youtube Links

Improve your passing - Rugby Drills - Teach PE
https://youtu.be/rjiR9tjs8Oo

Basic Rugby Drills - Line drill - Teach PE
https://youtu.be/UJ6qGlE-bUc

Rugby Drills - Pass & Pop - Teach PE
https://youtu.be/bai9GBSPia8

Basic Rugby Drills - The Switch - Teach PE
https://youtu.be/K7YbeVJebA4

Basic Rugby Drills - The Single Loop Switch - Teach PE
https://youtu.be/wP0a_NrnDsM

Rugby Drill - Passing - Miss Pass - Teach PE
https://youtu.be/aIhIIfoZfCo

Basic Rugby Drills - Miss pass - Behind - Teach PE
https://youtu.be/ltRohl8dE8A

Basic Rugby Drills - Basic Miss Pass - Infront - Teach PE
https://youtu.be/8H37iaJVJps

Rugby Drills - Switch - Miss Loop - Teach PE
https://youtu.be/O8z2C3BrXss

TAG Rugby Explained
https://www.youtube.com/watch?v=v7e8Y8g3sGY

KS3 | FOOTBALL HANDS

Big picture: To develop knowledge and understanding of the complex skills in Football

Complex Skills - Linking skills

Heading

- Keep your eyes open.
- Never take your eyes off the ball
- Use the middle of the forehead for heading.
- Aim for the centre of the ball.

Passing & Receiving

- Weight of the pass
- Accuracy of the pass
- Communication between the passer and receiver.
- Create space to receive **passes**
- Control touch towards next target

Control

1. Cushion control – taking the 'sting' out of the ball by pulling back the controlling surface on impact. This has the effect of 'cushioning' or absorbing the pace of the ball so that it drops at the feet.
2. Wedge control – by making the controlling surface, say the sole or outside of the boot, more rigid, the ball is 'wedged' between it and the ground. This is used when a player wants to force the ball downwards or into space so they can move onto it.

Crossing & Finishing

1. Crosses that are driven low with power (usually to the near post).
2. Swerved crosses for example around a defenders using the body position as a guide (near or far post).
3. Chipped crosses from the goal line (usually to the far post).to control and prepare ball.

This is a simple shooting drill with no pressure.

Adding a defender could be a progression in this drill to make it more difficult.

Technique/Skills - Linking skills

Passing

- Place their non-kicking foot next to the ball, pointing in the direction they want the ball to go.
- Strike through the middle of the ball.
- Keep their head over the ball.
- Eyes on the ball at the moment of contact.
- Good first touch to control and prepare ball.

Dribbling

- Keep the ball close to your feet
- Practise with the inside, outside of the foot and with rolling the foot over the ball, using the sole.
- Use both the left and right foot.
- Keep your head up and look for team mates, space and opposition players
- Shift your body weight to throw the defender off balance, use fakes to create space for yourself.

Shooting

- Head down – eye on the ball
- Plant non-striking foot along side the ball.
- Strike the middle of the ball Keep the knee of the kicking leg over the ball.
- Approach the ball slightly from the side.
- Aim at your target, and follow through your kicking foot.

Linking skills ▶

Can you link these skills in a controlled practice and competitive environment?
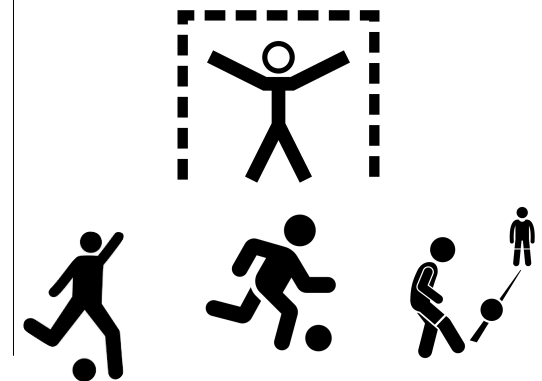
HOMEWORK | SUPPORT | UNDERSTANDING

These questions, key terms and links can all be used for homework/home learning on this topic

Key Questions

1. How many players are on a football team?

2. Explain the rule around pitch dimensions.

3. Explain free kicks and penalties.

4. Explain the object of the game.

5. Explain attacking in football.

6. Explain defending in football..

7. What are the teaching points of a passing?

8. What are the passing and receiving coaching points?

9. What are the crossing and finishing coaching points?

10. Can you list all of the cross over rules and skills that are in

football, basketball, netball and handball?

Key Terms

Rules - one of a set of explicit or understood regulations or principles governing conduct or procedure within a particular area of activity.

Pitch - A pitch is an area of ground that is marked out and used for playing a game such as football, cricket, or hockey.

Football - a game played between two teams of eleven players in which a round inflated ball is moved toward a goal usually by kicking.

Free Kick -a kick that is made without being stopped or slowed by an opponent and that is allowed because of a foul by an opponent.

Offside- in a position in a game on the opponent's part of the field where you are not allowed to be : not onside

Penalty- a disadvantage given for breaking a rule in a sport.

Dribbling - Dribbling is moving the ball past your opponent without allowing him to tackle you, allowing you to keep possession.

Skills - the ability to do something well; expertise.

Shooting - hitting the ball in an attempt to score a goal

Youtube Links

The Rules of Football - EXPLAINED! - https://www.youtube.com/watch?v=5Yo23e0hB48

Dribbling | Football https://www.youtube.com/watch?v=OiBQwlT2_cE

Shooting | Football - https://www.youtube.com/watch?v=Xp_5sW5KF3I

Passing | Football - https://www.youtube.com/watch?v=Z2Es_o-Rmh8

Offside Rule | Football https://www.youtube.com/watch?v=0-nvjtx3i7E

Defensive strategise | Football https://www.youtube.com/watchv=5DkFpmCrCWY

Tactics | Football https://www.youtube.com/watch?v=j-70s6zWTPY

KS3 | BADMINTON BASIC SKILLS

Big picture: To develop knowledge and understanding of the basic rules in badminton

Types of Shots

Back Hand Short Serve

This serve is most widely used in doubles. It is more common to use the backhand serve than the forehand one. The flick serve starts off in the same way as a Low Serve, but a last minute change of pace and flick of the wrist should take the shuttle over the opponents reach, but should not allow them much time to run back and hit an effective return.

Push Return

This shot is particularly useful if you are returning your opponent's serve and you want to push it away from him. As the terms suggest, you push it away from your opponent , so your opponent cannot get to it. It's very useful, with net shots in general, to hold the grip a little bit closer up the handle like this, because you typically get allot more control, even though a little less power.

Back Hand Drive

This is a safe shot in badminton and if played correctly it will force an opponent to hit an upward return, giving the other player a chance to attack. The backhand drive is the same as the forehand version except for the slight grip change, and starting in the back swing with the palm facing down and finishing the stroke with it facing up, opposite to that of the forehand.

Net Play

Badminton net play is a vital skill when you're playing along the net with your opponent. This is a fairly difficult skill to master because you need EXTREMELY good control over your racket.

Back Hand Clear

This is one of the toughest shots to play in badminton. Usually, the backhand clear is used to get a player out of trouble and the player is not in the position to play a forehand shot. However, the purpose is still the same, to force your opponent as far back as possible.

Singles Tactics

- Make opponent move quickly by using different shots
- Make shots to the corners
- After making a shot, always come back to the center of the court
- Make quick decisions (what kind of shot you are going to make and where to hit the birdie)
- Change the pace regularly but unexpectedly
- Overhead strokes must look the same
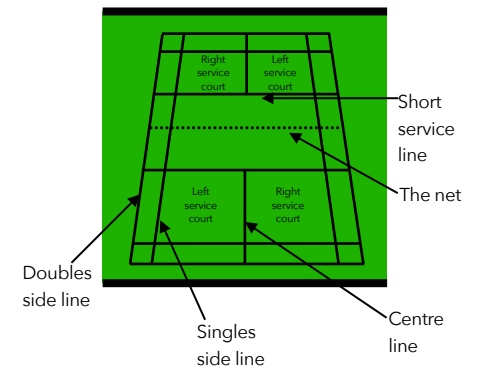- Long and deep serves work better

Doubles Tactics

- Short serves are better
- Target the space between opponents
- When receiving, play aggressively toward the net
- Should switch quickly from defence to attack and from attack to defence.
- When attacking, adopt a formation with one player in the front part of the court, and the other player towards the rear part of the court
- When defending, adopt a side-by-side formation in order to cover the full width of the doubles court.
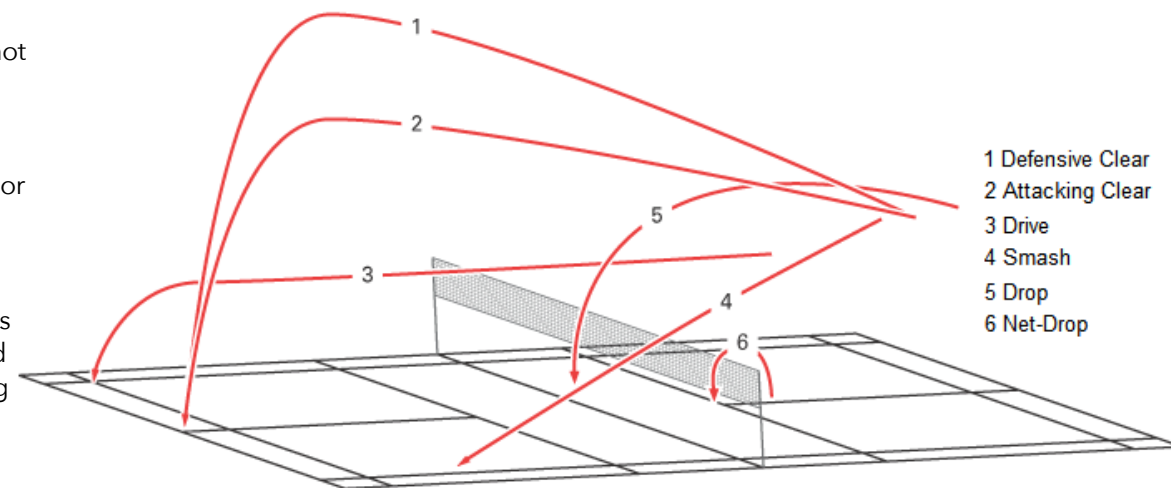
Shot Areas

Below is the court areas where the shuttle should be landing for each shot during a game situation.

The areas may slightly change depending on whether it is a singles or doubles game.

This would relate to the HANDS and HEAD part of the curriculum as pupils will need to understand the rules and tactics whilst executing the shot using their skills.

The court

The court markings

Here is a labelled image of the court markings:

- Right service court
- Left service court
- Short service line
- The net
- Left service court
- Right service court
- Doubles side line
- Singles side line
- Centre line

1 Defensive Clear
2 Attacking Clear
3 Drive
4 Smash
5 Drop
6 Net-Drop

HOMEWORK | SUPPORT | UNDERSTANDING

These questions, key terms and links can all be used for homework/ home learning on this topic

Key Questions

1. Describe how to perform the flick serve.

2. Why is the flick serve effective?

3. Why is the flick serve used in doubles rather than singles?

4. How should you return the flick serve? Why?

5. Describe how to perform the push return.

6. Why is the push return used in badminton?

7. How do you perform the back hand drive?

8. When should this be used in badminton?

9. Why is net play an important tactic/strategy to use?

10. What makes a good net player?

11. Describe how to perform the back hand clear.

12. Describe singles tactics in badminton.

13. Describe doubles tactics in badminton.

14. What is a good way to tire out your opponent?

15. Why is it important to be able to play a range of different shots?

Key Terms

Flick serve - *noun*
a fast and offensive serve that travels in an upwards direction towards the far service line.

Effective - *adjective*
successful in producing a desired or intended result.

Return - *verb*
give, put, or send (something) back to a place or person.

Push shot - *noun*
gentle shot played by pushing the shuttle with little wrist motion, usually from net or midcourt to the opponent's midcourt.

Tactic/Strategy - *noun*
strategic intention of preparing the player or team in real conditions of a match and solve situation in match.

Back hand - *noun*
hitting the shuttle with your racket WHILE the back of your hand is facing the shuttle

Youtube Links

The Flick serve -
https://www.youtube.com/watch?v=0unO4JuDBxQ

Push Return
https://www.youtube.com/watch?v=85OIpokFCaw

Backhand Drive -
https://www.youtube.com/watch?v=BHDNpeclhmg

Net Play -
https://www.youtube.com/watch?v=2ByjAixfocA

Backhand Clear
https://www.youtube.com/watch?v=96gsbytl_7c

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