# Digital Enterprise

Our vision

The aim for all learners at Sir John Talbot's School is to embrace emerging technology, be able to readily adapt and become digital leaders.

As a faculty we are committed to providing every student with experiences in digital technologies and enterprise that will allow them to develop a set of broad transferable skills which will enable them to participate fully in modern 21st century society.

Marches Academy Trust


Digital Enterprise Journey
Further Education
YEAR 13
YEAR 12
YEAR 11
YEAR 10
YEAR 9
YEAR 8
YEAR 7
Summer Term
Autumn Term
Spring Term
TOPIC: Web developer
TOPIC: Data Representation
TOPIC: Introduction to Business
TOPIC: Python programmer
TOPIC: Small Basic Developer
TOPIC: Computational Thinking
TOPIC: Network Manager
TOPIC: Database Demon
TOPIC: Microbit coding
TOPIC: Scratch Gamer Maker
TOPIC: Spreadsheet Specialist
TOPIC: How Computers Work
TOPIC: Email and Networks
UK Bebras Computational Thinking Challenge

# Digital Enterprise

Year 7

Marches Academy Trust

# Year 7 Computer Science Year Overview

*What is my Learning Journey this year?*

Sir John Talbot's school

Marches Academy Trust

| Name | Min TG |
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| | |

START

## Cyber Security

**What to expect**

**Content –** A consideration of the issues associated by cyber security

**Bigger Picture Focus –** To be able to recommend an appropriate measures to protect against cyber attacks

**Key Skills:**

- System construction
- Interface design
- Functions and Formulas
- Data analysis
- Visual based programming

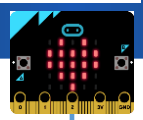
**What to expect…**

**Content –** A look at the architecture of computers, performance, memory and storage.

**Bigger Picture Focus –** To be able to recommend an appropriate computer system for a given scenario.

## How computers work

## Visual programmer



**What to expect**

**Content –** An introduction into computer programming using visual block based software.

**Bigger Picture Focus –** To be able to build an effective and functioning computer program.

**What to expect**

**Content –** Environmental considerations associated with business and IT.

**Bigger Picture Focus –** To be able to design and pitch an innovative and sustainable product.

## Environmental entrepreneur

On to Year 8

**Cultural Connections/ Real World Links**

- How to choose the most appropriate computer system.
- Understanding how to improve and upgrade a computer system.
- How spreadsheet software supports data analysis.
- How computer programs control things.

**Competitions and other links**

- UK Bebras
- Khans Code Academy
- CAS
- Cyber Discovery
- Astro Pi
- Pi Wars

Home Learning

Up to twice per half term there will be flipped learning set

Flipped activities will link to in class learning

Your teacher will also set each Flipped Learning task on Class Charts for your home learning every week

| Cyber Security |
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| How computers work |
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| Micro bit |
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| Eco Dragons Den |
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# Year 7 Curriculum Overview- Subject

| | Content<br>Topic/unit name, enquiry question | Disciplinary Knowledge (Skills)<br>Actions taken within a topic to gain substantive knowledge | Substantive Knowledge<br>This is the specific, factual content for a topic, which is connected into a careful sequence of learning | Prior Learning (KS2) | Future learning (KS3) |
|---|---|---|---|---|---|
| Autumn term | Unit 1<br><br>Cyber security | Identify and analyse the impact of cyber security threats.<br><br>Understand the importance of data protection.<br><br>Identify and evaluate measures to protect against cyber security threats. | 1.1 Malware and threats.<br><br>1.2 Cyber attacks<br><br>1.3 System vulnerabilities<br><br>1.4 Protection measures | In line with learning from key stage 2 curriculum. | Year 8 Network manager exploring network security. |
| Spring term | Unit 2<br><br>How computers work | Understand basic PC system architecture.<br><br>Identify and manipulate physical components that make up a PC.<br><br>Explain the role and key functions of the CPU.<br><br>Analyse hardware and software computer components.<br><br>Analyse factors that can affect performance, storage and memory capacity. | 2.1 Computer components<br><br>2.2 The CPU<br><br>2.3 Memory<br><br>2.4 Secondary storage | In line with learning from key stage 2 curriculum. | Year 7 Mico:bit exploring similar components. Year 8 Network manager to explore network hardware and the links with devices. Year 9 programming with Python. |
| Spring / Summer term | Unit 3<br><br>Visual programmer | Understand the purpose, uses, features and functions of visual based computer programming.<br><br>Identify coding language that makes up the visual cues used in visual based computer programming.<br><br>Create a computer programme with no, or few, errors.<br><br>Explain the programme effectively using correct terminology. | 1.1 Introduction to code<br><br>1.2 Introduction to the Micro:bit<br><br>1.3 The Micro:bit interface and components<br><br>1.4 Coding the Micro:bit | In line with learning from key stage 2 curriculum. | Year 8 develop text-based programming language skills in Small Basic<br><br>Year 9 develop text-based programming language in Python |
| Summer term | Unit 4<br><br>Environmental entrepreneurship | Identify characteristics that make up an entrepreneur.<br><br>Develop a focussed marketing campaign for a specific purpose.<br><br>Explain the benefits to a business of being more environmentally friendly and sustainable. | 1.1 Research and analyse existing products.<br><br>1.2 Design a business image and brand.<br><br>1.3 Produce an effective presentation.<br><br>1.4 Present a business idea. | In line with learning from key stage 2 curriculum. | Year 9 Business Enterprise unit exploring similar concepts and developing greater awareness of the commercial environment. |

# Scheme of Learning YEAR OVERVIEW

The Big Picture: Students will be introduced to the basics of Computer Science. They will develop an understanding and knowledge of systems architecture, how databases work and programming skills using visual programming software.

Year Group: 7

## Intent

1. Cyber Security – students will explore the impact of cyber security threats and identify measures to protect against.
2. How computers work – students will be introduced to the basics of systems architecture. They will develop a knowledge and understanding of how computers work, exploring hardware, software and computer components.
3. Visual Programmer– students will develop an understanding of programming using visual based programming software. They will work through a range of activities and develop their own program based on their knowledge and understanding.
4. Eco Dragons Den – students will explore the benefits of sustainable production. They will then design and pitch an innovative and sustainable product for a given purpose.

## Implementation

Students will work through the 4 topic areas, reflecting regularly on their knowledge and understanding throughout.

Each topic provides opportunities to build up skills through practical and theoretical activities. Each unit will be graded using 'rubric style assessment grids' that focus students' abilities of each individual skill. Students will be graded BRONZE, SILVER, GOLD or PLATINUM and graded within the given mark boundary.

LORIC opportunities are provided throughout each module, these include group tasks that provide chances for students to interact with other, demonstrate levels of communication and leadership. Practical work, such as exploring the inside of the computer, programming and searching using SQL will present problem solving skills that students will need to show resilience and initiative.

Home learning – students will be expected to complete 2 independent home learning pieces per topic. This will consolidate learning from the classroom and support preparation for end of unit assessments. A homework booklet will be provided at the start of the year detailing what is expected.

Autumn Term
E-Safety
- Platinum standard assessment grid will be used to assess knowledge and understanding of this unit.

Spring Term
How Computers Work
- Platinum standard assessment grid will be used to assess knowledge and understanding of this unit.

Summer Term
Visual Programming and Eco Dragons Den
- Platinum standard assessment grid will be used to assess knowledge and understanding of this unit.

## Impact

*Students will have an overall good knowledge and understanding of how computer systems work – this will support them with paper 1 of the GCSE Computer Science course. Students will build up transferable skills through the database unit and will develop a good knowledge and understanding of programming skills and terminology in preparation for learning textual based programming in year 8 and 9 and for paper 2 of the Computer Science GCSE.*

| Scheme of Learning Unit Overview Year 7 – Cyber Security | Time frame: 10 weeks | Approximate number of Lessons: 10 |
|---|---|---|
| **What is the big picture?** (Provide a clear overview of the unit)<br>To explore different types of cyber security incidents and threats, consider cyber security risk management measures and the process involved when responding to cyber security incidents. | | |
| **How does this link to and build on the previous year of learning?** | | |

**Intent:** What do you want the students to be able to know and do?

| | Knowledge | Skills |
|---|---|---|
| Good | Ability to identify different types of cyber security threat, explain ways to manage these threats and identify important criteria that needs to be reported when responding to a cyber security attack. | Recognition of key terminology.<br>Sorting criteria appropriately. |
| Better | Ability to explain the characteristics of a range of different types of cyber security threats, provide logical measures to protect a business or system from a cyber-attack and explain the logical process when reporting and responding to a cyber-attack. | Compare and contrast different possible measures. |
| Excellent | Explain the purpose of the CIA model in supporting businesses protection against cyber-attacks, analyse the impact of a cyber-attack on stakeholders, recommend effective solutions to protect against cyber-attacks and prepare an appropriate report in response to an attack. | Creation on a cyber incident report.<br>Ability to make reasoned recommendations. |

**Implementation:**

| What are the opportunities for "deep-learning"? | Units | What home-learning tasks are planned? | What work will be "deep-marked"? | What tracking data will be recorded? |
|---|---|---|---|---|
| Consideration of the full impact of cyber security impact on all stakeholders involved.<br>Understanding the importance of data protection – link to NHS incident. | 1.1 - Malware & Threats<br>1.2 - Cyber Attacks<br>1.3 – System Vulnerabilities<br>1.4 – Protection Measures | Students will complete 2 independent home learning pieces per unit.<br>1. Cyber quiz<br>2. Cyber legislation task | This unit will be marked using the 'Gold Standard' rubric assessment sheet. Each sub unit will have an assessment task to identify knowledge and understanding. | 'Gold Standard' rubric assessment grids will identify key strengths and areas for development. This will support 1-9 PPG grading. |

**Engagement:**

Students will be presented with a range of real-life cyber security incidents that they must evaluate impact and provide solutions and recommendations – this will include incidents such as the recent NHS cyber-attack.

**Impact:**

**Structured and organised response to cyber report, demonstrating an understanding of the type of attack, impact and level of response to incident.**

**Next steps:** How will this link to subsequent learning? Consider skills and knowledge

**GCSE Computer Science Paper 1 – System security and software, Computer science legislation.**
**Level 3 Cambridge Technical IT – Paper 3 - Cyber Security.**

| **Scheme of Learning Unit Overview: Year 7 – How Computers Work** | **Time frame: 7 hours** | **Approximate number of Lessons**: 7 |
|---|---|---|
| **What is the big picture?** (Provide a clear overview of the unit)<br>To understand the functions, features and components that make up a computer system, including the role and purpose of the CPU, different memory types and external storage. | | |
| **How does this link to and build on the previous year of learning?** | | |

**Intent:** What do you want the students to be able to know and do?

| | Knowledge | Skills |
|---|---|---|
| Good | To identify different components that make up a computer system, explain the role and purpose of the CPU and be able to describe the characteristics of a range of memory types and storage media. | Manipulate and identify the physical components of a computer system. |
| Better | To explain the key components that make up a computer system, demonstrating an understanding of the key features and functions of the CPU, including how CPU performance and system memory is measured. | Build a physical computer system.<br>Calculate and convert between different units of measurement. |
| Excellent | To make reasoned recommendations relating to computer systems, taking into consideration contributing factors that affect performance, storage and memory capacity. | Apply knowledge and understanding to extended answer questions. |

**Implementation:**

| What are the opportunities for "deep-learning"? | Units | What home-learning tasks are planned? | What work will be "deep-marked"? | What tracking data will be recorded? |
|---|---|---|---|---|
| von Neumann architecture.<br>Multi-core performance.<br>System upgrading. | 1.1 Computer components<br>1.2 CPU<br>1.3 Memory<br>1.4 Secondary storage | Students will complete 2 independent home learning pieces per unit.<br>1. Keyword definitions<br>2. Component's quiz | This unit will be marked using the 'Gold Standard' rubric assessment sheet. Each sub unit will have an assessment task to identify knowledge and understanding. | 'Gold Standard' rubric assessment grids will identify key strengths and areas for development. This will support 1-9 PPG grading. |

**Engagement**:

| Engagement will be measured through ability to answer questions in class, work completed in workbooks and assessments measured against PPG. |
|---|

**Impact:**

| Students should show a level of understanding of how computers work. It is expected by the end of this unit they would have sufficient knowledge to make recommendations about features and functions to consider when purchasing a new device. Impact will be measured through the 'Gold Standard' assessment grid against the minimum expected target grade. |
|---|

**Next steps:** How will this link to subsequent learning? Consider skills and knowledge

| **Paper 1 – Computer Science GCSE examination.** |
|---|

| **Scheme of Learning Unit Overview: Year 7 – Micro bits** | **Time frame: 10 hours** | **Approximate number of Lessons**: 10 |
|---|---|---|
| **What is the big picture?** (Provide a clear overview of the unit)<br>To develop a knowledge and understanding of the purpose, uses, features and functions of visual based computer programming. Students will explore language that lies behind computer programs and use this to develop their own piece of computer software. | | |
| **How does this link to and build on the previous year of learning?**<br>**Students are taught basic programming skills in year 6. Students should be familiar with the basics of some form of visual based programming language. This unit will extend that knowledge further and apply to a functional microcomputer. This will develop application from Scratch unit.** | | |

**Intent:** What do you want the students to be able to know and do?

| | Knowledge | Skills |
|---|---|---|
| Good | Able to create/develop a basic computer program using appropriate features and functions. Able to identify features and functions within a developed program. | Ability to use features and functions to create a basic program. |
| Better | Able to use appropriate features and functions to create an effective computer program that runs with few or no errors. Able to explain the program appropriately using correct terminology. Able to identify and correct some errors within a program. | Ability to use block building software to create a functional program.<br>Ability to explain a program using appropriate terminology. |
| Excellent | Able to create an effective and fully functional computer program that runs with minimal or no errors. Able to explain the functionality of the program in a variety of ways, including through the use of pseudocode. Able to debug a program effectively. | Ability to construct an effective program using appropriate features and functions.<br>Ability to translate code into pseudocode<br>Ability to develop and carry effective testing |

**Implementation:**

| What are the opportunities for "deep-learning"? | Units | What home-learning tasks are planned? | What work will be "deep-marked"? | What tracking data will be recorded? |
|---|---|---|---|---|
| Opportunity to explore different approaches to develop a computer program. | 1.1 Introduction to code<br>1.2 Introduction to the Micro: bit<br>1.3 The Micro: nit interface<br>1.4 Coding | Students will complete 2 independent home learning pieces per unit.<br>1. Keyword definitions<br>2. Research literacy task | This unit will be marked using the 'Gold Standard' rubric assessment sheet. Each sub unit will have an assessment task to identify knowledge and understanding. | 'Gold Standard' rubric assessment grids will identify key strengths and areas for development. This will support 1-9 PPG grading. |

**Engagement**:

Students will use the MicroBits to develop a range of different computer programs. This could range from creating an interactive LED badge, making a game e.g. snake/Tetris to creating an output for radio transmission.

**Impact:**

It is expected that by the end of this unit students will have the ability to develop a program using visual based programming language. Impact will be measured through the 'Gold Standard' assessment grid against the minimum expected target grade.

**Next steps:** How will this link to subsequent learning? Consider skills and knowledge

| **Scheme of Learning Unit Overview: Year 7 Green Dragons Den** | **Time frame: 6 hours** | **Approximate number of Lessons**: 6 |
|---|---|---|
| **What is the big picture?** (Provide a clear overview of the unit) To explore the characteristics that make an entrepreneur. A specific focus on designing and presenting a marketing campaign for a sustainable product. | | |
| **How does this link to and build on the previous year of learning?** This is new learning. This will build on literacy skills including public speaking and presenting. | | |

**Intent:** What do you want the students to be able to know and do?

| | Knowledge | Skills |
|---|---|---|
| Good | To be able to identify the characteristics of an entrepreneur. | To research and analysing successful sustainable business ventures. |
| Better | To be able to develop an effective marketing campaign for a specific purpose. | To design and develop an effective and professional presentation |
| Excellent | To be able to explain the benefits to a business of being more environmentally friendly and sustainable. | To use a range of literacy skills effectively, including public speaking and presenting. |

**Implementation:**

| What are the opportunities for "deep-learning"? | Units | What home-learning tasks are planned? | What work will be "deep-marked"? | What tracking data will be recorded? |
|---|---|---|---|---|
| To explore what it takes to build a successful business venture. | 1.1 Research and analyse existing products.<br>1.2 Design a business image/brand.<br>1.3 Produce an effective presentation.<br>1.4 Present a business idea | Students will complete 2 independent home learning pieces per unit.<br>1. Explore what is meant by sustainable production.<br>2. Research and present the findings of an entrepreneur. | This unit will be marked using the 'Platinum Standard' rubric assessment sheet. Each sub unit will have an assessment task to identify knowledge and understanding. | 'Platinum Standard' rubric assessment grids will identify key strengths and areas for development. This will support 1-9 PPG grading. |

**Engagement**:

| Students will design and develop a unique sustainable brand and present their ideas through a professional presentation. |
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**Impact:**

| Students will recognise what it takes to become a successful entrepreneur/business person. They will demonstrate an understanding of the benefits of sustainable production, and present this publicly to an audience. |
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**Next steps:** How will this link to subsequent learning? Consider skills and knowledge

| **Paper 1 and Paper 2 GCSE Business 1-9 (Entrepreneurs, Marketing and Environmental considerations)** |
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# Digital Enterprise

Year 8

Marches Academy Trust

# Year 8 Computer Science Year Overview

*What is my Learning Journey this year?*

Sir John Talbot's school

Marches Academy Trust

| Name | Min TG |
|---|---|
| | |

START

## Spreadsheet Specialist

### What to expect

**Content –** To use spreadsheet software to store data, support with data analysis and improve efficiency and effectiveness of managing data.

**Bigger Picture Focus -** To be able to build an effective working spreadsheet model to for a business scenario.

## Network Manager

### What to expect…

**Content –** A look into the different types of hardware required in a network. The different network types and topologies.

**Bigger Picture Focus -** To be able to recommend an efficient network design for a given scenario.

## Computational Thinking

### What to expect

**Content –** An introduction into computational thinking techniques and how to think logically.

**Bigger Picture Focus –** To be able to provide solutions using CT techniques for a range of problems.

## Small Basic Developer

### What to expect

**Content –** An introduction into text based programming understanding the basics of programming and constructs.

**Bigger Picture Focus –** To be able to develop a program using the language Small Basic for a given purpose and scenario.

On to Year 9

**Key Skills:**

- Network construction
- Problem solving and logical thinking
- Data analysis
- Text based programming

**Cultural Connections/ Real World Links**

- How to choose the most appropriate network topology.
- Understanding how to improve and upgrade a network.
- How database software supports data analysis.
- Approach problems with computational techniques.

**Competitions and other links**

- UK Bebras
- Khans Code Academy
- CAS
- Cyber Discovery
- Astro Pi
- Pi Wars

Home Learning

Up to twice per half term there will be flipped learning set

Flipped activities will link to in class learning

Your teacher will also set each Flipped Learning task on Class Charts for your home learning every week

| Spreadsheets |
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| Networks |
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| Comp Thinking |
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| Small Basic |
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# Year 8 Curriculum Overview- Subject

| | Content<br>Topic/unit name, enquiry question | Disciplinary Knowledge (Skills)<br>Actions taken within a topic to gain substantive knowledge | Substantive Knowledge<br>This is the specific, factual content for a topic, which is connected into a careful sequence of learning | Prior Learning (KS2) | Future learning (KS3) |
|---|---|---|---|---|---|
| Autumn term | Unit 1<br><br>Spreadsheets | Identify the purpose, uses, features and functions of Spreadsheet software and apply some of this knowledge to a given spreadsheet.<br><br>To develop a secure spreadsheet model using features and functions appropriately and effectively. | 1.1 Formatting<br><br>1.2 Formulas and functions<br><br>1.3 Validation and IF statements<br><br>1.4 Charts and graphs | Building on introduction to Microsoft Office suite during year 7 curriculum. In line with learning from KS2 curriculum.<br><br>Developing ability in Excel after using data to support recommendations during year 7 curriculum. | Unit 4 (year 8 curriculum) - Programming with Small Basic – IF statements.<br><br>Year 9 Programming – operators and IF statements. |
| Spring term | Unit 2<br><br>Network Manager | Identify and explain hardware and software required to support the development of a network.<br><br>Recommend appropriate hardware and software to support the development of a network.<br><br>Analyse the features and functions of different network topologies to make informed and suitable recommendations. | 1.1 Types of networks<br><br>1.2 Network topologies<br><br>1.3 Network protocols<br><br>1.4 Packet switching | Studying how computers work in year 7 curriculum.<br><br>Knowledge of cyber security from unit 1 in year 7 curriculum. | Unit 3 (year 8 curriculum) - Computational thinking, building on from topology and data packets. |
| Spring / Summer term | Unit 3<br><br>Computational Thinking | Understand computational thinking and algorithms and their relationship with computer science.<br><br>Carry out and explain a range of sorting algorithms.<br><br>Represent algorithms using flow diagrams.<br><br>Describe and create simple logic diagrams. | 1.1 Computational thinking<br><br>1.2 Bubble sorting<br><br>1.3 Merge sorting<br><br>1.4 Insertion sorting | In line with learning from key stage 2 curriculum.<br><br>Development from Visual Programming unit in year 7 curriculum. | Unit 4 (year 8 curriculum) – Programming with Small Basic, developing knowledge and understanding on iteration and logic.<br><br>Year 9 unit 4 – Data representation, developing further knowledge, understanding and ability in binary code. |
| Summer term | Unit 4<br><br>Programming with Small Basic | Understand the purpose, uses, features and functions of textual based computer programming.<br><br>Analyse language that lies behind computer programmes and use this to create their own programme.<br><br>Create an effective and fully functional computer programme that runs with minimal errors.<br><br>Debug a programme effectively. | 1.1 Outputs, variables and inputs.<br><br>1.2 Strings and maths<br><br>1.3 Selection<br><br>1.4 Iteration | In line with learning from key stage 2 curriculum.<br><br>Development from Visual Programming unit in year 7 curriculum. | Year 9 Unit 1 – Python programmer. |

# Scheme of Learning YEAR OVERVIEW

## The Big Picture

Year Group 8

Students will build on knowledge learnt from Year 7. Students will move from how computer systems work independently to how they interact within a network. They will look at how data can be analysed using alternative software packages and will move from visual based programming to textual based programming.

## Intent

1. Spreadsheet specialist – students will work through a skills-based project in which their end goal is to be able to develop a working spreadsheet for a given scenario.
2. Networks and Communication – students will explore the requirements of developing an effective network, including software, hardware, protocols and security measures.
3. Computational Thinking and Problem Solving – students will develop knowledge and understanding of the skills involved in solving problems. They will be introduced to methods used to sort data.
4. Small Basic – students will explore textual based programming and build up skills that can be transferred to more complex software programs, such as Python.

## Implementation

Students will work through the 4 topic areas, reflecting regularly on their knowledge and understanding throughout.

Each topic provides opportunities to build up skills through practical and theoretical activities. Each unit will be graded using 'rubric style assessment grids' that focus students' abilities of each individual skill. Students will be graded BRONZE, SILVER, GOLD or PLATINUM and graded within the given mark boundary.

LORIC opportunities are provided throughout each module, these include group tasks that provide chances for students to interact with other, demonstrate levels of communication and leadership. Practical work, such as exploring networks, searching and sorting using filters and macros, and understanding syntax will present problem solving skills that students will need to show resilience and initiative.

Home learning – students will be expected to complete 2 independent home learning pieces per topic. This will consolidate learning from the classroom and support preparation for end of unit assessments. A homework booklet will be provided at the start of the year detailing what is expected.

Autumn Term
Spreadsheet specialist
- PLATINUM standard assessment grid will be used to assess knowledge and understanding of this unit.

Spring Term
Networks and Communications
- PLATINUM standard assessment grid will be used to assess knowledge and understanding of this unit.

Summer Term
Computation Thinking & Small Basic
- PLATINUM standard assessment grid will be used to assess knowledge and understanding of this unit.

## Impact

Students will develop a good knowledge of the benefits and drawbacks of different types of computer network. They will explore the features and functions involved in developing a network. Students will build a working spreadsheet using advanced tools and features. These skills are transferable to the real world. Knowledge will not only support the CS GCSE, but also the Business GCSE. Small Basic will provide students with scaffolded skills to build up knowledge of textual based programming which will be transferable to year 9 when they study Python.

| **Scheme of Learning Unit Overview: Year 8 - Spreadsheets** | **Time frame: 7 hours** | **Approximate number of Lessons:** 7 |
|---|---|---|
| **What is the big picture?** (Provide a clear overview of the unit)<br>To understand the purpose, uses, features and functions of spreadsheets and show a level of competency in developing and using spreadsheets. | | |
| **How does this link to and build on the previous year of learning?**<br>**This builds on year 7 unit of data handling and using databases to store data.** | | |

**Intent:** What do you want the students to be able to know and do?

| | Knowledge | Skills |
|---|---|---|
| Good | To identify the purpose, uses, features and functions of spreadsheet software and apply some of this knowledge to a given spreadsheet. | Ability to conduct primary and secondary research effectively. |
| Better | To develop a secure spreadsheet model using a range of features and functions appropriately and effectively. | Ability to select and apply a range of appropriate functions and formulas. |
| Excellent | To create an effective functioning spreadsheet model that stores data securely and accurately using a wide range of suitable and appropriate features and functions. | Ability to apply validation and protection techniques to improve the security of data stored within a spreadsheet model.<br>Ability to apply filters to sort and search data effectively. |

**Implementation -**

| What are the opportunities for "deep-learning"? | Units | What home-learning tasks are planned? | What work will be "deep-marked"? | What tracking data will be recorded? |
|---|---|---|---|---|
| Use of validation techniques and tools to ensure data storage is safe and secure. | 1.1 Formatting<br>1.2 Formulas and functions<br>1.3 Validations and Ifs<br>1.4 Charts and graphs | Students will complete 2 independent home learning pieces per unit.<br>1. Formatting tools<br>2. Spreadsheet's quiz | This unit will be marked using the 'Gold Standard' rubric assessment sheet. Each sub unit will have an assessment task to identify knowledge and understanding. | 'Gold Standard' rubric assessment grids will identify key strengths and areas for development. This will support 1-9 PPG grading. |

**Engagement**:

The project provides a real-life scenario in which students will create a spreadsheet model for to cost and manage the Whitchurch 10K event. Students will take responsibility for sourcing all of their own information and data to support the development of their own personalised model.

**Impact:**

Evidence will be work completed on weekly skills-based tasks. Students will apply knowledge and understanding to sub unit, bi-weekly skills assessments.

**Next steps:**

**Paper 1 and Paper 2 – Business GCSE paper – role of finance function, handling data, types of research methods.**
**Paper 1 GCSE Computer Science Paper – recognising and understanding validation and data handling.**

| **Scheme of Learning Unit Overview: Year 8 – Communication and Networks** | **Time frame: 7 hours** | **Approximate number of Lessons:** 7 |
|---|---|---|
| **What is the big picture?** (Provide a clear overview of the unit)<br>To understand the hardware and software required to set up a network. To investigate the benefits and drawbacks of a range of different types of network topology in order to make appropriate and valid recommendations. | | |
| **How does this link to and build on the previous year of learning?**<br>**This builds on knowledge from year 7 'How Computers Work' topic where students developed a basic knowledge and understanding of the hardware and software that make up a computer system.** | | |

**Intent:** What do you want the students to be able to know and do?

| | Knowledge | Skills |
|---|---|---|
| Good | Identify hardware and software required to support the development of a network. Demonstrate knowledge and understanding of the purpose of different network topologies. | Identify different types of hardware and software provided and demonstrate how these would be used within an identified network topology. |
| Better | Explain the hardware and software required to support the development of a network. Make recommendations relating to the best network approach to use for a specified scenario. | Create a range of different topologies using hardware and software provided. |
| Excellent | Recommend appropriate hardware and software to support the development of a network. Analyse the features and functions of different network topologies to make informed and suitable recommendations. | Build a virtual network using appropriate hardware and software. |

**Implementation -**

| What are the opportunities for "deep-learning"? | Units | What home-learning tasks are planned? | What work will be "deep-marked"? | What tracking data will be recorded? |
|---|---|---|---|---|
| Understanding the protocols that lie behind a network that supports its functionality. | 1.1 Types of networks<br>1.2 Network topologies<br>1.3 Network protocols<br>1.4 Packet switching | Students will complete 2 independent home learning pieces per unit.<br>1. Keyword definitions<br>2. Network's quiz | This unit will be marked using the 'Gold Standard' rubric assessment sheet. Each sub unit will have an assessment task to identify knowledge and understanding. | 'Gold Standard' rubric assessment grids will identify key strengths and areas for development. This will support 1-9 PPG grading. |

**Engagement:**

Students will complete an in-class workbook. At the end of each sub unit students will then apply knowledge to a knowledge assessment task. Questioning will used to support formative assessment.

**Impact:**

It is expected that by the end of this unit students will be able to make effective recommendations to support with setting up and managing a network. Impact will be measured through the 'Gold Standard' assessment grid against the minimum expected target grade.

| **Scheme of Learning Unit Overview: Year 8 – Computational Thinking** | **Time frame: 7 hours** | **Approximate number of Lessons**: 7 |
|---|---|---|
| **What is the big picture?** (Provide a clear overview of the unit)<br>To understand what is meant by 'computational thinking' and the term 'algorithm' and its relationship with computer science. To be able to carry out and describe a range of searching and sorting algorithms and represent algorithms using flow diagrams. | | |
| **How does this link to and build on the previous year of learning?**<br>**This builds on Scratch and Micro bit units studied in year 7. This will enable students to recognise how to translate code into text. This will support future learning when students are required to code using textual based programming language.** | | |

**Intent:** What do you want the students to be able to know and do?

| | Knowledge | Skills |
|---|---|---|
| Good | Identify and explain key terminology and be able to write simple algorithms for given scenarios. Be able to identify different searching and sorting algorithms and demonstrate an ability to apply to at least one of these. | Application of knowledge to create algorithms using decomposition, abstraction and pattern recognition.<br>Bubble, merge and insertion sort. |
| Better | Apply knowledge and understanding of key terminology to explain algorithms developed. Show confidence of using a range of different searching and sorting algorithms. | Binary and linear search.<br>Create flow diagrams |
| Excellent | Ability to analyse a range of searching and sorting algorithms. Able to annotate and explain flow of data within a computer program using a range of forms e.g. flow charts, algorithms, pseudocode. Be able to describe and create simple logic diagrams. | Create pseudocode.<br>Create logic diagrams. |

**Implementation -**

| What are the opportunities for "deep-learning"? | Units | What home-learning tasks are planned? | What work will be "deep-marked"? | What tracking data will be recorded? |
|---|---|---|---|---|
| Explore different methods that are used by computers to search and sort data and information. | 1.1 Computation thinking<br>1.2 Bubble sorting<br>1.3 Merge sorting<br>1.4 Insertion sorting | Students will complete 2 independent home learning pieces per unit.<br>1. CT quiz<br>2. Comparing sorting algorithms | This unit will be marked using the 'Gold Standard' rubric assessment sheet. Each sub unit will have an assessment task to identify knowledge and understanding. | 'Gold Standard' rubric assessment grids will identify key strengths and areas for development. This will support 1-9 PPG grading. |

**Engagement:**

Students will be directly involved in formulating their own searching and sorting algorithms through role play. Evidence will be provided in work completed in workbooks, bi-weekly assessments and through responses to questions asked.

**Impact:**

By the end of this unit, it is expected that students will recognise the four key elements of computational thinking and will be able to apply at least one method of sorting algorithm. Impact will be measured through the 'Gold Standard' assessment grid against the minimum expected target grade.

| **Scheme of Learning Unit Overview: Year 8 – Small Basic** | **Time frame: 7 hours** | **Approximate number of Lessons:** 7 |
|---|---|---|
| **What is the big picture?** (Provide a clear overview of the unit)<br>To develop a knowledge and understanding of the purpose, uses, features and functions of textual based computer programming. Students will explore language that lies behind computer programs and use this to develop their own piece of computer software. | | |
| **How does this link to and build on the previous year of learning?**<br>**This unit builds on year 7 visual based programming topics (Scratch and MicroBits). This unit introduces textual based programming through a scaffolded approach.** | | |

**Intent:** What do you want the students to be able to know and do?

| | Knowledge | Skills |
|---|---|---|
| Good | Able to create/develop a basic computer program using appropriate features and functions. Able to identify features and functions within a developed program. | Ability to use features and functions to create a basic program. |
| Better | Able to use appropriate features and functions to create an effective computer program that runs with few or no errors. Able to explain the program appropriately using correct terminology. Able to identify and correct some errors within a program. | Ability to use block building software to create a functional program.<br>Ability to explain a program using appropriate terminology. |
| Excellent | Able to create an effective and fully functional computer program that runs with minimal or no errors. Able to explain the functionality of the program in a variety of ways, including through the use of pseudocode. Able to debug a program effectively. | Ability to construct an effective program using appropriate features and functions.<br>Ability to translate code into pseudocode<br>Ability to develop and carry effective testing |

**Implementation -**

| What are the opportunities for "deep-learning"? | Units | What home-learning tasks are planned? | What work will be "deep-marked"? | What tracking data will be recorded? |
|---|---|---|---|---|
| Opportunity to explore different approaches to develop a computer program. | 1.1 Outputs, variables and inputs<br>1.2 Strings and maths<br>1.3 Selection<br>1.4 Iteration | Students will complete 2 independent home learning pieces per unit.<br>1. Keyword definitions<br>2. Write an algorithm | This unit will be marked using the 'Gold Standard' rubric assessment sheet. Each sub unit will have an assessment task to identify knowledge and understanding. | 'Gold Standard' rubric assessment grids will identify key strengths and areas for development. This will support 1-9 PPG grading. |

**Engagement:**

Students will work through weekly skills tasks. Evidence of progress will be through the programs completed on Small Basic. These will be RAG rated in student booklets. Students will complete end of unit challenges will be assessed using the 'Gold Standard' rubric assessment grid.

**Impact:**

Assessment of the level of ability to test and implement appropriate changes to a bugged program. Is the student able to plan appropriate testing? Is the student able to identify issues within a bugged program? Is the student able to improve the functionality of a bugged program?

# Digital Enterprise

Year 9

Marches Academy Trust

# Year 9 Computer Science Year Overview

*What is my Learning Journey this year?*

Sir John Talbot's school

Marches Academy Trust

| Name | Min TG |
|---|---|
| | |

START

## Python Programmer


**What to expect**

**Content –** Continue to develop skills using text based programming language.

**Bigger Picture Focus –** To be able to develop a program using Python for a given purpose and scenario.

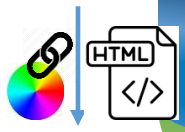
## Business Apprentice

**What to expect…**

**Content –** An introduction into business marketing with a key focus on branding and advertisement.

**Bigger Picture Focus -** To be able to develop and present a new business concept..

## Web Developer




**What to expect**

**Content –** An introduction into web development considering design and functionality tools.

**Bigger Picture Focus –** To be able to develop a web app for a given purpose and scenario.

## Data Representation

**What to expect**

**Content –** An introduction into how data is represented by a computer for images, sounds and text.

**Bigger Picture Focus –** To be able to provide solutions using CT techniques for a range of problems.


On to Year 10

**Key Skills:**

- Effective business planning
- Problem solving and logical thinking
- Data representation
- Text based programming

**Cultural Connections/ Real World Links**

- Develop coding skills to develop programs.
- Develop web development skills to create web apps.
- How an effective business plan helps a business succeed.
- Approach problems with computational techniques.

**Competitions and other links**

- UK Bebras
- Khans Code Academy
- CAS
- Cyber Discovery
- Astro Pi
- Pi Wars

Home Learning

Up to twice per half term there will be flipped learning set

Flipped activities will link to in class learning

Your teacher will also set each Flipped Learning task on Class Charts for your home learning every week

| Python |
|---|
| |

| Business |
|---|
| |

| Web Developer |
|---|
| |

| Data Rep |
|---|
| |

# Year 9 Curriculum Overview- Subject

| | Content<br>Topic/unit name, enquiry question | Disciplinary Knowledge (Skills)<br>Actions taken within a topic to gain substantive knowledge | Substantive Knowledge<br>This is the specific, factual content for a topic, which is connected into a careful sequence of learning | Prior Learning (KS2) | Future learning (KS3) |
|---|---|---|---|---|---|
| Autumn term | Unit 1<br><br>Python programmer | Develop and apply higher order programming skills using Python Programmer, such as creating lists, indexing and slicing.<br><br>Create and debug programmes using the Python environment.<br><br>Create an effective programme with minimal errors and explain how the programme works using specialist terms. | 1.1 Outputs, variables and inputs<br><br>1.2 Strings and maths<br><br>1.3 Selection<br><br>1.4 Iteration | Year 8 Unit 4 – Programming with Small Basic. Developing knowledge, understanding and ability in coding and applying it to Python coding language. | Underpins GCSE Computer Science curriculum. |
| Spring term | Unit 2<br><br>Business apprentice | Develop an understanding of the purpose of marketing and the different stages involved in the marketing process.<br><br>Identify the methods involved in meeting the needs of a target audience.<br><br>Evaluate different pricing strategies that could be used when bringing a new product to market.<br><br>Make effective recommendations to support a business introducing a new product. | 1.1 Researching existing products.<br><br>1.2 Creating an effective brand.<br><br>1.3 Setting a pricing strategy.<br><br>1.4 Developing an effective advertisement.<br><br>1.5 Presenting a business idea. | Year 7 Unit 4 – Environmental Entrepreneur. Developing understanding of key concepts and wider commercial issues. | Underpins GCSE Computer Science curriculum. |
| Spring / Summer term | Unit 3<br><br>Web developer | Research and explore what makes a good web application.<br><br>Understand and use design and development tools to create an effective application.<br><br>Evaluate, test and refine a web application based on feedback from the target audience. | 1.1 Research and analyse existing web apps.<br><br>1.2 Plan a web app solution.<br><br>1.3 Create a web app solution.<br><br>1.4 Test and refine a web app. | Year 7 Unit 4 – Environmental Entrepreneur.<br><br>Year 9 Unit 1 – Python Programmer. Testing and evaluating apps by other users. | Underpins GCSE Computer Science curriculum. |
| Summer term | Unit 4<br><br>Data representation | Develop knowledge and understanding of how a computer uses and processes data.<br><br>Be able to carry out data conversions and carry out simple binary calculations.<br><br>Investigate different methods computers use to format and compress data files. | 1.1 How computers process instructions using binary code<br><br>1.2 Converting binary code to denary code and hexadecimal.<br><br>1.3 How images are stored using binary code.<br><br>1.4 How audio is stored using binary code. | Year 8 Unit 3 – Computational thinking.<br><br>Year 8 Unit 4 – Programming with Small Basic.<br><br>Year 9 Unit 1 – Python programmer | Underpins GCSE Computer Science curriculum. |

# Scheme of Learning YEAR OVERVIEW

## The Big Picture

Year Group 9

Students will build on knowledge learnt from year 8. Students will develop knowledge of programming further from summer term of year 8 immediately into autumn term of year 9. Students will use Python which is more advanced than Small Basic. Students will l then be introduced to Business. This will support them in making appropriate choices for options.

## Intent

1. Python – students will develop knowledge and understanding of textual based programming using Python. This will prepare students for GCSE paper 2 and NEA.
2. Introduction to business – students will explore the 4Ps of the marketing mix and present a brand for a given scenario.
3. Web developer – students will explore different applications and then develop an application for a given scenario.
4. Data and data representation – students will be introduced to how computers work and calculate. They will carry out calculations to convert between binary, denary and hexadecimal values.

## Implementation

Students will work through the 4 topic areas, reflecting regularly on their knowledge and understanding throughout.

Each topic provides opportunities to build up skills through practical and theoretical activities. Each unit will be graded using 'rubric style assessment grids' that focus students' abilities of each individual skill. Students will be graded BRONZE, SILVER, GOLD or PLATINUM and graded within the given mark boundary.

LORIC opportunities are provided throughout each module, these include group tasks that provide chances for students to interact with other, demonstrate levels of communication and leadership. Practical work, such as programming will provide problem solving activities in which students will be required to use their initiative and demonstrate high levels of resilience.

Home learning – students will be expected to complete 2 independent home learning pieces per topic. This will consolidate learning from the classroom and support preparation for end of unit assessments. A homework booklet will be provided at the start of the year detailing what is expected.

Autumn Term
Python
- PLATINUM standard assessment grid will be used to assess knowledge and understanding of this unit.

Spring Term
Introduction to Business
- PLATINUM standard assessment grid will be used to assess knowledge and understanding of this unit.

Summer Term
Web Developer and Data Representation
- PLATINUM standard assessment grid will be used to assess knowledge and understanding of this unit.

## Impact

Students will develop a good knowledge of the benefits and drawbacks of different types of business ownership. They will expl ore how computers solve problems and carry out complex calculations. Students will build up excellent programming skills that will set them up perfectly for the GCSE CS GCS E.

| **Scheme of Learning Unit Overview: Year 9 Python Programming** | **Time frame: 14 hours** | **Approximate number of Lessons:** 14 |
|---|---|---|
| **What is the big picture?** (Provide a clear overview of the unit)<br>To develop and apply programming skills using Python programming software. Students will learn a range of programming techniques and use these to build a program for a given scenario. | | |
| **How does this link to and build on the previous year of learning?**<br>**This is developing visual block based programming from year 7 (Scratch) and part textual based programming in year 8 (Small Basic).** | | |

**Intent:** What do you want the students to be able to know and do?

| | Knowledge | Skills |
|---|---|---|
| Good | To be able to create a basic program that runs with minimal error, using a range of programming techniques such as strings, functions and iteration. | Debug pre made programs created in Python environment. |
| Better | To create an **effective program** that runs without error and be able to explain how the program works, using good application of specialist technical terminology. | Create a program using Python environment using some pre-existing source code.<br>Create flow charts to visually represent program created. |
| Excellent | To create an **effective and efficient** program that runs without error, using a range of programming skills, demonstrating an excellent knowledge and understanding of technical terminology to explain. | Create a program from scratch using Python environment.<br>Produce pseudo code to represent program created. |

**Implementation:**

| What are the opportunities for "deep-learning"? | Units | What home-learning tasks are planned? | What work will be "deep-marked"? | What tracking data will be recorded? |
|---|---|---|---|---|
| High order programming skills and techniques including creating lists, indexing and slicing. | 1.1 Outputs, variables, and inputs<br>1.2 Strings and maths<br>1.3 Selection<br>1.4 Iteration | Students will complete 2 independent home learning pieces per unit.<br>1. Data types and variables<br>2. IF statements | This unit will be marked using the 'Gold Standard' rubric assessment sheet. Each sub unit will have an assessment task to identify knowledge and understanding. | 'Gold Standard' rubric assessment grids will identify key strengths and areas for development. This will support 1-9 PPG grading. |

**Engagement:**

| |
|---|
| Students will work through weekly skills tasks. Evidence of progress will be through the programs completed on Python. These will be RAG rated in student booklets. Students will complete end of unit challenges will be assessed using the 'Gold Standard' rubric assessment grid. |

**Impact:**

| |
|---|
| Knowledge and understanding of key terminology presented through workbooks and verbal questioning. Students will produce a physical program using the skills developed in class – this will demonstrate and assess student's ability to program. Application of knowledge and understanding of program created presented in written report. |

| **Scheme of Learning Unit Overview Year 9 – Introduction to Business** | **Time frame:** 10 hours | **Approximate number of Lessons**: 10 |
|---|---|---|
| **What is the big picture?** (Provide a clear overview of the unit)<br>To introduce the topic of 'marketing'. To develop an understanding of the purpose of marketing and the different stages involved in the marketing process (4P's). Students will develop a unique brand for a given scenario and pitch their idea in a Dragons Den style approach. | | |
| **How does this link to and build on the previous year of learning?**<br>**This is new unit, that prepares students considering opting Business at GCSE. Some elements of this unit will have been discussed during year 8 topic on spreadsheets.** | | |

**Intent:** What do you want the students to be able to know and do?

| | Knowledge | Skills |
|---|---|---|
| Good | Ability to identify the purpose of marketing and the methods involved in identifying and meeting the needs of a target audience. Able to identify different pricing strategies that could be implemented by a business. | Interpret and apply key business terminology. |
| Better | Able to explain the pros and cons of different pricing strategies when introducing a new product to market. | Interpret business plans<br>Be able to compare and contrast. |
| Excellent | Ability to make effective recommendations to support a business looking at introducing a new product to market. This will include evaluations of effective pricing strategies and research methods to adopt. | Annotate and develop business plans to improve their effectiveness.<br>Make reasoned recommendations. |

**Implementation:**

| What are the opportunities for "deep-learning"? | Units | What home-learning tasks are planned? | What work will be "deep-marked"? | What tracking data will be recorded? |
|---|---|---|---|---|
| How different elements of marketing fit together to support effective introduction of a new product to a market. | 1.1 Researching existing products<br>1.2 Creating an effective brand<br>1.3 Setting a pricing strategy<br>1.4 Developing an effective advertisement<br>1.5 Pitch | Students will complete 2 independent home learning pieces per unit.<br>1. Pricing strategy<br>2. Storyboard – advert | This unit will be marked using the 'Gold Standard' rubric assessment sheet. Each sub unit will have an assessment task to identify knowledge and understanding. | 'Gold Standard' rubric assessment grids will identify key strengths and areas for development. This will support 1-9 PPG grading. |

**Engagement:**

Students will complete weekly activities and develop a presentation to display their knowledge and understanding of marketing.

**Impact:**

Knowledge and understanding of the different aspects of marketing evident through student's final presentation/pitch. Impact will be measured through the 'Gold Standard' assessment grid against the minimum expected target grade.

| **Scheme of Learning Unit Overview: Year 9 Web Development** | **Time frame: 10 hours** | **Approximate number of Lessons**: 10 |
|---|---|---|
| **What is the big picture?** (Provide a clear overview of the unit) To explore what makes an effective web application. Students will research into what makes an effective web application. They will then design and develop an interactive application for a given scenario. | | |
| **How does this link to and build on the previous year of learning?** In year 7 students learn about entrepreneurial characteristics during Eco Dragons Den. In year 8 learning progresses to develop knowledge and understanding of protocols and security issues associated with networks and applications. | | |

**Intent:** What do you want the students to be able to know and do?

| | Knowledge | Skills |
|---|---|---|
| Good | To be able to recognise what makes an effective application. | To research into and analyse the effectiveness of existing applications. |
| Better | To be able to recognise design and development tools to create an effective application. | To design and develop an effective application using industry standard software. |
| Excellent | To be able to understand how to effectively test and refine an application. | To develop an effective test plan to support a refined application model. |

**Implementation:**

| What are the opportunities for "deep-learning"? | Units | What home-learning tasks are planned? | What work will be "deep-marked"? | What tracking data will be recorded? |
|---|---|---|---|---|
| To explore the protocols and complex programming language used to development an effective application model. | 1.1 Research and analyse existing web apps<br>1.2 Plan a web app solution.<br>1.3 Create a web app solution<br>1.4 Test and refine a web app | Students will complete 2 independent home learning pieces per unit.<br>1. | This unit will be marked using the 'Platinum Standard' rubric assessment sheet. Each sub unit will have an assessment task to identify knowledge and understanding. | 'Platinum Standard' rubric assessment grids will identify key strengths and areas for development. This will support 1-9 PPG grading. |

**Engagement**:

| Students will design and develop an effective and interactive web application using WIX software for a given scenario. |
|---|

**Impact:**

| Knowledge and understanding of what it takes to be a web developer. |
|---|

**Next steps:** How will this link to subsequent learning? Consider skills and knowledge

| **Paper 2 – Computer Science GCSE programming NEA and Business Entrepreneur** |
|---|

| **Scheme of Learning Unit Overview Year 9 – Data and Data Representation** | **Time frame:** 7 weeks | **Approximate number of Lessons:** 7 |
|---|---|---|
| **What is the big picture?** (Provide a clear overview of the unit)<br>To develop an understanding and knowledge of how a computer processes and uses data, develop ability to carry out data conversions and perform simple binary calculations and explore different methods computers use to format and compress data files. | | |
| **How does this link to and build on the previous year of learning?**<br>**This unit will link into and further develop on from year 8 unit – Computational Thinking** | | |

**Intent:** What do you want the students to be able to know and do?

| | Knowledge | Skills |
|---|---|---|
| Good | Ability to recognise how computers process instructions using binary. Be able to correctly order units of data. Be able to convert denary into binary. Be able to represent images as binary using bit code. | Order units of data accurately.<br>Convert between binary and denary values<br>Display images using RLE. |
| Better | Ability to describe common units of data, describe how binary codes are used to represent characters and convert between units of data. Able to perform simple binary calculations (+/-‘s).<br>Able to describe how images can be represented in binary and sound can be stored digitally. | Convert between units of data.<br>Binary to denary calculations (+/-)<br>Calculate colour depth. |
| Excellent | Ability to describe the relationship between character bits and sets. Able to explain the terms ‘binary overflow’ and ‘binary shift’. Able to convert data into hexadecimal values and describe audio and visual compression techniques. | Calculate binary shift.<br>Convert between hex and denary/binary. |

**Implementation:**

| What are the opportunities for “deep-learning”? | What might be the pitfalls? | What home-learning tasks are planned? | What work will be “deep-marked”? | What tracking data will be recorded? |
|---|---|---|---|---|
| Developing understanding of how computers store and use data input by human beings. | Complex conversions of converting values from binary to hexadecimal. | Students will complete 2 independent home learning pieces per unit.<br>1. Keyword definitions<br>2. Bit representation | This unit will be marked using the ‘Gold Standard’ rubric assessment sheet. Each sub unit will have an assessment task to identify knowledge and understanding. | ‘Gold Standard’ rubric assessment grids will identify key strengths and areas for development. This will support 1-9 PPG grading. |

**Engagement:**

Students will role play how computers translate human code into machine code.

**Impact:**

**Student booklets and assessment will identify an ability to convert between different units of data and perform a range of calculations with confidence.**

# Digital Enterprise

## KS4 Business

Marches Academy Trust

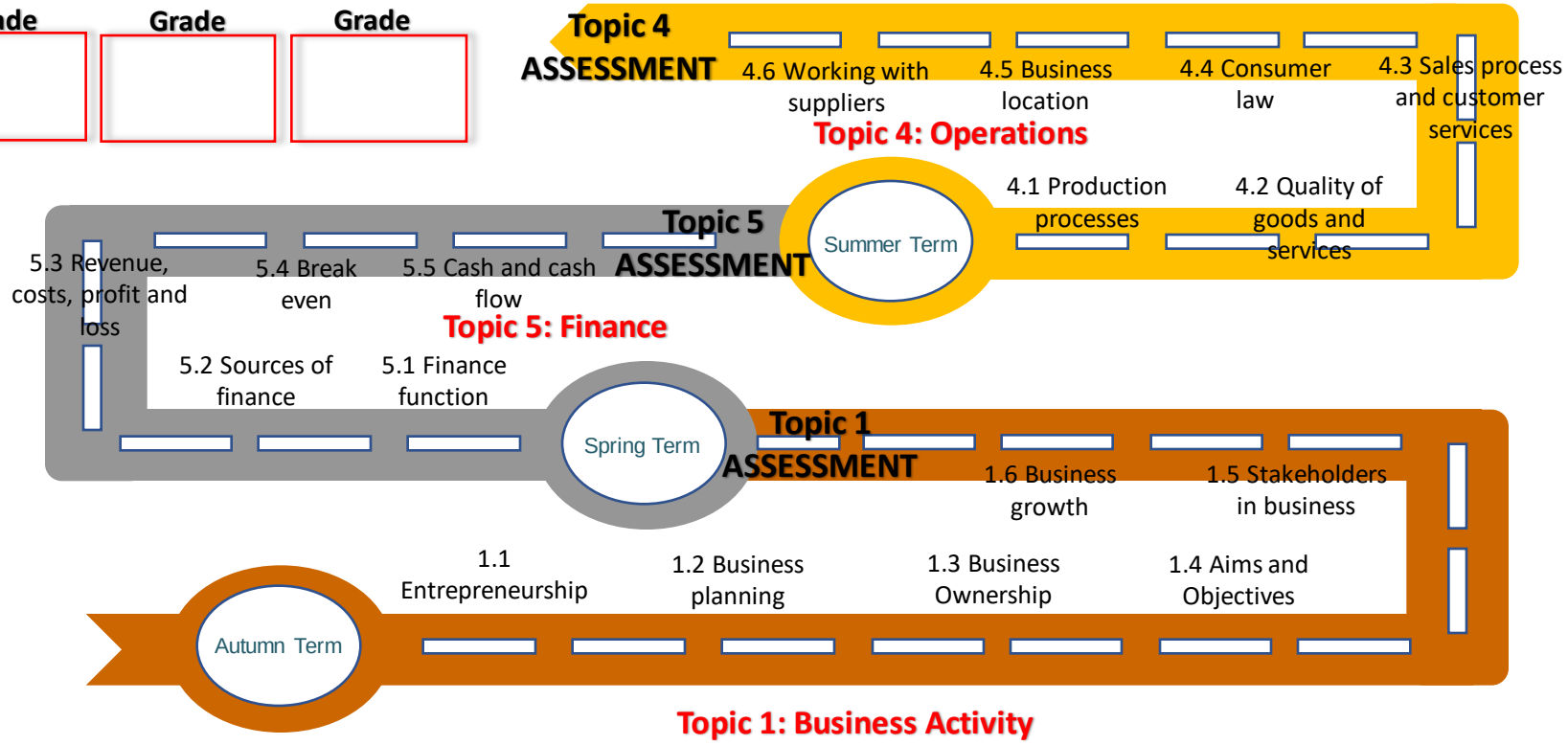
| Sir John Talbot's School | Business | Name | Min TG |
|---|---|---|---|
| | | | |

Sir John Talbot's school

# Year 10

**Curriculum Map**

| Topic 1 ASSESSMENT Grade | Topic 5 ASSESSMENT Grade | Topic 4 ASSESSMENT Grade |
|---|---|---|
| | | |

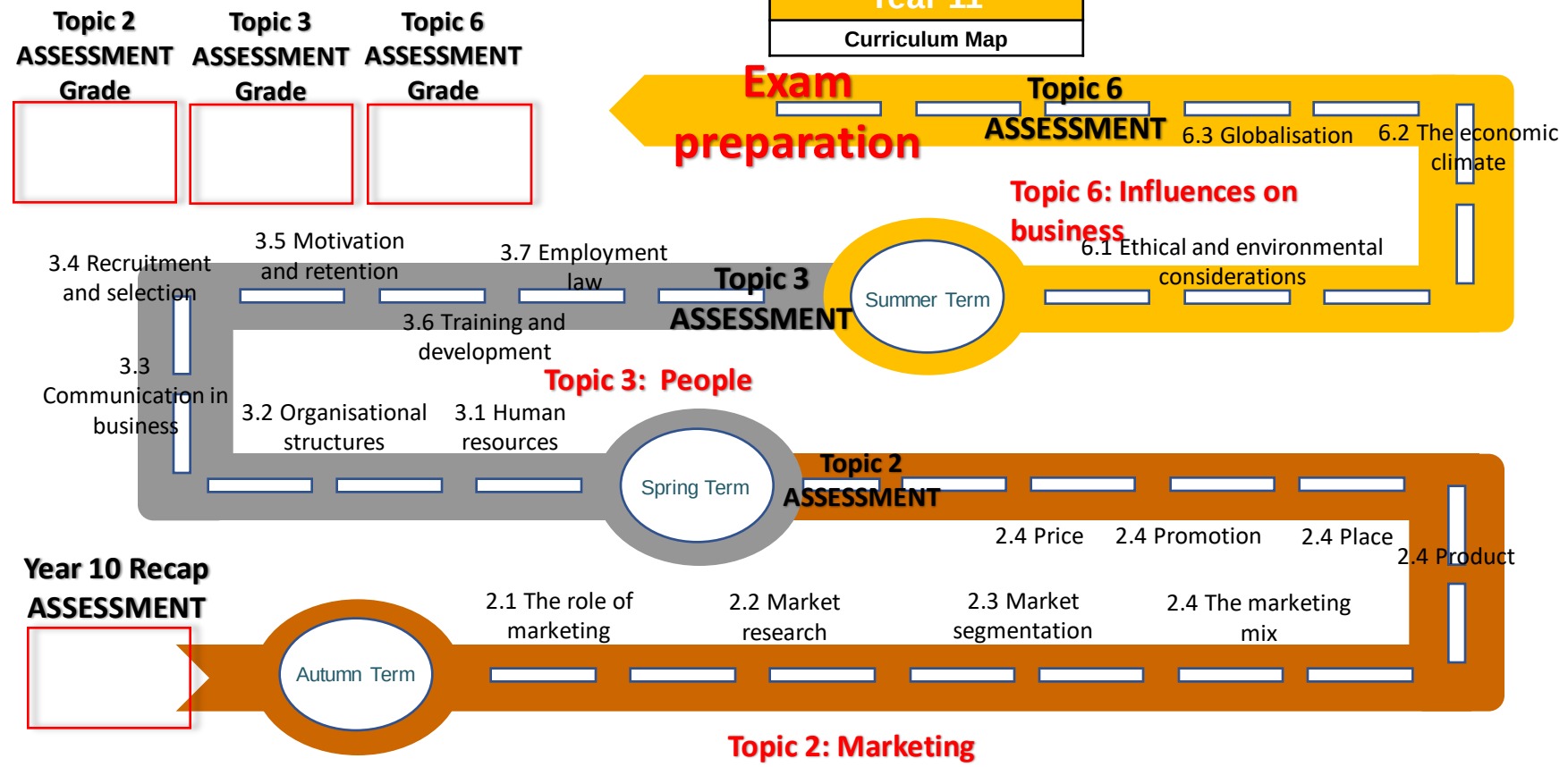


| Sir John Talbot's School | Business | Name | Min TG |
|---|---|---|---|
| | | | |

Sir John Talbot's school

# Year 11

Curriculum Map



Scheme of Learning YEAR OVERVIEW

## The Big Picture

Year Group 10

Students will work through topics 1-3 of Business paper 1 (Business activity, marketing and people). Students will build up a knowledge of what it takes to set up a new business, including the risks involved. They will explore the role of marketing and will consider the impact of human resources on a business.

## Intent

1. Business activity – students will learn about the role of business enterprise, business planning, business ownership, business aims and objectives, stakeholders in business and business growth.
2. Marketing – students will learn about the role of marketing within business, the importance of market research, how to segment a market and will explore the marketing mix.
3. Students will learn about the role of human resources, how different organizations are structured and the different ways of working, how businesses communicate information, the recruitment and selection process, how businesses motivate and retain staff, the importance of training and development, and employment law.

## Implementation

Students will work through the 3 topic areas, reflecting regularly on their knowledge and understanding throughout.

Each topic provides opportunities to build up skills through practical and theoretical activities. Each unit will conclude with a formal in class examination.

LORIC opportunities are provided throughout each module. Students will work in groups, communicating with each other, demonstrating high levels of leadership and organization. Students will show initiative through their activities and study by using all sources available.

A key focus will be made on understanding key terminology and command verbs, along with regular opportunities to challenge students ability to apply knowledge to extended answer questions.
Flipped learning activities will formulate the majority of home learning as research has proven that this is most effective in supporting development of prior knowledge leading to improved in class response and attention.

Students will be engaged in a number of practical activities including developing their own business brand, product and marketing mix. Students will be expected to present these to the rest of the class.

Autumn Term
LO in class topic tests for sub unit 1 – Business activity.
Students will also have 2 extended answer questions on business activity.

Spring Term
LO in class topic test for sub unit 2 – Marketing.
Students will also have 2 extended answer questions on marketing.

Summer Term
LO in class topic tests for sub unit 3 – People.
Students will also have 2 extended answer questions on people.

## Impact

Students will develop a good knowledge and understanding of business activity, marketing and people within business. This will support students with application to GCSE Business paper 1 questions. Students will explore and create success criteria to support with application of knowledge to extended answer questions. Students will also be taught how to extract evidence from a given scenario to support ability to gain grades from A03 band.

# Scheme of Learning YEAR OVERVIEW

## The Big Picture

Year Group 11

Students will work through topics 4-7of Business paper 2 (Operations, finance and influences on business). Students will build up a knowledge of how existing and established business operate. They will explore such things as processes of production, quality control and consumer law. Students will investigate the role of the finance function and explore ethical and environmental behaviours of businesses.

## Intent

1. Operations – students will learn about production processes, quality of goods and services, the sales process and customer services, consumer law, business location and working with suppliers.
2. Finance – students will learn about the role of the finance function, how business source finance, work through revenue, costs, profit and loss calculations, break even and cash and cash flow.
3. Influences on business – students will learn about environmental and ethical considerations of a business, the impact of the economic climate and globalization.

## Implementation

Students will work through the 3 topic areas, reflecting regularly on their knowledge and understanding throughout.

Each topic provides opportunities to build up skills through practical and theoretical activities. Each unit will conclude with a formal in class examination.

LORIC opportunities are provided throughout each module. Students will work in groups, communicating with each other, demonstrating high levels of leadership and organization. Students will show initiative through their activities and study by using all sources available.

A key focus will be made on understanding key terminology and command verbs, along with regular opportunities to challenge student's ability to apply knowledge to extended answer questions.

Flipped learning activities will formulate most of the home learning as research has proven that this is most effective in supporting development of prior knowledge leading to improved in class response and attention.

Autumn Term
LO in class topic tests for sub unit 3 – Operations.
Students will also have 2 extended answer questions on operations.

Spring Term
LO in class topic test for sub unit 5 – Finance.
Students will also have 2 extended answer questions on finance..

Summer Term
LO in class topic tests for sub unit 6 – Influences on business.
Students will also have 2 extended answer questions on influences on business.

## Impact

Students will develop a good knowledge and understanding of operations, finance and influences within business. This will support students with application to GCSE Business paper 2 questions. Students will explore and create success criteria to support with application of knowledge to extended answer questions. Students will also be taught how to extract evidence from a given scenario to support ability to gain grades from A03 band.

| **Scheme of Learning Unit Overview Unit 1 – Business Activity** | **Time frame:** 7 weeks | **Approximate number of Lessons:** 21 |
|---|---|---|
| **What is the big picture?** (Provide a clear overview of the unit)<br>To introduce the topic of 'business activity'. To develop an understanding of the reason why businesses exist, how to set up a new business, recognise different types of business ownership along with their benefits and drawbacks and what is involved when setting up a new business. | | |
| **How does this link to and build on the previous year of learning?**<br>**This unit builds on the taster session from year 9 – Introduction to Business.** | | |

**Intent:** What do you want the students to be able to know and do?

| | Knowledge | Skills |
|---|---|---|
| Good | Ability to identify reasons why businesses exist, different types of business ownership (+/-'s), requirements needed to consider when setting up a new business and stakeholders involved in a business. | Interpret and apply key business terminology. |
| Better | Ability to explain potential risks and rewards involved in setting up a business. Recognition of the importance of business planning and how different stakeholders may influence business decisions and activity. | Interpret business plans<br>Be able to compare and contrast. |
| Excellent | Ability to recommend most appropriate type of ownership for a business, analyse the usefulness of a business plan, analyse and evaluate the importance of different stakeholder groups and consider ways in which a business could grow. | Annotate and develop business plans to improve their effectiveness.<br>Make reasoned recommendations. |

**Implementation** -

| What are the opportunities for "deep-learning"? | What might be the pitfalls? | What home-learning tasks are planned? | What work will be "deep-marked"? | What tracking data will be recorded? |
|---|---|---|---|---|
| Exploration of considerations that businesses need to take into account in terms of their ownership type and future ownership developments. | New terminology that is unfamiliar to students. | Practice question booklet.<br>Flipped learning activity – business ownership.<br>Flipped learning activity – business growth. | Sub unit extended answer questions (1.1 – 1.6).<br>Mini mock assessment exam – this will assess each sub unit within this topic (1.1 – 1.6). | Sub unit exam questions.<br>Sub unit grades taken from mini mock. |

**Engagement**: What will be the "wow" moments? What are the "hooks" for student engagement?

Students to explore current or past entrepreneurs. Students will be presented with scenarios from real life (existing) businesses.

**Impact:** How will we know if outstanding learning has occurred?

**Knowledge and understanding applied through extended answer questions will demonstrate excellent understanding of key terminology. Use of Success Criteria will demonstrate student's excellent ability to plan and structure GCSE questions appropriately. Grades converted to 1-9 score from mini assessments.**

**Next steps:** How will this link to subsequent learning? Consider skills and knowledge

**GCSE Business paper 1 – Unit 1.**

| Scheme of Learning Unit Overview Unit 2 - Marketing | Time frame: 8 weeks | Approximate number of Lessons: 24 |
|---|---|---|

**What is the big picture?** (Provide a clear overview of the unit)
Students will explore the role marketing plays within business. They will investigate what a business needs to consider when conducting marketing and market research and will specifically focus on the four 4p's of the marketing mix.

**How does this link to and build on the previous year of learning?**
**This is new learning. Some aspects of this unit will have been taught discretely at KS3.**

**Intent:** What do you want the students to be able to know and do?

| | Knowledge | Skills |
|---|---|---|
| Good | Ability to identify and explain the role of marketing in business activity. Ability to define different methods of market research undertaken by businesses. Ability to explain the meaning of segmentation. Ability to identify different parts of the marketing mix. | Identify and explain. |
| Better | Ability to explain how different businesses might have a different approach to marketing. Ability to explain the advantages and disadvantages of methods of market research. Ability to explain how segmentation helps a business target customers. Ability to explain different parts of the marketing mix. | Explain and justify. |
| Excellent | Ability to analyse and evaluate the purpose and importance of marketing in business activity. Ability to analyse different types of market research and make justified recommendations as to which is most suitable for a particular situation. Ability to recommend appropriate market segmentation. Ability to recommend an appropriate marketing mix for a particular business. | Analyse, discuss and recommend. |

**Implementation** -

| What are the opportunities for "deep-learning"? | What might be the pitfalls? | What home-learning tasks are planned? | What work will be "deep-marked"? | What tracking data will be recorded? |
|---|---|---|---|---|
| Development of understanding of importance of marketing for business success. Exploring different approaches a business may consider. | Misconceptions of confusing digital distribution with e-commerce. | Practice question booklet.<br>Flipped learning activity – pricing strategies.<br>Flipped learning activity – product life cycle. | Sub unit extended answer questions (2.1 – 2.4).<br>Mini mock assessment exam – this will assess each sub unit within this topic (2.1 – 2.4). | Sub unit exam questions.<br>Sub unit grades taken from mini mock. |

**Engagement:** What will be the "wow" moments? What are the "hooks" for student engagement?

Students will engage in a marketing mix activity in which they will develop and market their own product/brand.

**Impact:** How will we know if outstanding learning has occurred?

**Knowledge and understanding applied through extended answer questions will demonstrate excellent understanding of key terminology. Use of Success Criteria will demonstrate student's excellent ability to plan and structure GCSE questions appropriately. Grades converted to 1-9 score from mini assessments.**

**Next steps:** How will this link to subsequent learning? Consider skills and knowledge

**GCSE Business paper 1 – Unit 2.**

| Scheme of Learning Unit Overview Unit 3 - People | Time frame: 8 weeks | Approximate number of Lessons: 24 |
|---|---|---|

**What is the big picture?** (Provide a clear overview of the unit)

Students will explore the role of human resources in business. They will investigate different types of organisational structure used by businesses, different ways of working, how businesses communicate, methods of recruitment, selection, motivation, retention, training and development. They will also look into current employment law and the impact and influences they have on business activity, operations and decisions.

**How does this link to and build on the previous year of learning?**

**This is new learning. Some aspects of this unit will have been taught discretely at KS3.**

**Intent:** What do you want the students to be able to know and do?

| | Knowledge | Skills |
|---|---|---|
| Good | Able to explain the meaning of the term human resources. Able to explain an organisational structure and use terminology related to it. Able to explain the importance of communications to businesses. Able to explain why businesses recruit and identify what is involved in the recruitment process. Able to identify methods of motivation and types of training. Identify employment law. | Identify and explain. |
| Better | Able to explain how a business identifies its human resource needs. Able to explain the benefits and drawbacks of different types of structure. Able to evaluate the importance of business communications. Able to evaluate different methods of recruitment and selection. Able to explain different methods of motivation and training. Explain employment law. | Explain, evaluate and justify. |
| Excellent | Able to evaluate the benefits and costs to businesses of completing an analysis of their human resource needs. Able to evaluate the impact of changes in the ways in which people work on businesses and on its workers. Able to analyse ways in which digital communications have influenced businesses. Able to analyse the advantages and disadvantages of different methods of selection and evaluate the use of each. Able to recommend appropriate methods of motivation and training. Analyse the impact of employment law. | Analyse, discuss and recommend. |

**Implementation** -

| What are the opportunities for "deep-learning"? | What might be the pitfalls? | What home-learning tasks are planned? | What work will be "deep-marked"? | What tracking data will be recorded? |
|---|---|---|---|---|
| Opportunity to explore how legislation influences and impacts on business decisions. | Changes to current UK legislation.<br>Misunderstandings of how training differs to development. | Practice question booklet.<br>Flipped learning activity – apprenticeships.<br>Flipped learning activity – employment law. | Sub unit extended answer questions (3.1 – 3.7).<br>Mini mock assessment exam – this will assess each sub unit within this topic (3.1 – 3.7). | Sub unit exam questions.<br>Sub unit grades taken from mini mock. |

**Engagement**: What will be the "wow" moments? What are the "hooks" for student engagement?

Students will develop and conduct mock interviews in order to identify with the process of recruitment and selection.

**Impact:** How will we know if outstanding learning has occurred?

**Knowledge and understanding applied through extended answer questions will demonstrate excellent understanding of key terminology. Use of Success Criteria will demonstrate student's excellent ability to plan and structure GCSE questions appropriately. Grades converted to 1-9 score from mini assessments.**

**Next steps:** How will this link to subsequent learning? Consider skills and knowledge

**GCSE Business paper 1 – Unit 3.**

| Scheme of Learning Unit Overview Unit 4 - Operations | Time frame: 7 weeks | Approximate number of Lessons: 21 |
|---|---|---|

**What is the big picture?** (Provide a clear overview of the unit)

To introduce the topic of 'operations' within a business. To develop an understanding of the reason why a business should analyse and evaluate the way it produces it's products and the level of quality said products are produced at; why businesses should consider their choice of location very carefully; why businesses should evaluate their customer service provision; how consumer law may impact on operations and how a business should manage its relationships with its suppliers.

**How does this link to and build on the previous year of learning?**

This unit builds on work completed earlier in the year on introduction to business, marketing and people – encouraging learners to begin to consider the interdependent nature of business and how operations will be heavily influenced by the nature of the business, its marketing activities and the nature of the employees.

**Intent:** What do you want the students to be able to know and do?

| | Knowledge | Skills |
|---|---|---|
| Good | Ability to identify:<br>1. Different production methods<br>2. The importance of quality and how "quality" can be a subjective term.<br>3. Why providing excellent customer service is imperative to success – particularly in businesses with high levels of customer interaction.<br>4. The impact consumer law can have on a business.<br>5. The different factors at play when deciding on a location.<br>6. How supply chain management and lengthy supply chains can impact on a business' objectives and operations. | Recall of new terminology.<br>Identification of different terms in different situations. |
| Better | Students should be able to apply these concepts in multiple contexts, analysing how different businesses will respond to situations with different solutions that involve production methods, quality, customer service, consumer law, choosing location and managing a supply chain. | Ability to analyse impact of choices on a business and its stakeholders. |
| Excellent | Students should be able to evaluate the different methods and factors involved with the subtopics listed below to recommend different solutions within different contexts, adding in-depth application to reach the highest grades, commenting heavily on the nature of the business in different contexts. | Evaluation/comparison/contrast/problem solving to weigh up options a business may have. |

**Implementation** -

| What are the opportunities for "deep-learning"? | What might be the pitfalls? | What home-learning tasks are planned? | What work will be "deep-marked"? | What tracking data will be recorded? |
|---|---|---|---|---|
| Exploration of considerations that businesses need to take into account when creating solutions for problems involving the operations department. | New terminology that is unfamiliar to students. | Practice question,<br>Flipped learning activities – business location<br>Flipped learning activity – consumer law. | Unit "midterm" 2x3 and 1x9 marker on quality and production methods. | Sub unit "multiple choice check- in tests".<br>Unit midterm 2x3 and 1x9 marker.<br>End of unit assessment scores and grades. |

| Scheme of Learning Unit Overview Unit 5 – Finance | Time frame: 8 weeks | Approximate number of Lessons: 24 |
|---|---|---|
| **What is the big picture?** (Provide a clear overview of the unit)<br>To introduce the topic of 'Finance' within a business. To develop an understanding of the importance of sound financial management and why there's a need for a department dedicated to this. To consider where a business can source it's finance, how a business may generate revenue and use this to cover different types of costs in order to evaluate whether it makes a profit or a loss, how many units should be produced to break-even and how/why cash flow is an important concept. | | |
| **How does this link to and build on the previous year of learning?**<br>This unit encourages learners to begin to consider the interdependent nature of business and how decisions made in different departments will have an impact on the finance function and the overall profitability of a business venture. | | |

**Intent:** What do you want the students to be able to know and do?

| | Knowledge | Skills |
|---|---|---|
| **Good** | Ability to identify:<br>1. Why a business needs a function dedicated to financial management.<br>2. How much revenue a business makes.<br>3. The difference between variable and fixed costs.<br>4. The overall profit/loss position of a business.<br>5. A break-even point and contribution per unit.<br>6. The key elements of a cash flow forecast, developing an ability to analyse a cash flow position and identify positive or negative trends. | Addition/subtraction/multiplication and division in context of finance.<br>Use of division/multiplication to express profit as a percentage of revenue.<br>Ability to analyse different numerical figures/data to make judgements on financial security and success. |
| **Better** | Students should be able to apply these concepts in multiple contexts, analysing how different businesses will respond to situations with different solutions that involve financial decisions. Students should be able to explain how changing circumstances will lead to different decisions regarding increased emphasis on revenue growth or cost reduction. | Ability to analyse impact of choices on a business and its stakeholders. |
| **Excellent** | Students should be able to evaluate the different methods and factors involved with the subtopics listed above to recommend different solutions within different contexts, adding in-depth application to reach the highest grades, commenting heavily on the nature of the business in different contexts. | Evaluation/comparison/contrast/problem solving to weigh up options a business may have. |

**Implementation** -

| What are the opportunities for "deep-learning"? | What might be the pitfalls? | What home-learning tasks are planned? | What work will be "deep-marked"? | What tracking data will be recorded? |
|---|---|---|---|---|
| Exploration of considerations that businesses need to take into account when creating solutions for problems involving the finance function. | New terminology that is unfamiliar to students.<br>Weak mathematical capability. | Practice questions,<br>Flipped learning activities – break-even graphs.<br>Flipped learning activity – cash flow forecasts. | Unit "midterm" 2x3 and 1x9 marker on quality and production methods. | Sub unit "multiple choice check- in tests".<br>Unit midterm 2x3 and 1x9 marker.<br>End of unit assessment scores and grades. |

| Scheme of Learning Unit Overview Unit 6 – Influences on Business | **Time frame:** 4 weeks | **Approximate number of Lessons:** 12 |
|---|---|---|

**What is the big picture?** (Provide a clear overview of the unit)
To introduce the topic of the external 'influences' a business may face and how they should respond. Students will consider how a business should consider maintaining a ethical and environmental profile at all times, despite the cost. Students will also consider how a globalised marketplace and fluctuations within the wider economy will impact upon a business and its decision making (specifically analysing unemployment and consumer spending).

**How does this link to and build on the previous year of learning?**
This unit encourages learners to begin to consider the interdependent nature of business by analysing how wider influences will impact the decision making of other departments within a business.

**Intent:** What do you want the students to be able to know and do?

| | **Knowledge** | **Skills** |
|---|---|---|
| **Good** | Ability to identify:<br>1. The different ethical and environmental choices and considerations that a business faces.<br>2. How changes in unemployment, consumer spending, GDP growth, consumer confidence and business confidence can and will affect the demand for a business' products and subsequent success.<br>3. The factors that have to led to a globalised marketplace in which business' may now sell their products and the opportunities and threats this bring to a business. | Recall of new terminology.<br>Identification of different terms in different situations. |
| **Better** | Students should be able to apply these concepts in multiple contexts, analysing how different businesses will respond to situations with different solutions that changing external influences. Students should be able to explain how different actions from a business can help utilise opportunities and minimise threats. | Ability to analyse impact of choices on a business and its stakeholders. |
| **Excellent** | Students should be able to evaluate the different solutions on offer to businesses when solving problems posed by a changing external environment within different contexts. Adding in-depth application to reach the highest grades, commenting heavily on the nature of the business in different contexts. | Evaluation/comparison/contrast/problem solving to weigh up options a business may have. |

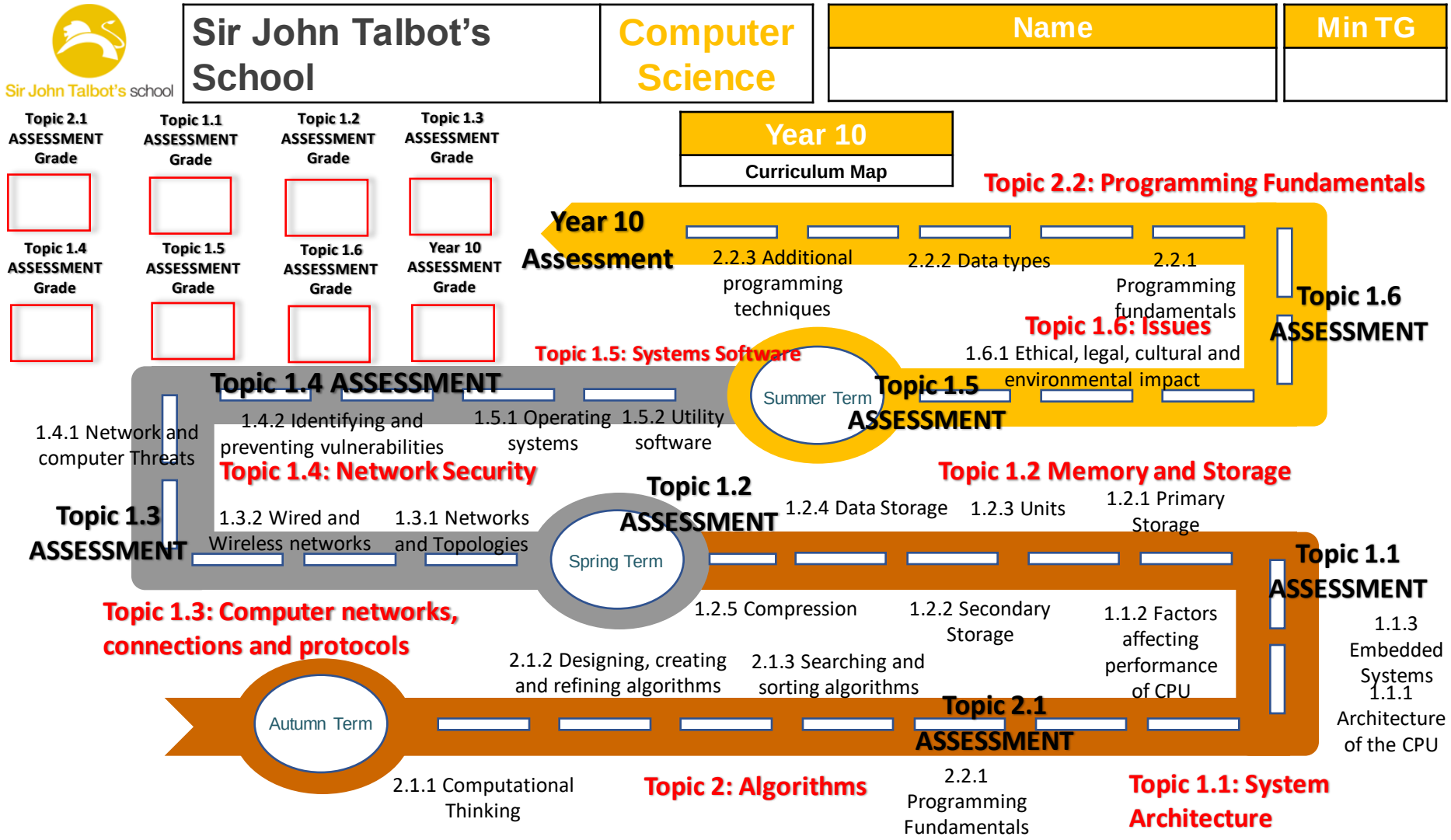
**Implementation** -

| **What are the opportunities for "deep-learning"?** | **What might be the pitfalls?** | **What home-learning tasks are planned?** | **What work will be "deep-marked"?** | **What tracking data will be recorded?** |
|---|---|---|---|---|
| Exploration of considerations that businesses need to take into account when recommending solutions to the threats posed by a changing external environment. | New terminology that is unfamiliar to students.<br>Weak mathematical capability. | Practice questions,<br>Flipped learning activities – impacts of unemployment<br>Flipped learning activity – ethical or environmental? | Unit "midterm" 2x3 and 1x9 marker on quality and production methods. | Sub unit "multiple choice check- in tests".<br>Unit midterm 2x3 and 1x9 marker.<br>End of unit assessment scores and grades. |

# Digital Enterprise

KS4 Computer Science

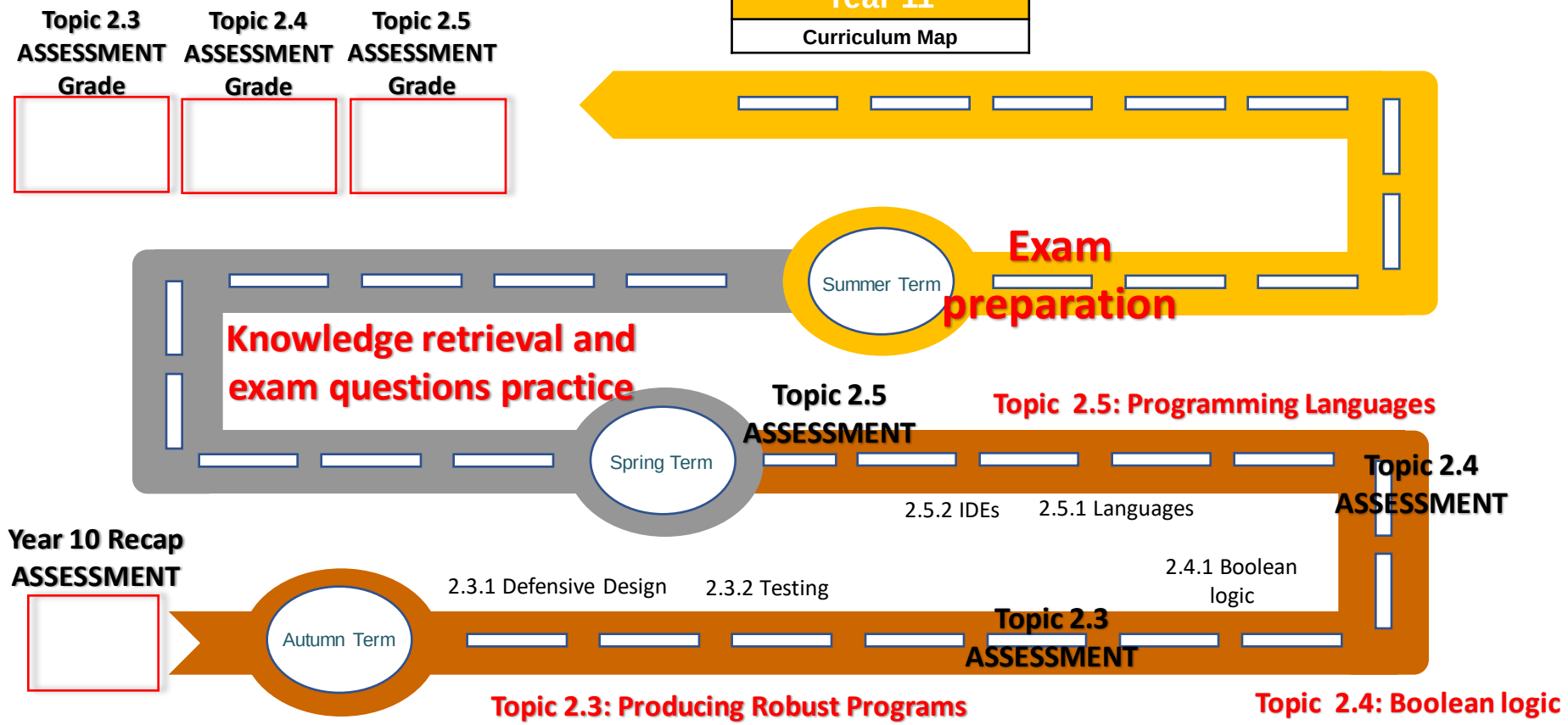
Marches Academy Trust


Sir John Talbot's School
Computer Science
Name
Min TG
Year 10
Curriculum Map
Topic 2.1 ASSESSMENT Grade
Topic 1.1 ASSESSMENT Grade
Topic 1.2 ASSESSMENT Grade
Topic 1.3 ASSESSMENT Grade
Topic 1.4 ASSESSMENT Grade
Topic 1.5 ASSESSMENT Grade
Topic 1.6 ASSESSMENT Grade
Year 10 ASSESSMENT Grade
Topic 2.2: Programming Fundamentals
Year 10 Assessment
2.2.3 Additional programming techniques
2.2.2 Data types
2.2.1 Programming fundamentals
Topic 1.6 ASSESSMENT
Topic 1.6: Issues
1.6.1 Ethical, legal, cultural and environmental impact
Topic 1.5: Systems Software
Topic 1.5 ASSESSMENT
Summer Term
1.5.1 Operating systems
1.5.2 Utility software
Topic 1.4 ASSESSMENT
1.4.1 Network and computer Threats
1.4.2 Identifying and preventing vulnerabilities
Topic 1.4: Network Security
Topic 1.3 ASSESSMENT
1.3.2 Wired and Wireless networks
1.3.1 Networks and Topologies
Topic 1.3: Computer networks, connections and protocols
Topic 1.2 ASSESSMENT
Spring Term
1.2.4 Data Storage
1.2.3 Units
1.2.1 Primary Storage
Topic 1.2 Memory and Storage
1.2.5 Compression
1.2.2 Secondary Storage
1.1.2 Factors affecting performance of CPU
Topic 1.1 ASSESSMENT
1.1.3 Embedded Systems
1.1.1 Architecture of the CPU
Topic 1.1: System Architecture
Autumn Term
2.1.2 Designing, creating and refining algorithms
2.1.3 Searching and sorting algorithms
Topic 2.1 ASSESSMENT
2.1.1 Computational Thinking
Topic 2: Algorithms
2.2.1 Programming Fundamentals

| Sir John Talbot's School | Computer Science | Name | Min TG |
|---|---|---|---|
| | | | |

# Year 11

Curriculum Map



# Scheme of Learning YEAR OVERVIEW

## The Big Picture

Year Group 10

Students will start the course by working through the topics of 2.1 and 2.2 of the Computer science paper (Algorithms and Programming fundamentals). This will allow students to start the develop their programming skills early in the course and to continue throughout the 2 years. Students will then work through topics 1.1 to 1.6 and build up knowledge to complete Component 1 exam paper at the end of year 10.

## Intent

1. Algorithms and Programming fundamentals – students will learn about the role of elements that make up computational thinking and how these are used in solving problems. Students will continue to develop their programming skills meeting the requirements to learn techniques set in the specification.
2. System Architecture and Memory and Storage – students will learn about the architecture of the Von Neuman processor and the primary and secondary storage.
3. Computer Networks and Network security – Students will learn about the different types of networks, topologies, network hardware along with the threats to networks.
4. Systems software and Issues – Students will learn the role of the operating system and the types of utility software. Investigate the impact of technology on society and environment.

## Implementation

Students will work through the specified topic areas, reflecting regularly on their knowledge and understanding throughout.

Each topic provides opportunities to build up skills through practical and theoretical activities. Each unit will conclude with a formal in class examination.

LORIC opportunities are provided throughout each module. Students will work in groups, communicating with each other, demonstrating high levels of leadership and organisation. Students will show initiative through their activities and study by using all sources available.

A key focus will be made on understanding key terminology and command verbs, along with regular opportunities to challenge students' ability to apply knowledge to extended answer questions.

Flipped learning activities will formulate most of the home learning tasks as research has proven that this is most effective in supporting development of prior knowledge leading to improved in class response and attention. Students will be required to watch videos for each specification point and complete Cornell notes.

Students will be engaged in developing several programming tasks to develop their programming skills.

**Consider your assessment Markers**

Identify where the following will take place;

**Key assessments**
**Low stakes testing**
**Deep marking points**
**Home learning**
**Examinations**
**Conferencing/MAD time**
**Moderation**

Autumn Term
LO in class topic tests for sub unit 2.1 – Algorithms 1.1 – System Architecture and1.2 Memory and storage.

Spring Term
LO in class topic test for sub unit 1.3 – Networks and 1.4 – Network security.

Summer Term
LO in class topic test for sub unit 1.5 – System Software and 1.6 – Issues. Students will also complete an end of Year 10 exam to assess all content learnt.

## Impact

Students will develop their capability, creativity and knowledge in computer science. Students will use practical skills to develop and apply their analytic, problem-solving, design and computational thinking skills. Students will develop their programming skills by completing several programming challenges to allow knowledge to complete programming exam questions. Students will be able to access all assessment objectives by understanding the command verb and developing knowledge retrieval of topics learnt this year.

# Scheme of Learning YEAR OVERVIEW

## The Big Picture

Year Group 11

Students will start Year 11 working through the topic 2.3 Producing robust programs, 2.4 Boolean logic and 2.5 Programming languages. Students will then have a routine of exam paper chunking whereby a full paper will be broken down and focused on each week to allow knowledge retrieval and content interleaving. Command words will be revisited as well as misconceptions in preparation for the final exams.

## Intent

1. Producing robust programs – students will learn the measures taken in defensive design, ensuring programs are maintainable and well tested.
2. Boolean logic - students will learn about the different logic gates and how to produce a truth table for a given logic diagram.
3. Programming languages - Students will learn the characteristics of different levels of programming languages and the features available in Integrated development environments(IDE).

## Implementation

Students will work through the specified topic areas, reflecting regularly on their knowledge and understanding throughout.
Each topic provides opportunities to build up skills through practical and theoretical activities. Each unit will conclude with a formal in class examination.
LORIC opportunities are provided throughout each module. Students will work in groups, communicating with each other, demonstrating high levels of leadership and organisation. Students will show initiative through their activities and study by using all sources available.
A key focus will be made on understanding key terminology and command verbs, along with regular opportunities to challenge students' ability to apply knowledge to extended answer questions.
Flipped learning activities will formulate most of the home learning as research has proven that this is most effective in supporting development of prior knowledge leading to improved in class response and attention. Students will be required to watch videos for each specification point and complete Cornell notes.
Students will be engaged in developing their own programming project and demonstrating the knowledge learnt within the programming and project documentation.

**Consider your assessment Markers**

Identify where the following will take place;

**Key assessments**
**Low stakes testing**
**Deep marking points**
**Home learning**
**Examinations**
**Conferencing/MAD time**
**Moderation**

Autumn Term
LO in class topic tests for sub unit 2,3 – Producing robust programs, 2.4 – Boolean logic and 2.5 – Programming languages.

Spring Term
Past paper and sample paper exams will be chunked into 3 parts and assessed on each week.

Summer Term
Preparation for final exams:
J277/01 Computer Systems exam
J277/02 Computational thinking, algorithms and programming exam

## Impact

Students will develop their capability, creativity and knowledge in computer science. Students will use practical skills to develop and apply their analytic, problem-solving, design and computational thinking skills. Students will develop their programming skills by completing several programming challenges to allow knowledge to complete programming exam questions. Students will be able to access all assessment objectives by understanding the command verb and developing knowledge retrieval of topics learnt this year.

| Scheme of Learning Unit Overview CS unit 1.2 | **Time frame:** 2 lessons |
|---|---|

**What is the big picture?**

- What is memory is and why would a computer system need this.
- How does their body relate to a computer system?
- Does a bigger brain mean you can process more information?

**How does this link to and build on the previous year of learning?** This follows on from the computing knowledge unit at KS3

**Intent:** What do you want the students to be able to know and do?

| | Knowledge | Skills |
|---|---|---|
| Good | • Explain what RAM and ROM are<br>• Explain what virtual memory and flash memory are | 1. List the two main forms of memory.<br>2. Discuss the need for ROM and RAM<br>3. Explain the difference between ROM and RAM<br>4. Discuss the impact of the amount of RAM on performance<br>5. Use keyword terminology in written responses. |
| Better | • Explain what RAM and ROM are used for, using some of the keywords<br>• Explain how a lack of RAM can affect performance, discussing virtual memory use and disadvantages<br>• Give a range of examples of flash memory | |
| Excellent | • Can create a detailed visualisation of how RAM and ROM work using all of the keywords<br>• Can explain how RAM uses addresses<br>• Detailed discussion on virtual memory including disk thrashing, paging/swapping, fragmented memory addressing issues<br>• EBI - Research the electronic differences between Flash memory and RAM | |

**Implementation** -

| What are the opportunities for "deep-learning"? | What might be the pitfalls? | What home-learning tasks are planned? | What work will be "deep-marked"? | What tracking data will be recorded? |
|---|---|---|---|---|
| Students could find out how memory has changed over the years and how current electronic components may restrict further growth. Students can look at the research and development from intel and other industry leaders. | Virtual Memory is permanently created. Virtual memory is only created and used if needed, as it is much slower than RAM. Virtual memory is controlled/created by the Operating System. | Create a glossary of key words<br>Explain the impact of memory on gaming computer | Past paper question on topic | 1.2 End of topic test |

**Engagement:** What will be the "wow" moments? What are the "hooks" for student engagement?

Coach thinks of a problem with their computer and the coachee has to guess, using guidance from the coach.

**Impact:** How will we know if outstanding learning has occurred?

Students will be able to discuss all types of memory and its impact on the computer system.

**Next steps:** How will this link to subsequent learning? Consider skills and knowledge

1.6 Malware – impact on memory; 1.7 system software

| Scheme of Learning Unit Overview CS unit 1.3 | **Time frame:** 2 lessons |
|---|---|
| **What is the big picture?**<br>1. Understand the need for secondary storage<br>2. Understand the different types of storage device<br>3. Understand the different characteristics of different types of storage | |
| **How does this link to and build on the previous year of learning?** This follows on from the computing knowledge unit at KS3 | |

**Intent:** What do you want the students to be able to know and do?

| | Knowledge | Skills |
|---|---|---|
| Good | • Define the term secondary storage<br>• Name the common types of storage<br>• Match most devices correctly to the type of storage<br>• Identify some characteristics of different types of storage | Use keyword terminology to explain the different types of storage media and their characteristics<br><br>Be able to recommend a storage device for a situation<br><br>Estimate data capacity requirements for different file types |
| Better | • Describe the need for secondary storage<br>• Match devices to their type of storage<br>• Describe the characteristics of each type of storage | |
| Excellent | • Explain how each type of storage device works<br>• Compare the use of different types of storage media | |

**Implementation** -

| What are the opportunities for "deep-learning"? | What might be the pitfalls? | What home-learning tasks are planned? | What work will be "deep-marked"? | What tracking data will be recorded? |
|---|---|---|---|---|
| Students could recommend an appropriate type of data storage for each scenario given and justify their choice based on the different characteristics, this could be written in the form of questions for students to write their answers in prose. | Students refer to their USB memory stick as a USB. USB is a connection protocol, not a storage device. A USB memory stick is a solid state storage device that connects to the PC through a USB Port<br>When recalling optical students associate it with vision, not the use of lasers and light | Mind map storage devices<br>Define Storage devices<br>Scenario – recommend storage device<br>Categorise storage devices into magnetic, optical or solid state<br>Keyword – create glossary | Past paper question on topic (see topic by topic past papers) | 1.3 End of topic test |

**Engagement:** What will be the "wow" moments? What are the "hooks" for student engagement?

| Consider capacity of cloud storage centre. What type of storage do they use? Capacity? Transfer rate? Cost? |
|---|

**Impact:** How will we know if outstanding learning has occurred?

| Students will be able to discuss storage devices and recommend a suitable method with keyword terminology. They will be able to estimate the data capacity of each media |
|---|

**Next steps:** How will this link to subsequent learning? Consider skills and knowledge

| **1.7 systems software – operating and utility software** |
|---|

| **Scheme of Learning Unit Overview CS unit 1.4** | **Time frame:** 6 lessons |
|---|---|
| **What is the big picture?**<br>• We use the internet on a daily basis, but do we realise what is involved in this, what is working away in the background for us to do this?<br>• Why is it a good idea to network computers together? Consider what we hope to gain from this. Consider if there may be any dangers or risks from networking computers together | |
| **How does this link to and build on the previous year of learning?** This follows on from the computing knowledge unit at KS3 | |

**Intent:** What do you want the students to be able to know and do?

| | Knowledge | Skills |
|---|---|---|
| Good | • To describe the basic structure of the four types of network that are covered<br>• To describe the role of each of the components needed to create a LAN<br>• To be able to identify the factors that affect the performance of a network<br>• To be able to define the terms DNS, hosting, the cloud and virtual network | Use keyword terminology to explain the different types of network and their characteristics<br><br>Identify and discuss factors that affect performance and recommend solutions<br><br>Discuss the benefits of a VLAN |
| Better | • To describe the characteristics of the four types of network and can describe the role of different computers in a client-server and a peer to peer network<br>• To be able to explain why these factors affect the performance<br>• To be able to explain the role and purpose of each of the terms | |
| Excellent | • To understands the benefits and draw backs of a client-server network and a peer-to-peer network<br>• To be able to explain how these factors can be improved or possibly overcome<br>• To understand the benefits of a virtual network and how they can be used. | |

**Implementation** -

| What are the opportunities for "deep-learning"? | What might be the pitfalls? | What home-learning tasks are planned? | What work will be "deep-marked"? | What tracking data will be recorded? |
|---|---|---|---|---|
| Data packet transmission and protocols | Learners can confuse the role and function of the different areas of the internet | Definitions task<br>View Warriors of the Net video – bring to lesson to discuss and make connections with objectives | Past paper question on topic (see topic by topic past papers) | 1.4 End of topic test |

**Engagement:** What will be the "wow" moments? What are the "hooks" for student engagement?

The Internet – how does it work? Relating the use of networks to their everyday lives. Showing them how important networks are and what they take for granted being able to do through the use of networks.

**Impact:** How will we know if outstanding learning has occurred?

Students will be asking how does the data get transmitted – thinking of protocols and error checking techniques.

**Next steps:** How will this link to subsequent learning? Consider skills and knowledge

**1.5 Network topologies and protocols**

| Scheme of Learning Unit Overview CS unit 1.5 | **Time frame:** 6 lessons |
|---|---|
| **What is the big picture?**<br>• Most computers and devices are connected together via networks. This opens up new opportunities and advantages. | |
| **How does this link to and build on the previous year of learning?** This follows on from the computing knowledge unit at KS3 | |

**Intent:** What do you want the students to be able to know and do?

| | Knowledge | Skills |
|---|---|---|
| Good | • Can draw and explain Mesh and Star topologies<br>• Makes some contribution towards discussions | Use keyword terminology to explain the different types of network and their characteristics<br><br>Answer some questions from the exam papers on the topics<br><br>Create a short animation or film on Network security.<br>Code an encryption program using a programming language of your choice. |
| Better | • Can explain some features of Layers and Protocols<br>• Can use give definitions to keywords<br>• Can use terminology in explanations but not always accurately | |
| Excellent | • Uses the correct terminology and can explain the various keywords<br>• Makes an accurate video or animation about Network and the lesson content<br>• Uses the correct terminology and can explain the various keywords<br>• Explains each layer accurately<br>• Explains packet switching in detail and accurately | |

**Implementation** -

| What are the opportunities for "deep-learning"? | What might be the pitfalls? | What home-learning tasks are planned? | What work will be "deep-marked"? | What tracking data will be recorded? |
|---|---|---|---|---|
| Activity: network level of response – stimuli and resource links | • MAC addresses are the same as IP addresses<br>• If a packet is lost the data is not sent<br>• All data is sent via the same route | Read blogs from resource link<br>Create glossary of key terms<br>GCSE Pod – listen and do activity<br>Seneca – review and complete quiz | Past paper question on topic (see topic by topic past papers) | 1.5 End of topic test |

**Engagement:** What will be the "wow" moments? What are the "hooks" for student engagement?

- Watch the video from 1994 about the internet and how new and unaware users / news reporters were. Discuss the changes and the development to the modern day

**Impact:** How will we know if outstanding learning has occurred?

- Check understanding through Student's discussion; Feedback from students; Outcome of the Activities

**Next steps:** How will this link to subsequent learning? Consider skills and knowledge

1.6 network security

| Scheme of Learning Unit Overview CS unit 1.6 | **Time frame:** 6 lessons |
|---|---|
| **What is the big picture?**<br>What computing threats are out there in the world? | |
| **How does this link to and build on the previous year of learning?** This follows on from the computing knowledge unit at KS3 | |

**Intent:** What do you want the students to be able to know and do?

| | Knowledge | Skills |
|---|---|---|
| Good | • Understand types of malware and identify differences<br>• Students to understand the meaning of DDOS and brute force<br>• Have a basic knowledge of network forensics, related laws and network policy<br>• Understand how to set a secure password | Use keyword terminology to explain the different types of network and their characteristics<br><br>Define user access levels for a particular group<br><br>Answer questions from the exam papers on the topics<br><br>Apply knowledge to long answer response question to identify threats, impact and how to combat. |
| Better | • Understand the different types of phishing and how they operate<br>• Students to understand how a botnet is created<br>• Have some knowledge of laws based around the misuse of tools typically used for forensic purposes<br>• Understand how a Ceaser Cipher works and demonstrate the ability to encrypt and decrypt messages | |
| Excellent | • Discuss how data can be intercepted.<br>• Write a network policy for an SME<br>• Students to explain vulnerabilities and how they can be exploited<br>• Discuss the effects of encryption on organisations such as the Government | |

**Implementation** -

| What are the opportunities for "deep-learning"? | What might be the pitfalls? | What home-learning tasks are planned? | What work will be "deep-marked"? | What tracking data will be recorded? |
|---|---|---|---|---|
| Activity: network level of response – stimuli and resource links | • Worms and viruses replicate in order to spread however worms do not need to attach themselves to a program unlike viruses.<br>• Malware is otherwise known as malicious software. Viruses are an example of malware | Create glossary of key terms<br>GCSE Pod – listen and do activity<br>Seneca – review and complete quiz | Past paper question on topic (see topic by topic past papers) | 1.6 End of topic test |

**Engagement:** What will be the "wow" moments? What are the "hooks" for student engagement?

How secure is your password? Use www.howsecureisyourpassword.net to check how long it will take to crack.

**Impact:** How will we know if outstanding learning has occurred?

Level of response to discussion of encryption, interception and network vulnerabilities

**Next steps:** How will this link to subsequent learning? Consider skills and knowledge

1.7 System software and 1.8 legal issues

| **Scheme of Learning Unit Overview CS unit 1.7** | **Time frame:** 3 lessons |
|---|---|
| **What is the big picture?**<br>"What Operating Systems have you used? Why are there so many different Operating Systems?" | |
| **How does this link to and build on the previous year of learning?** This follows on from the computing knowledge unit at KS3 | |

**Intent:** What do you want the students to be able to know and do?

| | Knowledge | Skills |
|---|---|---|
| Good | • To be able to describe Systems Software using examples<br>• To be able to give an outline of the role of the Operating System<br>• To be able to give a range of utility programs<br>• To give the reasons why backups are needed | Use keyword terminology to explain the different types of network and their characteristics<br><br>Answer questions from the exam papers on the topics<br><br>Communicate that Systems software provides an interface between the user and the hardware<br><br>To be able to escribe in detail the steps required to:<br>Compress a file (by lossless or lossy)<br>Encrypt data<br>Perform Disk Defragmentation |
| Better | To be able to describe the process in brief of the following aspects of an Operating System (Peripheral Management, Memory Management, Processor Allocation, File Management, User Management<br>• To be able to briefly describe the purpose of a range of Utility Programs<br>• To describe the difference between Full and Incremental backup | |
| Excellent | • To describe in detail the steps required to:<br>o Compress a file (by lossless or lossy)<br>o Encrypt data<br>o Perform Disk Defragmentation<br>• To justify in which situations it would be best to use incremental over full backups and vice versa | |

**Implementation** -

| What are the opportunities for "deep-learning"? | What might be the pitfalls? | What home-learning tasks are planned? | What work will be "deep-marked"? | What tracking data will be recorded? |
|---|---|---|---|---|
| Use the LOR to develop deeper knowledge and allow Peer Assessment and Review. | Common misconceptions:- | Create glossary of key terms<br>GCSE Pod – listen and do activity<br>Seneca – review and complete quiz<br><br>Explore further utility programs that exist on your computer / mobile phone and list the features and functions of these. | Past paper question on topic (see topic by topic past papers) | 1.7<br>End of topic test |

**Engagement:** What will be the "wow" moments? What are the "hooks" for student engagement?

- The students will engage in a simple compression technique that they all take part in regularly (text speech

**Impact:** How will we know if outstanding learning has occurred?

- Level of response to long answer question to discuss types of utility software and their function. Able to recommend where and how to use in given scenario or context.

**Next steps:** How will this link to subsequent learning? Consider skills and knowledge

2.5 translators and facilities of language

| Scheme of Learning Unit Overview CS unit 1.8 | **Time frame:** 3 lessons |
|---|---|
| **What is the big picture?**<br>There are lots of ethical, legal, cultural, environmental and privacy issues that can arise through the use of technology. There are many people involved with this and these are called stakeholders | |
| **How does this link to and build on the previous year of learning?** This follows on from the computing knowledge unit at KS3 | |

**Intent:** What do you want the students to be able to know and do?

| | Knowledge | Skills |
|---|---|---|
| Good | • Learners understand the involvement different stakeholders have in the use and creation of technology<br>• Learners can outline issues within Ethics, Legal, Cultural, Environmental and Privacy<br>• Learners can state the difference between open source and proprietary software<br>• Learners can identify at least one environmental and one privacy issue that can arise from the use of technology | Use keyword terminology to explain the different types of network and their characteristics<br><br>Answer questions from the exam papers on the topics<br><br>Recognise and discuss issues related to Environmental, Cultural, Morals & Ethics<br><br>Identify stakeholders in a range of scenarios |
| Better | • Learners can explain the implications of issues within Ethics, Legal, Cultural, Environmental and Privacy<br>• Learners can link these into Stakeholders<br>• Learners can discuss the difference between open source and proprietary software<br>• Learners can explain some legislation to do with privacy<br>• Learners can discuss basic environmental concerns related to a case study | |
| Excellent | • Learners can analyse and discuss issues, in relation to stakeholders, across Ethics, Legal, Cultural, Environmental and Privacy<br>• Learners argue as to which version of software may be better for a certain stakeholder<br>• Learners can discuss the implications of multiple environmental and privacy issues | |

**Implementation** -

| What are the opportunities for "deep-learning"? | What might be the pitfalls? | What home-learning tasks are planned? | What work will be "deep-marked"? | What tracking data will be recorded? |
|---|---|---|---|---|
| Use the LOR to develop deeper knowledge and allow Peer Assessment and Review. | The impact of technology is regularly changing, so it is very difficult to develop specific content that should be learnt for this topic. The best thing to get learners to do is look at real life examples, look at news stories, become familiar with issues that are been spoken about around the work on a daily basis. | Create glossary of key terms<br>GCSE Pod – listen and do activity<br><br>Seneca – review and complete quiz | Past paper question on topic (see topic by topic past papers) | 1.8<br>End of topic test |

**Engagement:** What will be the "wow" moments? What are the "hooks" for student engagement?

| Find examples of Computer Science in the news |
|---|

**Impact:** How will we know if outstanding learning has occurred?

| Level of analyse and discussion of issues, in relation to stakeholders, across Ethics, Legal, Cultural, Environmental and Privacy |
|---|

**Next steps:** How will this link to subsequent learning? Consider skills and knowledge

# Digital Enterprise

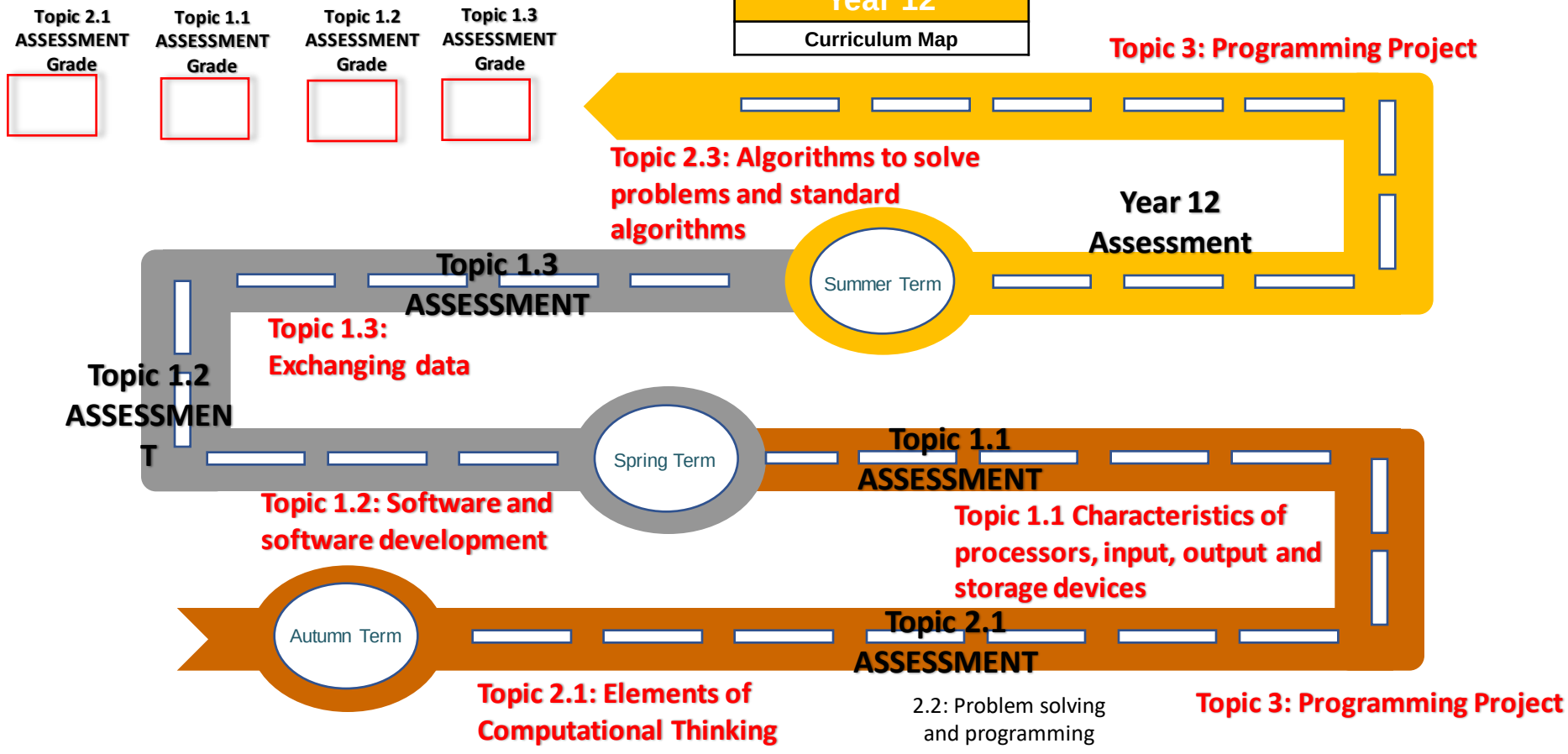
## KS5 Computer Science

Marches Academy Trust

| Sir John Talbot's School | Computer Science | Name | Min TG |
|---|---|---|---|
| | | | |

# Year 12

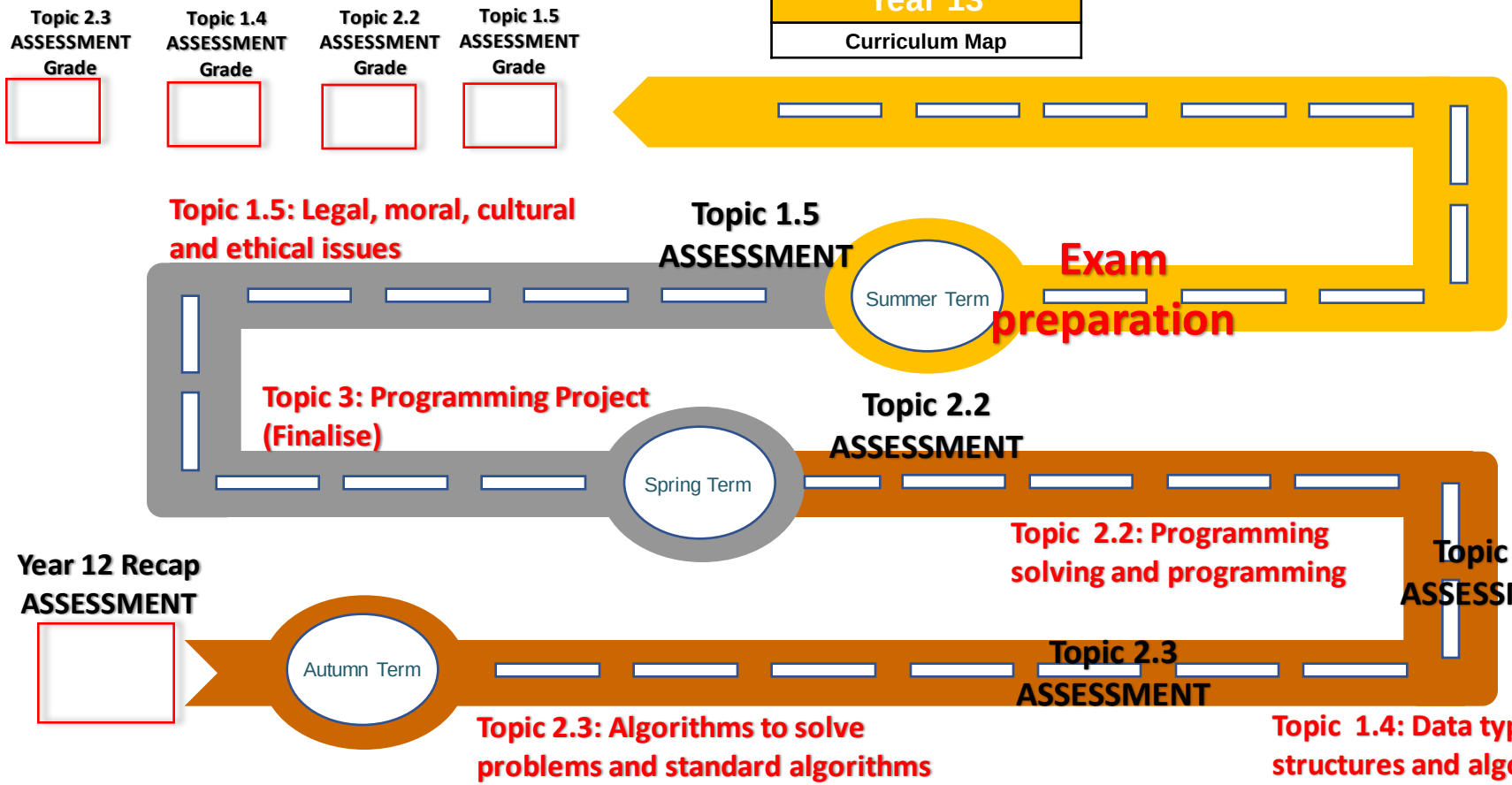
Curriculum Map



| Sir John Talbot's School | Computer Science | Name | Min TG |
|---|---|---|---|
| | | | |

# Year 13

Curriculum Map



# Scheme of Learning YEAR OVERVIEW

## The Big Picture

Year Group 12

Students will start the course by working through the topics of 2.1 and 2.2 of the Computer science paper (Elements of computational thinking and Problem solving and programming). This will allow students to start the analysis section of the programming project documentation. Students will then work through topics 1.1 to 1.3 and build up a knowledge on the system architecture.

## Intent

1. Elements of computational thinking and Problem solving and programming – students will learn about the role of elements that make up computational thinking and how these are used in solving problems. Students will continue to develop their programming skills meeting the requirements to learn techniques set in the specification.
2. Characteristics of processors, input, output and storage devices – students will learn about the architecture of different processors and the role of input, output and storage devices.
3. Software and software development – Students will learn the role of the operating system, how applications are generated and the process of developing software.
4. Exchanging data – Students will learn about the different types of compression and encryption, gain practical experience of databases and networks.

## Implementation

Students will work through the specified topic areas, reflecting regularly on their knowledge and understanding throughout.
Each topic provides opportunities to build up skills through practical and theoretical activities. Each unit will conclude with a formal in class examination.
LORIC opportunities are provided throughout each module. Students will work in groups, communicating with each other, demonstrating high levels of leadership and organisation. Students will show initiative through their activities and study by using all sources available.
A key focus will be made on understanding key terminology and command verbs, along with regular opportunities to challenge students ability to apply knowledge to extended answer questions.
Flipped learning activities will formulate the majority of home learning as research has proven that this is most effective in supporting development of prior knowledge leading to improved in class response and attention. Students will be required to watch videos for each specification point and complete Cornell notes.
Students will be engaged in developing their own programming project and demonstrating the knowledge learnt within the programming and project documentation.

**Consider your assessment Markers**

Identify where the following will take place;

**Key assessments**
**Low stakes testing**
**Deep marking points**
**Home learning**
**Examinations**
**Conferencing/MAD time**
**Moderation**

Autumn Term
LO in class topic tests for sub unit 2.1 – Elements of computational thinking and 1.1 – Characteristics of processors.

Spring Term
LO in class topic test for sub unit 1.2 – Software and software development and 1.3 – Exchanging data.

Summer Term
Unit 3 – programming project will be marked against the mark scheme. Students will also complete an end of Year 12 exam to assess all content learnt.

## Impact

Students will expand their capability, creativity and knowledge in computer science. Students will use practical skills to develop and apply their analytic, problem-solving, design and computational thinking skills. Students will be able to access the higher levels of the mark scheme for the programming project that is worth 20% of the overall grade. Students will be able to access all assessment objectives by understanding the command verb and developing knowledge retrieval of topics learnt this year.

Scheme of Learning YEAR OVERVIEW

## The Big Picture

Year Group 13

Students will start Year 13 working through the topic 2.2 Algorithms to solve problems and 2.2 Problem solving and programming to allow them apply a range of algorithms to their programming project. Students will then continue to learn the theory topics of 1.4 and 1.5(Data types and Legal, ethical, moral and cultural issues) to build up a knowledge on different data structures and the impact of computing on society.

## Intent

1. Algorithms to solve problems and standard algorithms – students will learn how to develop algorithms for a given problem as well as understanding and learn how to develop standard algorithms.
2. Data types, data structures and algorithms - students will learn about the different data types and number conversions, Boolean algebra and a number of different data structures.
3. Legal, moral, cultural and ethical issues - Students will learn the individual moral, social, ethical and cultural opportunities and risks of digital technology. Legislation surrounding the use of computers and ethical issues that can or may in the future arise from the use of computers.

## Implementation

Students will work through the specified topic areas, reflecting regularly on their knowledge and understanding throughout.
Each topic provides opportunities to build up skills through practical and theoretical activities. Each unit will conclude with a formal in class examination.
LORIC opportunities are provided throughout each module. Students will work in groups, communicating with each other, demonstrating high levels of leadership and organisation. Students will show initiative through their activities and study by using all sources available.
A key focus will be made on understanding key terminology and command verbs, along with regular opportunities to challenge students' ability to apply knowledge to extended answer questions.
Flipped learning activities will formulate the majority of home learning as research has proven that this is most effective in supporting development of prior knowledge leading to improved in class response and attention. Students will be required to watch videos for each specification point and complete Cornell notes.
Students will be engaged in developing their own programming project and demonstrating the knowledge learnt within the programming and project documentation.

**Consider your assessment Markers**

Identify where the following will take place;

**Key assessments**
**Low stakes testing**
**Deep marking points**
**Home learning**
**Examinations**
**Conferencing/MAD time**
**Moderation**

Autumn Term
LO in class topic tests for sub unit 2.3 – Algorithms to solve problems, 1.4 – Data types and 2.2 - Programming

Spring Term
Programming Project will be marked against exam board criteria and moderated. LO in class topic test for sub unit 1.5 – Issues

Summer Term
Preparation for final exams:
H446/01 Computer Systems examination
H446/02 Algorithms and Programming examination

## Impact

Students will expand their capability, creativity and knowledge in computer science. Students will use practical skills to develop and apply their analytic, problem-solving, design and computational thinking skills. Students will be able to access the higher levels of the mark scheme for the programming project that is worth 20% of the overall grade. Students will be able to access all assessment objectives by understanding the command verb and developing knowledge retrieval of topics learnt this year.

| **Scheme of Learning Unit Overview Computer Systems – Component 1** | **Time frame:** 20 Weeks **Approximate number of Lessons:** 60 Lessons |
|---|---|
| **What is the big picture?** This unit will develop understanding of how computer components and software work and their individual purposes. | |
| **How does this link to and build on the previous year of learning?**<br>**This builds on knowledge learnt at KS3 and those students who studied GCSE Computer Science.** | |

**Intent:** What do you want the students to be able to know and do?

| | Knowledge | Skills |
|---|---|---|
| Good | Understand the internal workings of the Central Processing Unit (CPU), the exchange of data and will also look at software development, data types and legal and ethical issues. | Calculate floating point binary, binary arithmetic and represent numbers in binary and hexadecimal.<br>Explain |
| Better | Be able to apply the criteria specified in the specification in different contexts including current and future uses of the technologies.<br>Ability to provide different examples and compare and contrast computer hardware and software. Compare the types of programming language and develop programs using different languages. | Explain with reference to examples<br>Apply<br>Compare and contrast<br>Develop programs using LMC |
| Excellent | Be able to analyse and recommend appropriate computer hardware and software. Recommend best IT systems for given scenarios. Analyse how effective communication skills can be transferred to an IT environment. Analyse the impact of ethical and operational issues and threats to computer systems and recommend solutions along with the impact of emerging technology. | Analyse<br>Recommend<br>Discuss the impact<br>Solve Boolean Algebra |

**Implementation -**

| What are the opportunities for "deep-learning"? | What might be the pitfalls? | What home-learning tasks are planned? | What work will be "deep-marked"? | What tracking data will be recorded? |
|---|---|---|---|---|
| Students can investigate the impact of emerging technology and apply the skills they have learnt through this topic to their programming project. | Misconceptions of topics and students not studied GCSE content. | Flipped learning tasks to watch videos on each point of the specification and take Cornell notes. | Exam questions on each sub-topic. | Scores for each sub-topic exam questions will be recorded and shared with students. |

**Engagement**: What will be the "wow" moments? What are the "hooks" for student engagement?

| Opportunities to practically examine computer hardware, develop software, websites, and networks. |
|---|

**Impact:** How will we know if outstanding learning has occurred?

| **Progress will be evident at each assessment point where students will be able to answer AO1, 2 and 3 examination questions.** |
|---|

**Next steps:** How will this link to subsequent learning? Consider skills and knowledge

| **Scheme of Learning Unit Overview Algorithms and Programming – Component 2** | **Time frame:** 20 Weeks **Approximate number of Lessons:** 60 Lessons |
|---|---|
| **What is the big picture?** This unit will allow students to apply the knowledge and understanding encountered in component 1 as well as developing problem solving skills by computational methods. needed by learners to apply the knowledge and understanding encountered. | |
| **How does this link to and build on the previous year of learning?**<br>**This builds on knowledge learnt at KS3 and those students who studied GCSE Computer Science.** | |

**Intent:** What do you want the students to be able to know and do?

| | Knowledge | Skills |
|---|---|---|
| Good | Understand what is meant by computational thinking and understand the benefits of applying computational thinking to solving a wide variety of problems. Understand the fundamentals of the basic programming techniques. | Explain<br>Develop programs using the basic techniques. |
| Better | Understand the principles of solving problems by computational methods. Be able to use algorithms to describe problems. Understand the algorithms for a number of different data structures. | Explain with reference to examples<br>Apply<br>Compare and contrast algorithms<br>Develop programs using a range of programming techniques |
| Excellent | Be able to analyse a problem by identifying its component parts. Be able to develop programs including a range of programming techniques and data structures. Understand the difference between procedural and object-oriented programming | Analyse<br>Develop complex programs using object=oriented programming.<br>Design, program and evaluate computer systems that solve problems, making reasoned judgements about these and presenting conclusions |

**Implementation**

| What are the opportunities for "deep-learning"? | What might be the pitfalls? | What home-learning tasks are planned? | What work will be "deep-marked"? | What tracking data will be recorded? |
|---|---|---|---|---|
| Students can investigate the use of data structures in their programs and apply the skills they have learnt through this topic to their programming project. | Misconceptions of topics and students not studied GCSE content. | Flipped learning tasks to watch videos on each point of the specification and take Cornell notes. | Exam questions on each sub-topic. | Scores for each sub-topic exam questions will be recorded and shared with students. |

**Engagement**: What will be the "wow" moments? What are the "hooks" for student engagement?

| Opportunities to demonstrate common algorithms in developing programs and developing text-based games using object-oriented programming. |
|---|

**Impact:** How will we know if outstanding learning has occurred?

| **Progress will be evident at each assessment point where students will be able to answer AO1, 2 and 3 examination questions.** |
|---|

**Next steps:** How will this link to subsequent learning? Consider skills and knowledge

# Digital Enterprise

## KS5 Business Studies

Marches Academy Trust

# A – Level Business Studies

**Assessment:**
**Paper 1 –Marketing, people and global business**
**Paper 2 – Business activities, decisions and strategy**
**Paper 3- Investigating business in a competitive environment**

**Summer Term – Year 13**

**Theme**
- Assessing competitiveness
- Managing change

**Theme 4**
- Paper 3 pre-issued research task

**Spring Term – Year 13**

**Theme 3**
- Decision making techniques
- Influences on business decision

**Theme 4**
- Business expansion
- Global marketing for MNC's

**Year 13**
Theme 3 – Business decisions and strategy
Theme 4 – Global business

**Autumen term –Year 13**

**Theme 3**
- Business Objectives and strategy
- Business growth

**Theme 4**
- Globalisation
- Global marketing


**Assessment:**
- **Progress Tests**
- **Exam based calculation and extended response questions**
- **Theme 1 and Theme 2 exam**

**Summer Term – Year 12**

**Theme 1**
- Managing People
- Entrepreneurs and Leaders

**Theme 2**
- Resource management
- External Influences

**Spring Term – Year 12**

**Theme 1**
- The marketing mix
- Marketing Strategy

**Theme 2**
- Managing finance
- Financial strategy

**Year 12**
Theme 1 – Marketing and People
Theme 2 – Managing Business activities

**Autumn Term – Year 12**

**Theme 1**
- Meeting customer needs
- Market forces

**Theme 2**
- Raising finance
- Financial planning

# A Level Business -Theme 1 Learning Journey

**Assessment:**
Paper 1 –Marketing, people and global business

**Autumn Term – Year 12**
**Unit 1.5 –Entrepreneurs and Leaders**
- Role of an Entrepreneur
- Entrepreneurial motives and characteristics
- Business Objectives
- Forms of business ownership
- Business choices
- Entrepreneur to leader

Local links

We will be using the following local business links throughout the course: Muller, Palethorpes, JCB, Jaguar,Chester Zoo, Image on food, Local entrepreneurs

**Autumn Term – Year 12**
**Unit 1.4 –Managing people**
- Workforce planning
- Flexible working types
- Dismissal and redundancy
- Employee and employer relations
- Collective bargaining
- Internal and external recruitment
- Costs of recruitment, selection and training
- Types of training
- Organisational design –Types of structure
- Motivation theories
- Financial motivators
- Non financial motivators
- Leaders and managers
- Types of leadership style

**Assessment:**
- **Knowledge organisers for each unit**
- **Exam based calculation and extended response questions**
- **Theme 1 exam**

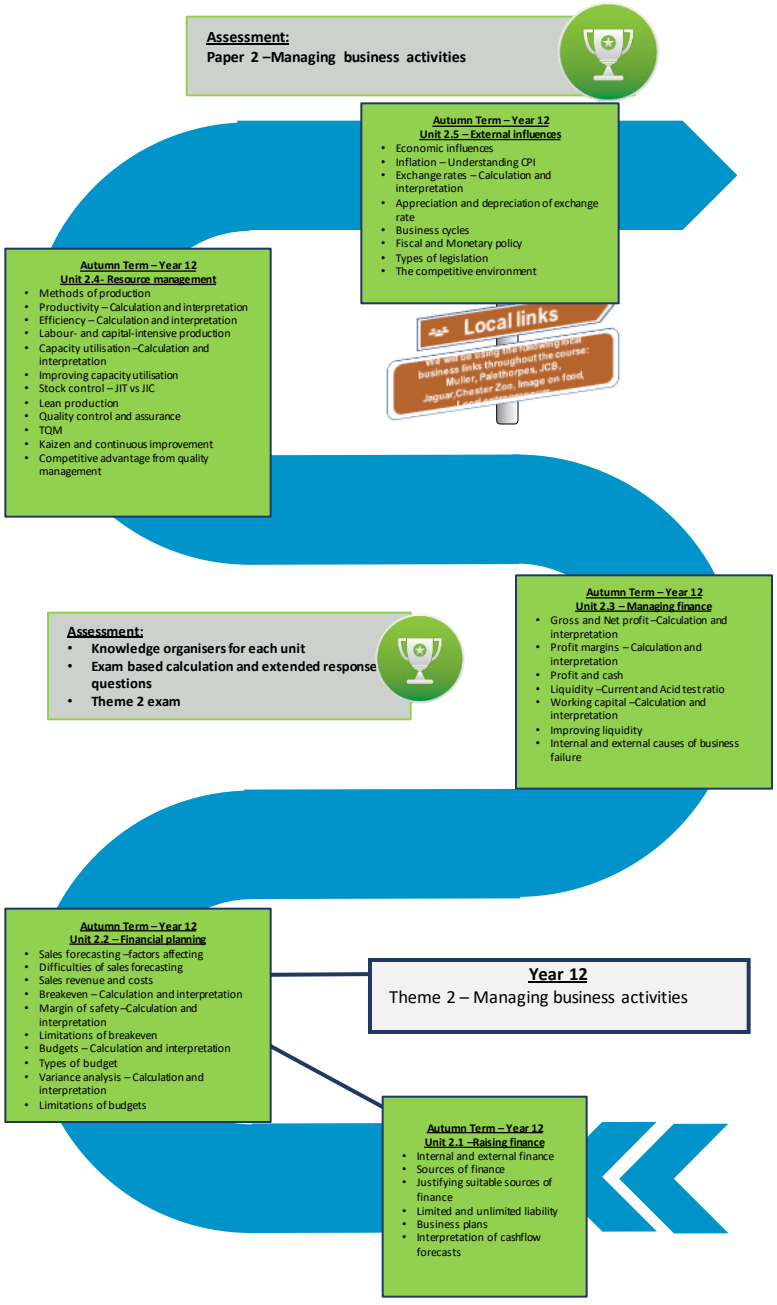
**Autumn Term – Year 12**
**Unit 1.3 – Marketing mix and strategy**
- The design mix
- Building a brand
- Benefits of branding
- Use of social media to build a brand
- Pricing strategies
- Distribution strategies
- Product life cycle
- Boston matrix
- B2B and B2C marketing
- Mass and niche marketing

**Autumn Term – Year 12**
**Unit 1.2 Market**
- Factors influencing demand
- Factors influencing supply
- Interaction of demand and supply
- Price elasticity of demand – Calculation and interpretation of results
- Income elasticity of demand – calculation and interpretation of results

**Year 12**
Theme 1 – Marketing and People

**Autumn Term – Year 12**
**Unit 1.1 – Meeting customer needs**
- Mass and niche markets
- Market size and market share
- Branding- Dynamic markets
- Risk and uncertainty
- Product and Market orientation
- Market Segmentation
- Primary and Secondary research
- Limitations – sample size and bias
- ICT to support market research

# A Level Business -Theme 2 Learning Journey



# A Level Business -Theme 3 Learning Journey

**Assessment:**
**Paper 3 – Business decisions and strategy**

**Autumn Term – Year 13**
**Unit 3.5 –Assessing competitiveness**
- Profit and loss accounts
- Balance sheets
- Ratio Analysis –Calculation and interpretation
- Limitations of ratios
- Human resources
- Labour productivity – Calculation and interpretation
- Labour turnover – Calculation and interpretation
- Absenteeism –Calculation and interpretation
- Strategies to increase productivity and reduce labour turnover and absenteeism.

**Autumn Term – Year 13**
**Unit 3.6 –Managing change**
- Causes and effects of change
- Effects of change on Business
- Key factors in bringing change
- Scenario and contingency planning
- Risk assessment and risk mitigation


**Autumn Term – Year 13**
**Unit 3.4 –Influences on business decisions**
- Classification of company cultures
- Stakeholder expectations
- Stakeholder conflict
- Shareholder Vs Stakeholder
- Internal and external stakeholders
- Corporate Social Responsibility
- Business Ethics
- Pay and rewards

**Assessment:**
- **Knowledge organisers for each unit**
- **Exam based calculation and extended response questions**
- **Theme 2 exam**

**Autumn Term – Year 13**
**Unit 3.3 –Decision making techniques**
- Time series analysis and moving averages
- Investment appraisal technique 1 – ARR
- Investment appraisal technique 2 –NPV
- Investment appraisal technique 3 –Payback
- Limitations of Investment appraisal
- Decision trees – Construct and Interpret
- Limitations of decision tress
- Critical path analysis –Construct and interpret
- Limitations of Critical path analysis

**Autumn Term – Year 13**
**Unit 3.2 – Business growth**
- Objectives of growth
- Economies and diseconomies of scale
- Mergers and takeovers
- Organic and Inorganic growth
- Advantages and disadvantages of organic growth
- Reasons for staying small scale
- Small business survival in competitive markets

**Year 13**
Theme 3 – Business decisions and strategy

**Autumn Term – Year 13**
**Unit 3.1 – Business objectives and strategy**
- Corporate objectives
- Use of Mission statements
- Strategy and tactics
- Ansoff's matrix
- Porter's strategic matrix
- SWOT analysis
- Porter's 5 force theory
- PESTLE analysis

# A Level Business -Theme 4 Learning Journey

**Assessment:**
**Paper 3 – Business decisions and strategy**

**Autumn Term – Year 13**
**Unit 4.4 – Multinational corporations**
- The impact of MNC's on the local and national economy
- Ethics of MNC behaviour
- Controlling MNC's


**Autumn Term – Year 13**
**Unit 4.3 –Global marketing**
- Ethnocentric, Polycentric and geocentric strategies
- Niche marketing
- Cultural and social factors that affect global marketing

**Assessment:**
- **Knowledge organisers for each unit**
- **Exam based calculation and extended response questions**
- **Theme 2 exam**

**Autumn Term – Year 13**
**Unit 4.2 – Global markets and business expansion**
- Push and Pull factors that prompt trade
- Assessment of a country as a market
- Assessment of a country as a production location
- Global mergers and joint ventures
- Global competitiveness
- Exchange rate movements

**Year 13**
Theme 4 – Global Business

**Autumn Term – Year 13**
**Unit 4.1- Globalisation**
- Growing and emerging economies
- Key indicators of economic growth
- Features of globalisation
- International trade and business growth
- FDI and link to business growth
- Role of protectionism
- Role of trading blocs

| Week | Topic | Content |
|---|---|---|
| 1 | 1.1 Meeting customer needs | Introduction – what is a market?<br>**1.1.1 The market**<br>Mass markets and niche markets<br>Dynamic markets |
| 2 | | **1.1.2 Market research**<br>Product and market orientation<br>Methods of market research<br>Uses and limitations of these methods<br>Market segmentation from market research results<br>**1.1.3 Market positioning**<br>How businesses use market research information |
| 3 | 1.2 The market | **1.2.1 Demand**<br>Introduction to the demand curve<br>Discuss movement along and of the demand curve, and factors influencing this |
| 4 | | **1.2.2 Supply**<br>Introduction to the supply curve<br>Discuss movement along and of the supply curve, and factors influencing this<br>**1.2.3 Markets**<br>Combine work in demand and supply to illustrate price determination in a market |
| 5 | | **1.2.4 Price elasticity of demand (PED)**<br>Calculation of PED<br>Interpretation of PED and its importance to businesses<br>**1.2.5 Income elasticity of demand (YED)** |

| | | |
|---|---|---|
| | | Calculation of YED<br>Comparison contrast to PED<br>Interpretation of YED and its importance to businesses |
| 6 | 1.3 Marketing mix and strategy | **1.3.1 Product/service design**<br>Design mix and how this might change<br>**1.3.2 Branding and promotion**<br>Types of branding<br>Building a brand and changes in branding<br>Generic versus branded products |
| 7 | | **1.3.2 Branding and promotion**<br>Types of promotion |
| 8 | | **1.3.3 Pricing strategies**<br>Different strategies<br>Changes in, and factors determining, these strategies |
| 9 | | **1.3.4 Distribution**<br>Methods<br>Changes in channels used<br>**1.3.5 Marketing strategy**<br>The product life cycle and extension strategies<br>Boston Matrix<br>Consumer behaviour<br>How the marketing mix changes in response |
| 10 | 1.4 Managing people | **1.4.1 Approaches to staffing**<br>Individual and collective methods and approaches<br>**1.4.2 Recruitment, selection and training**<br>Methods |

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| | | Costs and benefits |
| 11 | | **1.4.3 Organisation design**<br>Key features and terminology<br>Strengths and weaknesses of different models |
| 12 | | **1.4.4 Motivation in theory and practice**<br>Importance of motivation<br>Motivation theories<br>Financial and non-financial incentives<br>**1.4.5 Leadership**<br>Management and leadership<br>Types/methods<br>Links between leadership and motivation |
| 13 | 1.5 Entrepreneurs and leaders | **1.5.1 Role of an entrepreneur**<br>What entrepreneurs do<br>Problems and barriers they face<br>**1.5.2 Entrepreneurial motives and characteristics**<br>Characteristics and skills<br>Motivations for becoming an entrepreneur<br>**1.5.6 Moving from entrepreneur to leader**<br>Challenges |
| 14 | | **1.5.3 Business objectives**<br>Outline and examples of objectives<br>**1.5.4 Forms of business**<br>Legal organisation and features<br>The factors that lead to these forms<br>**1.5.5 Business choices**<br>Opportunity costs, choices and trade offs |

| Week | Topic | Content |
|---|---|---|
| 1 | 2.1 Raising finance | **2.1.1 Internal finance**<br>**2.1.2 External finance**<br>Sources and methods of finance<br>The distinction between the two<br>**2.1.3 Liability**<br>Legal implications<br>Finance implications |
| 2 | | **2.1.4 Planning**<br>Business planning<br>Cash flow forecasts (as stand-alone and part of the business plan)<br>Use and limitations of cash flow forecasts |
| 3 | 2.2 Financial planning and 2.3 Managing finance | **2.2.1 Sales forecasting**<br>Sales forecasting purpose and factors influencing sales forecasts<br>Difficulties with forecasting<br>**2.2.2 Sales, revenue and costs**<br>Calculation of sales revenue and volume, and link to sales forecasting data |
| 4 | | **2.2.2 Sales, revenue and costs**<br>Calculation of fixed and variable costs<br>**2.2.3 Break-even**<br>Numerical calculation<br>Graphical presentation and interpretation |

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| | | Uses and limitations of break-even analysis |
| 5 | | **2.2.4 Budgets**<br>Purpose and types of budgets<br>Variance analysis<br>Difficulties of budgeting<br>**2.3.1 Profit**<br>Distinction between profit and cash |
| 6 | 2.3 Managing finance | **2.3.1 Profit**<br>Calculation (and link to break-even)<br>Statement of comprehensive income (profit and loss account) – introduction and key features |
| 7 | | **2.3.2 Liquidity**<br>Statement of financial position (balance sheet) – introduction and key features<br>Working capital (link to cash) |
| 8 | | **2.3.3 Business failure**<br>Financial: link to cash, profit and liquidity<br>Non-financial: link to the market and people |
| 9 | 2.4 Resource management | **2.4.1 Production, productivity and efficiency**<br>Methods of production<br>Productivity and efficiency<br>**2.4.2 Capacity utilisation**<br>Calculation, implications and ways of improving capacity utilisation |
| 10 | | **2.4.3 Stock control**<br>Diagrams and key features<br>Different methods and advantages gained from each<br>**2.4.4 Quality management** |

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| | | Methods, costs, and benefits<br>Links between stock control and quality management |
| 11 | 2.5 External influences | **2.5.1 Economic influences** |
| 12 | | Macroeconomic variables: inflation, exchange rates<br>Economic policy: interest rates, taxation and government spending |
| 13 | | **2.5.2 Legislation**<br>Different areas of businesses affected by legislation |
| 14 | Revision and AS level exam preparation | Revision and exam practice for AS level examinations and/or mock examinations for Theme 1 and Theme 2.<br><br>Introduction to the broad pre-released context (available from June) for A level Paper 3. Set summer research project for A level students. Link to Extended Project Qualification if applicable. |

| Week | Topic | Content |
|---|---|---|
| 1 | 3.1 Business objectives and strategy and 3.4 Influences on business decisions | **3.1.1 Corporate objectives**<br>Development and levels<br>Critical appraisal of these and their presentation<br>**3.4.1 Corporate influences**<br>The timescales on which businesses work<br>Influences on decision-making<br>**3.4.4 Business ethics**<br>Trade-offs between profit and ethics and how this relates to objectives |
| 2 | 3.4 Influences on business decisions | **3.4.3 Shareholders versus stakeholders**<br>Examples of stakeholders and their objectives<br>Influences on business objectives<br>Conflicts between stakeholders and stakeholders and the business |
| 3 | | **3.4.2 Corporate culture**<br>How culture is formed in relation to objectives, ethics, etc.<br>Categorising culture and assessing its strength |
| 4 | 3.1 Business objectives and strategy | **3.1.2 Theories of corporate strategy**<br>Ansoff, Porter, Boston Matrix<br>Strategic and tactical decisions |
| 5 | | **3.1.3 SWOT analysis**<br>**3.1.4 Impact of external influences**<br>PESTLE analysis |
| 6 | 3.2 Business growth | **3.2.1 Growth** |

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| | | How and why businesses grow<br>Problems of growth<br>**3.2.2 Mergers and takeovers**<br>Reasons<br>Different categories/directions<br>**3.2.3 Organic growth**<br>Compare and contrast with mergers and takeovers, and reasons for staying small<br>**3.2.4 Reasons for staying small**<br>Links to new, highly competitive markets<br>Avoidance of diseconomies of scale |
| 7 | 3.3 Decision-making techniques | **3.3.1 Quantitative sales forecasting**<br>Times series analysis calculations<br>Uses and limitations of quantitative sales forecasting |
| 8 | | **3.3.2 Investment appraisal**<br>Methods, calculation and interpretation<br>Uses and limitations |
| 9 | | **3.3.3 Decision trees**<br>Construction and interpretation<br>Uses and limitations |
| 10 | | **3.3.4 Critical Path Analysis**<br>Completion and interpretation<br>Uses and limitations |
| 11 | 3.5 Assessing competitiveness | **3.5.1 Interpretation of financial statements**<br>Statement of comprehensive income (profit and loss account) and statement of financial position (balance sheet)<br>Stakeholder interest |
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| | | **3.5.2 Ratio analysis**<br>Calculation and interpretation<br>Uses and limitations |
| 13 | | **3.5.3 Human resources**<br>Quantitative measures of HR performance |
| 14 | 3.6 Managing change | **3.6.1 Causes and effects of change**<br>**3.6.2 Key factors in change**<br>Link to topics covered within this theme<br>**3.6.3 Scenario planning**<br>Planning to reduce risk |

| Week | Topic | Content |
|---|---|---|
| 1 | 4.1 Globalisation | **4.1.1 Growing economies**<br>Measurements of different economies and economic performance<br>Business opportunities |
| 2 | | **4.1.2 International trade and business growth**<br>Specialisation of economies and business<br>Business growth via trade |
| 3 | | **4.1.3 Factors contributing to increased globalisation**<br>External factors (link to PESTLE) |
| 4 | | **4.1.4 Protectionism**<br>Threats posed to economies and businesses and reactions to these |
| 5 | | **4.1.5 Trading blocs**<br>As a reaction to protectionism between countries<br>Opportunities and threats to businesses |
| 6 | 4.2 Global markets and business expansion | **4.2.1 Conditions that prompt trade**<br>Push and pull factors for businesses |
| 7 | | **4.2.2 Assessment of a country as a market**<br>**4.2.3 Assessment of a country as a production location**<br>Contrast the two, and compare and contrast factors |
| 8 | | **4.2.4 Reasons for global mergers or joint ventures**<br>**4.2.5 Global competitiveness**<br>How this is achieved and can be enhanced through working with other businesses |

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| 9 | 4.3 Global marketing | **4.3.1 Marketing**<br>On a global scale<br>Strategic choices for different markets |
| 10 | | **4.3.3 Cultural and social issues**<br>Influences on marketing strategy<br>**4.3.4 Niche markets**<br>Features and how these interact with cultural and social issues |
| 11 | 4.4 Global industries and companies | **4.4.1 The impact of MNCs**<br>Local impacts versus national impacts |
| 12 | | **4.4.2 Ethics**<br>Ethical discussions raised by the activities of MNCs |
| 13 | | **4.4.3 Controlling MNCs**<br>Possibilities and practicalities |
| 14 | Revision and A level exam preparation | Revision of Themes 1, 2, 3 and 4<br>Exam preparation |