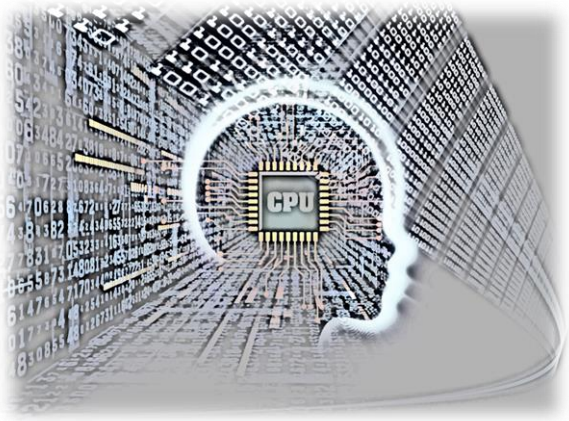
OCR

GCSE COMPUTER SCIENCE

Year 11 Progress Booklet



Name……

Group…… Teacher:……

Target Grade: 1 2 3 4 5 6 7 8 9

Version 2

ASSESSMENT TRACKING SHEET

Complete this table with all of your results for exam practised assessed work and end of unit assessment. It will enable you to keep track of your performance. USE IT to understand where your strengths lie and where there are areas for improvement.

Date	Subject of Assessment	Grade	Relation to Target (i.e +1/ -1)	Written Feedback (tick if received)	Verbal Feedback (tick if received)

Assessment Policies

- Classwork will be monitored but not marked
- It is your responsibility to track your progress using this learning log.
- Feedback will be achieved in a variety of ways: Written, Orally, Peer, Self and Teacher.
- Each unit will have an end of unit assessment, by which will manage your progress over time.
- Pupils work must be their own to show understanding and not copy and pasted solely from the internet or other sources.

Approx. Grade Boundaries

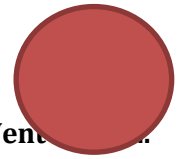
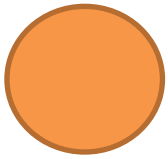
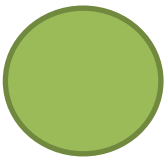
Percentage	9-1 Grade	Old A*-G Grade
90%	9	A**
80%	8	A*/A
70%	7	A
61%	6	B
53%	5	B/C
44%	4	C
33%	3	D/E
23%	2	E/F
13%	1	F/G
0%	U	U

Example PLC

Here the candidate did not know anything about the purpose of the CPU but after the lesson they did.

Content	Before	After
The purpose of the CPU		

Using a Red, Amber, Green rating allows you to see where you need to improve and revise when you come to take the End of Topic Test.

What Went ...

I got the questions about [insert topic here] right

I got [insert score here] which allowed me to achieve/exceed my target grade.

I really understood [insert topic here].

What do I need to do to achieve/exceed target grade?

I must learn [insert topic here] as I got those questions wrong.

I must learn to apply my knowledge to the scenario in the question.

I must break down problems into smaller steps.

HOW THE GCSE IS STRUCTURED

Component	Marks	Duration	Weighting
Computer systems (01) Calculators **not** allowed	80	1 hour 30 mins	50%
Computational thinking, algorithms and programming (02)* Calculators **not** allowed	80	1 hour 30 mins	50%

* Algorithm questions are not exclusive to component 02 and can be assessed in all components.

Component 01: Computer systems

Introduces students to the central processing unit (CPU), computer memory and storage, wired and wireless networks, network topologies, system security and system software. It also looks at ethical, legal, cultural and environmental concerns associated with computer science.

Component 02: Computational thinking, algorithms and programming

Students apply knowledge and understanding gained in component 01. They develop skills and understanding in computational thinking: algorithms, programming techniques, producing robust programs, computational logic, translators and data representation. The skills and knowledge developed within this component will support the learner when completing the Programming Project.

Programming Project

Students use OCR Programming Project tasks to develop their practical ability in the skills developed in components 01 and 02.

Assessment Objectives

AO1	Demonstrate knowledge and understanding of the key concepts and principles of Computer Science.
AO2	Apply knowledge and understanding of key concepts and principles of Computer Science.
AO3	Analyse problems in computational terms: • To make reasoned judgements • To design, program, evaluate and refine solutions.

Relationship between AO and Components

Component	**% of overall GCSE**		
	AO1	**AO2**	**AO3**
Computer systems (J276/01)	**15**	**22**	**3**
Computational thinking, algorithms and programming (J276/02)	**14**	**14**	**12**
Programming project (J276/03/04)	**1**	**4**	**15**
Total (%)	**30%**	**40%**	**30%**

Assessment Objectives Broken Down

	Assessment Objective
AO1	Demonstrate knowledge and understanding of the key concepts and principles of computer science.
AO1 1a	Demonstrate knowledge of the key concepts and principles of computer science.
AO1 1b	Demonstrate understanding of the key concepts and principles of computer science.
AO2	Apply knowledge and understanding of key concepts and principles of computer science.
AO2 1a	Apply knowledge of key concepts and principles of computer science.
AO2 1b	Apply understanding of key concepts and principles of computer science.
AO3	Analyse problems in computational terms: • to make reasoned judgements • to design, program, evaluate and refine solutions.
AO3 1	To make reasoned judgements (this strand is a single element).
AO3 2a	Design solutions.
AO3 2b	Program solutions.
AO3 2c	Evaluate and refine solutions.

Level of Response for Long Mark Questions

Highest mark:	If clear evidence of all the qualities in the band descriptors is shown, the HIGHEST Mark should be awarded
Middle mark:	This mark band should be used for candidates who are secure in the band. They are not 'borderline' but they have only achieved some of the qualities in the band descriptors.
Lowest mark:	If the answer shows the candidate to be borderline (i.e. they have achieved all the qualities of the bands below and show limited evidence of meeting the criteria of the band in question) the LOWEST mark should be awarded.

	AO2.1a	AO2.1b
Highest mark:	Precision in the use of terminology. Knowledge shown is consistent and well-developed. Clear appreciation of the question from a range of different perspectives making extensive use of acquired knowledge and principles of computer science.	Understanding of concepts is consistently applied to context enabling a logical and sustained argument to develop. Examples used enhance rather than detract from response.
Middle mark:	Awareness of the meaning of the terms in the question. Knowledge is sound and effectively demonstrated. Demands of question understood although at times opportunities to make use of acquired knowledge and concepts are not always taken.	Understanding of concepts is shown and is applied to context. There is clear evidence that an argument builds and develops through the response but there are times when opportunities are missed to use an example or relate an aspect of understanding to the context provided.
Lowest mark:	Confusion and inability to deconstruct terminology as used in the question. Knowledge partial and superficial. Focus on question narrow and often one-dimensional.	Inability to apply understanding of key concepts in any sustained way to context resulting in tenuous and unsupported statements being made. Examples if used are for the most part irrelevant and unsubstantiated.
0 Marks	No response or no response worthy of credit.	No response or no response worthy of credit.

Autumn Term 1

1.4 Wired and Wireless Networks

Content	Before	After
Types of networks:		
LAN (Local Area Network)		
WAN (Wide Area Network)		
Factors that affect the performance of networks		
The different roles of computers in a client-server and a peer-to-peer network		
The hardware needed to connect stand-alone computers into a Local Area Network:		
Wireless access points		
Routers/switches		
NIC (Network Interface Controller/Card)		
Transmission media		
The internet as a worldwide collection of computer networks:		
DNS (Domain Name Server)		
Hosting		
The cloud		
The concept of virtual networks.		

1.5 Network topologies, protocols and layers

Content	Before	After
Star and mesh network topologies		
Wifi:		
Frequency and channels		
Encryption		
Ethernet		
The uses of IP addressing, MAC addressing, and protocols including:		
• TCP/IP (Transmission Control Protocol/Internet Protocol)		
• HTTP (Hyper Text Transfer Protocol)		
• HTTPS (Hyper Text Transfer Protocol Secure)		
• FTP (File Transfer Protocol)		
• POP (Post Office Protocol)		
• IMAP (Internet Message Access Protocol)		
• SMTP (Simple Mail Transfer Protocol)		
The concept of layers		
Packet Switching.		

Test Result

RAW SCORE	GRADE	ADOVE/BELOW TARGET

What do I need to do to achieve/exceed target grade?

1.

2.

3.

What do I need to do to achieve/exceed target grade?

1.

2.

3.

Think Pink

Go Green

Autumn Term 2

1.6 System Security

Content	Before	After
Forms of attack		
Threats posed to networks:		
Malware		
Phishing		
People as the 'weak point' in secure systems (social engineering)		
Brute force attacks		
Denial of service attacks DDOS		
Data interception and theft		
The concept of SQL injection		
Poor network policy		
Identifying and preventing vulnerabilities:		
Penetration testing		
Network forensics		
Network policies		
Anti-malware software		
Firewalls		
User access levels		
Passwords		
Encryption.		

1.8 Ethical, legal, cultural and environmental concerns

Content	Before	After
How to investigate and discuss Computer Science technologies while considering:		
• Ethical issues		
• Legal issues		
• Cultural issues		
• Environmental issues		
• Privacy issues.		
How key stakeholders are affected by technologies		
Environmental impact of Computer Science		
Cultural implications of Computer Science		
Open source vs proprietary software		
Legislation relevant to Computer Science:		
• The Data Protection Act 1998		
• Computer Misuse Act 1990		

• Copyright Designs and Patents Act 1988		
• Creative Commons Licensing		
• Freedom of Information Act 2000		

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Test Result

RAW SCORE	GRADE	ADOVE/BELOW TARGET

What do I need to do to achieve/exceed target grade?

1.

2.

3.

What do I need to do to achieve/exceed target grade?

1.

2.

3.

Think Pink

Go Green

Spring Term 1

2.1 Computational Thinking

Content	Before	After
1. **Computational thinking:**		
○ abstraction		
○ decomposition		
○ algorithmic thinking		
2. Standard searching algorithms :		
Binary search		
Linear search		
2. Standard sorting algorithms :		
Bubble sort		
Insertion sort		
Merge sort		
4. Types of testing:		
iterative		
final / terminal		
5. How to identify syntax and logic errors		
6. Selecting and using suitable test data.		

Test Result

RAW SCORE	GRADE	ADOVE/BELOW TARGET

What Went Well **1.** **2.** **3.**
What do I need to do to achieve/exceed target grade? **1.** **2.** **3.**

2.2

2.3 Producing Robust programs

Content	Before	After
1. Defensive design considerations:		
input sanitisation / validation		
planning for contingencies		
anticipating misuse		
authentication		
2. Maintainability:		
comments		
indentation		
3. The purpose of testing		
4. Types of testing:		
iterative		
final / terminal		
5. How to identify syntax and logic errors		
6. Selecting and using suitable test data.		

Test Result

Content	Before	After
The purpose of the CPU		
Von Neumann architecture:		
o MAR (Memory Address Register)		
o MDR (Memory Data Register)		
o Program Counter		
o Accumulator		
Common CPU components and their function:		
o ALU (Arithmetic Logic Unit)		
o CU (Control Unit)		
o Cache		
The function of the CPU as fetch and execute instructions stored in memory		
How common characteristics of CPUs affect their performance:		
o clock speed		
o cache size		
o number of cores		
Embedded systems:		
o purpose of embedded systems		
o examples of embedded systems.		

RAW SCORE	GRADE	ADOVE/BELOW TARGET

What Went Well **1.** **2.** **3.**
What do I need to do to achieve/exceed target grade? **1.** **2.** **3.**

Test Result

RAW SCORE	GRADE	ADOVE/BELOW TARGET

What Went Well **1.** **2.** **3.**
What do I need to do to achieve/exceed target grade? **1.** **2.** **3.**

1.5 Memory

Content	**Before**	**After**
The difference between RAM and ROM		
The purpose of ROM in a computer system		
The purpose of RAM in a computer system		
The need for virtual memory		
Flash memory.		

Test Result

RAW SCORE	GRADE	ADOVE/BELOW TARGET

What Went Well **1.** **2.** **3.**
What do I need to do to achieve/exceed target grade? **1.** **2.**

What do I need to do to achieve/exceed target grade?

1.3 Storage

Content	Before	After
The need for secondary storage		
Know the difference between, bit, byte, KB, MB, GB, TB etc.		
Common types of storage:		
Optical		
Magnetic		
Solid state		
Suitable storage devices and storage media for a given application and the advantages and disadvantages of these using characteristics:		
Capacity		
Speed		
Portability		
Durability		
Reliability		
Cost		

Test Result

RAW SCORE	GRADE	ADOVE/BELOW TARGET

What Went Well **1.** **2.** **3.**
What do I need to do to achieve/exceed target grade? **1.** **2.** **3.**

1.7 Systems Software

Content	Before	After
The purpose and functionality of systems software		
Operating systems:		
User interface		
Memory management/ multitasking		
Peripheral management and drivers		
User management		
File management		
Utility system software:		
Encryption software		
Defragmentation		
Data compression		
The role and methods of backup:		
Full		
Incremental.		

Test Result

RAW SCORE	GRADE	ADOVE/BELOW TARGET

What Went Well **1.** **2.** **3.**
What do I need to do to achieve/exceed target grade? **1.** **2.** **3.**

5e. Command words

The command words below will be used consistently in all assessment material and resources.

Add: Join something to something else so as to increase the size, number, or amount.

Analyse: Break down in order to bring out the essential elements or structure. To identify parts and relationships, and to interpret information to reach conclusions.

Annotate: Add brief notes to a diagram or graph.

Calculate: Obtain a numerical answer showing the relevant stages in the working.

Compare: Give an account of the similarities and differences between two (or more) items or situations, referring to both (all) of them throughout.

Complete: Provide all the necessary or appropriate parts.

Convert: Change the form, character, or function of something.

Define: Give the precise meaning of a word, phrase, concept or physical quantity.

Describe: Give a detailed account or picture of a situation, event, pattern or process

Design: Produce a plan, simulation or model.

Discuss: Offer a considered and balanced review that includes a range of arguments, factors or hypotheses. Opinions or conclusions should be presented clearly and supported by appropriate evidence.

Draw: Produce (a picture or diagram) by making lines and marks on paper with a pencil, pen, etc.

Evaluate: Assess the implications and limitations; to make judgements about the ideas, works, solutions or methods in relation to selected criteria.

Explain: Give a detailed account including reasons or causes.

Give: Present information which determines the importance of an event or issue. Quite often used to show causation.

How: In what way or manner; by what means.

Identify: Provide an answer from a number of possibilities. Recognise and state briefly a distinguishing factor or feature.

Justify: Give valid reasons or evidence to support an answer or conclusion.

Label: Add title, labels or brief explanation(s) to a diagram or graph.

List: Give a sequence of brief answers with no explanation.

Order: Put the responses into a logical sequence.

Outline: Give a brief account or summary.

Show: Give steps in a derivation or calculation.

Solve: Obtain the answer(s) using algebraic and/or numerical and/or graphical methods.

State: Give a specific name, value or other brief answer without explanation or calculation.

Tick: Mark (an item) with a tick or select (a box) on a form, questionnaire etc. to indicate that something has been chosen.

What: Asking for information specifying something.