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| **Unit 1.2** | **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 RAM, ROM, virtual memory and flash?What is the difference between RAM and ROM? | **LG1:** Understand the difference between RAM and ROM.**LG1:** Identify the need for virtual memory.**LG1**: Know what flash memory is.**LG2:** Apply knowledge of memory and be able to explain the different types of memory. |  |  |  |
| What is secondary storage?What is the purpose of secondary storage?What are the common characteristics of secondary storage? | **LG1:** Identify the need for and purpose of secondary storage.**LG1:** Know the common types of storage device.**LG1:** Understand the common characteristics of different types of storage device.**LG2:** Be able to recommend a storage device for a situation |  |  |  |
| UnitsBinaryDenary | **LG1:** Define the units bit, nibble, byte, kilobyte, megabyte, gigabyte, terabyte, petabyte.**LG1:** Understand why data needs to be converted into a binary format to be processed by a computer.**LG1 and 3:** Learn how to convert positive denary whole numbers (0-255) into 8 bit binary numbers and vice versa.**LG2:** To apply knowledge of how to convert binary numbers into denary numbers and vice versa. |  |  |  |
| HexadecimalBinaryDenary | **LG1 and LG3:** Learn how to convert positive denary whole numbers (0–255) into 2 digit hexadecimal numbers and vice versa.**LG1 and LG3:** Learn how to convert from binary to hexadecimal equivalents and vice versa.**LG2:** To apply knowledge of how to convert hexadecimal into binary and denary numbers and vice versa. |  |  |  |
| Binary additionOverflow | **LG1** **and 3:** Learn how to add two binary numbers together.**LG1:** Understand what overflow is and how the CPU handles overflow.**LG2:** To apply knowledge of how to convert hexadecimal into binary and denary numbers and vice versa. |  |  |  |
| Binary shiftMultiply - leftDivide - right | **LG1:** Understand what a binary shift is.**LG2:** To apply knowledge of a binary shift by being able to identify if binary number has been multiplied or divided. |  |  |  |
| CharacterCharacter setASCIIExtended ASCIIUnicode | **LG1:** Identify the use of binary code to represent characters**LG1:** Understand the term ‘character set’**LG2:** Explain the relationship between the number of bits per character in a character set and the number of characters which can be represented (for example ASCII, extended ASCII and Unicode) |  |  |  |
| Image representationBinaryMetatdataColour depthResolution | **LG1:** Know how an image is represented as a series of pixels represented in binary**LG1:** Identify metadata included in the file**LG1:** Understand the effect of colour depth and resolution on the size of an image file.**LG2:** To apply knowledge of images in respect to how they are formed, represented, colour depth and resolution. |  |  |  |
| SoundSample sizeBit rateSampling frequency | **LG1:** Understand how sound can be sampled and stored in digital form.**LG1:** Know how sampling intervals and other factors affect the size of a sound file and the quality of its playback:* sample size
* bit rate
* sampling frequency

**LG2:** To apply knowledge of how sound can be sampled and stored in digital form. |  |  |  |
| CompressionLossy LosslessFile size | **LG1:** Understand the need for compression.**LG1:** Know different types of compression and the differences* lossy
* lossless

**LG2:** To apply knowledge of how compression is used for images, sounds and files. |  |  |  |
| Assessment | End of unit assessment LG1 – Knowledge of memory, storage and data representation.LG2 – Application of knowledge and skills.LG3 – Skills – Converting binary, denary, hexadecimal numbers. Binary addition and binary shifts. |  |  |  |