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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.