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| **Unit 2** | **2.1 Algorithms 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** |  |  |  |
| AbstractionDecompositionAlgorithmic thinkingStructure diagrams | **LG1:** To understand the principles of computational thinking.**LG2:** To apply knowledge ofabstraction, decomposition and algorithmic thinking to solve a problem.**LG3:** Tobreak down a complex problem into smaller problems so the complex problem is easier to solve. |  |  |  |
| FlowchartsInputs OutputsProcessesSubprogramStructured flowchart | **LG1:** To identify different symbols used to create a flowchart and understand what they represent.**LG2 & LG3:** Be able to produce an algorithm using a flowchart. |  |  |  |
| PseudocodeHigh-level languagePython | **LG1:** To understand what pseudocode is.**LG2 & LG3:** Be able to produce an algorithm using pseudocode. |  |  |  |
| Trace tables Common errors | **LG1:** Understand what a trace table is used for.**LG2 & LG3:** Be able to use a trace table to test an algorithm. |  |  |  |
| Binary search | **LG1:** To understand the steps of a binary search.**LG2 & LG3:** Apply a binary search to a set of data. |  |  |  |
| Linear search | **LG1:** To understand the steps of a linear search.**LG2 & LG3:** Apply a linear search to a set of data. |  |  |  |
| Bubble sort | **LG1:** To understand the steps of a bubble sort.**LG2 & LG3:** Apply a bubble sort to a set of data. |  |  |  |
| Merge sort | **LG1:** To understand the steps of a merge sort.**LG2 & LG3:** Apply a merge sort to a set of data. |  |  |  |
| Insertion sort | **LG1:** To understand the steps of an insertion sort.**LG2 & LG3:** Apply an insertion sort to a set of data. |  |  |  |

**Links:**

**LG1:** Algorithms are used to support 2.2 programming fundamentals, 2.3 producing robust programs and any scenario where you are required to write a list of instructions.

**LG2:** Application of your understanding of an algorithm is important so that you can write an algorithm to design a computer program.

**LG3:** Being able to write an algorithm is important to design a computer program.