

100 Day Plan

Class of 2023 – Y13

All subjects week by week from Monday 13th February 2023.

Note from Gareth

The next 100 days are a crucial stage for you as you prepare for your final exams. This is the time when you consolidate your learning and build on the knowledge and skills you have acquired throughout the past two years. Revision is a systematic and effective way to reinforce understanding and retain information for longer periods.

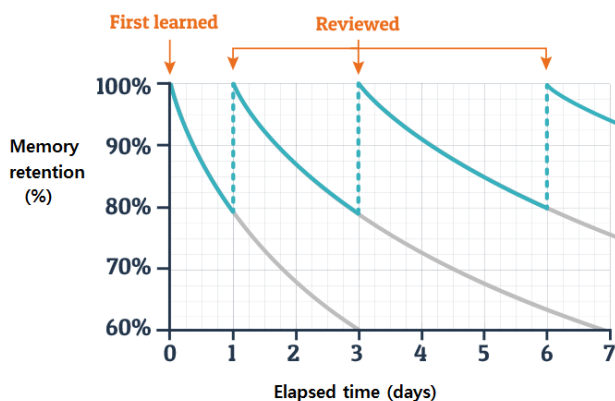
To make the most of revision, it is important to create a structured revision plan and stick to it. You should identify your strengths and weaknesses, and focus on areas that need improvement. Taking practice tests and past papers is a good way to get a feel for the types of questions that may come up in exams.

In addition to traditional revision methods such as reading textbooks, taking notes and writing essays, you can use modern technologies such as online resources, flashcards, and revision apps. These can be a fun and engaging way to revise and provide an alternative to traditional methods.

It's also essential to take breaks and maintain a healthy lifestyle during revision. A balanced diet, regular exercise, and adequate sleep can help improve focus and memory retention. Making time for leisure activities can help reduce stress and anxiety, which can have a negative impact on revision.

In conclusion, revision is an essential part of preparing for your final exams. By adopting a structured approach, using a combination of revision techniques and taking care of one's well-being, you can increase your chances of success.

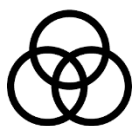
We hope that you will find the 100-day plan helpful and motivating. We hope it's your toolkit to success.



Learning Retention

Each time learning is reviewed, the rate at which you forget reduces. Essentially, the more you revise, the longer you will remember what you've learned.

Revision Strategies



This document contains information that you will find useful when revising for your upcoming assessments.

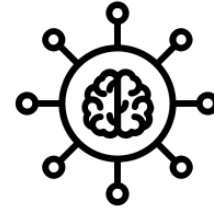
The first section walks you through six revision strategies that research has shown to be more successful than others. There is a video explaining each revision strategy on the UTC website in the **remote learning** section. Some activities are marked with * below and these are specifically identified as being useful revision techniques for students with SEN.

The second section is a week by week guide for each exam subject, identifying what you should be revising each week in the build up to summer exams. If you follow this guide then you will have revised everything you need to over the next few months.

Revision Top Tips

- 1 Get organised** – It is important to get the equipment you need to revise before you start revising. Stock up on cue cards, highlighters, plain and lined paper and different coloured pens.
 - 2 Tidy up** – You'll need somewhere with good lighting, your pens close by, your phone out of sight and your TV unplugged. Try not to revise on your bed, or you'll be dreaming of pink igloos and elephants before you know it.
 - 3 Know your stuff** – Make sure you have all of your revision resources to hand. Download your knowledge organisers from the UTC website and find out what exam boards you are using.
 - 4 Take a break** - Don't totally stop yourself from having fun. This'll help you stay motivated, relax, and allow you to keep up with your favourite hobbies.
 - 5 Sleep and eat well** - Sleep is more important than you'd imagine - it helps your brain store all the juicy information you've learned throughout the day. Drinking plenty of water and eating healthy foods will also boost your concentration throughout the day.
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Reducing Your Notes



Aim	Tips	How to start
The aim of these activities is to reduce the amount of notes you are revising from. This will save you precious time in the days just before exams.	This needs to be started early. It will not work if it is done only days before an exam.	Pick a subject and topic to begin and using your class notes select one of the methods below.

Cue Cards

Note or cue cards are always handy for when you're out and about. List definitions and rules, you need to know. Or write key words from which you can fill in the gaps to tell the whole story. *Use different coloured pens or paper to help with word association and grouping of key words.

These are also handy for learning language vocabulary. Once filled in, these cards will allow you to reclaim time that would otherwise be wasted -on the bus, in the queue at the supermarket -there's no limit.

Mind Maps/Spider Diagrams

Take a topic, and list the main topics/themes. For each theme list the main points, definitions, key words and examples. The aim is to have a single piece of paper (A3 or A4) for each topic. You will not be able to write down everything, so prioritise the key information. Images and symbols can also be used alongside/instead of words to help visualise key information.

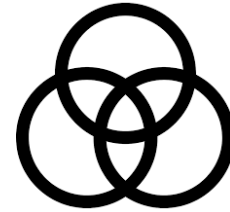
Diagrams, Tables and Timelines

Some subjects allow you to display key information in a different format, especially useful when you are trying to make sense of a series of events (if displayed chronologically). You can also try this for a specific character in a story/plot, you can show their involvement, impact and influence throughout the play/text. For pictures it is said "A picture paints a thousand words" ...enough said. Tables are very useful for displaying the key information and showing possible relationships between the information.

*Recording of Notes

Once you have reduced your notes, record yourself or someone else reading your notes through. You can then listen back as often as you want to.

Visual Organisers

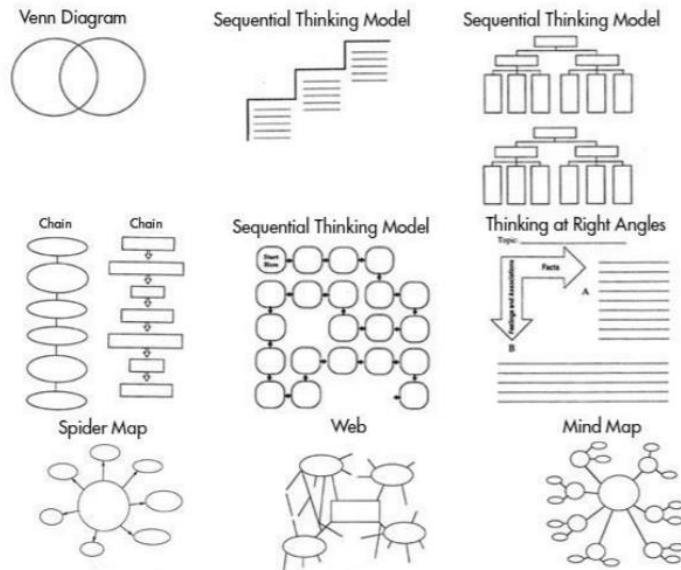


Aim	Tips	How to start
The aim of this is to get away from reading notes or highlighting, and start some active revision.	Stick to subjects where there are obvious links (Science, English, Sport)	Pick one of the diagrams shown below and add the details of a plot, or topic from one of your lessons.

Visual or Graphic Organisers

A picture paints a thousand words...well this is kind of similar. For subjects where there are processes or key events in chronological order or obvious links and relationships a graphic organiser can be a welcome break from lots of written text.

You need to reconstruct your revised topics and make the links or connections as you go. Below are a few examples, I'm sure your familiar with one or two of them already. We remember information better when we have taken an active part in producing it, rather than it being given to us –can you do the same using one of these models?



*Watch videos

Use videos and appropriate YouTube links explaining and demonstrating what it is you are revising

*Literacy Doughnut

Using three circles, prioritise the important information or words in the inner circle and then, in descending priority, the middle and the outer. Concentrate initially on remembering the inner circle, then expand out once confident.

*Role-play

Either in class or with peers/family, role play the topic or situation that you are revising. Visualising 'real life' conversations and actions help with memory recall.

*Post it party

Place key words/phrases onto post it notes and place them around your house, in rooms and on objects that you may associate with the word. Eg. An energy equation in science may be placed by the kettle, key words to do with the human body may be placed around the bedroom, plant reproduction key words could be placed on house plants, etc. This will help with visual association.

Quick Retrieval



Aim	Tips	How to start
The aim of this is to test your knowledge of the basic information. You need to master these facts to be able to fully explain them.	Stick to simple facts such as dates, character features, timelines, definitions and equations. Use knowledge organisers.	Pick a subject and particular topic, and use your knowledge organisers to give yourself 10 simple questions

Self-Quizzing

This is one of the most effective quick revision activities out there –it only takes a matter of minutes and can be done anywhere and anytime. Simply pick a subject, pick a topic and write down 10 quick retrieval (basic facts) questions. Aim to retrieve the key facts and information; such as dates, names, places, quotes, definitions, formulas and equations. On the reverse answer the questions.

Flash Cards

Not to be confused with a cue cards, these have either a single word (topic/part of a topic) or diagram or Mnemonic on one side, and the information on the other side. These cards can be used both directions and are great when revising with a friend or family member. Once presented with the one side, you repeat from memory as much as possible from the other side.

*You could also use them as a mix and match activity, through writing key words on one card and the meaning on the other, shuffle them and match them back together. This can be done individually or as a game with a friend/family member.

Teach Somebody

A great way to learn, is to teach somebody else. You simply need either a small whiteboard and pen, or a notepad and pen. Then select at random a topic or aspect of a subject to “teach” to someone else. Limit yourself to 3 minutes (set a timer) –want to assess how effective you were as a teacher –either set the “student” a simple Retrieval task (Low Stakes Quiz) or ask them to repeat it back –can you find the mistakes?

*Making connections

“See” the question and think around the topic. Make a story around the topic. Use key words in random sentences in conversation.

Past Papers



Aim	Tips	How to start
The aim of this is to process and refine your revision to meet the demands of an exam.	Learn the meaning of command words (describe, explain, evaluate...). Use the mark scheme to mark your answers.	Search on the internet for 'past exam papers' for your subject and exam board. Your teachers will also have a stash of them ready to use.

Past Papers

This is the single-handedly the best revision tool you can use, as long as you complete the process fully.

Part 1

Sit the paper under exam conditions. Make sure you have the correct exam board/subject/tier. Stick to the time given to you on the paper.

This will allow you to become familiar with what will happen in the summer, practice your timings and understand what the paper will look like. The more relaxed you are in the summer the better you will perform.

Part 2

Mark the paper using the official mark scheme. As you go through correct any mistakes that you have made using a different colour pen. These mistakes should then form your next self-quizzing activity. You will learn as much by marking your paper as you will be completing it.

Part 3

If they are available then read the examiner's report for the paper you have completed. This will give you an idea of the main errors and misconceptions made by other students who have completed this exam.

Practice Essay Writing



Aim	Tips	How to start
The aim of this is to perfect your extended writing skills by focussing on both the knowledge needed and the structure required.	Make sure you know what extended writing answers will be included for each subject. Practice this for all subjects, not just English.	Look at the past papers and rewrite any of the extended writing questions. These may be marked with a * or may be worth 6 or more marks.

Essay Writing/Extended Writing

Let's aim to perfect your extended writing technique –remembering that good spelling and grammar help too.

The main thing to remember is always answer the question, this seems obvious, but to do so, we must understand the command word and what it means for your response. For example, what's the difference between a Describe and an Explain question. Search "exam command words" on the internet for a definite list and their meanings.

Secondly, don't waffle or give your personal opinion (unless required) –try and avoid telling a story –"I" or "I think" are not useful outside of subjects that require a personal opinion, like RE.

Structure your writing, use an interesting introduction, 4-5 paragraphs (normal essay) and a clever conclusion –as a minimum. Try and link your paragraphs to create a flow which will ensure your response is better received by the marker.

Finally, if you have time, read the original question as you start each new paragraph, this will encourage you to stay on track and answer the question –to help this, always try and either start or finish each paragraph with a topic/question relevant sentence.

*Decoding exam questions

Differentiate between the command words of a question and the subject-specific words. Have two separate colours and highlight which is which. The words that we left over are additional language that can be ignored. This will help in processing what exactly it is you are being asked to write/answer.

*Sentence starters

Create a bank of sentence starters that you can use in your essay writing. Practice using these in the practice writing, until you become familiar with the phrases.

*Organising your page

When practising essay writing, it may be useful to separate your page into sections, using boxes or flow charts. You can then visually link the sections together.

Revision Strategies for Students with Dyslexia

- Visual (spatial): make large colourful posters of important information, or highlight key passages in a different colours. Stick post-its where you will see them e.g. by the sink so you read them whilst brushing your teeth.
- Aural (auditory-musical): record lessons, or record and listen to your revision notes.
- Verbal (linguistic): explain your essay structure, or key concepts to someone else. The act of having to mentally structure and then verbalise a concept to someone else can help with your own understanding and ability to remember.

Organisation Strategies

- Deal with printed materials as soon as you receive them, check the contents list to make sure everything is there.
- Colour-coding: keep all class notes, essays and materials on a particular subject colour coded and filed together.
- Identify what's important: use highlighters, post-its or annotations so you can find information easily.
- Use a planner: use your phone, computer or a handwritten planner to keep track of projects and deadlines on a daily basis. Work back from the deadline and set yourself realistic goals to complete the assignment on time.
- Reminders: set yourself reminders on your phone for classes, tutor meetings and course deadlines.
- Minimise distractions: set yourself time for a task and switch off your phone, tv and radio. It can also help to keep your study sessions short, but regular.

Maths – EdExcel GCE in Mathematics

	Revision topics Pure Year 1	Revision Topics Pure Year 2	Revision Topics Applied Year 1	Revision Topics Applied Year 2	Maths genie http://www.mathsgenie.co.uk/alevel.html	Optional Extra
13 th February 14 weeks to go	Ch 1 Indices Surds Expanding and Factorising polynomials	Ch 1 Proof by Contradiction Partial Fractions Algebraic Division	Ch 1 Sampling Types of data	Ch 1 Using exponentials with linear regression Finding the PMCC Hypothesis testing with PMCC	Proof Partial Fractions Statistical Hypothesis testing	https://www.drfrostmaths.com/
20 th February 13 weeks to go	Ch 2 Solving Quadratics Complete the Square Using the discriminant Quadratic Functions and their Graphs	Ch 2 Mappings Modulus Functions Composite and inverse Functions Solving modulus problems Combined transformations	Ch 1 The large data set	Ch 2 Set notation Conditional probability	Functions Probability	https://www.mathedup.co.uk/a-level-takeaways/
27 th February 12 weeks to go	Ch 3 Simultaneous equations Inequalities Graphs and finding Regions	Ch 3 Arithmetic sequences Geometric sequences Sigma notation Recurrence relations	Ch2 Averages and quartiles Range IQR and interpercentile range	Ch 2 Probability formulae Tree diagrams	Sequences and series Probability	https://naikermaths.com/

<p>6th March 11 weeks to go</p>	<p>Ch 4 Sketching Quadratics and quartics Reciprocal graphs Points of intersection Transformations of graphs</p>	<p>Ch 4 Negative and fractional powers of binomials Partial Fractions with binomial</p>	<p>Ch 2 Variance and SD Coding Data</p>	<p>Ch 3 Finding probabilities from the normal distribution Inverse normal The standardised distribution</p>	<p>Statistical distributions</p>	<p>https://www.iethwamaths.com/</p>
<p>13th March 10 weeks to go</p>	<p>Ch 5 Equation of a s traight line Parallel, perpendicular and length Modelling with straight lines</p>	<p>Ch 5 Areas and arc length Solving trig equations Small angle approximation</p>	<p>Ch 3 Finding Outliers Box plots and cumulative frequency graphs Histograms Comparing data</p>	<p>Ch 3 Finding the mean and standard deviation Approximating the Binomial distribution Hypothesis testing the Normal distribution</p>	<p>Trigonometry Statistical distributions</p>	<p>https://senecalearning.com/en-GB/</p>
<p>20th March 9 weeks to go</p>	<p>Ch 6 Midpoints and perpendicular bisectors Equation of a circle Tangents and chords Triangles in circles</p>	<p>Ch 6 Reciprocal trig Identities using reciprocal trig Inverse trig</p>	<p>Ch 4 Correlation and regression data</p>	<p>Ch 4 Calculating moments and resultant moments Equilibrium</p>	<p>Trigonometry moments</p>	<p>https://revisionworld.com/a2-level-level-revision/maths-level-revision</p>

27 th March 8 weeks to go	Ch 7 Algebraic long division Factor Theorem Proof	Ch 7 Addition and double angle formula Simplifying sin and cos functions Proving identities	Ch 5 Sample space and frequency Venn diagrams Mutually exclusive and independent Tree diagrams	Ch 4 Tilting	Trigonometry moments	http://www.schoolworkout.co.uk/a_level.htm
3 rd April 7 weeks to go	Ch 8 Binomial expansion	Ch 8 Converting between parametric and cartesian Sketching parametrics Points of intersection Modelling parametrics	Ch 6 Probability distributions Binomial distribution	Ch 5 Resolving forces Inclined planes Friction	Parametrics Forces	http://www.mathcentre.ac.uk/
10 th April 6 weeks to go	Ch 9 Sine rule, cosine rule and area of a triangle Graphs of sin, cos and tan transformations	Ch 9 Differentiation: Sine and cosine Exponential and logs Chain rule Product rule Quotient rule	Ch 7 Binomial hypothesis testing	Ch 6 SUVAT with resolution of forces Derivation of general formulae	Differentiation Forces	https://www.physicsandmathstutor.com/
17 th April 5 weeks to go	Ch 10 Trig of all angles Exact values Solving trig for an angle within a range Basic trig identities	Ch 9 Differentiation: Harder trig functions Parametrics Implicit Using 2 nd derivatives Rates of change	Ch 8 Models and assumptions SI Units and simple vectors	Ch 7 Static particles Statics with friction Static rigid bodies (using moments)	Differentiation Moments	

24 th April 4 weeks to go	Ch 11 Solving Geometric problems and modelling	Ch 10 Locating roots Iteration Newton-Raphson	Ch 9 Displacement and velocity time graphs Simple suvat Suvat using gravity	Ch 7 Dynamics on an inclined plane	Numerical methods Moments	
1 st May 3 weeks to go	Ch 12 Basic Differentiation First principles Tangents and normals Stationary points Sketching gradient functions Modelling with differentiation Increasing and decreasing functions	Ch 11 Integration: Standard functions By substitution By parts Using partial fractions	Ch 10 Force diagrams and vectors Force and acceleration	Ch 7 Connected particles on an inclined plane	Integration	
8 th May 2 weeks to go	Ch 13 Basic integration Definite integrals and area Area between a curve and a line	Ch 11 Integration: Finding areas Trapezium rule Solving differential equations modelling	Ch 10 Forces in 2D Connected particles and pulleys	Ch 8 Vectors in kinematics Projectiles with vectors	Integration Kinematics	
15 May 1 week to go	Ch 14 Exponential sketching and modelling Logs Using logs on non linear data	Ch 12 Vectors in 3D Solving geometric problems Applications to mechanics	Ch 11 Acceleration as a function of time Using calculus Deriving the constant acceleration formula	Ch 8 Variable acceleration in 1D Variable acceleration in 2D	Vectors Kinematics	

Maths – EdExcel GCE in Further Mathematics

	Revision Topics Core Year 1	Revision Topics Core Year 2	Revision Topics Applied	Optional Extra
13 th February 14 weeks to go	Ch 1 Imaginary and complex numbers Multiplying Complex numbers Complex conjugation Roots of quadratic equations Solving cubic and quartic equations	Ch 1 Exponential form of Complex numbers Multiplying and dividing complex numbers De Moivre's theorem Trig identities	D1 Ch 1 Using and understanding algorithms Flow charts Bubble sort Quick sort Bin packing algorithms Order of an algorithm	Core 1 Review 1
20 th February 13 weeks to go	Ch 2 Argand diagrams Modulus and argument form Mod- arg form of a complex number Loci in the argand diagram Regions in the argand diagram	Ch 1 Sums of series Nth root of a complex number Solving geometric problems	D1 Ch2 Modelling with graphs Graph theory Special types of graph Representing graphs and networks using matrices The planarity algorithm	Core 1 Review 2
27 th February 12 weeks to go	Ch 3 Sums of natural numbers Sums of squares and cubes	Ch 2 The method of differences Higher derivatives Maclaurin's series Series expansions of compound functions	D1 Ch 3 Kruskal Primm Applying Primm's to a distance matrix Using Dijkstra's algorithm to find the shortest path Floyds algorithm	Core 1 Exam paper 1
6 th March 11 weeks to go	Ch 4 Roots of a quadratic Roots of a cubic Roots of a quartic	Ch 3 Improper integrals The mean value of a function Differentiating inverse trig functions Integrating invers trig functions Integrating using partial fractions	D1 Ch 4 Eulerian Graphs Using the route inspection algorithm Networks with more than four odd nodes	Core 2 review 1

13 th March 10 weeks to go	Ch 4 Expressions relating to the roots of a polynomial Linear transformations of roots	Ch 4 Volumes of revolution round the x axis Volumes of revolution round the y axis	D1 Ch 5 The classical and practical TSP Using a minimum spanning tree to find an upper bound Using a minimum spanning tree to find a lower bound Using the nearest neighbour algorithm to find an upper bound	Core 2 review 2
20 th March 9 weeks to go	Ch 5 Volumes of revolution in the x axis Volumes of revolution in the y axis Adding and subtracting volumes Modelling	Volumes of revolution of parametrics Modelling with volumes of revolution	D1 Ch 6 Linear programming problems Graphical methods Locating the optimal point Solutions with integer values	Core 2 Exam paper 1
27 th March 8 weeks to go	Ch 6 Intro to matrices Matrix multiplication Determinants	Ch 5 Polar coordinates and equations Sketching curves	D1 Ch7 Formulating linear programming problems The simplex method Problems requiring integer solutions Two stage simplex The Big M method	Core 2 exam paper 2
3 rd April 7 weeks to go	Ch 6 Inverting a 2x2 matrix Inverting a 3x3 matrix Solving systems of equations	Ch 5 Area enclosed by a polar curve Tangents to polar curves	D1 Ch 8 Modelling a project Dummy activities Early and Late event times Critical activities	Decision review 1
10 th April 6 weeks to go	Ch 7 Linear transformations in 2D Reflections and rotations Enlargements and stretches Successive transformations	Ch 6 Intro to hyperbolics Inverse hyperbolics Identities and equations	D1 Ch 8 The float of an activity Gantt charts Resource histograms Scheduling diagrams	Decision review 2
17 th April 5 weeks to go	Ch 7 Linear transformations in 3D The invers of a linear transformation	Ch 6 Differentiating hyperbolics Integrating hyperbolics	FM1 Ch 1 Momentum in one direction Conservation of Momentum Momentum as a vector	Decision Exam AS

24 th April 4 weeks to go	Ch 8 Proof by mathematical induction Proof by divisibility tests Proving statements involving matrices	Ch 7 First order differential equations Second order homogenous differential equations	FM1 Ch2 Work done Kinetic and potential energy Conservation of mechanical energy and the work energy principle Power	Decision Exam A level
1 st May 3 weeks to go	Ch 9 Equation of a line in 3D Equation of a plane in 3D	Ch 7 Second order non-homogenous differential equations Using boundary conditions	FM1 Ch 3 Hooke's law and equilibrium problems Hooke's law and dynamic problems Elastic energy Problems involving elastic energy	Fmechanics Review 1
8 th May 2 weeks to go	Ch 9 Scalar product Angles between lines and planes	Ch 8 Modelling with first order differential equations Simple harmonic motion	Ch 4 Direct impact and Newton's law of restitution Direct collision on a smooth plane Loss of kinetic energy Successive direct impacts	F mecahnics Review 2
15 May 1 week to go	Ch 9 Points of intersection Finding perpendiculars	Ch 8 Damped and forced harmonic motion Coupled first order differential equations	Ch 5 Oblique impact with a fixed surface Successive oblique impacts Oblique impact of smooth spheres	FMechanics Paper AS and A

Maths – EdExcel Level 2 Mathematics in Context

	Revision topics Application of Statistics Seneca AS Stats/GCSEH	Revision topics Probability Seneca AS Stats/GCSEH	Revision topics Linear programming and Sequences Hegarty
13 th February 14 weeks to go	Sampling, properties of distributions and limitations 1.1.1, 6.1.1-6.1.4	Basics – 5.1.1-5.1.2, 5.2.1-5.2.2, 3.1.1	Writing expressions and formulae – 151-155
20 th February 13 weeks to go	Time series graphs/moving averages/ Trend lines 6.2.4	Tree diagrams – 3.2.1	Plot line graphs/Interpret graphs 206-213
27 th February 12 weeks to go	Representing data 6.2.1-6.2.3, 2.2.2	Dependent/independent events – 5.3.2	Simultaneous equations/algebra and graphs – 190-195
6 th March 11 weeks to go	Histograms – 2.2.1, 6.2.5	Venn diagrams – 5.2.3, 5.2.3, 3.2.2	Inequalities one variable – 267-271 Inequalities two variables -272-276
13 th March 10 weeks to go	cumulative frequency – 2.2.4, 6.2.6,6.2.7	Conditional – 5.3.3-5.3.6, 3.3.2- 3.3.4	Linear Programming – 941-943

20 th March 9 weeks to go	Compare distributions – 6.3.1,6.3.2, 2.2.6	two way tables – 5.2.2	Growth and decay – 800-811
27 th March 8 weeks to go	Averages - https://www.examsolutions.net/gcse-maths/ stats, mean 1,2,3	Assessment 1.5.1	Simple/compound interest – 88-97
3 rd April 7 weeks to go	Quartiles/box plots/outliers – 2.2.3	Risk	Quadratics/reciprocal/polynomial/exponential – 298-302
10 th April 6 weeks to go	standard deviation/variance – 2.1.1-2.1.4		Gradients/rates of change – 894,896
17 th April 5 weeks to go	Correlation/line of best fit – 2.3.1,2.3.2, 6.2.8		Roots - 253
24 th April 4 weeks to go	product moment correlation coefficient/PMCC https://www.examsolutions.net/international-exams/edexcel/s1-tutorials/correlation 1,2,3		Nth terms for linear -197-198 Nth terms for quadratic – 247-250

1 st May 3 weeks to go	Linear regression/method of least squares - https://www.examsolutions.net/international-exams/edexcel/s1-tutorials/regression 1,2,3		Fibonacci - 263
8 th May 2 weeks to go	Spearman's Rank https://www.youtube.com/watch?v=mmTs_zkox6w		Sigma/Arithmetic sequences – 919-926
15 May 1 week to go	Spreadsheets Assessments – 1.6.1-1.6.2		Geometric sequence – 264 Recurrence relations - 262

Computer Science – OCR A Level Computer Science H446

	Paper 1	Paper 2	Exam Practice
13 th February - 14 weeks to go	Topic 1 – Structure of Processors (Craig and Dave) <ul style="list-style-type: none"> Registers, buses and components FDE cycle Clock speed, cache and cores Pipelining Von Neumann vs Harvard 	Topic 1 – Thinking Abstractly (Craig and Dave) <ul style="list-style-type: none"> Abstraction 	Paper 1 Paper 2
20 th February – 13 weeks to go	Topic 1 – Types of Processors (Craig and Dave) <ul style="list-style-type: none"> CISC and RISC GPUs Multicore and parallel 	Topic 1 – Thinking Ahead (Craig and Dave) <ul style="list-style-type: none"> Inputs and outputs for a problem Caching Reusable components 	Paper 1 Paper 2
27 th February - 12 weeks to go	Topic 1 – Input Output and Storage (Craig and Dave) <ul style="list-style-type: none"> Different input and output devices and their uses Magnetic, optical and solid-state storage RAM and ROM Virtual storage 	Topic 1 – Thinking Procedurally (Craig and Dave) <ul style="list-style-type: none"> Decomposition Sub-routines 	Paper 1 Paper 2
6 th March – 11 weeks to go	Topic 2 – Systems Software (Craig and Dave) <ul style="list-style-type: none"> Operating systems Memory management Interrupts Scheduling Types of operating systems BIOS Device drivers Virtual machines 	Topic 1 – Thinking Logically (Craig and Dave) <ul style="list-style-type: none"> Selection algorithms 	Paper 1 Paper 2
13 th March – 10 weeks to go	Topic 2 – Application Generation (Craig and Dave) <ul style="list-style-type: none"> Application software Utility software Open source vs closed source Translators Stages of compilation Linkers, loaders and libraries 	Topic 1 – Thinking Concurrently (Craig and Dave) <ul style="list-style-type: none"> Concurrent processing 	Paper 1 Paper 2
20 th March – 9 weeks to go	Topic 2 – Software Development (Craig and Dave) <ul style="list-style-type: none"> Software development methodologies Writing and following algorithms 	Topic 2 – Programming Techniques (Craig and Dave) <ul style="list-style-type: none"> Programming constructs Recursion Global and local variables Modularity IDEs Object oriented techniques 	Paper 1 Paper 2

27 th March - 8 weeks to go	<p>Topic 2 –Types of Programming Language (Craig and Dave)</p> <ul style="list-style-type: none"> • Programming paradigms • Assembly language • Addressing modes • Object oriented language • Hashing 	<p>Topic 2 – Computational Methods (Craig and Dave)</p> <ul style="list-style-type: none"> • Problem recognition • Problem decomposition • Divide and conquer • Abstraction • Backtracking • Data mining • Heuristics • Performance modelling • Pipelining • Visualisation to solve problems. 	<p>Paper 1</p> <p>Paper 2</p>
3 rd April – 7 weeks to go	<p>Topic 3 –Compression (Craig and Dave)</p> <ul style="list-style-type: none"> • Lossy and lossless compression • Run length encoding and dictionary encoding • Symmetric and asymmetric encryption. 	<p>Topic 3 – Complex Algorithms (Craig and Dave)</p> <ul style="list-style-type: none"> • Big O Notation 	<p>Paper 1</p> <p>Paper 2</p>
10 th April - 6 weeks to go	<p>Topic 3 –Databases (Craig and Dave)</p> <ul style="list-style-type: none"> • Key database terms • Normalisation • SQL • Transaction processing 	<p>Topic 3 – Data Structure Algorithms (Craig and Dave)</p> <ul style="list-style-type: none"> • stacks, queues, trees, linked lists, depth-first (post-order) and breadth-first traversal of trees 	<p>Paper 1</p> <p>Paper 2</p>
17 th April - 5 weeks to go	<p>Topic 3 –Networks (Craig and Dave)</p> <ul style="list-style-type: none"> • Network characteristics and protocols • Internet structure • Network security • Client server and peer to peer networks 	<p>Topic 3 – Sorting Algorithms (Craig and Dave)</p> <ul style="list-style-type: none"> • Bubble sort • Merge sort • Insertion sort • Quick sort 	<p>Paper 1</p> <p>Paper 2</p>
24 th April - 4 weeks to go	<p>Topic 3 –Web Technologies (Craig and Dave)</p> <ul style="list-style-type: none"> • HTML, JavaScript and CSS • Search engine indexing and PageRank • Server and client side processing 	<p>Topic 3 – Searching Algorithms (Craig and Dave)</p> <ul style="list-style-type: none"> • Binary search • Linear search 	<p>Paper 1</p> <p>Paper 2</p>
1 st May - 3 weeks to go	<p>Topic 4 –Data Types (Craig and Dave)</p> <ul style="list-style-type: none"> • Binary, denary and hexadecimal conversions • Adding and subtracting binary numbers • Positive and negative floating-point binary • Bitwise manipulation and masks • Character sets 	<p>Topic 3 – Path Finding Algorithms (Craig and Dave)</p> <ul style="list-style-type: none"> • Dijkstra's shortest path algorithm • A* algorithm 	<p>Paper 1</p> <p>Paper 2</p>
8 th May - 2 week2 to go	<p>Topic 4 –Data Structures (Craig and Dave)</p> <ul style="list-style-type: none"> • Arrays, records, lists and tuples • Linked lists, graphs, stacks, queues, binary trees and hash tables 	<p>Topic 5 –Computer Related Legislation (Craig and Dave)</p> <ul style="list-style-type: none"> • Data protection act • Computer misuse act • Copyright designs and patents act • Regulation of investigatory powers act 	<p>Paper 1 – topic 4</p> <p>Paper 1 – topic 5</p>

15 May – 1 week to go	Topic 4 –Boolean Algebra (Craig and Dave) <ul style="list-style-type: none"> • Boolean logic • Karnaugh maps • Laws of simplification • Logic gates and truth tables • D type flip flops, half and full adders 	Topic 5 –Moral and Ethical Issues (Craig and Dave) <ul style="list-style-type: none"> • The individual moral, social, ethical and cultural opportunities and risks of digital technology. 	Paper 1 – topic 4 Paper 1 – topic 5
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BTEC Computer Science UNIT 2

13 th February - 14 weeks to go	<p>A1: Types of computer systems and the purpose, features and uses of internal components used in:</p> <ul style="list-style-type: none"> •multi-functional devices •personal computers •mobile devices •servers. <p>A1: Factors affecting the choice, use and performance of internal components.</p> <p>A1: The hardware used in computer systems:</p> <ul style="list-style-type: none"> •input devices •output devices •storage devices. <p>A1: How the features of hardware can affect their performance and the performance of a computer system.</p>
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20th February -
13 weeks to go

A1: Factors affecting choice of hardware:

- user experience – ease of use, performance, availability, accessibility
- user needs
- compatibility
- cost
- efficiency
- implementation – timescales, testing, migration to new system
- productivity
- security.

A1: Data storage and recovery systems:

- redundant array of independent disks (RAID)
- network attached storage (NAS).

A2: Types of operating system:

- real-time operating system
- single-user single task
- single-user multi-tasking
- multi-user

A2: The role of the kernel in controlling and managing system components and tasks:

- program execution
- interrupts
- modes
- memory management
- multi-tasking
- disk access
- file systems
- device drivers

A2: The role of the operating system in managing:

- networking
- security

<p>27th February - 12 weeks to go</p>	<p>A2: Factors affecting the choice and use of user interfaces:</p> <ul style="list-style-type: none"> •graphical •command line •menu based <p>A2: Factors affecting the choice of operating system</p> <p>A2: Factors affecting the use and performance of an operating system.</p> <p>A2: The purpose, features and uses of utility software</p> <p>A2: Factors affecting the choice, use and performance of utility software.</p>
<p>6th March - 11 weeks to go</p>	<p>A2: The purpose, features and uses of application software</p> <p>A2: Factors affecting the choice, use and performance of application software.</p> <p>A2: The principles and implications of open source operating systems and software</p> <p>A3: The use, features and implications of computer systems for data processing.</p> <p>A3: The role of hardware in collecting data.</p>

<p>13th March - 10 weeks to go</p>	<p>A3: The role of software in collecting data</p> <p>A3: Data processing functions:</p> <ul style="list-style-type: none"> •aggregation •analysis •conversion •reporting •sorting •validation <p>A3: The impact on individuals and organisations of using and storing data across multiple computer systems:</p> <ul style="list-style-type: none"> •access •cost •implementation •productivity •security. <p>A3: Backup and data recovery procedures.</p>
<p>20th March – 9 weeks to go</p>	<p>B1: The features and characteristics of different computer architecture models:</p> <ul style="list-style-type: none"> •stored program model: <ul style="list-style-type: none"> oVon Neumann architecture oHarvard architecture •cluster computing •uniform memory access and non-uniform memory access. <p>B1: Use and application of emulation.</p> <p>B1: Factors affecting the choice of different architecture models.</p> <p>B1: The impact of using different architecture models.</p> <p>B2: Instruction cycles.</p>

<p>27th March - 8 weeks to go</p>	<p>B2: Execution speeds: <ul style="list-style-type: none"> •factors affecting execution speeds •methods of increasing execution speed •implications of execution speeds. B2: The use and choice of instruction sets B2: Pipelining B2: Cache B2: Registers B2: Multi-processing and multi-threading.</p>
<p>3rd April – 7 weeks to go</p>	<p>B2: The features and implications of embedded and mobile central processing unit (CPU) architecture. B2: The features and implications of microcomputer CPU architecture. B2: The features and implications of server CPU architecture. B3: Types of register: <ul style="list-style-type: none"> •general purpose register •special registers: <ul style="list-style-type: none"> oaccumulator oinstruction register omemory address register (MAR) omemory data register (MDR) oprogram counter. B3: The function and purpose of general and special registers and their impact on the way computer systems perform. B3: The role of interrupts in a computer system.</p>

<p>10th April - 6 weeks to go</p>	<p>C1: The use and interpretation of number systems used in computer systems, including:</p> <ul style="list-style-type: none"> •units of digital data (bit, byte, kilobyte and multiples of these) •binary •binary coded decimal (BCD). <p>C1: The use of binary arithmetic (including BCD) to perform calculations: addition, subtraction, multiplication and division.</p> <p>C1: The use of binary to represent negative and floating point numbers.</p> <p>C2: The purpose and implications of using codes to represent character sets.</p> <p>C2: The features and uses of common character sets:</p> <ul style="list-style-type: none"> •ASCII •UNICODE.
<p>17th April - 5 weeks to go</p>	<p>C3: How bitmap/raster image data is stored and represented in a computer system.</p> <p>C3: The impact of image resolution on the way images are stored and represented.</p> <p>C3: The impact of sample/bit depth on the way that image data is stored and images are displayed.</p> <p>C3: The effects of compression on image data.</p>

24th April -
4 weeks to go

D1: The features, applications and implications of data types used in computer systems:

- stack
- queue
- array
- list.

D1: The use and application of data types in computer software.

D1: The use and implications of data types in computer hardware.

D2: The relationship between matrices and arrays

D2: Mathematical operations using matrices

D2: Single, two- and multi-dimensional arrays

D2: Row-major and column-major order.

1st May -
3 weeks to go

E1: Types of communication channel:

- simplex
- half-duplex
- full-duplex
- point-to-point
- multi-drop.

E1: Methods of connecting devices and transmitting data across and between computer systems.

E1: The selection of connection methods to fulfil specified tasks and functions.

E1: Asynchronous and synchronous data transmission.

E1: Parallel and serial transmission.

E1: Use of packet data in transmitting data:

- contents of a data packet
- the role of components of a data packet
- packet switching.

E1: Protocols used to govern and control data transmission.

E1:The features, applications and implications of encryption

- simple encryption ciphers:
 - oCaesar cipher
 - oVigenère cipher
- encryption used in computer systems:
 - osymmetric key encryption
 - opublic key encryption.

E1: Types of compression:

- lossy
- lossless

E1: The applications and implications of data compression.

<p>8th May - 2 week2 to go</p>	<p>E2: Methods used to detect errors in data transmission:</p> <ul style="list-style-type: none"> •parity schemes •checksum •repetition schemes •cyclic redundancy check (CRC). <p>E2: The concepts, implications and applications of error detection.</p> <p>E3: Commonly-used error correction systems:</p> <ul style="list-style-type: none"> •automatic repeat request (ARQ) •forward error correction (FEC). <p>E3: The concepts, implications and applications of error correction systems.</p>
<p>15 May – 1 week to go</p>	<p>F1: The use, application and interpretation of Boolean logic to identify data flow and solve problems.</p> <p>F1: The use, application and interpretation of Boolean logic to identify logical structures, represent data flow and solve problems.</p> <p>F2: The use, application and interpretation of flow charts and diagrams to represent data flow in and between computer systems.</p> <p>F2: The use, application and interpretation of flow charts and diagrams to solve problems.</p>

BTEC Computer Science Unit 3

Year 13: '100 day plan'	Weeks to go	Subject: Planning and Management of Computing Projects	Resources:
06 February 2023	12	Project management concepts - spec A1-A6	T129-149, R101-108
13 February 2023	11	Part A Starting up a project - spec B1-B4	T149-167, R109-113
20 February 2023	10	Part A Project Planning - spec C1-C5	T168-187, R114-119
27 February 2023	9	Part A Guidance	R128-134
06 March 2023	8	Revision Task 1 (Part A Guided)	W65-80
13 March 2023	7	Past Paper Jan 2022 - Part A	
20 March 2023	6	Past Paper June 2022 - Part A	
27 March 2023	5	Part B Guidance	R135-138
03 April 2023	4	Part B Executing & Monitoring - spec D1-D5	T 188-198, R120-125
10 April 2023	3	Part B Project Closure - spec D1-D5	T198-206, R126-129
17 April 2023	2	Past Paper Jan 2022 - Part B	
24 April 2023	1	Past Paper Jan 2022 - Part B	
01 May 2023		Part A - 3 hour exam between 2nd and 9th May	
08 May 2023		Part B - 2 hour exam between 9th and 11th May	

Textbook (T)

Revision Guide (R)

Revision Workbook (W)

<http://bteccomputing.co.uk/unit-3-project-management/>

Physics – AQA GCE A-level 7408

	Revision topics Paper 1 (year 12)	Revision topics Paper 2 (year 13)	Revision topics Paper 3
13 th February 14 weeks to go	3.1 Measurement and their errors https://www.alevelphysicsonline.com/aqa-3-1 https://isaacphysics.org/test/attempt/y12_summer_skills_test_quiz?stage=a_level		
20 th February 13 weeks to go	3.2 Particles and radiation https://www.alevelphysicsonline.com/aqa-3-2 https://isaacphysics.org/test/attempt/y12_summer_quantum_test_quiz?stage=a_level		
27 th February 12 weeks to go	3.3 Waves https://www.alevelphysicsonline.com/aqa-3-3 https://isaacphysics.org/test/attempt/y12_summer_waves_optics_test_quiz?stage=a_level		
6 th March 11 weeks to go	3.4 Mechanics https://www.alevelphysicsonline.com/aqa-3-4 https://isaacphysics.org/test/attempt/y12_summer_mechanics_test_quiz?stage=a_level		
13 th March	3.4 Mechanics and materials https://www.alevelphysicsonline.com/aqa-3-4		

	https://isaacphysics.org/test/attempt/y12_summer_momentum_materials_test_quiz?stage=a_level		
20 th March 9 weeks to go	3.5 Electricity https://www.alevelphysicsonline.com/aqa-3-5 https://isaacphysics.org/test/attempt/y12_summer_electricity_test_quiz?stage=a_level		
27 th March 8 weeks to go	3.6 Further mechanics https://www.alevelphysicsonline.com/aqa-3-6 https://isaacphysics.org/test/attempt/y13_further_mechanics_test_quiz?stage=a_level		
3 rd April 7 weeks to go	June 2018 paper 1 https://www.alevelphysicsonline.com/aqa-past-papers	3.6 Thermal physics https://www.alevelphysicsonline.com/aqa-3-6 https://isaacphysics.org/test/attempt/y13_summer_thermal_test_quiz?stage=a_level	
10 th April 6 weeks to go	June 2019 paper 1 https://www.alevelphysicsonline.com/aqa-past-papers	3.7 Gravitational fields https://www.alevelphysicsonline.com/aqa-3-7 https://isaacphysics.org/test/attempt/y13_summer_gravfields_test_quiz?stage=a_level	
17 th April 5 weeks to go	Nov 2020 paper 1 https://www.alevelphysicsonline.com/aqa-past-papers	3.7 Electric and magnetic fields https://www.alevelphysicsonline.com/aqa-3-7 https://isaacphysics.org/test/attempt/y13_further_electricity_test_quiz?stage=a_level https://isaacphysics.org/test/attempt/y13_ebfields_test_quiz?stage=a_level	

24 th April 4 weeks to go		<p>3.8 Nuclear physics https://www.alevelphysicsonline.com/aqa-3-8 https://isaacphysics.org/test/attempt/y13_summer_nuclear_test_quiz?stage=a_level</p>	<p>June 2018 paper 3A https://www.alevelphysicsonline.com/aqa-past-papers</p>
1 st May 3 weeks to go		<p>June 2018 paper 2 https://www.alevelphysicsonline.com/aqa-past-papers</p>	<p>3.9 Astrophysics https://www.alevelphysicsonline.com/aqa-3-9</p>
8 th May 2 weeks to go		<p>June 2019 paper 2 https://www.alevelphysicsonline.com/aqa-past-papers</p>	<p>June 2019 paper 3A and 3BA https://www.alevelphysicsonline.com/aqa-past-papers</p>
15 May 1 week to go		<p>Nov 2020 paper 2 https://www.alevelphysicsonline.com/aqa-past-papers</p>	<p>Nov 2020 Paper 3A and 3BA https://www.alevelphysicsonline.com/aqa-past-papers</p>

Chemistry – AQA GCE A-level 7405

	Revision topics Paper 1 and Paper 3	Revision topics Paper 1, 2 and 3	Revision topics Paper 2 and Paper 3
13 th February 14 weeks to go	3.1.1 Atomic structure https://www.physicsandmathstutor.com/chemistry-revision/a-level-aqa/	3.1.2 Amount of substance 3.1.3 Bonding https://www.primrosekitten.com/pages/aqa-a-level-chemistry	
20 th February 13 weeks to go	3.1.7 Redox https://www.physicsandmathstutor.com/chemistry-revision/a-level-aqa/	3.1.4 Energetics 3.1.6 Chemical equilibria https://www.primrosekitten.com/pages/aqa-a-level-chemistry	3.1.5 Kinetics https://www.physicsandmathstutor.com/chemistry-revision/a-level-aqa/
27 th February 12 weeks to go	3.2.1 Periodicity 3.2.2 Group 2 3.2.3 Group 7 https://www.physicsandmathstutor.com/chemistry-revision/a-level-aqa/		
6 th March 11 weeks to go			3.3.1 Intro to organic 3.3.2 Alkanes 3.3.3 Haloalkanes https://www.primrosekitten.com/pages/aqa-a-level-chemistry

13 th March 10 weeks to go			3.3.4 Alkenes 3.3.5 Alcohols 3.3.6 Organic analysis https://www.primrosekitten.com/pages/aqa-a-level-chemistry
20 th March 9 weeks to go	3.1.8 Thermodynamics https://www.primrosekitten.com/pages/aqa-a-level-chemistry		3.1.9 Rate equations https://www.physicsandmathstutor.com/chemistry-revision/a-level-aqa/
27 th March 8 weeks to go	3.1.10 Equilibrium constant for homogenous systems 3.1.11 Electrode potentials and electrochemical cells https://www.physicsandmathstutor.com/chemistry-revision/a-level-aqa/		
3 rd April 7 weeks to go	3.1.12 Acids and bases 3.2.4 Properties of group 3 metals and their oxides https://www.physicsandmathstutor.com/chemistry-revision/a-level-aqa/		
10 th April 6 weeks to go	3.2.5 Transition metals 3.2.6 reactions of ions in aqueous solution https://www.primrosekitten.com/pages/aqa-a-level-chemistry		

17 th April 5 weeks to go			3.3.7 Optical isomerism 3.3.8 Aldehydes and ketones 3.3.9 Carboxylic acids and derivatives https://www.primrosekitten.com/pages/aqa-a-level-chemistry
24 th April 4 weeks to go			3.3.10 Aromatic chemistry 3.3.11 Amines https://www.physicsandmathstutor.com/chemistry-revision/a-level-aqa/
1 st May 3 weeks to go			3.3.12 Polymers 3.3.13 Amino acids, proteins and DNA https://www.physicsandmathstutor.com/chemistry-revision/a-level-aqa/
8 th May 2 weeks to go			3.3.14 Organic synthesis https://www.primrosekitten.com/pages/aqa-a-level-chemistry
15 May 1 week to go			3.3.15 NMR 3.3.16 Chromatography https://www.physicsandmathstutor.com/chemistry-revision/a-level-aqa/