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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 | | |  |  |  |
| Units  Binary  Denary | **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. | | |  |  |  |
| Hexadecimal  Binary  Denary | **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 addition  Overflow | **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 shift  Multiply - left  Divide - 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. | | |  |  |  |
| Character  Character set  ASCII  Extended ASCII  Unicode | **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 representation  Binary  Metatdata  Colour depth  Resolution | **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. | | |  |  |  |
| Sound  Sample size  Bit rate  Sampling 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. | | |  |  |  |
| Compression  Lossy  Lossless  File 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. | | |  |  |  |