

| Term/Focus | Unit 8.1 – Communication and Networks | Unit 8.2 – Algorithms and Programming |
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| <p>Key knowledge and skills – What core knowledge and key skills will be acquired and developed by students?</p> | <p>Foundation</p> <ul style="list-style-type: none"> • Give a basic definition of a network and give some reasons why they are used • List a few devices that can be networked • State a few differences between LAN and WAN • State that there is a difference between the Internet and world wide web • Identify a few parts of a web address • Give a few examples of domain names • Briefly describe how data is transferred across a network • State a few names of protocols • State that data is transferred in packets across a network • Identify some of the main characteristics of hubs, routers and switches • Name a few network topologies and know that they connect in different ways • List a few advantages and disadvantages of each topology • List a few devices used to connect different topologies • Construct a simple web page using HTML tags • Change the colours of the page background and text using CSS | <p>Foundation</p> <ul style="list-style-type: none"> • Explain what an algorithm and a flowchart is • Identify some flowchart shapes • Explain briefly what selection is • Use pseudocode to create a simple algorithm with selection • Use a flowchart to create a simple algorithm with selection • Use Flowgorithm to create and run a flowchart • Convert a song into a flowchart • Use a For Loop in Flowgorithm • Describe a variable • Use variables in algorithms • State some of the different data types • Complete Algorithm Challenge according to target grade • Write simple programs to display words on the screen, perform calculations and store data in variables with help • Use casting to change from one data type to another • Add simple annotation to a program • Amend programs using selection and operators • Amend programs using lists and iteration • Amend programs using while loops, validation and verification |

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| | <p>Developing</p> <ul style="list-style-type: none"> • Give a basic definition of a network and state some advantages and disadvantages • List some devices that can be networked • State some differences between LAN and WAN • State the difference between the Internet and world wide web • Identify some parts of a web address • Give some examples of domain names • Describe how data is transferred across a network • State some names of protocols • Describe how data is transferred in packets across a network • Identify some of the main characteristics of hubs, routers and switches • Name some network topologies and know that they connect in different ways • List some advantages and disadvantages of each topology • List some devices used to connect different topologies • Construct a simple web page using HTML tags • Change the colours of the page background and text using CSS | <p>Developing</p> <ul style="list-style-type: none"> • Explain what an algorithm and a flowchart is • Identify a range of flowchart shapes • Write a simple algorithm • Create a simple flowchart • Briefly explain what selection and a condition is • Briefly explain and use pseudocode to create a simple algorithm with selection • Briefly explain and use a flowchart to create a simple algorithm with selection • Use Flowgorithm to create and run a flowchart • Briefly explain what an input and output is • Use Flowgorithm to perform a partial algorithm trace • Write a song and convert it into a flowchart • Use a For Loop in Flowgorithm • Explain what a variable is • Use variables in algorithms • State a range of different data types • Complete Algorithm Challenge according to target grade • Write simple programs to display words on the screen, perform calculations and store data in variables • Use casting independently to change from one data type to another • Add simple annotation to a program • Create and amend programs using selection and operators • Create and amend programs using lists and iteration • Create and amend programs using while loops, validation and verification |

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| | <p>Good</p> <ul style="list-style-type: none"> • Give a detailed definition of a network and explain some advantages and disadvantages • List a range of devices that can be networked • Explain the differences between LAN and WAN • Explain the difference between the Internet and world wide web • Identify most parts of a web address • Give a range of examples of domain names • Explain how data is transferred across a network • Explain some of the protocols used in data transfer • Explain how data is transferred in packets across a network • Identify the main characteristics of hubs, routers and switches • Explain the difference between hubs, routers and switches • Explain some network topologies and how they connect in different ways • Explain some advantages and disadvantages of each topology • Describe a number of devices used to connect different topologies • Construct a simple web page using HTML tags. • Select and use a suitable heading type and add some basic information in a paragraph. • Add a range of appropriate information and an image to the page. • Change the colours of the page background and text using CSS. • Use <div> tags to define and style separate areas of the page and experiment and apply different border styles to CSS boxes. | <p>Good</p> <ul style="list-style-type: none"> • Explain what an algorithm and a flowchart is • Identify a range of flowchart shapes • Write a simple algorithm • Create a simple flowchart • Explain what selection and a condition is • Explain and use pseudocode to create a simple algorithm with selection • Explain and use a flowchart to create a simple algorithm with selection • Use Flowgorithm to create and run a flowchart • Explain what an input and output is • Use Flowgorithm to perform a complete algorithm trace • Write a song and convert it into a flowchart • Explain how to use a For Loop in Flowgorithm • Explain what a variable is and how it works • Use a range of variables in algorithms • Explain the different data types • Complete Algorithm Challenge according to target grade • Make changes to simple programs to display words on the screen, perform calculations and store data in variables • Use casting independently to change from one data type to another • Add useful annotation to a program • Create, amend and explain programs using selection and operators • Create, amend and explain programs using lists and iteration • Create, amend and explain programs using while loops, validation and verification |
| | <p>Exceptional</p> <ul style="list-style-type: none"> • Give a detailed definition of a network, provide examples and explain a range of advantages and disadvantages | <p>Exceptional</p> <ul style="list-style-type: none"> • Explain what an algorithm and a flowchart is • Identify a range of flowchart shapes • Write a simple algorithm |

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| | <ul style="list-style-type: none"> • List a wide range of devices that can be networked • Explain the differences between LAN and WAN and provide examples of when they would be used • Explain the difference between the Internet and world wide web • Identify all parts of a web address • Explain a range of examples of domain names • Explain how data is transferred across a network • Explain most of the protocols used in data transfer • Explain in detail how data is transferred in packets across a network, and what a data packet contains • Identify the main characteristics of hubs, routers and switches • Explain the difference between hubs, routers and switches and identify situations for each • Explain a range of network topologies and explain how they connect • Explain a range of advantages and disadvantages of each topology • Explain a range of devices used to connect different topologies • Construct a simple web page using HTML tags. • Select and use a suitable heading type and add some basic information in a paragraph • Add a range of appropriate information and an image to the page • Change the colours of the page background and text using CSS • Use <div> tags to define and style separate areas of the page and experiment and apply different border styles to CSS boxes • Apply a font style in CSS | <ul style="list-style-type: none"> • Create a simple flowchart • Explain how to make a flowchart more efficient • Explain what selection and a condition is • Explain and use pseudocode to create a complex algorithm with selection • Explain and use a flowchart to create a complex algorithm with selection • Use Flowgorithm to create and run a flowchart • Explain what an input and output is • Use Flowgorithm to perform a complete algorithm trace • Use Flowgorithm to create and run a flowchart of their own • Write a song and convert it into a flowchart • Explain how to use a For Loop in Flowgorithm • Change For Loop counters to change the output of the song • Explain what a variable is and how it works, giving appropriate examples • Use a range of variables in algorithms • Explain the different data types and give appropriate examples • Complete Algorithm Challenge according to target grade • Make changes to simple programs to display words on the screen, perform calculations and store data in variables • Create new programs based on the programs written as a class • Use casting independently to change from one data type to another • Add useful and extensive annotation to a program • Create, amend and justify programs using selection and operators • Create, amend and justify programs using lists and iteration • Create, amend and justify programs using while loops, validation and verification |

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| Links to GCSE | 1.3.1 Networks and topologies 1.3.2 Wired and wireless networks, protocols and layers | 2.1.2 Identifying the inputs, processes and outputs for a problem 2.1.2 Using flowcharts 2.1.3 Using pseudocode 2.1.4 Trace tables 2.2.1 Variables, constants, assignments, inputs, outputs, operators, sequence, selection, iteration 2.2.2 Data types and casting 2.2.3 Arrays |
| Homework – Knowledge organiser created and on website? | Yes H1 Fill the Gaps / Construct an Answer H2 How Data Travels Across the Internet H3 Complete the Writing Assessment from class H4 Fill the Gaps / Correct the Teacher H5 Question Cards for revision games | Yes H6 Grandad’s Greenhouse H7 Iteration H8 Question Cards for revision games H9 Python Programming Challenges H10 Learning Lists & Incredible Iteration |
| Responsive Teaching – how do we assess and feed back to students in this subject (formative and summative) | Two weekly assessment of classwork to identify and correct misconceptions using Feedforward Book Look Record Sheet. Homework reviews to inform planning of next lesson. Lesson 6 Writing Assessment to highlight areas for improvement and inform future planning. Test in lesson 12. | Two weekly assessment of classwork to identify and correct misconceptions using Feedforward Book Look Record Sheet. Homework reviews to inform planning of next lesson. Ongoing class review of programming to highlight areas for improvement and inform future planning. Test in lesson 12. |
| Termly assessment content – what content will be covered in your termly assessments (the two-week assessment window)? | End of Unit Test in Lesson 12 – all of the above. | End of Unit Test in Lesson 12 – all of the above. |