All Saints' Academy Cheltenham

Year 10

Cycle 2

Curriculum Organiser

Name : _____

Tutor : _____

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All Saints' Academy Home School Agreement – 2024/25

All Saints' Academy recognises that the successful development of its students depends on an effective partnership of the Academy, students and parents/carers.

All three parties share responsibility for the development and achievement of each student. Together we commit ourselves to the following:

The Academy will:	Parents/Carers will:	Students will:
• Provide a learning environment that is stimulating, safe and caring. • Treat everyone with respect. • Ensure that each student has the opportunities, support and guidance to achieve their full potential. • Report regularly on each student's progress. • Expect high standards, set clear rules, promote mutual respect and develop a sense of responsibility. • Keep parents informed about Academy matters, be welcoming to enquiries and responsive to concerns. • Set homework in line with the published timetable, and give feedback on tasks completed. • Record and reward good progress and performance. • Offer enrichment activities that will develop broader skills to prepare for life and the world of work.	• Make sure their child attends in correct uniform, arrives on time and is properly equipped. • Encourage their child to work hard and support them in their homework. • Attend consultation evenings and discussions about their child's progress. • Support the Academy's policies and guidelines as published on the Academy website. • Allow their child to attend off-site visits during the day. • Agree to the sanctions system as set out in the Academy Ready to Learn Policy. • Ensure their child attends every day and that time out of school is not taken or requested, unless for an urgent reason. • Inform staff, if they have concerns about their child's progress, well-being or any other issues. • Encourage their child to participate in the enrichment opportunities offered by the Academy.	• Be an ambassador for All Saints' Academy. • Work hard in class and at home to achieve their full potential. • Treat others as they would wish to be treated and live out the Academy values. • Attend the Academy in correct uniform, be on time and properly equipped. • Keep the Academy rules, behave responsibly and be polite to others in the Academy, and in the wider community. • Follow the Ready to Learn Policy, completing any sanctions set and striving to achieve rewards each week. • Understand that any misbehaviour in the community whether in uniform or not, will be treated as if the incident happened in the Academy. • Take part in enrichment activities offered by the Academy. • Care for the environment in and outside the Academy.

Signed by Form Tutor	Signed by Parent/Carer	Signed by Student
.....	.....	.....

'Where every member of our extended family realises their God-given potential, inspired by John 10:10. Jesus said 'I have come so you may have life in all its fullness'

Independent homework timetable

Subject	Week 1 day	Week 2 day
English		
Maths		
Biology		
Chemistry		
Physics		
RE		
Option subject 1:		
Option subject 2:		
Option subject 3:		

Why study?

All students study because they value opportunities to learn and improve.

All students understand that in order to make excellent progress towards bright futures, they need to take responsibility for their own success and study at home as well as at the Academy.

We want you to have the very best opportunities available to you when you leave the Academy. Achieving excellent exam results in Year 11 and Year 13 is one way to help you to do that.

To gain excellent exam results in Year 11 and Year 13, you need to work hard in school every single lesson, every day in Year 7, 8, 9, 10 and 11. If you are in the Academy every day for 5 years you will have 4,750 hours of study time.

We want to make it as easy as possible for you to complete your study away from the Academy. Completing one hour of study per evening at home adds up to an extra 950 hours over your five years with us – which is like having an extra year of learning.

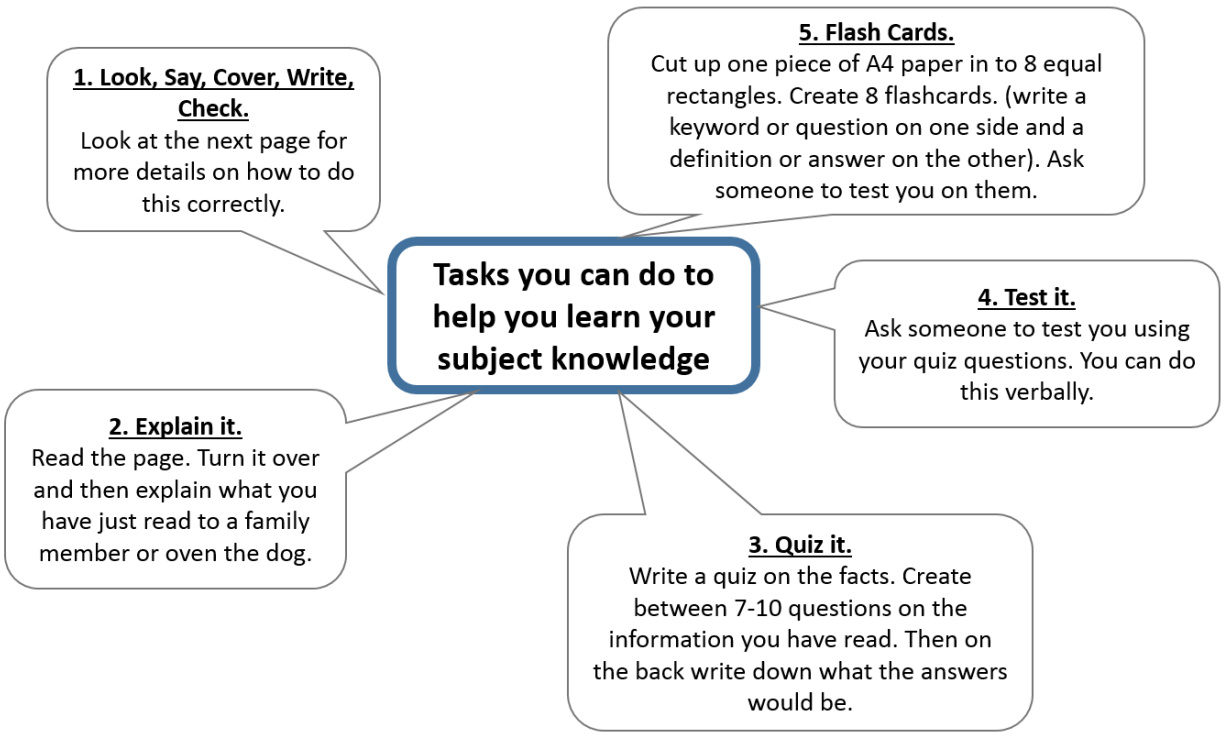
When and what should I study?

You should complete your Independent homework timetable on page 3, so that you know when to study.

Year 7, 8 and 9 should be completing one hour of homework each evening.

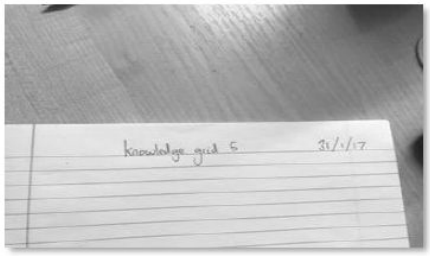
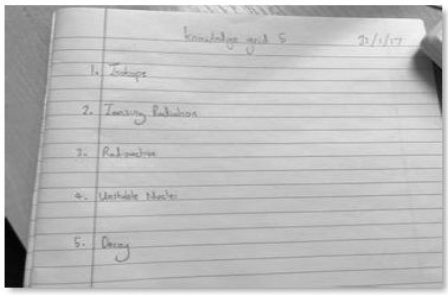
Year 10 and 11 should be completing two hours of homework each evening.

How should I use my Curriculum Organiser to study?



How should I use my Curriculum Organiser to study?

Look, Say, Cover, Write, Check

Step 1		1) Write the date and the title from the knowledge organiser. Underline them.
Step 2		2) Write out the keywords you have been asked to learn, leaving two lines between each word.
Step 3		3) Cover the definitions apart from the first: read it, cover it, say it in your head, check it until you are confident with it. Repeat this process with the other words and take your time.
Step 4		4) Cover up each definition in turn and write them out from memory. Avoid cheating as you need to know how much you can remember. Don't expect yourself to get it exactly right first time.
Step 5		5) Correct your answers in green pen. Repeat the process.

SPAG: Spelling, Punctuation and Grammar

Punctuation

Sentence demarcation:

Symbol	Name	Use
A, N	Capital letters	To start a sentence.
.	Full stop	To show a point/ idea is finished.
!	Exclamation mark	To illustrate heightened emotions, either positive or negative
?	Question mark	To illustrate a question is being asked.
…	Ellipsis	To build tension at the end of sentence or to leave a sentence unfinished for effect.

In sentence punctuation:

Symbol	Name	Use
,	Comma	Following an adverb or connective which starts a sentence or to join a subordinate and main clause together.
" "	Speech marks	To indicate the start and end of direct speech.
( )	Brackets	To put additional information into a sentence.
'	Apostrophe	To show a contraction (joining of two words) or omission (taking out of a letter).

Ambitious punctuation:

Symbol	Name	Use
:	Colon	To show the start of a list or to show important information.
;	Semi colon	To separate long items in a list or to join to simple sentences that are linked by meaning.

Grammar rules

Sentence construction:

All sentences need a subject, verb and an object.

Tense:

Past- Was/ Were
Present- Is/Am
Future- Will

Singular and Plural:

I was…
We/ they were….

Capital Letter Rules:

Start to a sentence.
Proper nouns.
Titles of books, films etc.
Days of the week.
Months of the year.
Religious deities.
I/ I'm/ I'd/ I've.
Historical periods/events.

Homophones

Their- belonging to them.
There- a position or place.
They're- contraction for they are.

Witch- a person with magic powers.
Which- a question word.

Were- past tense of was.
We're- contraction for we are.

Its- belonging to something.
It's- contraction for it is.

Toe- a part of the body.
Tow- to pull something along.

Hole- a hollow place in a solid body.
Whole- all of something.

English KS4 Curriculum 2024-2025

	Year 10			Year 11		
	Knowledge and skills	Cross Curricular	Enrichment	Knowledge and skills	Cross Curricular	Enrichment
Cycle 1	**Literature Paper 1-Macbeth** Read and explore key characters and themes. **Language Paper 2-Transactional Writing** GAPS and key features of different written genres. SPAG skills. **Assessments:** **Mid- Cycle:** Macbeth- Theme of Ambition **End:** Transactional Writing- article and letter **Careers**- Stage manager/Director/ Actor/Speech writer/Journalist/ Marketing.	RE: Great Chain of Being and Christian beliefs. History: essay writing skills	RSC live showings	**Literature Paper 2** **Play: An Inspector Calls or Blood Brothers** Read and explore key characters and themes. **Unseen poetry** Analysis skills **Assessments:** **Mid-Cycle:** AIC- Theme of Responsibility Blood Brothers- Theme of secrets and lies **End:** Mock Exams **Careers**- Self-employed person/ Councillor/ shop worker.	Geo and Business: Economic world- links to economic ideas presented in the texts. History: similar time period	Theatre trip
Cycle 2	**Language Paper 1- Creative Writing** SPAG skills, story styles and forms. **Literature Paper 1-Poetry Anthology** Read and explore key themes and contextual information. **Assessments:** **Mid-Cycle:** Creative Writing **End:** Theme of Nature **Careers**- Author/ Poet/English teacher/ Editor/ Librarian.	Geography: The Living World and Nature poetry. History- poetry context.	Book club Carnegie shadowing Creative Writing competitions	**Revision and Consolidation** All sections of Literature and Language revisited and revised as appropriate for specific classes.		Book club Carnegie shadowing
Cycle 3	**Literature Paper 2-A Christmas Carol** Read and explore key characters and themes. Understanding of historical context. **Language Papers 1 and 2- Reading skills** Retrieval, analysis, evaluation, synthesis, and comparison. **Assessments:** **Mid-Cycle:** Theme of Redemption **End:** Paper 2 Language reading section **Careers**- Historian/ Charity worker.	Extended writing skills: History MFL		**Revision/ Exams** All sections of Literature and Language revisited and revised as appropriate for specific classes.		

Year 10 –Cycle 2- English Literature – Poetry Anthology		
Poem Overview and Context		
London - William Blake (1794) The poet describes a journey through the city and details the pain and suffering he observes in every quarter. **Context:** • Comment on the effects of the Industrial Revolution on the people who lived in the city. • It criticises the people in power (like the church that sent the orphans up chimneys) for not doing more to help.	**As Imperceptibly as Grief-Emily Dickinson (1865)** Explores the feeling of "grief" and compares it to the passing away of the summer. **Context:** • Suffered from depression for most of her adult life. • Lived as a recluse and rarely left home.	**Death of a Naturalist - Seamus Heaney (1966)** Depicts a loss of innocence as the speaker changes from being excited about nature to the feeling threatened and frightened by the end. **Context:** • His brother died young which affected his view of the world. • Lived on a farm in Ireland and brought up in a rural setting.
The Prelude - William Wordsworth (1805) The speaker recounts an illicit night out with his friends- it captures the freedom and possibility he felt as a child. **Context:** • Lived with his Grandparents in the Lake District. • Spent his whole life writing this epic poem.	**A Wife in London - Thomas Hardy (1899)** Describes a wife receiving news of her husband who has died in fighting in the Boer War. **Context:** • Based in Industrial London • Boer war was the first to have telegrams to inform of death	**Valentine - Carol-Ann Duffy (1993)** Challenges the stereotypical view of love when the speaker presents their lover metaphorically as an onion. **Context:** • First open LGBT poet who was discriminated as a result. • First female poet Laureate.
She Walks in Beauty - Lord Byron (1814) The speaker describes the beauty of a woman whose physical beauty is matched by the description of her inner beauty or 'goodness'. **Context:** • The woman is his cousin's wife who he met at a funeral. • Renowned for being a lady's man- he didn't normally focus on personality.	**The Soldier - Rupert Brooke (1914)** A sonnet which glorifies England during the First World War and represents the patriotic ideals that characterized pre-war England. **Context:** • Brooke was an officer who never actually fought in the war. • He died of blood poisoning on the way to the battle.	**Living Space - Imtiaz Dharker (1997)** Describes the slums of Mumbai. Despite the dangerous living conditions there is a sense of hope and a loyalty to faith. **Context:** • Has real experience of the slums with family living there. • Considered herself to be a Scottish Muslim.

Ozymandias - Percy Shelley (1817) About the insignificance of human beings to the passage of time. The once great and arrogant king's works have crumbled and disappeared, his civilisation is gone. **Context:** • Based on Rameses II- one of Egypt's most infamous rulers. • Shelley was critical of organised power.	**Dulce et Decorum Est - Wilfred Owen (1917)** A vivid depiction of the horrors of war and in particular a gas attack. **Context:** • A solider who saw what was really happening in the trenches. • Write this as part of his treatment for PTSD to help him deal with what he had seen.	**Cosy Apologia - Rita Dove (1999)** Depicts a contented relationship against a backdrop of a hurricane. **Context:** • Written on the day of Hurricane Floyd. • Autobiographical poem written to her husband.
To Autumn - John Keats (1819) An ode written in praise of Autumn. He believes it to be superior to all other seasons. **Context:** • Lived in the city (London) but appreciated nature. • Dying from TB- a disease that had already killed his brother.	**Afternoons - Philip Larkin (1959)** An observation of young mothers taking their children to a playground. What seems like an everyday occurrence highlights the passing of time. **Context:** • An observational poet who wrote about what he saw. • Written to make people question the prospects for young mothers.	**Mametz Wood - Owen Sheers (2005)** Describes how farmers ploughing today regularly find the remains of those gunned-down soldiers who died during the battle of the Somme. **Context:** • Written after a visit to the battlefields. • During this battle over 4000 of the 38th Welsh division were killed.
Sonnet 43 - Elizabeth Barrett-Browning (1850) Expresses the poet's intense love for her husband-to-be. So intense is her love for him, she says, that it rises to the spiritual level. **Context:** • Saw Robert as her saviour as he took her away from an abusive homelife. • Suffered medically throughout her life.	**Hawk Roosting - Ted Hughes (1960)** A dramatic monologue detailing the arrogance of the hawk who presents himself as superior, fearless and almost God-like. **Context:** • Was in the RAF and understood the importance of leadership. • Thought the hawk is a metaphor for a world dictator.	**The Manhunt - Simon Armitage (2007)** Explores the impact of the experience of war on a soldier, and in turn his relationship with his wife, and his ability to connect with others. **Context:** • Based on the psychological effects of the Bosnian War on returning soldiers. • Eddie and Laura Beddoes are the focus of the poem.

<table>
<tr><th>Subject Terminology</th><th>Key Quotations</th><th>Key Words</th></tr>
<tr>
<td rowspan="2"><u>Poetic Techniques</u>:
Metaphor - Comparing one thing to another by saying it is it. Eg: ‘Frozen river which ran through his face’
Euphemism - A mild phrase used to replace one that might cause upset or offense. Eg: ‘He- has fallen- in the far South land.’
Dysphemism - Deliberating using offensive or vulgar language for effect. Eg: ‘His hand who the worm now knows.’
Assonance - Consecutive words using similar vowel sounds but not consonants. Eg:’ Forever England.’
Consonance - Repetition of similar sounding consonants used near each other for effect. Eg:’Marks of Weakness/ Marks of Woe.’
Tricolon - Using three parallel words, phrases or clauses for effect. Eg: ‘guttering, choking, drowning.’
Sibilance - Consecutive words beginning with the same s, c or z sound. Eg:

<u>Structural Techniques:</u>
Sonnet - A 14-line poem written in iambic pentameter.
Rhyming Couplets - Two lines next to each other which end with the same sound.
Iambic Pentameter - A line of verse containing 5 feet each containing an unstressed then stressed syllable
Iambic Tetrameter - A line of verse containing 4 feet each containing an unstressed then stressed syllable
Quatrain - A stanza of 4 lines
Free Verse - Poetry that does not rhyme or have a regular rhythm
Blank Verse - Verse without rhyme which is usually iambic
Volta - The point in a sonnet where the tine changes
Enjambment - One line of poetry continuing to the next without punctuation
Caesura - Punctuation used to create a stop mid-way through a line of poetry.</td>
<td>“every black’ning church appals;” London
“It was a time of rapture.” The Prelude
“She walks in beauty, like the night.” She Walks in Beauty
“king of kings…” Ozymandias
“thou hast thy music too-“ To Autumn
“I love thee to the depth and breath and height.” Sonnet 43
“Summer lapsed away.” Imperceptibly
“He- has fallen- in the far South Land…” AWIL
“…that is forever England.” The Soldier
“Gas! Gas! Quick boys!” Dulce..
“Summer is fading.” Afternoons
“I am going to keep things like this.” Hawk…
“Great slime kings..” Death of a Naturalist
“I give you an onion.” Valentine
“There are just not enough straight lines.” LS
“I fill this stolen time with you.” Cosy Apologia
“…in boots that outlasted them.” Mametz
“…a sweating unexploded mine.” Manhunt</td>
<td>Telegram - A document used in the war to inform people at home of the deaths of soldiers.
Rudder - The item used for steering a ship.
Manacles - Restraints used around wrists or ankles.
Slum - An overcrowded and unsafe area inhabited by very poor people.
Imperceptibly - Without notice.
Flax- dam - A collection of rotting flax plants.
Gleaner - A person whose job it is to pick up grain after fields have been harvested.
Melancholy - A feeling of sadness.</td>
</tr>
<tr>
<td>Assessments:

<u>Mid-Cycle: Creative Writing</u>
Write story based on a prompt, from a choice of 4.

<u>End of Cycle: Poetry Anthology</u>
a) How is the theme of nature presented in To Autumn?
b) Compare how the theme of nature is presented in To Autumn and one other poem from your anthology.</td>
<td>Themes

Love
Conflict
Pain and suffering
Place
Nature
Loss
Death
Faith and worship</td>
</tr>
</table>

Year 10 – Cycle 2- English Language – Creative Writing		
Story Elements	**Top Tips for story writing**	**Non-Linear Structures**
Introduction: Introduce the main characters and describe the setting using descriptive vocabulary and techniques. Create an atmosphere e.g., funny, scary, exciting to set the tone of the piece. **Build Up:** Develop the plot and build up to the problem. Let the reader get to know the characters. Engage the reader by making them ask questions about the story. Give hints about what could/might happen later. **Problem/Climax:** This is the most important part of the story. It will be where the problem occurs, and the main character must react to it. The problem does not have to be something terrible, in fact the more realistic the better. **Resolution:** How is the problem being resolved? How do your characters react to their situation? **Ending:** Show what is different at the end of the story compared with the start. Explain the impact that the climax has had in the world of your story considering: - What happens as a result of, the problem being sorted out? - How has your protagonist changed? - How do your characters feel now?	**Content:** - Limit the number of characters: 3 is optimal. - Make your story realistic - Set your story over a short time frame, ideally less than 24 hours. - Ensure you have a clear climax - Focus on the development of your protagonist and illustrating their change - Do not write more than 4 sides for your story - Plan your ending before you start writing **Style and Structure:** - Use a wide range of vocabulary and punctuation throughout. - Vary your sentence type for maximum impact. - Vary the length of your paragraphs to keep the reader interested. - Include a little, but not too much dialogue. - Use features for effect, for example using a range of descriptive features in the introduction and structural ones like ellipsis and short sentences in the climax.	**Flash Back/ Forward -** A story set in the present that goes back or forward to specific events for effect. Usually this will be in a memory or a hope for the future. **Circular Structure -** A story that starts and ends in the same place and time. **Dual Narrative -** The same story being told at the same time by more than one narrator. This enables you to show one event from different points of view. **Written Sources -** Using written sources in your story, such as letters, newspaper articles etc will change the time frame of the story without deviated from the plot.

All Saints' Academy Mathematics KS4 Curriculum

Cycle	Year 10 Foundation	Year 10 Higher	Year 11	
	Knowledge & Skills	Knowledge & Skills	Knowledge & Skills	
1	**Algebra:** • Laws of Indices • Multiplying linear expressions • Factorising Quadratic Expressions • Changing the subject **Number:** • Standard Form • Error Intervals • Compound Growth and Decay **Construction:** • Perpendicular bisector of a line • Angle bisector • Shortest distance from point to a line **Proportion:** • Simplifying ratios and sharing ratios • Best buys	**Algebra:** • Laws of Indices • Multiplying linear expressions • Factorising Quadratic Expressions • Changing the subject **Number:** • Standard Form • Indices and Surds • Error Intervals • Compound growth and decay **Geometry:** • Pythagoras' Theorem and 3D shapes • Fractional and negative enlargements • Similar Shapes and Triangles • Area and Volume Scale Factor **Construction:** • Perpendicular bisector of a line • Angle bisector • Shortest distance from point to a line **Proportion:** • Simplifying ratios and sharing ratios • Best buys • Connected Ratios	Foundation • Revision and preparation for mocks	Higher • Circle Theorems • Quadratic Inequalities • Sine and Cosine Rule • Revision and preparation for mocks
Careers	**Quantity Surveyor**	**Meterologist**	**College options needing Mathematics**	**University options with Mathematics**
2	**Geometry:** • Area of rectilinear shapes, triangles and circles • Sector perimeter and area • Area of compound shapes • Surface Area and Volume of Prisms • Pythagoras' Theorem	**Geometry:** • Spheres, pyramids, cones, frustums and composite solids • Sector perimeter and area • Area of compound shapes **Algebra:** • Algebraic fractions • Constant of proportionality	Revision and preparation for mocks	

	Algebra: • nth term of linear sequences • Straight Line graphs • Simultaneous Equations **Data Handling:** • Scatter graphs and Line of Best Fit • averages from tables and grouped intervals	• Straight line graphs • Linear and quadratic sequences • Simple Geometric progressions. • Linear inequalities and inequality regions • Simultaneous Equations – Linear, Quadratic and Circle Equations as one of the equations	
Careers	**CAD Technician**	**Acoustic Consultant**	
3	**Probability:** • Product Rule for Counting • Two-way tables • Venn Diagrams • Tree Diagrams and Conditional Probability **Geometry:** • Angles in Polygons • Trigonometry **Algebra:** • Solving Quadratic Equations algebraically and from their graphs	**Algebra:** • Quadratic, cubic, exponential and reciprocal graphs • Tangent to a circle • Completing the Square • Solving Quadratic Equations algebraically and from their graphs **Probability:** • Product Rule for Counting • Two-way tables • Venn Diagrams • Tree Diagrams and Conditional Probability **Geometry:** • Angles in Polygons • Trigonometry • Vectors **Statistics:** • Cumulative frequency graphs & box plots • Histograms.	Revision and preparation for final examinations.
Careers	**Sports Science and Analysis**	**Statistician**	

Year 10 Higher Cycle 2 Mathematics

LO: simplify algebraic fractions

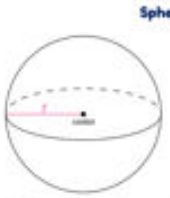
Simplify

$$\frac{2x+8}{4}$$

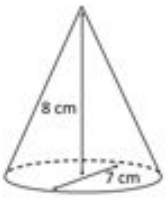
$$\frac{2x+8}{4} = \frac{2(x+4)}{4}$$

$$= \frac{x+4}{2}$$

LO: apply the formula for the volume of a sphere and cone



What is the volume of this cone?



$V = \frac{1}{3}\pi r^2 h$

= 103 cm^3

Simplify

$$\frac{x+5}{2x+10}$$

$$\frac{x+5}{2x+10} = \frac{x+5}{2(x+5)}$$

$$= \frac{1}{2}$$

LO: draw and shade inequality regions

Simplify $\frac{x^2 + 5x + 4}{x^2 + 8x + 16}$

$= \frac{(x+1)(x+4)}{(x+4)(x+4)}$

LO: find the formula for the nth term of a quadratic sequence

The n^{th} term of a quadratic sequence
A summary reminder diagram

The n^{th} term is $an^2 + bn + c$

a + b + c = 5, 18, 35, 56, 81, 110, ...

3a + b = 13 17 21 25 29 ...

2a = 4 4 4 4 ...

Find the first and second differences of the black sequence (shown in red and blue respectively).
Find the value of a from the equation 2a = 4
Now work out the value of b from the equation 3a + b = 13 (you already know a)
Now work out the value of c from the equation a + b + c = 5 (you already know a and b)
The answer is $2n^2 + 7n - 4$

Year 10 Higher Cycle 2 Mathematics

LO: convert recurring decimals to fractions

Recurring Decimals to Fractions

1. Let x = recurring decimal.
2. Let n = the number of recurring digits.
3. Multiply the recurring decimal by 10^n.
4. Subtract (1) from (3) to eliminate the recurring part.
5. Solve for x, expressing your answer as a fraction in its simplest form.

Examples:

0.7 (one recurring digit)

$x = 0.7777...$

$10x = 7.777...$

$10x - x = 7$

$9x = 7$

$x = \frac{7}{9}$

1.256 (two recurring digits)

$x = 1.25656...$

$100x = 125.6565...$

$100x - x = 125.6565... - 1.256565...$

$99x = 124.4$

$x = \frac{124.4}{99} = \frac{1244}{990} = \frac{622}{495}$

LO: recognise inverse proportion problems

① Write an equation of proportionality.
② Substitute x & y to find k.
③ Rewrite the equation using k and substitute x to find y.

① $y = \frac{k}{x}$

5 workers can dig a well in 6 hours.

How long does it take 2 people?

y = time

② $6 = \frac{k}{5}$ (hours / workers)

$30 = k$ (worker-hours)

③ $y = \frac{k}{x}$

$y = \frac{30}{2}$

$y = 15$ hours

LO: find compound interest from the formula

£5000 in invested with an interest rate of 9.2% for two years. What is the value of the investment after 2 years?

Using the formula for compound interest,

$$A = P\left(1 + \frac{r}{100}\right)^n$$

$$= 5000\left(1 + \frac{9.2}{100}\right)^2$$

$$= 5000(1.092)^2$$

$$A = 5\,962.32$$

LO: solve simultaneous equations with one non-linear equation

Solve the simultaneous equations

$y = 3x + 1$

$y^2 = 4x^2 - x + 7$

$(3x+1)^2 = 4x^2 - x + 7$

$9x^2 + 6x + 1 = 4x^2 - x + 7$

$5x^2 + 7x - 6 = 0$

$5x^2 - 3x + 10x - 6 = 0$

$x(5x-3) + 2(5x-3) = 0$

$(5x-3)(x+2) = 0$

$5x - 3 = 0$ $\quad x + 2 = 0$

$5x = 3$ $\quad x = -2$

$x = \frac{3}{5}$

LO: factorise quadratic expressions

Factorise this quadratic

$$x^2 + 10x - 24$$

A $(x+4)(x+6)$

B $(x+2)(x-12)$

C $(x-6)(x-4)$

D $(x-2)(x-12)$

E $(x-6)(x+4)$

F $(x-2)(x+12)$

Which is the correct answer?

LO: factorise quadratic expressions where a > 1

$6x^2 + 3x - 8x - 4$

$= (6x^2 + 3x) + (-8x - 4)$ Group terms

$= 3x(2x + 1) + (-4)(2x + 1)$ Factor out GCFs

$= 3x(2x + 1) - 4(2x + 1)$ Simplify

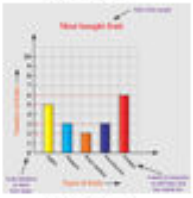
$= 3x(2x + 1) - 4(2x + 1)$ Common factor!

$= (2x + 1)(3x - 4)$ Factor out $2x + 1$

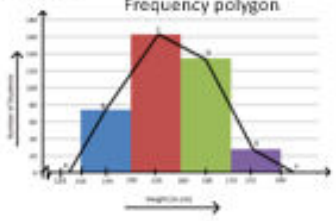
Year 10 Foundation Cycle 2 Mathematics

LO: I can represent, interpret and manipulate data including: Bar and bar line graphs, pictograms, frequency polygons, scatter graphs and line of best fit.

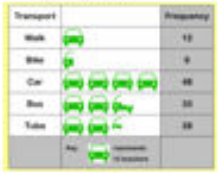
Bar graph



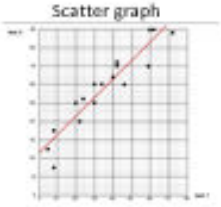
Frequency polygon



pictogram



Scatter graph



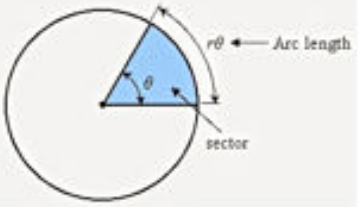
Hegarty 425,426,441,453,454

LO: I know the circle definitions and properties including: tangent, arc, sector and segment.
I can calculate the arc length of a sector and sector area.

θ is measured in **radians**

Arc length $= r\theta$

Area of sector $= \frac{1}{2}r^2\theta$



Hegarty 544-547

LO: I can work out averages and range including from frequency tables.

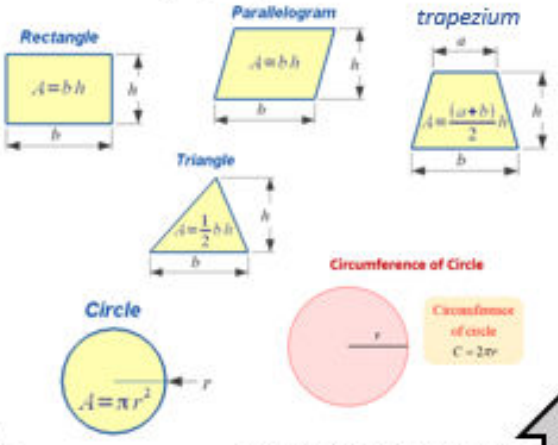
Mean = the sum of the numbers divided by the number of numbers in the data set
Median = middle number when ordered smallest to largest
Mode = number that appears the most often
Range = highest number takeaway smallest number

Minutes Late, t	Frequency, f	Midpoint, x	fx
0 < t ≤ 10	27	5	135
10 < t ≤ 20	10	15	150
20 < t ≤ 30	7	25	
30 < t ≤ 40	5	35	
40 < t ≤ 50	4		
50 < t ≤ 60	2	55	110
Total	55	Total	

Fill in the gaps
Can you work out the mean from the table?
What about the median?

Hegarty 402-418

LO: I can calculate areas and perimeters of rectilinear shapes, triangles and circles.



Hegarty 536-543, 548-559

LO: I can do all 4 operations with decimals

Always align your decimals when adding or subtracting

Can you do 5.6-2.95?

Evaluate 3.6 x 2.4

Evaluate 5.62 ÷ 0.2

Now can you try:

a) 2.4 x 12.1
b) 0.915 ÷ 0.3

Hegarty 47-51

LO: I can estimate calculations by rounding to 1s.f.

Estimate $\frac{315 \times 19}{9.8}$

First round all values to 1 s.f. before calculating.

$\approx \frac{300 \times 20}{10} \approx \frac{6000}{10} \approx 600$

Now can you try estimate these:

a) 3.21×68.5
b) $\frac{534 \times 4.8}{2.31}$

Hegarty 130 and 131

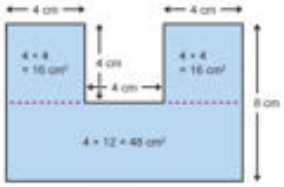
Year 10 Foundation Cycle 2 Mathematics

LO: I can calculate areas of compound shapes ☐

Method 1

Divide the shape into squares and rectangles, find their individual areas and then add them together.

The length of the larger rectangle is $4 + 4 + 4 = 12\ cm$



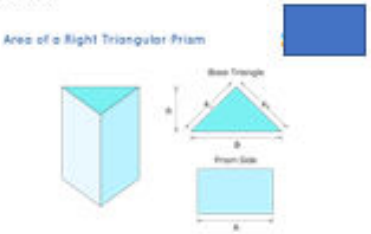
$Area = 16 + 16 + 48 = 80\ cm^2$

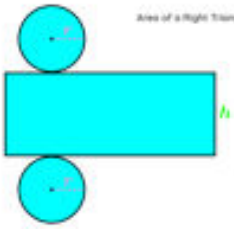
Method 2

Imagine the shape as a large rectangle with a section cut out.

Hegarty 555

LO: I can calculate the surface area of a right prisms and cylinders. ☐





Surface area of cylinder (SA)

$SA = 2\pi rh + 2\pi r^2$

r = radius h = height

Hegarty 584-586

LO: I can find the nth term of a linear sequence. ☐

I can understand and recognise 'special sequences' including square, cube and Fibonacci. ☐

Find an expression for n^{th} term for the following sequence

-1

2, 5, 8, 11, 14

+3 +3 +3 +3

It goes up in 3 therefore the nth term starts with 3n

You then find the 0^{th} term by finding out what comes before the 1^{st} term.

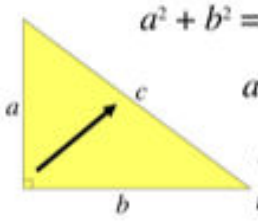
In this case -1

Therefore my nth term is: 3n - 1

Hegarty 198, 261, 263

LO: I can use Pythagoras' theorem in right angled triangles, as well as solve problems with Pythagoras' theorem in 2D figures. ☐

$a^2 + b^2 = c^2$ OR $a^2 = c^2 - b^2$



Which side is the hypotenuse?

The right angle points to the hypotenuse.

It's the side labelled "c".

Hegarty 498-504

LO: I can solve linear simultaneous equations by elimination and substitution, as well as derive and solve two simultaneous equations from a worded problem ☐

Solve the system by elimination.

$$\begin{cases} x + 2y = 11 \\ -3x + y = -5 \end{cases}$$

Step 1

$x + 2y = 11$

$-2(-3x + y = -5)$

$x + 2y = 11$

$+(6x - 2y = +10)$

$7x + 0 = 21$

Multiply each term in the second equation by –2 to get opposite y-coefficients.

Add the new equation to the first equation to eliminate y.

Step 2

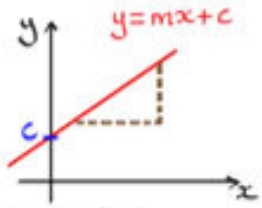
$7x = 21$

$x = 3$

Solve for x.

Hegarty 190-195

LO: I can find the equation of a line in the form of y=mx+c, as well as understand and interpret the gradient and y-intercept of straight line graphs, including parallel lines. ☐



m = gradient = $\frac{\text{difference in } y}{\text{difference in } x}$

Hegarty 206-214

KS4 Science Curriculum 2024-25

	Year 10			Year 11		
	Knowledge and skills	Enrichment	Curriculum links	Knowledge and skills	Enrichment	Curriculum links
Cycle 1	**Topics** – Cell Biology, Organisation, Atoms and the Periodic Table, Bonding, Energy, Electricity **Assessment:** End of topic, small assessments throughout. **Careers** – Medicine, Chemical engineer, design engineer	'Street Science' for students to at break and lunch. Science society, a club that takes part in events and competitions.	Maths – throughout all topics. PE – movement, circulation link to fitness DT – links to digestion and food groups.	**Topics** – Evolution, Ecology, Chemical Analysis, Chemistry of the Atmosphere, Using Resources, Waves, Magnetism, Space Physics. **Assessment:** End of topic, small assessments throughout. Mock Examinations. **Careers** – conservationist, sustainability officer, geologist, astrophysicist	'Street Science' for students to take part in experiments at break and lunch.	Maths – throughout all topics. Geography – links to sustainability.
Cycle 2	**Topics** – Infection and Response, Bioenergetics, Chemical Changes, Energy Changes, Radiation, Matter **Assessment:** End of topic, small assessments throughout. **Careers** – Medicine, botanist, chemical engineer, electrician	'Street Science' for students to at break and lunch. Science society, a club that takes part in events and competitions.	Maths – throughout all topics. Recognising patterns.	**Topics** – Revision of all topics, including targeted revision for student specific areas. **Assessment:** End of topic, small assessments throughout. Mock Examinations.	'Street Science' for students to take part in experiments at break and lunch.	Maths – throughout all topics.
Cycle 3	**Topics** – Homeostasis, Rates of Reaction, Organic Chemistry, Forces **Assessment:** End of topic, small assessments throughout. Mock Examinations. **Careers** – medicine, counsellor, chemical engineering, petrochemistry, design engineer	'Street Science' for students to take part in experiments at break and lunch. Trips to the Cheltenham Science Festival.	Maths – throughout all topics. Using equations.	**Topics** – Revision of all topics, including targeted revision for student specific areas. **Assessment:** End of topic, small assessments throughout. Mock Examinations.	'Street Science' for students to take part in experiments at break and lunch.	Maths – throughout all topics. DT – electricity, wiring and household skills.

Year 10 Biology – Cycle 2 Knowledge Organiser
Biology Paper 1- Organisation

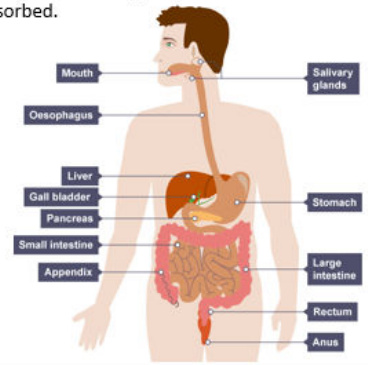
http://www.aqa.org.uk/subjects/science/gcse/combined-science-trilogy-8464

Levels of organisation:
organelles → cells → tissues → organs → organ systems

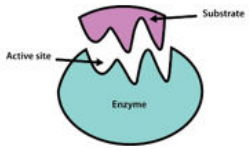
Structure	Description
Organelle	Cell structure that is specialised to carry out a particular function or job
Cell	Basic structural and functional unit of a living organism
Tissue	Group of cells with similar structures, working together to perform a shared function
Organ	Structure made up of a group of tissues, working together to perform specific functions
Organ system	Group of organs with related functions, working together to perform body functions

Digestive system

Digestion breaks down large molecules to smaller molecules that can be absorbed.

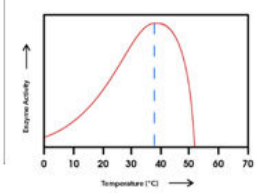


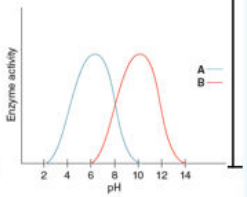
Enzymes
Biological catalysts.
Proteins.
Speed up reactions by splitting molecules apart or joining molecules together.
Specific and only catalyse 1 reaction.
Carbohydrase breaks down starch to glucose.
Protease breaks down protein to amino acids.
Lipase breaks down lipid to fatty acids and glycerol.



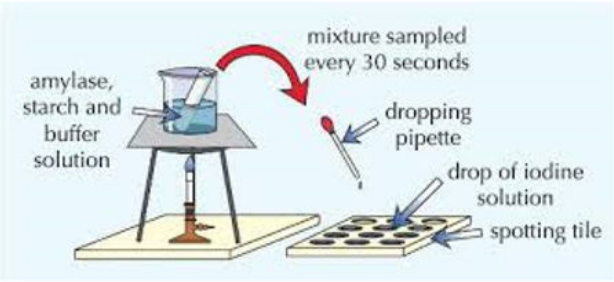
Mid-Cycle Assessment

Temperature effects the rate of enzyme reactions. Initially rate of reaction increases. If it gets too hot enzyme denatures. pH effects the rate of reaction. Different enzymes work best at different pH's. If the pH is to high or too low the enzyme can denature.
Denature means that the active site changes shape.

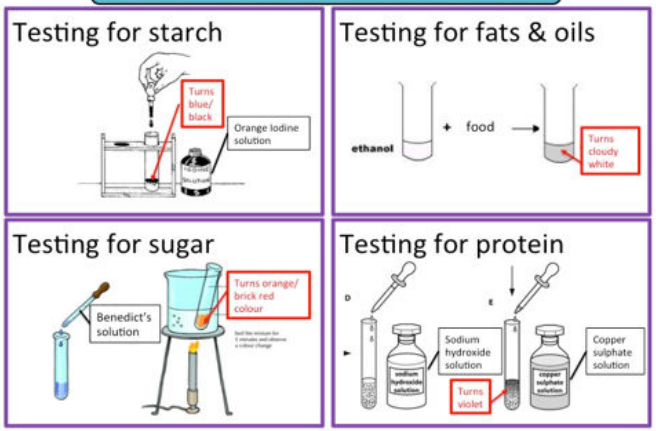




Enzymes – investigating effect of pH on enzyme activity.
To do this you use starch and amylase.
When blue black colour disappears starch no longer present.
Amylase has broken starch down into sugars. Faster the colour disappears the faster the reaction is.



Practical tests for starch, sugars, fats and proteins

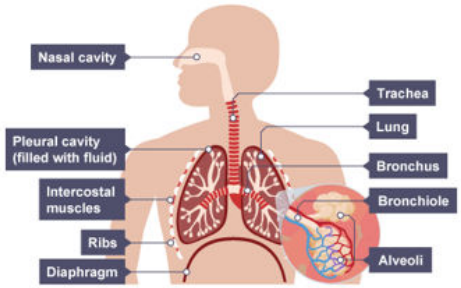


My Biology teacher is:

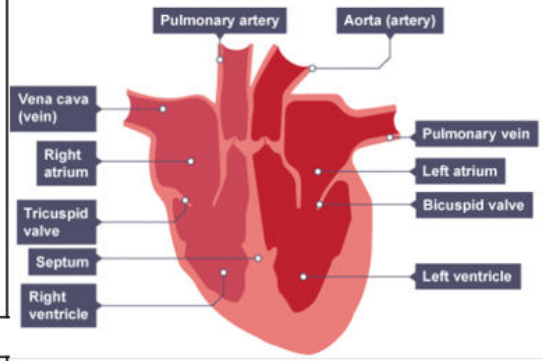
Year 10 Biology – Cycle 2 Knowledge Organiser
Biology Paper 1- Organisation

http://www.aqa.org.uk/subjects/science/gcse/combined-science-trilogy-8464

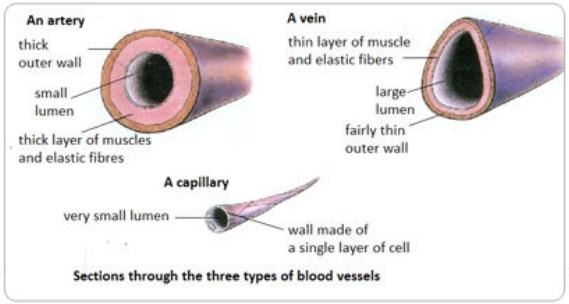
Lungs:
Air moves in and out of the lungs through trachea, bronchus, bronchioles and end in alveoli where gas exchange takes place. Oxygen diffuses into the blood and carbon dioxide diffuses out of the blood.



Heart:
Double circulatory system.
Left side oxygenated. Right side deoxygenated.
Pacemaker in right atrium controls your heart rate

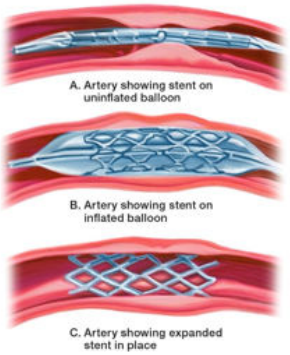


Blood vessels:
Red blood cells carry oxygen
White blood cells defend against infection
Platelets help blood to clot
Plasma is the liquid that carries everything in the blood – e.g. cells, waste products, glucose



Cardiovascular disease:

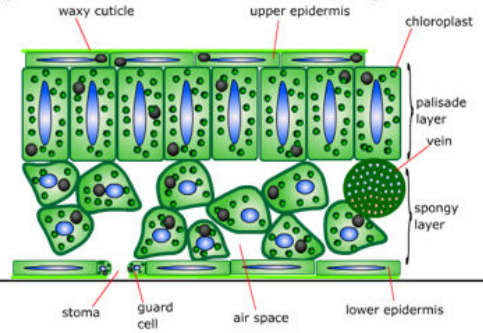
High fat diet and lack of exercise are risk factors for cardiovascular disease.
Fatty deposits build up in the arteries causing the arteries to narrow.
Stents keep arteries open.
Statins reduce cholesterol in the blood.
Artificial hearts can pump blood around the body.
Faulty heart valves can be replaced.



Health and disease:
Health is the state of physical and mental well being.
Diseases can be communicable or non-communicable.
Factors that affect your health:
- Poor diet
- Lots of stress
- Access to medicines

Risks factors can affect your chances of getting a disease.
Smoking can cause lung disease or lung cancer.
Obesity is linked to type 2 diabetes.
Drinking too much alcohol can damage the brain and liver.
Cancer is an uncommunicable disease caused by uncontrolled cell growth and division. There are 2 types of tumours benign and malignant.

Plant organisation transpiration:
Phloem tubes transport food.
Xylem tubes take up water.
Water flows through plant in the transpiration stream.
Transpiration is the loss of water from the plant.



My Biology teacher is:

AQA

Chemistry
Chemistry Paper 1- Quantitative Chemistry

Key terms

1 Law of conservation of mass	**No atoms** are **lost** or **gained** during a **chemical reaction**. The mass of the products is the same as the mass of the reactants. Some reactions **appear to give a change in mass**, but this is because a **gas may have escaped** from the reaction container.
2 Relative atomic mass (A_r)	The **average mass** of an **atom of an element** compared to Carbon-12.
3 Relative formula mass (M_r)	The **sum** of **all the atomic masses** of the atoms in a **formula** (e.g. H_2O).
4 Uncertainty	The **interval** within which the **true value** can be **expected to lie**. E.g. 25°C ± 2°C – the true value lies between 23°C and 27°C.
5 Mole (HT)	A measurement for the amount of a chemical. It is the **mass** (in grams) of **6.02×10^{23}** (the Avogadro constant) **atoms of an element**. Symbol: mol.
6 Balanced equation (HT)	Balanced symbol equations show **the number of moles that react**. e.g. $Mg + 2HCl \rightarrow MgCl_2 + H_2$ Shows one mole of magnesium reacting with two moles of hydrochloric acid to form one mole of magnesium chloride and one mole of hydrogen.
7 Limiting reactant (HT)	The **reactant** that is **completely used up** in a chemical reaction. It **limits the amount of product** formed.
8 Excess reactant (HT)	The reactant that is **not completely used up** in a chemical reaction. There is some reactant left at the end.
9 Concentration	A measure of the **number of particles** of a chemical in a **volume**. Can be measured in **g/dm³**.
10 Decimetre³ (dm^3)	A **measurement of volume**. Contains **1000cm³**.

Calculating relative formula mass (M_r)

https://www.youtube.com/watch?v=y7es3yl3zX0&index=8&list=PLsorq7UsrfYsFLSgTetRVjzN6QYvf3jpC

Add up all the atomic masses in a formula.

e.g. H_2O. Mass of hydrogen = 1. Mass of oxygen = 16.

$(2 \times 1) + 16 = 18$

Percentage uncertainty

$$\text{Percentage uncertainty} = \frac{\text{Uncertainty}}{\text{Quantity being measured}} \times 100$$

e.g. What is the percentage uncertainty of a 50cm³ measuring cylinder accurate to ±2cm³?

$$\text{Percentage uncertainty} = \frac{2}{50} \times 100 = 4\%$$

Mid-Cycle Assessment

Number of moles

$$\text{Number of moles} = \frac{\text{Mass of chemical}}{\text{Relative formula mass}}$$

e.g. How many moles of water are there in 36g of H_2O?

$$\text{Number of moles} = \frac{36}{18} = 2 \text{ moles}$$

Volume in dm³

$$\text{Volume in dm}^3 = \frac{\text{volume of liquid}}{1000\text{cm}^3}$$

e.g. What is the volume in dm³ of 500cm³ of hydrochloric acid?

$$\text{Volume in dm}^3 = \frac{500}{1000} = 0.5\text{dm}^3$$

Concentration of a solution

$$\text{Concentration} = \frac{\text{Mass of solute}}{\text{Volume (in dm}^3\text{)}}$$

e.g. What is the concentration of a solution of hydrochloric acid which contains 100g of hydrochloric acid in 500cm³?

$$\text{Concentration} = \frac{100}{0.5} = 200\text{g/dm}^3$$

https://www.bbc.com/education/topics/zsnyy4j

My Science teachers are:

AQA

Chemistry Chemistry Paper 1- Chemical changes

Key terms:

Acid – Substance producing more hydrogen ions than hydroxide ions when dissolved in water.

Alkali – Substance producing more hydroxide ions than hydrogen ions when dissolved in water.

Base – A substance that reacts with an acid to neutralise it and produce a salt.

Neutralisation – The reaction between an acid and a base to form a salt plus water.

Oxidation – The gain of oxygen, or loss of electrons, by a substance during a chemical reaction

Reduction – When reduction and oxidation take place at the same time.

Acids and alkalis

- **Acids** form acidic solutions in water. Acids produce hydrogen ions, H^+ in aqueous solution
- **Alkalis** form alkaline solutions in water. Alkalis produce hydroxide ions, OH^- in aqueous solution.
- A **neutral** solution is neither acidic, nor alkaline. A neutral solution has a pH value of 7.
- The pH scale measures the acidity or alkalinity of a solution. The pH of a solution can be measured using a pH probe, or estimated using universal indicator and a colour chart.

Strong and weak acids (HIGHER TIER only)

Acids in solution are a source of hydrogen **ions**, H^+. The hydrogen ions are produced when the acid **dissociates** or breaks down to form ions.

Strong acids
Strong acids completely dissociate into ions in solution.
For example, hydrochloric acid is a strong acid. It ionises completely to form hydrogen ions and chloride ions:
$HCl(aq) \rightarrow H^+(aq) + Cl^-(aq)$
Nitric acid and sulfuric acid are also strong acids.

Weak acids
Weak acids only partially dissociate in solution.
For example, ethanoic acid is a weak acid. It is only partially ionised to form hydrogen ions and ethanoate ions:
$CH_3COOH(aq) \rightleftharpoons H^+(aq) + CH_3COO^-(aq)$
The $\rightleftharpoons$ symbol is used in the equation to show that the reaction is a **reversible reaction** and does not go to completion.

Neutralisation

A **neutralisation** reaction is a reaction between an acid and a base.

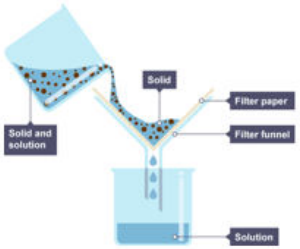
acid + base → salt + water

Remember:
acids in solution are sources of hydrogen **ions**, H^+
alkalis in solution are sources of hydroxide ions, OH^-

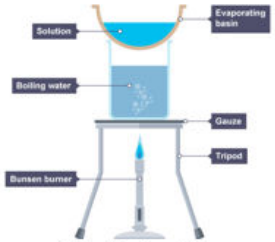
$$H^+_{(aq)} + OH^-_{(aq)} \rightarrow H_2O_{(l)}$$

Required practical

Preparation of a pure, dry sample of a soluble salt from an insoluble oxide or carbonate



1. Filtering the mixture



2. Heating the solution

Add metal oxide in excess → Mix → filtration → heating & evaporation → crystallisation

Reactivity Series

The **reactivity series** of metals is a chart showing metals in order of decreasing **reactivity**. In general, the more **reactive** a metal is:

- the more vigorous its reactions are
- the more easily it loses electrons in reactions to form positive ions (cations)

Metal	Reaction with cold water	Reaction with dilute acids	Reactivity
Potassium	Violent	Violent	Most reactive
Sodium			
Lithium			
Calcium	Fast	Rapid	
Magnesium	Very slow		
(Carbon)			
Zinc	Usually no reaction	Slow	
Iron	Rusts slowly		
(Hydrogen)			
Copper	No reaction	No reaction	
Gold			Least reactive

Reactions of metals with water
Metal + water → metal hydroxide + hydrogen
E.g. Sodium + water → sodium hydroxide + hydrogen

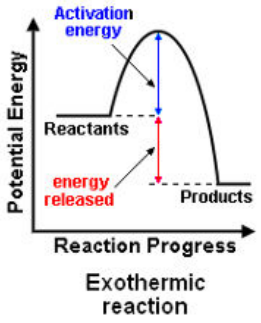
Reactions of metals with acids
Metal + acid → salt + hydrogen
E.g. Magnesium + hydrochloric acid → magnesium chloride + hydrogen

My Chemistry teacher is:

AQA

Chemistry
Chemistry Paper 1- Energy changes

Exothermic reactions https://www.bbc.com/education/topics/z27xxfr

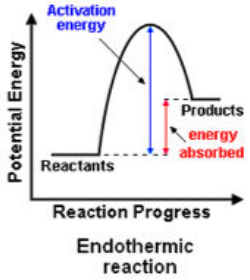


A reaction that **transfers energy to the surroundings** so the **temperature of the surroundings increases**, e.g. **combustion** and **neutralisation** reactions.

Used in **self-heating cans** and **hand warmers**.

Activation energy= The minimum **energy needed** for **particles to successfully react**.

Endothermic reactions

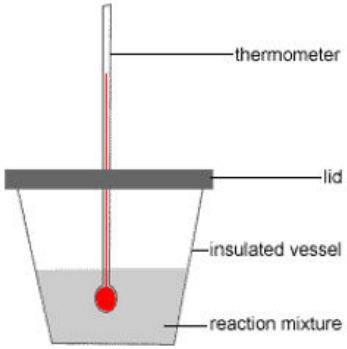


A reaction that **takes in energy from the surroundings** so the **temperature of the surroundings decreases**, e.g. **thermal decomposition**.

Used in **sports injury packs**.

https://www.youtube.com/watch?v=jaj_p-HbtII&list=PLsorq7UsrfYsFLSgTetRVjzN6QYvf3jpC&index=12

Required practical- Investigate the variables that affect temperature change in chemical reactions eg acid plus alkali.



https://www.youtube.com/watch?v=tKxcQYZ2YH8

Mid-Cycle Assessment

Energy change of a reaction (Higher tier)

Energy is **not created or destroyed**, only **transferred from one store to another**. This is known as the **conservation of energy**.

Energy is needed to break bonds.

Energy is released when bonds are formed.

If the energy change is **positive** then the reaction is **endothermic**. If the energy change is **positive** then the reaction is **exothermic**.

The energy change in a reaction can be calculated using **bond energies**. A bond energy is the amount of **energy** needed to break one **mole** of a particular **covalent bond**.
Different bonds have different bond energies. These are given when they are needed for calculations.

To calculate an energy change for a reaction:
- add together the bond energies for all the bonds in the **reactants**- this is the 'energy in'
- add together the bond energies for all the bonds in the **products** - this is the 'energy out'
- energy change = energy in - energy out

https://www.youtube.com/watch?v=eExCBkp4jB4

Hydrogen and chlorine react to form hydrogen chloride gas:

$H–H + Cl–Cl \rightarrow 2 \times (H–Cl)$

Use the bond energies in the table to calculate the energy change for this reaction.

Bond	Bond energy
H–H	436 kJ mol^{-1}
Cl–Cl	243 kJ mol^{-1}
H–Cl	432 kJ mol^{-1}

Energy in = 436 + 243 = 679 kJ mol^{-1}

Energy out = (2 × 432) = 864 kJ mol^{-1}

Energy change = in - out

= 679 - 864

= -185 kJ mol^{-1}

My Chemistry teacher is:

Year 10 Physics – Cycle 2 Physics Paper 1- Particle model of matter

Density

Density is how much **mass** a substance contains **compared to its volume**. Solids are usually dense because the particles are closely packed.

Equation	Symbol equation	Units
Density = $\frac{\text{mass}}{\text{volume}}$	$\rho = \frac{m}{v}$	Density = kilograms / metre^3 (kg/m^3) Mass = kilograms (kg) Volume = metres^3 (m^3)

Gas Pressure

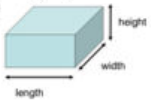
The **force** exerted by gases on surface as the **particles collide** with it. **As temperature increases, gas pressure increases** if the volume stays constant.

Increasing temperature increases pressure as the particles have more kinetic energy so collide with the surface more frequently.

Required practical: Measuring density

Regular shaped objects:

1. Measure the length, width and height of each of the objects.
2. Measure the mass of each object using the digital balance, and record the results.
3. Calculate and record the volumes (length x width x height).
4. Calculate and record the densities (mass ÷ volume)



Irregular shaped objects:

Can be measured using a displacement (eureka) can.
Measure the volume of water displaced by the object.

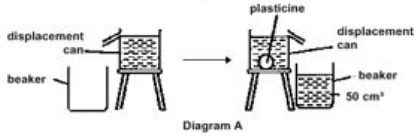
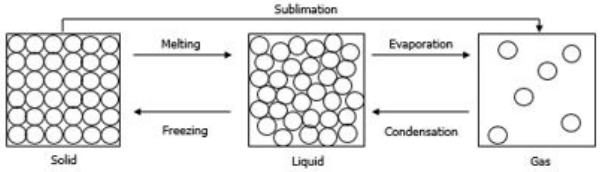


Diagram A

https://www.youtube.com/watch?v=lvqu6JAbaKc

Changes of state



Change of State= When a substance **changes from one state of matter** to another (e.g. melting is the change from a solid to a liquid). Energy changes the state, not the temperature.

Changes of state are **physical changes** because the **material recovers its original properties if the change is reversed.**

Internal energy and transfers

Internal Energy= The **energy stored** inside a system **by the particles** (atoms and molecules) that make up the system. Internal energy is the **total kinetic energy and potential energy of all the particles.**

When you heat something up, you increase its internal energy

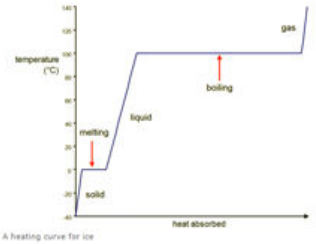
Kinetic Energy= Energy stored within **moving objects** (e.g. particles).

Potential Energy= Energy stored in **particles** because of their **position.** The **further apart** particles are, **the greater the potential energy.**

Specific heat

The specific heat capacity of a substance is the **amount of energy** required to **raise the temperature of one kilogram** of the substance **by one degree Celsius.**

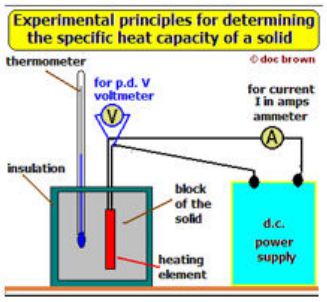
Latent heat is the amount of energy required to **change the state of one kilogram** of the substance with **no change in temperature.**



A heating curve for ice

Equation	Symbol equation	Units
Energy = mass x SLH	E = ml	Energy = joules (J) Mass = kilograms (kg) SLH = Joules per kilogram (J/Kg) Specific heat capacity = J/Kg°C
Change in thermal energy = mass x specific heat capacity x temperature change	ΔE = mcΔθ	Change in thermal energy = joules (J) Temperature change = degrees (°C)

Required practical-Specific heat capacity



Specific heat capacity is the **energy** needed to raise the temperature of **1kg** of a material by **1°C**

change in thermal energy = mass × specific heat capacity × temperature change

$[\Delta E = m c \Delta\theta]$

change in thermal energy, ΔE, in joules, J

mass, m, in kilograms, kg

specific heat capacity, c, in joules per kilogram per degree Celsius, J/kg °C

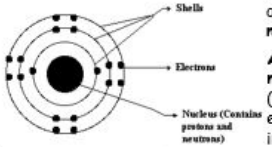
temperature change, $\Delta\theta$, in degrees Celsius, °C

My Physics teacher is:

Year 10 Physics – Cycle 2 Physics Paper 1- Atomic Structure

Atomic Structure

Atom= The **smallest part of an element** that can exist. All substances are made of atoms. **No** overall **electrical charge**. **Very small**, radius of 0.1nm.



Mass number – the total number of **protons** and **neutrons**

Atomic number – the **number of protons** (the number of electrons is the same in an atom)

$^{23}_{11}Na$

Electron configuration– Electrons fill the first energy level (shell) first. Maximum electrons: **2 in first shell 8 electrons in other shells**

Sub-atomic particle	Mass	Charge	Position in Atom
Proton	1	+1	Nucleus
Neutron	1	0	Nucleus
Electron	Very small	-1	Orbiting in shells

Atoms and Isotopes

Atoms of the same element can have **different numbers of neutrons**; these atoms are called **isotopes** of that element.

Atoms turn into **positive ions** if they **lose one or more outer electron(s)**.

Isotopes of Carbon

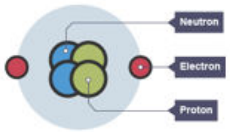
^{12}C	^{13}C	^{14}C
Carbon-12	Carbon-13	Carbon-14
6 protons 6 neutrons	6 protons 7 neutrons	6 protons 8 neutrons

Energy levels:
Absorption of radiation may lead to electrons moving further from the nucleus (higher energy level).
Emission of radiation may lead to electrons moving closer to the nucleus (lower energy level).

Development of the model of the atom

Plum pudding model

The plum pudding model shows that the atom is a **ball of positive charge** with **negative electrons embedded** in it. Was **incorrect**.



Nuclear model

Rutherford's scattering experiment found a **dense, positively charged nucleus**.

The nuclear model has a **positive nucleus** and **electrons orbiting**.

Chadwick later discovered **neutrons**.

Bohr discovered the arrangement of **electrons in shells**.

Nuclear radiation

Radioactive decay= When an **unstable nucleus changes** to **become more stable** and **gives out radiation**. **Random**.

Activity= The **rate at which decay occurs**. Measured in **becquerels (Bq)**.

Count rate= Number of decays recorded **each second** by a Geiger-Muller tube.

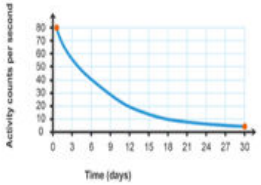
Radiation	Range in air	Absorbed by	Ionizing Power	Product emitted when nuclei decays
Alpha	Short – **up to 5cm**	**Paper** and **skin**	**Very High**	**2 protons** and **2 neutrons**
Beta	Medium – **about 1m**	About 5mm of **aluminium**.	**Medium**	**Electron**
Gamma	**Unlimited** – spreads out in air from the source	**Several centimetres** of **lead**.	**Low**	**Electromagnetic wave**

Nuclear equations

Alpha decay	$^{219}_{86}Rn \rightarrow {}^{215}_{84}Po + {}^{4}_{2}He$ In alpha decay a helium nucleus (2 protons and 2 neutrons) is emitted. The new element formed has: - A mass number that has decreased by 4. - An atomic number that has decreased by 2.
Beta decay	$^{14}_{6}C \rightarrow {}^{14}_{7}N + {}^{0}_{-1}e$ In beta decay a neutron turns into a proton. An electron is emitted. The new element formed has: - A mass number that stays the same. - An atomic number that increases by 1.
Gamma ray	There are no changes to the nucleus when gamma rays are emitted.

Half-life

The **time it takes** for the **number of nuclei of the isotope in a sample to halve**
Or,
The **time it takes for the count rate** (or activity) from a sample containing the isotope **to fall to half its initial level**.



Contamination

Contamination	The **unwanted presence of materials containing radioactive atoms** e.g. within liquids, with the body/ on the skin.
Irradiation	When an object is **exposed to radiation**. The object does not become radioactive itself.
Ionisation	Radiation can ionize by **removing electrons from atoms to form ions**. If this happens in **DNA** it could lead to a **mutation that causes cancer**.
Peer review	The **checking of scientific results** by other **scientific experts**.

Nuclear fission

Where an unstable **nucleus** absorbs a neutron, **splits** into two daughter **nuclei** releasing a lot of energy and more neutrons. Used in **nuclear power stations**

Nuclear fusion

Where two **nuclei** combine to produce a new, larger **nucleus**. Releases a lot of energy in the process. Requires high temperature and pressures, happens in **stars**.

My Physics teacher is:

KS4 Religious Studies Curriculum Plan 2024-25

Staff	Year 10 - Edexcel	Year 11 – Edexcel
Careers	Building understanding of world views and philosophical and ethical approaches gives an understanding of how society functions. Leading to careers in the public sector, HR, Social policy design, law, environmental work, International development, working with NGO's etc. home work related tasks will be set at the end of every cycle that link to careers.	
Cycle 1 = 10 weeks	Paper 1 Religion and Society through a study of Christianity Christian Beliefs • The Trinity • The creation of the universe and humanity • The incarnation • The last days of Jesus' life • The nature of salvation • Christian eschatology • The problem of evil and suffering • Solutions to the problem of evil and suffering Matters of Life and Death • Origins and value of the universe • The sanctity of life • The origins and value of human life • The issue of abortion • Death and the afterlife • Non-religious arguments against life after death • Euthanasia • The natural world and issues raised	Intro Living the Muslim life – • The Ten obligatory acts in Shi'a Islam • The Shahadah • Salah • Sawm • Zakah and Khums • Hajj • Jihad • Celebrations and commemorations Intro Peace and Conflict – • Peace • Peace making • Conflict • Pacifism • The just war theory • Holy war • Weapons of mass destruction • Issues surrounding conflict
Assess Week - (1 week)	GCSE style assessment, based upon these topics. Assessment and mark scheme in shared area.	Mocks and GCSE style assessment, based upon these topics Assessment and mark scheme in shared area.
Review - (1 week)	Green pen against mark scheme, peer review then teacher assessment followed by consolidation of common misconceptions.	Green pen against mark scheme, peer review then teacher assessment followed by consolidation of common misconceptions.
Cycle 2 = 10 weeks	Intro Living the Christian life • Christian worship • Sacraments • The nature and purpose of prayer • Pilgrimage • Celebrations • The future of the Church • The Church in the local community • The worldwide Church Intro Marriage and the family – • Marriage • Sexual relationships • Families • Roles within the family • Family in the local parish	Revision Start revision for Mocks – Matters of life and death – Sanctity of life and associated teaching Cycle 2 –FULL MOCKS – Christian Beliefs and Practices, plus marriage and family revision Revision from the post mock point will be based upon weak areas from full mocks for each class, below is a suggested outline. This will be confirmed in Dept. meetings and agreed with HoF Cycle 2 - Structured Revision Start with Muslim Beliefs – 6 Beliefs and 5 Roots Allah and Prophets Holy books and Angels Al-Qadr and Aqirah Living the Muslim Life revision – The 10 obligatory Acts and Shahadah

	• The family in the parish today • Family planning Divorce • Men and women in the family • Gender prejudice and discrimination	Salah and Sawm Zakh and Khums – and Hajj Jihad and celebrations and festivals
Assess Week – (1 week)	GCSE style assessment, based upon this topic. Assessment and mark scheme in shared area.	GCSE style assessment, based upon this topic. Assessment and mark scheme in shared area.
Review – (1 week)	Green pen against mark scheme, peer review then teacher assessment followed by consolidation of common misconceptions.	Green pen against mark scheme, peer review then teacher assessment followed by consolidation of common misconceptions.
Cycle 3 = 10 weeks	Introduction to Paper 2 – Religion, Peace and Conflict through a study of Islam Muslim Beliefs – • The six beliefs of Islam • The five roots of "Usul ad-Don" in Shi'a Islam • The nature of Allah • Risalah • Malaikah • Muslim Holy books • Al-Qadr • Akhirah Intro Crime and punishment in Islam – • Justice • Crime • Good, evil and suffering • Punishment • Aims of punishment • Forgiveness • Treatment of criminals • The death penalty	
Assess Week – (1 week)	GCSE style assessment, based upon this topic. Assessment and mark scheme in shared area.	Assessment based upon Paper 1.
Review – (1 week)	Green pen against mark scheme, peer review then teacher assessment followed by consolidation of common misconceptions.	Green pen against mark scheme, peer review then teacher assessment followed by consolidation of common misconceptions.

Edexcel Year 10 RE – Cycle 2 – Living the Christian life

Worship

Christians have two types of worship:

liturgical worship, which is worship using a set form.

non-liturgical worship, which has no set form and tends to focus on music and the sermon

All Churches have informal worship at gatherings such as Mums and Tots, and Christians also worship in private.

It is important to have different types of worship because people have different feelings and interests.

The picture can't be displayed.

Christian

Advent is a four-week preparation for Christmas when Christians think about Jesus coming again to bring in the final judgement.
Christmas celebrates the birth of Jesus and is important for Christians because without the birth of Jesus there would be no Christianity and no salvation from sin.
Holy Week is when Christians remember the last week of Jesus' life, especially the Last Supper on Maundy Thursday and the crucifixion on Good Friday.
Easter Day celebrates Jesus rising from the dead. Easter is important because it celebrates the founding of the Eucharist, Jesus dying to save people from sin and rising from the dead to give Christians the hope of eternal life.

Sacraments

Sacraments are celebrations. They mark stages in life and are outward signs and symbols which show that an inward gift from God has been given.
Catholics, Orthodox Christians and some Anglicans have seven sacraments, while most Protestants just have baptism and Eucharist.
Christians are baptised to become **members** of the Church and to **remove their sins**.
Most Christians are baptised as babies, but some Christians such as **Baptists** are baptised as adults.
Some Christians (Catholic and Orthodox) believe that the bread and wine in the Eucharist change to the body and blood of Jesus, others (Protestants) call it Holy Communion and think it is just remembering the **Last Supper**, but all Christians believe that it unites them with Jesus and each other.

The future of the Church

Great Commission – Jesus' last command to his disciples to go out and convert the world
Evangelism is important for the church as a whole and for individual Christians.
It: Enables Christians to obey the Great Commission of Jesus
Encourages Christians to tell other people about their faith
Can help the poor and suffering to have hope
Can occur alongside improvements to education and healthcare
Keeps the Christian message alive and relevant to life today.
Brings many new Christians to the Church.
What is missionary work?
The church has a **mission** to spread the Christian faith. It does this by sending **missionaries** around the world. As well as preaching to people about Jesus, missionary work may also include working among the poor to build hospitals and schools, nursing and teaching.

Prayer

Vocal prayer – prayer using words
Meditation – thinking about religious matters
Contemplation – communion with God
Adoration – praising or adoring God for what he is
Thanksgiving – prayers thanking God
Confession – prayers saying sorry for sins and asking God's forgiveness
Supplication

[D] 'Everyone needs to pray. ' Evaluate this statement considering arguments for and against. In your response you should:
refer to Christian teachings
refer to different Christian points of view
reach a justified conclusion.
[12 Marks]

The local Church

Denomination – *A group of Christians with shared set of beliefs.*
Parish – *A community of believers from a denomination in a particular area.*
Ecumenism – *A movement that tries to bring different Christian denominations together.*

Local churches provide worship, the sacraments and opportunities to learn more about the faith.
They are important to the local area because they also provide schools, social facilities and advice centres as well as running such things as food banks.
They are also involved in working with other churches to bring about Church unity (ecumenism).

Pilgrimage

Pilgrimage has always been important for Christians as they believe it brings them closer to God.
Christians go to Jerusalem to feel close to Jesus in the places he spent his final days.
They visit places like Walsingham to feel close to the Virgin Mary and go on pilgrimage to places like Iona and Taizé to become more united with other Christians.
'Every year Jesus' parents went to Jerusalem for the Festival of the Passover. When he was twelve years old, they went up to the festival, according to the custom. After the festival was over, while his parents were returning home, the boy Jesus stayed behind in Jerusalem, but they were unaware of it. (Luke 2:41–43)

The worldwide church

Reconciliation – bringing together people who were opposed to each other
Persecuted - to treat people badly or harass them because of their religion/race etc
Charity - he voluntary giving of help, typically in the form of money, to those in need
Forgiveness - Stopping blaming someone, and/or pardoning them for what they have done wrong

Christianity is the world's largest religion and is at work throughout the world. It tries to bring an end to conflict because Christians believe that Jesus died to bring forgiveness and reconciliation. The Church is being persecuted in Muslim countries which operate Shari'ah (Islamic) law and in dictatorships like North Korea.

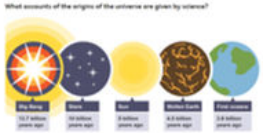
Homage – acknowledgement of superiority
Reverence – an act showing religious respect
Host – unleavened bread used in the Eucharist
Clergy – people ordained for religious duties in Christian
Churches Vestments – official robes for those leading Christian worship
Lectionary – a list of Bible readings to be read at certain times of the year
Liturgical year – the year in the Church's calendar based on the special festivals from Advent to Pentecost
Congregation – the people assembled for worship
Liturgy – a set form of public worship
Holy Communion – the Christian service of thanksgiving using bread and wine (also called Eucharist or Mass)
Extempore prayers – prayers said without preparation
Sacrament – an outward sign of an inward blessing
Penance – an action showing sorrow for a sin
Eucharist – a Christian rite considered by most to be a sacrament
Grace – God's gift which gives strength to be good and holy
Infant baptism – baptising babies, with their parents and godparents making vows on their behalf
Paschal candle – the large candle kept in the church throughout Easter and first lit on Easter Day
Believers' baptism – restricting baptism to those old enough to understand the meaning of the ritual
Dedication – a ceremony involving a child being presented to the congregation and vows being made to encourage the child to follow the Christian life
Absolution – through the actions and words of a priest or minister pardon of sins is assured
Holy Communion – where Christians share bread and wine re-enacting the Last Supper
Transubstantiation – the belief that during the service of Mass (also called Eucharist or Holy Communion) the bread and wine transform into the body and blood of Jesus

Stretch and challenge:- Does the Church still have relevance in the 21st Century? Has the true meaning of Easter as been lost?

Edexcel - Year 10 Religion and Ethics – Cycle 2 – Matters of life and death

Origins and value of the universe

Today, the idea now known as the Big Bang theory is the most accepted scientific explanation for how the universe came into being.



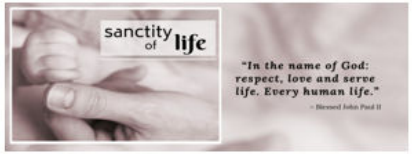
- Christianity teaches that the universe is important and is a reflection of God's great power and wisdom, known as general revelation.
- Many Christians believe that you can learn about God by studying the universe. This is known as natural theology.
- Christianity has been criticised in the past for encouraging a selfish and destructive attitude towards the environment. In response to this, the Christian Church has urged people to be better stewards of the Earth and the environment.

The Sanctity of life

- Christianity teaches that all life is special because it comes from God.
- Human life is believed to be particularly precious and is regarded as sacred.

Before I formed you in the womb I knew you, before you were born I set you apart; I appointed you as a prophet to the nations. (Jeremiah 1:5)

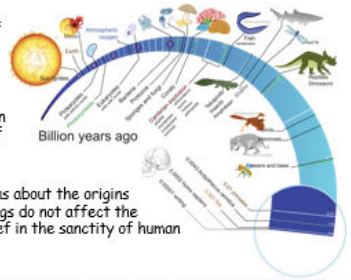
- A belief in the sanctity of life can influence the way a Christian might try to live their life and their attitude towards bioethical issues associated with the beginning and end of life, such as abortion, embryo research, cloning, fertility treatments, genetic engineering and euthanasia.
- While all Christians may believe in the sanctity of life they can have different views about matters of life and death.



Origins and value of human life

Scientific theories argue that human beings were not created when the universe began billions of years ago but came into being much later through a process known as evolution.

- The theory of evolution was put forward by Charles Darwin in a book called On the Origins of Species.



- Scientific ideas about the origins of human beings do not affect the Christian belief in the sanctity of human life.
- Christians share a respect and regard for the value of human life with people from other religions and agnostics and atheists alike.
- The value of human beings is recognised in the Universal Declaration of Human Rights.

Abortion

Abortion is the medical process that terminates or ends a human pregnancy so that it does not result in the birth of a baby.

- Traditionally, the Christian Church has taught that abortion is wrong in all circumstances. Today, denominations have different views and for many Christians it is a very complex issue.
- Humanists believe that abortion is a serious moral issue. They support a woman's right to have an abortion, if that is the right choice for them, but believe that abortion should be a last resort. Atheists have differing views about abortion. Some atheists are very pro-life and totally against abortion, whereas others believe that it can be a positive moral choice. A Christian may or may not share the views of an atheist or Humanist about abortion, depending upon each of their personal beliefs. Most Christians would disagree with the idea that abortion can be a positive moral choice.

Death and the afterlife

People have different ideas about what happens after death. Christians believe that the resurrection of Jesus proves that life continues after death.

Theists and Humanists do not believe in life after death. They argue that death is the end of human existence and to think anything else is just 'wishful thinking'.

Christians reject all arguments that say there is no such thing as an afterlife. They are also taught to answer questions and explain their beliefs to the non-religious.

Some people claim to have had near death experiences, which they think supports the idea of an afterlife, although others disagree and say that this can be explained in other ways.

Euthanasia

Euthanasia is a term used to describe the deliberate act of ending a person's life to relieve pain and suffering. It is a complex issue and can also be known as assisted dying.

- Hospices and palliative care are seen as alternatives to euthanasia.
- Most Christians disagree with euthanasia and think it is morally wrong. This is because of a belief in the sanctity of life.
- Humanists and many atheists would like to see voluntary euthanasia legalised, under strict conditions. They believe that it is everyone's basic human right to be able to choose how and when they die.
- Christians do not want euthanasia to be legalised

Christian and non-religious responses to the natural world

Christians believe that stewardship is a way of life. This means they have a responsibility to try to protect and improve the environment.

Operation Noah is an ecumenical Christian charity which is very concerned about climate change. It says that the time has now come for everyone, particularly Christians, to take action against this.

In the past, Christianity has been criticised for its attitude towards animals. Today most Christians believe that animals are an important part of God's creation.

However, they have different ideas about the role of animals and, in some cases, how they should be treated. The Anglican Society for the Welfare of Animals (ASWA) is a Church of England organisation that supports animal welfare.

It also campaigns to stop the abuse of animals Organisation, which aims to educate people about the importance of caring for all of creation.

Exam questions

- Outline 3 arguments for life after death (3 Marks)
- Outline 3 reason for why a Christian might oppose abortion (3 Marks)
- Outline 3 arguments in support of euthanasia (3 marks)

- Explain two scientific explanations about the origins of human life. (4marks)
- Explain two reasons why a nonreligious person would reject belief in a life after death. (4 marks)
- Explain two different Christian beliefs about animal rights (5 marks)

- Explain two reasons why Christians believe in the existence of life after death. (5 marks)
- Explain two reasons why a Christian might oppose Euthanasia. (5 marks)
  - ➢ In your answer you must refer to a source of wisdom and authority

- 'Human life created itself' (12 marks)
- 'Abortion is always wrong' (12 Marks)
- 'There is no good reason to believe in an afterlife.'
  - ➢ Refer to Christian teachings
  - ➢ Refer to a different Christian point of view
  - ➢ Read a justified conclusion

Key terms

Big Bang
A scientific theory regarding the origin f the universe.

Sanctity of Life
The belief that life is holy and belongs to God

Abortion:
The Deliberate ending of a pregnancy by removal of the foetus

Paranormal:
Experiences which suggest that there may be a nonvisible sprit world.

Quality of life:
The value given to life depending on how far a person can take enjoyment form it.

Euthanasia:
The deliberate administering of life ending medication by a third party

Hospice:
A place which provides care for people who have serious or terminal illness

Stewardship
Looking after something that is not your own

Key Stage 4 Physical Education

	Year 10	Year 11		
	Leadership skills and implementing and developing tactics	Evaluating performance and demonstrating improvement	Enrichment	Curricular links
Cycle 1	• **Evaluate performance** • **Embedding and continue to develop techniques into a competitive game** • **Use and develop tactics in various situations** • **Analyse and evaluate skills as a leader and official – officiating games with support** Assessment: skills learnt used within a game type of activity/routine	• **Evaluate performance and demonstrate improvement** • **Embedding and continue to develop techniques into a competitive game** • **Use and develop tactics in various situations** • **Analyse and evaluate skills as a leader and official – officiating games with support** Assessment: skills learnt used within a game type of activity/routin3	Football Netball Rugby Trampolining Fitness club Dance Basketball	HRE links Science
Cycle 2	• **Evaluate performance** • **Embedding and continue to develop techniques into a competitive game** • **Use and develop tactics in various situations** • **Analyse and evaluate skills as a leader and official – officiating games with support** Assessment: skills learnt used within a game type of activity	• **Evaluate performance and demonstrate improvement** • **Embedding and continue to develop techniques into a competitive game** • **Use and develop tactics in various situations** • **Analyse and evaluate skills as a leader and official – officiating games with support** Assessment: skills learnt used within a game type of activity	Football Netball Rugby Trampolining Fitness club Dance Basketball	
Cycle 3	• **Evaluate performance** • **Embedding and continue to develop techniques into a competitive game** • **Use and develop tactics in various situations** • **Analyse and evaluate skills as a leader and official – officiating games with support** Assessment: skills learnt used within a game type of activity	• **Evaluate performance and demonstrate improvement** • **Embedding and continue to develop techniques into a competitive game** • **Use and develop tactics in various situations** • **Analyse and evaluate skills as a leader and official – officiating games with support** Assessment: skills learnt used within a game type of activity	Cricket Rounders Athletics Tennis Softball	Measurements – Maths

Year 10 PE – Tactical Development/Leadership

Table Tennis

- **Grip and stance**
- **Push – Backhand/Forehand**
- **Backhand Drive – application of spin**
- **Forehand Drive – application of spin**
- **Serve**
- **Lob and smash**
- **Singles and doubles play**

Football

- Defensive tactics
- Attack tactics
- Formations
- Set plays
- Adapting tactics
- Leadership/ coaching

Girls Football

Leaders:
Confidence Skills
Working with others
Leadership skills
Communication skills
Problem Solving skills.

Attacking:
- Finishing
- Passing
- Receiving
- Turning
- Moving with the ball

Defending:
- Intercepting
- Pressing
- Marking
- Challenging
- Covering and recovering

Trampolining

- Basic moves and twists
- Seat landing plus combinations
- Swivel hips
- Front landing plus combinations
- Back landing plus combinations
- Somersaults

Rugby

- Defensive tactics
- Attack tactics
- Formations
- Set plays
- Adapting tactics
- Leadership / coaching

Netball

- Recap – recall Passing/Receiving, Ball handling, Footwork, Marking/covering, Intercepting, Dodging
- Tactical development – centre passing, backline, side line
- Game play
- Officiating
- Coaching and development

HRE

- Circuit movements
- Safe and effective use of resistance machines
- Planning, conducting and evaluating a fitness programme

Stick Option 1 subject Curriculum plan here

Stick Option 1 subject Curriculum Organiser here

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Stick Option 2 subject Curriculum plan here

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Stick Option 3 subject Curriculum plan here

Stick Option 3 subject Curriculum Organiser here

Stick Option 3 subject Curriculum Organiser here