CURRICULUM MAP

Subject	Computer Science
Head of Department	L Slabber

SCHOOL INTENT

Rutlish School Vision: Rutlish School is committed in providing **the highest quality education and opportunities** for students.

*Through all we do, we prepare students for opportunities, responsibilities and experiences later in life. We aim to inspire, enable and facilitate lifelong learners able to build on their individual strengths and capabilities, who achieve their ambitions. We seek to support our students becoming **healthy, happy, successful** modern people young adults; knowledgeable, kind, aware, confident, capable and skilful members of society. (Curriculum Intent)*

Rutlish School Mission Statement: "Modeste, Strenue, Sancte: Be modest, be thorough, pursue righteousness"

We want students to:

succeed (we strive to provide pathways to support their success)

embrace challenge, build resilience, overcome setbacks and become increasingly independent in pursuit of their goals

be aware of their responsibilities and feel confident to participate and contribute to society. (Curriculum Intent)

Rutlish School: Curriculum Intent

Rutlish School provides a meaningful, broad and balanced curriculum, which is accessible to all, as well as supports and challenges all students.

The School aims to:

- ensure that the curriculum is designed for every student of every ability and every background to be supported in making the best possible progress and attainment from their starting point;
- ensure all students can successfully access the curriculum offer, making any reasonable adjustments required where particular needs are identified;
- ensure that the curriculum is accessible to all abilities and that planning and teaching aim to support, stretch and challenge all learners across a full range of abilities;
- provide a curriculum that is sequenced to build skills and knowledge throughout students' time at Rutlish School, to equip them for their next steps in education, and careers and in life;
- provide a curriculum that promotes a deeper and wider understanding of the world outside of the classroom;
- ensure our curriculum consistently promotes high moral standards, social and self-awareness and allow students to form informed opinions on social issues such as, equality, diversity and inclusivity as well as the practical aspects of society;
- provide opportunities for students to personalise and apply learning in other contexts, including personal and cross-curricular;
- provide students with the skills and knowledge necessary to becoming independent, analytical, critical, and innovative thinkers;
- provide opportunity to encourage students' curiosity, creativity, self-expression, resilience, and confidence;
- develop staff to deliver skills beyond their own subject specialism and incorporate cross curricular initiatives, in particular Literacy, Reading, Numeracy, ICT and Enterprise;
- ensure that our curriculum offer support for different educational and career pathways, including EBACC and vocational
- provide consistent opportunities for students to develop and enhance their reading skills, and support is provided to ensure all students are able to access the curriculum.

DEPARTMENT INTENT

The aim of Computer Science at Rutlish is to provide a high-quality computing education which equips students to use computational thinking and to creatively understand and change the world. We study Computer Science to help us think in a more logical way and become better at making decisions and solving problems in a world that is rapidly changing and demanding technological expertise. The curriculum will teach students key knowledge about how computers and computer systems work, and how they are designed and programmed.

KEY STAGE 3 RATIONALE/ INTENT

The KS3 curriculum has been designed to ensure learners have sufficient knowledge to stay safe online and use computers safely in life. The KS3 curriculum also provides a focus on developing resilient learners who are able to learn from mistakes and effectively solve problems. The topics at KS3 give a basis of knowledge, skills and understanding to allow students to progress onto either i-Media or Computer Science at KS4 and will provide exposure to those subjects so that students can make an informed decision on their GCSE choices.

KEY STAGE 4 RATIONALE/ INTENT

At KS 4 students build on the skills they have learned in KS 3. The curriculum develops the student's ability to become a more resilient learner that is focused on logical thinking, decomposition and abstraction of problems to ultimately become advanced at solving computational problems. Students also continue to develop skills in digital literacy where they use computer systems to create and evaluate digital products for specific audiences and purposes.

KEY STAGE 5 RATIONALE/ INTENT

The KS 5 program of study develops the ability of students to become independent learners and to use research to extend their knowledge beyond the scope of the specification. Computer Science at KS 5 provides students with the challenge of programming a computer game that embeds complexities, creativity and allows students to problem solve and follow a test driven development process. The curriculum enables students to become critical thinkers that are able to apply and evaluate their knowledge to different scenarios. The curriculum enables students to become critical thinkers that are able to apply and evaluate their knowledge to different scenarios.

Rutlish School

YEAR 7

	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
	UNIT OF WORK: Fronter, MS Teams	**UNIT OF WORK:** Python	**UNIT OF WORK:** Binary	**UNIT OF WORK:** Webplus	**UNIT OF WORK:** Flowol	**UNIT OF WORK:** Python OOP
KNOWLEDGE	Understand how to use the learning platforms to be able to fully engage in all remote lessons, blended learning, homework and classwork set across the curriculum. **E-Safety** To explore e-safety issues and understand how to prevent and protect the user using a range of digital devices. To learn about the different legislation regarding E-safety. **Introduction to computers** To look at the different parts of a computer system and understand what their function is. To learn about how a computer works and what is computer hardware and software. To learn about what a computer virus is and the different ways, it may catch a virus. To explore how to prevent a computer virus. To learn about how computers, collect data from other input devices and output data from different devices.	To use the programming text based language python. To learn how to create basic programs using arithmetic operators, variables and inputs. To learn how to recognize and correct syntax errors in programs. To learn how to assign values to variables in programs and able to concatenate variables and string. To learn how predict outcomes of what will happen when a program runs.	To explore the binary number system and to understand how the binary number system works. To learn what ASCII is and how ASCII is used to represent text and how ASCII is represented as binary. To learn about the different file sizes and how to calculate file sizes.	To learn how to use Serif Webplus software by creating a Multi-Page Website. To know and understand how to design a website that is fully fit for audience and purpose. To understand how the different features on a web page can be used to design an effective website. To understand the importance of copyright in web design. To be able to implement web components to make the website interactive.	This is a practical unit covering the principles of producing control and monitoring solutions Using a flowchart-based interface (Flowol 4). To learn to produce systems that use simple loops and basic outputs, and then move on to look at systems that have multiple inputs and outputs. Students learn to refine their solutions using subroutines and variables. To research different types of computer and non-computerised control systems. To learn how to sequence instructions using the different flowchart symbols. Students will create a range of different flowcharts for different purposes. Understand what actuators are used for in control systems. Understand what a variable is and how they are used in a control system.	To learn about how to program IDE. To learn how to use python object oriented programming with turtle. To Learn the definitions for OOP, CLASS, ATTRIBUTE AND ENCAPSULATION. To learn to change the attributes of a turtle. To learn to use commands to fill in colour of a shape and back ground colour To learn key terms Constant, Pseudo code, Library, Procedure/Function/Method. Learn to program shapes and add comments using hashtag. To learn how to program using repeat functions. To learn to program to increase width of pen use the commands pensize (enter the size of the pen width). To learn to use commands for pen up and down: To learn how to use iteration in programming and keyboard controls.
KEY SKILLS	**VLE** Logging on to Fronter and Teams. Understand the difference between a task and an assignment. Be able to download and submit assignments; send a message to a teacher. **E – Safety** Understand how to be safe online and protect user's identities and personal information from any potentials dangers within the digital world of the Internet and **Electronic Devices**. Identify the differences with the following acts regarding the use of information. • The Data Protection Act • Computer Misuse Act • Copyright Law **Intro to computers** Definition of software and hardware. The differences between hardware and software. Recognise the different types and the purpose of input and output devices How the computer can process data. Describe the purpose of the various computer components.	Use the function print to create a simple program. Use escape sequence \n to create a new line in a program. Use \t to create a tab space in a program. Create a program using commas to concatenate string and variables. Create programs to perform simple arithmetic calculations. Create a program that responds when you input personal details. Understand the different data types, string, integer, float and use it correctly in a program. To predict what a program will do and able to correct any syntax errors.	Converting from denary to binary and vice versa. Binary addition Binary subtraction ASCII representation Ordering binary units of measure, bit, and bytes. Calculating file sizes.	To plan the layout for a website to show what it will look like and that to explain how it will be suitable to the clients brief. To be able to use multi-media components (roll overs, hotspots, photo gallery, lightbox, search bar, time stamp, embed videos) effectively in a website. Use a Master page to ensure website design is consistent on all 3 pages. Able to create the Navigation system. To be able to create internal and external hyperlinks. Use feedback to identify improvements and to be able to make appropriate refinements to a solution. To save and publish the website which loads quickly and correctly for all the webpages. To know how to include images on a webpage. Review and evaluate a website.	Identify everyday situations where computer control is used and the sensors used by control systems. Break down problems in the form of flowcharts. Design algorithms to solve problems by producing flowchart-based solutions for control systems that include sequences and loops, subroutines and variables. To be able to break a task down into its component steps and be able to correctly sequence the steps in a tasks Create a flowchart that shows all of the individual steps for a task, completely sequenced in the correct order. To create computer control systems that use subroutines Use Flowol for modelling traffic lights, temperature control and various other systems Create flow charts and computer control systems using the Flowol software package.	To use code to program a triangle and square shape. Use a program to create students own shape. Use commands to move forward and backward. Use code to add different attributes to the Turtle. Use the begin_ fill() and end _fill () to get the program to fill a colour for different shapes. Use Use colour to change your back ground using the command bgcolor ("enter the color that you want) Use the command pensize(enter the size of the pen width) to change the pen width. Use commands for pen up and down. To use iteration, for loop and while loop in drawing different shapes.

	Identify the types of computer viruses and how they occur. Understand how to prevent the risk of computer viruses.					
HOW DO WE BUILD ON SKILLS AND KNOWLEDGE?	Draw upon student's knowledge and use of a VLE at Primary – make links to similarities of VLEs despite different applications used - see starter questions. Recap shortcuts and file types learned in primary school. **E – Safety** Review what students had been taught at Key Stage 2 using technology safely, respectfully and responsibly; identify ways to report concerns about the use of social media, online content or contact with other users. How in primary to search effectively and safely for information. Recognise how to avoid using inappropriate content and the skills in finding reliable data. **Intro to computers** Extend and expand upon the knowledge acquired in Key Stage 2, looking at what a digital computer is and the two different inter-related systems, hardware and software.	Draw upon the knowledge of using block-based Scratch programming in Key Stage 2 and develop working programs in Scratch to solve a range of problems. Understand the concepts of sequencing, selection and iteration. To compare and apply to learning Text-based Python programming.	Draw upon knowledge of the decimal number line learned in KS 2 and make links to the binary number line – similarities and differences.	Review what students had been taught at Key Stage 2 for Web Design. Connect with the rules and principles in creating suitable websites at Key Stage 2. Expand upon knowledge to explore the features of websites to learn how to create content for a web pages.	Review what students had been taught at Key Stage 2 Computing: Controlling Devices, programming and sequences using block based software.	Review work already covered in year 7 unit 2 Python programming autumn term 2. Identify key terms and definitions used in python programing.
LINKS TO THE WORLD i.e. links to careers; equality: gender, class, ethnicity, etc.; different subjects	**Cross curricular:** Students will be empowered to engage in the learning of all subjects as they can confidently use the learning platforms. Students will evaluate what they find online critically to be confident that the information is reliable and relevant to all subject areas. The rules for keeping safe online, how to recognise risks, harmful content and contact, and how to report them. **Careers:** Key skills link to world of work; students are able to use software, which is currently used in the world of work. Students are confident in being safe online and can effectively evaluate the credibility of information online acknowledge any risks, which will allow them to be responsible digital citizens in any future employment. Students can understand how a computer processes data and how the different components work to benefit current computer science, computer engineering or computer maintenance jobs. They are up to date with the risks in viruses to different computer digital devices used globally from the home environment to everyday work.	**Cross curricular:** Development of problem-solving skills in a way that is applicable to many other subjects and in many other areas of life. **Careers:** Students discovering their proficiency in problem solving, handling syntax, programming may find they can enter an industry in which those skills are highly valued. Computer Science industry: Robotics, British Aerospace, and Data Analysts.	**Cross curricular:** Understanding how base 2 links to numeracy skills (Maths). **Careers:** Software Developer. Database Administrator. Computer Hardware Engineer. Computer Systems Analyst. Computer Network Architect. Web Developer. Information Security Analyst. Computer and Information Research Scientists.	**Cross curricular:** Development of effective research skills and evaluating the effectives of the content displayed on websites specific to all subject areas. **Careers:** Key skills to search effectively using websites for relevant information and data that can be applied to the following: Publishing, Media, Advertisement and Fashion industry. Web Science able to apply the skills to use the features to design an effective website.	**Cross curricular:** Development of problem-solving skills in a way that is applicable to many other subjects and in many other areas of life. **Careers:** Job opportunities: Software Programmers in: Games, Operating Systems, Databases, Application software, Mobile applications Air Traffic Control	**Cross curricular:** Development of problem-solving skills in a way that is applicable to many other subjects and in many other areas of life. **Careers:** Students discovering their proficiency in problem solving, handling syntax, programming may find they can enter an industry in which those skills are highly valued. Any careers linked to programming and different areas in Computer Science.

ASSESSMENTS Summative and Formative as applicable	<u>Formative:</u> Class discussions – see ppt Quiz, Verbal feedback <u>Summative:</u> Task <u>E – Safety</u> <u>Formative:</u> Class discussions – see ppt Quiz What Well Well? (WWW) and Even Better If? (EBI) on project task. Mind map summarise what they already know about a topic in a creative and visual way <u>Summative:</u> End of unit task. End of unit quiz test. Self and peer evaluation of classwork. <u>Intro to computers</u> <u>Formative:</u> Class discussions – see ppt Quiz What Well Well? (WWW) and Even Better If? (EBI) on project task Mind map summarise what they already know about a topic in a creative and visual way <u>Summative:</u> End of unit Task End of unit quiz test Self and peer evaluation of classwork	<u>Formative:</u> Class discussions – see ppt Quiz What went well? (WWW) and Even Better If? (EBI) on project task Mind map summarise what they already know about a topic in a creative and visual way <u>Summative:</u> End of unit Task End of unit quiz test Self and peer evaluation of classwork.	<u>Formative:</u> Class discussions – see ppts and student workbook. Quiz on Fronter Spaced practice – recap of knowledge from previous lessons. Interleaving: recap of topic 1 – Introduction to computers. Self and peer evaluation of classwork. <u>Summative:</u> End of topic test.	<u>Formative:</u> Class discussions – see ppt Quiz on Fronter What went well? (WWW) and Even Better If? (EBI) on project task. Mind map summarise what they already know about a topic in a creative and visual way. Self and peer evaluation of classwork. <u>Summative:</u> End of unit Task End of unit quiz test.	<u>Formative:</u> Class discussions – see ppt Quiz What went well? (WWW) and Even Better If? (EBI) on project task Mind map summarise what they already know about a topic in a creative and visual way Self and peer evaluation of classwork. <u>Summative</u> End of unit Task. End of unit quiz test.	<u>Formative:</u> Class discussions – see ppt. Quiz What went well? (WWW) and Even Better If? (EBI) on project task Mind map summarise what they already know about a topic in a creative and visual way. Self and peer evaluation of classwork. <u>Summative:</u> End of unit Task. End of unit quiz test.
FEEDBACK SUPPORTS LEARNING	**Opportunity for students to reflect on learning, respond to feedback, improve work, etc.** ✓	**Opportunity for students to reflect on learning, respond to feedback, improve work, etc.** ✓	**Opportunity for students to reflect on learning, respond to feedback, improve work, etc.** ✓	**Opportunity for students to reflect on learning, respond to feedback, improve work, etc.** ✓	**Opportunity for students to reflect on learning, respond to feedback, improve work, etc.** ✓	**Opportunity for students to reflect on learning, respond to feedback, improve work, etc.** ✓
SPECIALIST VOCABULARY	VLE Download Upload Submit <u>E – Safety</u> Digital literacy Online safety Responsible use of technologies <u>Intro to computers</u> the physical components operating system Processor computer viruses	Text based programming Block based programming Syntax Integer String Float/real Boolean Python Scratch Variable Input print test	Bit Byte Kilobyte Megabyte Base 2 ASCII File size Data representation	Information Audience World Wide Web Published Web Components Evaluation Master page Hyperlinks Test Plan Effective search	Variables Model Flowcharts Evaluation Sequencing Input Subroutines Sensors Control Algorithm Process Output Decision Variable Mimic Actuators (Car Park control systems Computer Programming ●	Python bgcolor Algorithm command String pensize Float/ Real ITERATION Character FOR LOOP Boolean WHILE LOOP Integer KEY PRESSES Syntax LISTENERS Variable Commenting CLASS OOP ENCAPSULATION ATTRIBUTE begin_fill() end_fill()

QUALITY FIRST TEACHING
✓ Strategies to learn more, remember more (metacognition) used in lessons e.g. retrieval, elaboration, interleaving, dual coding, etc. ✓ Differentiation and reasonable adjustments for students with SEND, EAL, etc. such as scaffolding, visual aids, audio, physical resources, planned questioning, etc. ✓ Opportunities for Literacy, Numeracy and Oracy, including a focus on reading ✓ Opportunities to apply key concepts and address misconceptions

YEAR 8

	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
	UNIT OF WORK: Orientation: The Rutlish Network and E Systems	UNIT OF WORK: Data Representation Binary	UNIT OF WORK: Python	UNIT OF WORK : Photoshop	UNIT OF WORK: Networks	UNIT OF WORK: HOW COMPUTERS WORK
KNOWLEDGE	To understand the importance of file / Folder Management/ Passwords / Security. To understand the importance of online safety and how to stay safe online. __HTML E SAFETY WEBSITE__ To learn the basics of HTML and CSS. To learn to create web pages using HTML. _____To learn how to create an effective E-safety Web site design which adapts to any size of screen for viewing on, say, a mobile phone or a PC._____To learn how to use a range of HTML tags to create well laid out website. __Set 4 & Set 5__ __E-Safety Web design__ To learn how to use Serif Webplus software to create a Multi-Page Website. To know and understand how to ensure that a website is fully fit for audience and purpose. To understand the importance of planning a website that meets the requirements of the brief.	To learn about the different units of data that can be stored inside a computer and how quantities of these binary digits represent all forms of data within a computer. To learn to convert denary numbers into binary and calculate the sum of binary addition calculations and binary subtraction calculations. To learn and understand the Hexadecimal number system and convert a binary number to Hex and a Hex number to binary.	To learn more complex programming techniques using a text based language. Students will review and develop their knowledge of the programming constructs learned in year 7. Students will learn about the following: Print Loops Variables If Statements Else Statements To understand the use of arithmetic expressions. To read and create simple programs that use selection. To review Different data types, string, integer, float and Boolean. Know about different relational operators to form logical expressions. To explore what Boolean operators are. To predict answers to conditions and test out in python. Using flowcharts to write an algorithm for coding tasks. Describe how iteration (while statements) controls the flow of program execution. To learn how to use a range of loops in python programming: Count Controlled loop and while loops. To understand how to debug coding errors - Identify and fix common syntax errors. To develop knowledge of programming constructs to be able to predict outcomes of what will happen when a program runs.	In this unit, students will be able to use graphic editing software to create and edit graphics To learn how to use a wide range of Photoshop tools to create and manipulate graphic images. To understand the legislation regarding copyright issues. To use simple tools to edit/distort images and saving images in the correct locations. To recall tools used and explain how to use them. To learn the key concept of "Cloning" & how to "remove" unwanted aspects from an image by cloning another part of an image in its place. To learn the key concept of removing backgrounds and why this is often necessary when making attractive documents. To understand the purpose of different file types and their properties.	To learn what a computer network is and will look at the advantages and disadvantages of using standalone vs networked devices. Students will know about different types of networks including LAN's and WAN's before looking at specific network topologies. Students will gain an understanding of key networking terminology and will be able to describe what the internet is, how it functions and how it differs from the World Wide Web. This unit progresses students' knowledge and understanding of networks and associated hardware. The unit will equip students to establish a foundation understanding of how data is transmitted across networks, as well as exploring the factors that can affect performance. Develop knowledge about the internet and services provided over the internet.	To learn and understand the fundamentals of how a computer system operates. To learn about the hardware, software and memory of a computer system. To learn about the history and development of computing. Set 4 & Set 5 Animation To discuss the impact of 3D animation on the wider world. To know and understand the differences between key framing and stop motion animation. To undertake a creative project that involves using industry standard software Adobe Animate CC. To achieve challenging goals, including selecting relevant information, advertisement persuasive captions and meeting the needs of known users.
KEY SKILLS	__Students will be able to explain:__ • How to use school network appropriately and efficiently? • How to save work • To be able to contribute to class discussions e.g.: What are the benefits of sharing information online? __HTML E SAFETY WEBSITE__ To create text styles and add content, including text and graphics, in a specified position on a page, as well as navigation links to other pages on their website and to external websites. Explain some good and not so good features on a web page Demonstrate you can add features using HTML coding. Explain the term HTML. Demonstrate you can add HTML code to a web page.	__Students will be able to explain:__ Why data must be stored in binary format, converted to be processed by a computer. Be able to explain the data units and moving between each – Bit, Nibble, Byte, Kilobyte, Megabyte, and Gigabyte. __Students will be able to do the following:__ Convert positive denary whole numbers to binary numbers (up to and including 8 bits) and vice versa. Addition and subtraction – two binary integers (up to and including 8 bits) and explain overflow errors which may occur. Convert positive denary whole numbers into 2-digit hexadecimal numbers and vice versa.	To use simple arithmetic expressions in assignment statements to calculate values. Receive input from the keyboard and convert it to a numerical value. To write programs that display messages, receive keyboard input, and use simple arithmetic expressions in assignment statements. To use selection (if-elif-else statements) to control the flow of program execution. To locate and correct common syntax errors. I can create lists and access individual list items. To use flowcharts to write an algorithm for grading and calculator program. To write a program in python to check the number within acceptable limits and outputs a message saying accepted or not. To define and use iteration in a program. Combine iteration and selection to control the flow of program execution. To confidently modify and write a program using a while loop and a for loop.	Learn to use graphic editing software to design and manipulate images to create a movie poster using a suitable graphics package in this unit. To learn skills in design, photo editing and image manipulation to create graphics for a given audience and purpose. To create a movie poster using the skills they have learnt so far. To apply different formatting techniques and discuss copyright law. Select appropriate images for the project brief. Demonstrate an understanding of licensing issues involving online content by applying for proper Creative Commons licences. Demonstrate the ability to credit the source of an image.	Pupils will learn that the World Wide Web is part of the Internet, and how web addresses are constructed and stored. Understand and explain what an IP address is, Client-server, peer-to-peer networks. Understand and explain the concept of cloud Computing. Understand and explain ways of keeping data secure and simple encryption techniques. To understand how data is sent across a network. Know the role of a range of basic hardware involved in networking, such as switches	Identify key people and explain what they did to help in the development of computers. Identifying computer components. Describe the input, process and output cycle for four standard procedures. Explain the purpose of ROM and RAM in a computer. To explain how each computer part affects the performance of the computer system. To create a presentation to show a computer works. __Animation__ To add, delete, and move objects/images. To scale and rotate objects.

Demonstrate you can accurately source images for your web site. Modify HTML tags using inline styling to improve the appearance of web pages. Display images within a web page. Apply HTML tags to construct a web page structure from a provided design. To experiment with CSS to format tags in a HTML document - Describe what CSS is - Use CSS to style static web pages - Assess the benefits of using CSS to style pages instead of in-line formatting. **Set 4 & Set 5** <u>E-Safety Web design</u> To review an existing website and consider its structure. - I can explore a website - I can discuss the different types of media used on websites. - I know that websites are written in HTML To plan the features of a web page - I can recognise the common features of a web page - I can suggest media to include on my page relevant to E-Safety. - I can draw a web page layout that suits my purpose.To consider the ownership and use of images (copyright). - I can say why I should use copyright free images. - I can find copyright-free images. - I can describe what is meant by the term 'fair use'. To recognise the need to preview pages. - I can evaluate my web page. - I can explain what a navigation path is. - I can describe why navigation paths are useful - I can make multiple web pages and link them using hyperlinks. - I can evaluate the user experience of a Website.	Convert binary integers to their hexadecimal equivalents and vice versa. To perform binary shifts. To understand how characters are represented in binary.	To be able to explain and predict outcomes of what will happen when a program runs. To be able to locate and correct common syntax errors.	To use the distort features within the software to produce practical effects. To use the Blur features within the software to produce practical effects. To use the Pen features within the software to produce practical effects. To explain what cloning is using a photo-editing software package. To use the cloning tool to select a target background colour or texture. To adjust the brush to a suitable size for the selected image. To remove an object/person from an image so that it is hard to spot "with the naked eye". To understand how to delete a background using the magnetic lasso tool. Adjust their brush to a suitable size for the image and make a neat selection of the image. To paste a selected object onto a new background and position and edit if further. To export to PNG and Jpeg. To understand the correct file format to be exported suitable for poster and website format.	Understand domain names and DNS. Know about a range of Internet services. To know what a computer network is - Define what a computer network is and explain how data is transmitted between computers across networks - Define 'protocol' and provide examples of non-networking protocols Explain the meaning and significance of bandwidth. To compare wired and wireless technologies To know the difference between the internet and the World Wide Web. To discuss the relationship between IP address and domain name - Describe components (servers, browsers, pages, HTTP and HTTPS protocols, etc.) and how they work together.	To be able to add colour to objects/images. To add, move, and delete keyframes to make basic animations. To play, pause, and move through the animation using the timeline. To understand how to create/source a wide range of assets; test that animation is functional and addresses the client brief; successfully uses tools and techniques to enhance the animation. To be able to: create a simple animation using simple drawing and frame-by-frame techniques. Explain how frame rate and speed affect the smoothness of the animation. Use multiple layers. Use tweening and frame-by-frame techniques. Add sound effects.
HOW DO WE BUILD ON SKILLS AND KNOWLEDGE? By using activities which favour different learning styles to generate creative / lateral thinking and solutions to problems posed by E Safety. Creating a nurturing environment in which to discuss / air concerns safely. <u>HTML E SAFETY WEBSITE</u> Students have built websites in Year 7 using web serif plus so this unit aims to expand those skills and to build upon them by developing knowledge in using HTML coding to build an E-Safety website. Students recognise how websites are put together and attempt to create their own pages using online HTML editors. <u>E-Safety Webplus</u>	Draw upon knowledge of binary unit in year 7. Review and build upon knowledge gained in year 7 in how the binary number system works and converting binary numbers to denary. Learn about the Hexadecimal number system by firstly revisiting and revising their Binary knowledge from Year 7. Students will then learn about how to convert between Denary, Binary and Hexadecimal numbers.	Draw upon the knowledge of using Python programming in year 7 from the Python unit and python oop unit. Revisit the use of sequence, selection and repetition in programs; work with variables and various forms of input and output learn in year 7. To build on the skills of year 7 be developing the skills to recognize and correct syntax errors in programs. Variables, selection were learnt in year 7 and will be recapped this unit. New concepts such as iteration, random and lists are used to produce a more efficient quiz. All these skills are needed for GCSE Computer Science.	Continue to build on knowledge about copyright.	Review what students had been taught in key stage 2 and in unit 1 Introduction to computers understand computer networks including the internet; how they can provide multiple services such as the world wide web; and the opportunities they offer for communication and collaboration.	Review what students had been taught In key stage 2 and in year 7 introduction to computers unit. To continue to develop their understanding of how computer and technology works and how computers process instructions and commands <u>Set 4 & Set 5</u> <u>Animation</u> This links to KS2 by using animation skills taught during Year 4-6. This links to KS3 by using graphics skills taught during Year 8 in spring term.

Set 4 & Set 5 Students have built websites in Year 7 using web serif plus so this unit aims to expand those skills and to build upon them by developing knowledge in using advanced web components and a range of assets to build an E-Safety website.					
LINKS TO THE WORLD i.e. links to careers; equality: gender, class, ethnicity, etc.; different subjects _HTML E SAFETY WEBSITE & **Set 4 & Set 5** **E-Safety Webplus** <u>Cross curricular:</u> Development of problem-solving skills in a way that is applicable to many other subjects and in many other areas of life. E-Safety is compulsory across all IT courses and links to the fundamentals of being safe online. **Careers:** Students learn by experience and grow as confident and responsible citizens who value and appreciate how webpages are built using HTML coding. They can adapt and transfer these creating and problem solving skills in other areas of the curriculum. They can aspire to be innovators and independent HTML coders that has an impact on careers in engineering, computer science and programming. <u>Job opportunities:</u> Web developer, web designer, front end developer. <u>Set 4 & Set 5</u> **E-Safety Webplus** <u>Cross curricular:</u> Development of effective research skills and evaluating the effectives of the content displayed on websites specific to all subject areas. **Careers:** Key skills to search effectively using websites for relevant information and data that can be applied to the following: In Publishing, Media, Advertisement and Fashion industry.	**Cross curricular:** Development of problem-solving skills in a way that is applicable to many other subjects and in many other areas of life. **Careers:** Students discovering their proficiency in problem solving, handling syntax, programming may find they can enter an industry in which those skills are highly valued. Computer Science industry: Robotics, British Aerospace, Data Analysts.	**Cross curricular:** Development of problem-solving skills in a way that is applicable to many other subjects and in many other areas of life. This unit links to the GCSE in computer science. The content in this unit will help towards component 2_Computational thinking, algorithms and programming. **Careers:** Students discovering their proficiency in problem solving, handling syntax, programming may find they can enter an industry in which those skills are highly valued. Computer Science industry: Robotics, British Aerospace, Data Analysts <u>Job opportunities:</u> Machine Learning Engineer, Python Developer, Data Scientist, DevOps Engineer, Full-Stack Developer	**Cross curricular:** DT- design work. Copyright and ownership - Students know that work they create belongs to them - They can name their work so that others know it belongs to them. When searching on the internet for content to use, students can explain why they need to consider who owns it and whether I have the right to reuse it. **Careers:** Key skills to search effectively using websites for relevant information and data that can be applied to the following: In Publishing, Media, Advertisement and Fashion industry.	**Cross curricular:** This unit links to the GCSE in computer science. The content in this unit will help towards component 1 - Computer Systems. The skills acquired in the use of research, describe and retain information can be applied to other subject areas. **Careers:** Network and Computer Systems Administrator. Computer and Information Systems Manager. Computer Network Architect. Computer Systems Analyst. Computer Network Support Specialist.	**Cross curricular:** Research, describe and retain information can be applied to all subject areas and is useful in higher education and most careers. **Set 4 & Set 5** **Animation** Understanding how to manipulate multimedia software across different platforms has become increasingly important in our digitally driven economy. It allows students to communicate ideas effectively, and these skills can be put to use across the curriculum Problem Solving Implementation, Evaluation and Analysis skills that can be applied to the world of work and other subject areas. **Careers:** Development of problem-solving skills in a way that is applicable to many other subjects and in many other areas of life. <u>Set 4 & Set 5 Animation</u> This links to careers by developing core skills needed roles in the computer animation and gaming industries. 2D animator 3D animator Background artist Character animator Clean-up artist Digital ink and paint artist Image editor Key frame animator

Rutlish School

	Column 1	Column 2	Column 3	Column 4	Column 5	Column 6
ASSESSMENTS (Summative and Formative as applicable)	**Formative:** Class discussions – see ppt; Quiz; What went well and even Better If? (EBI) on project task; Mind map summarise what they already know about a topic in a creative and visual way. Self and peer evaluation of classwork. **Summative:** End of unit Task; End of unit quiz test; To put evidence of their final website in an assessment.	**Formative:** Class discussions – see ppt; Quiz; What went well and even Better If? (EBI) on project task; Mind map summarise what they already know about a topic in a creative and visual way. Self and peer evaluation of classwork. **Summative:** End of unit assessment. End of unit quiz test	**Formative:** Class discussions – see ppt; Quiz; What went well and even Better If? (EBI) on project task; Mind map summarise what they already know about a topic in a creative and visual way. Self and peer evaluation of classwork. **Summative:** End of unit assessment. End of unit quiz test; Create a series of programmes in response to set tasks.	**Formative:** Class discussions – see ppt; Quiz; What went well and even Better If? (EBI) on project task; Mind map summarise what they already know about a topic in a creative and visual way. Self and peer evaluation of classwork **Summative:** End of unit Task; End of unit quiz test .	**Formative:** Class discussions – see ppt; Quiz; What went well and even Better If? (EBI) on project task; Mind map summarise what they already know about a topic in a creative and visual way. Self and peer evaluation of classwork. **Summative:** End of unit Task; End of unit quiz test. End of unit assessment.	**Formative:** Class discussions – see ppt; Quiz; What went well and even Better If? (EBI) on project task; Mind map summarise what they already know about a topic in a creative and visual way. Self and peer evaluation of classwork. **Summative:** End of unit assessment. End of unit quiz test **Set 4 & Set 5** Create a short animation that will be evidenced in an Assessment Portfolio. They will also answer questions about their animations and complete a self-assessment.
FEEDBACK SUPPORTS LEARNING	**Opportunity for students to reflect on learning, respond to feedback, improve work, etc.** ✓	**Opportunity for students to reflect on learning, respond to feedback, improve work, etc.** ✓	**Opportunity for students to reflect on learning, respond to feedback, improve work, etc.** ✓	**Opportunity for students to reflect on learning, respond to feedback, improve work, etc.** ✓	**Opportunity for students to reflect on learning, respond to feedback, improve work, etc.** ✓	**Opportunity for students to reflect on learning, respond to feedback, improve work, etc.** ✓
SPECIALIST VOCABULARY	HTML E SAFETY WEBSITE TAGS; Test; CSS HTM **Set 4 & Set 5** E-safety Webplus; Information; Audience; World Wide Web; Published; Web Components; Evaluation; Master page; HyperlinksPlan; Effective search; Formatting a webpage	Hexadecimal; Binary; Denary; Convert; Base 2; Nibble, bit, byte, kilobyte, gigabyte	Problem Solving Programming; Sequencing; Loops; If Statements; De Bugging; Selection; Iteration	Image manipulation; Photo editing; Photoshop; Magnetic lasso tool. Cloning; Distort features; Filters; Layers; Refine edge; Quick Selection tool; Magic wand tool; Brush tool; Healing tool; Clipping mask	Networks; HTTP and HTTPS; Protocols, IP address and domain name; hardware; servers, browsers; packet switching; switch	Rom; Ram; Components; Hardware; multiple-core processors; Input, process and output; Motherboard; Heat sink; Speed (GHz) **Animate CC** workspace; multiple layers; tweening-Classic tween, motion tween, shape tween; frame-by-frame techniques; timeline; persuasive captions; elements

QUALITY FIRST TEACHING

- ✓ Strategies to learn more, remember more (metacognition) used in lessons e.g. retrieval, elaboration, interleaving, dual coding, etc.
- ✓ Differentiation and reasonable adjustments for students with SEND, EAL, etc. such as scaffolding, visual aids, audio, physical resources, planned questioning, etc.
- ✓ Opportunities for Literacy, Numeracy and Oracy, including a focus on reading
- ✓ Opportunities to apply key concepts and address misconceptions

YEAR 9

	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
KNOWLEDGE	**UNIT OF WORK:** **Knowledge: Create a sound understanding of how the Rutlish network works and how to remain safe online.** An appreciation of how computers and networks function is crucial to understanding not only how to use them but to maintain them and remain safe whilst doing so. Growing social media use amongst teenagers and the attendant problems it brings is well documented and the curriculum intends to show pupils how to deal with difficult situations online and inform them of the people and places to whom they can turn. This unit of work should last between 5/6 weeks and so teachers should begin the Number Systems Unit before half term. The intention is to teach students about alternative number systems to the one we use	**UNIT OF WORK:** Number Systems & Python Number Systems continued from last term Python Programming The ability to use Python a high level programming language required for KS4 programmes of study. In so doing learners use computational thinking skills.	**UNIT OF WORK:** Ethical and Legal issues Students earn about ethical issues, environmental issues and legal issues with computing. They will take part in many discussions to look at how rapid technological changes are shaping people's perceptions, the environment and the laws that govern us all.	**UNIT OF WORK:** Algorithms & Python Students learn some of the different ways in which a computer can sort information. Students analyse the different methods to test for efficiency. Students will then perform the different methodologies using Python.	**UNIT OF WORK:** Animation Create a 60 second advert using Animate. Students use industry standard software to create advert for a product and go through different stages of planning, creating and testing a product, which they review at end.	**UNIT OF WORK:** Creating a Multi-Page Website Exploration of what makes a website good and bad and the opportunity to build a website using set criteria against which the final product can be evaluated.
KEY SKILLS	• Understanding about different sources of problems online. • Analysing and evaluating the different agencies to whom they can turn. Also to develop oral and written comprehension skills. • Learn how to add / subtract in binary • Convert from binary to denary • Learn how to use Hex	**Number Systems Contd** Two's Complement ASCII Test **Python** If / Else Relational Operators Algorithms For Loops While Loops Test	To be able to describe and explain the term ethics; to list some of the issues that surround technology and its environment; to identify some of the issues in GDPR and to explain what is meant by the terms "fair use"; "file sharing" and "public domain".	Learning how to perform the following Bubble Sort Quick Sort Merge Sort	**Using** Key frames Tweening Onion skinning Free transform Adding sound	**Website** Using a master page Building minimum 3 pages Demonstration of following skills (not exhaustive list) • Inserting / editing navigation bar • Inserting header and footer • Inserting banner • Adding and editing appropriate text • Adding and editing images • Rollover Buttons • Photo Galleries • Hot Spots • Hyperlinks • Video links

	Col 1	Col 2	Col 3	Col 4	Col 5	Col 6
HOW DO WE BUILD ON SKILLS AND KNOWLEDGE?	• By using activities which favour different learning styles to generate creative / lateral thinking and solutions to problems posed by E Safety • Creating a nurturing environment in which to discuss / air concerns safely. • By developing skills required for number systems incrementally at KS3 level		The topic is introduced in year 8 but for year, 9 different scenarios are examined in order to consolidate prior learning but to stretch students further.	Topic introduced for the first time and is required for KS4 PoS	Introduced in Year 9 as prep for students taking IMedia in year 10	Students have built websites in Year 7 so this unit aims to consolidate those skills and to build upon them by adding a list of advanced interactive features for students to use.
LINKS TO THE WORLD i.e. links to careers; equality; gender, class, ethnicity, etc.; different subjects	➢ PSHE ➢ Potentially Drama ➢ Literacy – opportunities presenting by storyboarding ➢ Media – filming role play? ➢ Cyber Security in the real world ➢ Bletchley Park GCHQ		AI GDPR Computer Misuse Act	Just a thought - PE – if PE had a list of boys they needed to sort into teams / squads? Technology / IT	Animation / IT industry – Creative industries worth 12% UK GDP	PSHE – Animal Shelter – Looking after another living thing **Careers** Web Design Graphic Design Editorial Software Engineering
ASSESSMENTS Summative and Formative as applicable	**Formative:** Self and peer assessment Class discussions Classwork and homework Exit tickets Think pair share Quizzes Mnemonics Retrieval power Ticket **Summative:** End of unit test	**Formative:** Self and peer assessment Class discussions Classwork and homework Exit tickets Think pair share Quizzes Mnemonics Retrieval power Ticket **Summative:** End of unit test	**Formative:** Self and peer assessment Class discussions Classwork and homework Exit tickets Think pair share Quizzes Mnemonics Retrieval power Ticket **Summative:** End of unit test	**Formative:** Self and peer assessment Class discussions Classwork and homework Exit tickets Think pair share Quizzes Mnemonics Retrieval power Ticket **Summative:** End of unit test	**Formative:** Self and peer assessment Class discussions Classwork and homework Exit tickets Think pair share Quizzes Mnemonics Retrieval power Ticket **Summative:** End of unit test	**Formative:** Self and peer assessment Class discussions Classwork and homework Exit tickets Think pair share Quizzes Mnemonics Retrieval power Ticket **Summative:** End of unit test
FEEDBACK SUPPORTS LEARNING	**Opportunity for students to reflect on learning, respond to feedback, improve work, etc.** ✔	**Opportunity for students to reflect on learning, respond to feedback, improve work, etc.** ✔	**Opportunity for students to reflect on learning, respond to feedback, improve work, etc.** ✔	**Opportunity for students to reflect on learning, respond to feedback, improve work, etc.** ✔	**Opportunity for students to reflect on learning, respond to feedback, improve work, etc.** ✔	**Opportunity for students to reflect on learning, respond to feedback, improve work, etc.** ✔
SPECIALIST VOCABULARY	• Oversharing • Digital Footprint • Trolling • File management • Naming Conventions • Computer Network • Binary • Denary • Hex		Fair Use Public Domain File Sharing	Bubble Sort Merge Sort Quick Sort		

QUALITY FIRST TEACHING
✓ Strategies to learn more, remember more (metacognition) used in lessons e.g. retrieval, elaboration, interleaving, dual coding, etc. ✓ Differentiation and reasonable adjustments for students with SEND, EAL, etc. such as scaffolding, visual aids, audio, physical resources, planned questioning, etc. ✓ Opportunities for Literacy, Numeracy and Oracy, including a focus on reading ✓ Opportunities to apply key concepts and address misconceptions