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| **Unit 8.1** | **Road Map** | | | | | |
| In this unit you will investigate water on the land. The aims are as follows:  **LG1**: Knowledge  **LG2**: Application  **LG3**: Skills | Assessment Grades |  |  | | | |
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| **Themes** | **Learning Goals/Outcomes/Content** | | |  |  |  |
| What is Python used for?  What is code?  What are programming constructs?  What is a syntax error?  What is a variable?  What are comments used for?  How do I run a program? | **LG1:** Know what **Python** is and some of the applications it is used for.  **LG1:** Know the three basic programming constructs.  **LG1:** Understand what a **syntax error** is and how to interpret an error message.  **LG1:** Know the rules for **variable names** and use variables in a program  **LG1:** Understand the use and value of using **comments**  **LG2 & LG3:** Write, run and save a simple Python program in Interactive mode using the input and print functions. | | |  |  |  |
| What is a data type?  When should different data types be used?  What are assignment statements?  How do I write a program with a calculation and apply the BIDMAS rule? | **LG1:** Understand the importance of using **correct data** types: string, integer or float  **LG2**: Use the **int**, **float** and **round** functions  **LG1:** Understand how to use assignment statements correctly  **LG2:** Perform arithmetic using the BIDMAS rule  **LG2 & LG3:** Write a program involving input, calculation and output | | |  |  |  |
| What are selection statements?  What are comparison operators?  Why should I indent my code? | **LG1:** Understand and use selection statements **if**, **else** and **elif** in a program.  **LG1 and LG2:** Know and learn how to use different comparison operators.  **LG2:** Use **indentation** correctly to define a block of code  **LG3:** Write a program which includes selection. | | |  |  |  |
| What are loops in a computer program?  How do I add selection to my loop?  How can I generate a random number in a computer program? | **LG1:** Understand the difference between a **while** loop and a **for** loop.  **LG1:** Know how to use an **if** statement within a while loop  **LG1:** Learn how to incorporate a function to generate a random number.  **LG1 and LG2:** Learn how to plan a program and then plan a program to solve a problem.  **LG3:** Write a program which includes a loop and selection statement. | | |  |  |  |
| What is pseudocode?  What different types of errors are there?  How can I debug a computer program? | **LG1:** Learn to write algorithms in **pseudocode**.  **LG2:** Review the difference between **syntax errors, run-time errors and logic errors**.  **LG1:** Learn techniques for **debugging** programs. | | |  |  |  |
| What is a linear search?  What is a binary search? | **LG1:** Understand the difference between a **linear search** and a **binary search**. | | |  |  |  |
| **Practical Assessment** | **LG3:** Develop and ability to plan, write, test and evaluate a program. | | |  |  |  |
| **Written Assessment** |  | | |  |  |  |

**Links:**

**LG1:** Being able to understand the three basic programming constructs enable you to understand, plan and write future computer programs.

**LG2:** Application of your knowledge is important as it allows you to feel confident in writing a concise and well-structured computer program.

**LG3:** Being able to plan, write and de-bug computer programs will assist your studies if you choose to take GCSE computer science.