**Band S**

**YEAR 8   ICT LP 1**

**SUBJECT: Algorithms and Binary**

**Ysgol Uwchradd**
**Prestatyn**
**High School**

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**This half term : Skills, Knowledge and Understanding to be developed:**

- Students will learn how to represent algorithms using pseudo code and flowcharts.
- Students will learn about the Binary Numbering System and convert between denary and binary numbers.
- Students will understand how binary is used to represent data and text.
- Reference:https://www.bbc.co.uk/bitesize/guides/zpp49j6/revision/1
- DCF: 4.1 Problem solving and modelling

**Key Terms to be learned this half term:**

Algorithm, pseudocode, flowchart, iteration, condition, binary, denary, analogue, digital.

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| Lesson | Learning Objectives | Objective assessments | Homework |
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| **Lesson 1 Learning Objectives etc:** | • Introduction to Y8 ICT.<br>• Recap parts of a computer including input and output devices.<br>• Watch a BBC Click video on time travelhttps://www.bbc.co.uk/programmes/p08nwkw4 | Fill in the banks of computer devices.<br>Sort the devices into the correct column.<br>Write about a time machine. | |
| **Lessons 2 & 3 Learning Objectives etc:** | • What is an algorithm?<br>• Use pseudocode to describe algorithms<br>• What is iteration?<br>• Use iteration to improve the efficiency of an algorithm.<br>DCF: 4.1 Problem solving and modelling: identify different parts of a process | Write a simple algorithm to describe an everyday task.<br>Use pseudocode to perform a task using Stuart the Minion. Use iteration on an algorithm.<br>Change the conditions in an algorithm and add further instructions. | **Homework lesson 3: LP1.1 – algorithm task** |
| **Lessons 4 & 5 Learning Objectives etc:** | • What is a flowchart?<br>• How can we show iteration and selection in a flowchart.<br>• What is binary?<br>• How is binary used to represent text and data.<br>DCF: 4.1 Problem solving and modelling: modify a given flowchart to change the variables of an algorithm. Predict process outcome after modifying inputs. | Describe the purpose of the given flowcharts. Make any changes as necessary.<br>Create an algorithm and flowchart Describe the difference between denary and binary.<br>Complete the missing word exercise. | **Homework lesson 5: LP1.2 – algorithm task** |
| **Lessons 6 & 7 Learning Objectives etc:** | • What is the ASCII code?<br>• How can binary code represent images and sound. | Identify binary used to represent letters.<br>Use binary to represent an image. | **Homework lesson 7: LP1.3 – binary task** |

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| **Lessons 8 & 9  Learning Objectives etc:**<br><br>• What is the binary numbering system?<br>• How can we convert denary numbers to binary?<br>• What terms are used to describe units of storage in computers? | **Objective assessments:**<br><br>Convert denary numbers to binary.<br>Explain the terms and processes learnt for binary.<br>Convert binary to denary. | **Homework lesson 9: LP1.4 – denary to binary conversion task** |
| **Lessons 10 & 11  Learning Objectives etc:**<br><br>• How can we represent colour on an image?<br>• How does colour depth effect image quality? | **Objective assessments:**<br><br>Complete the missing word exercise.<br>Identify image resolution sizes.<br>Create images using binary | **Homework lesson 11: LP1.5 – binary to denary conversion task** |
| **Lessons 12 & 13  Learning Objectives etc:**<br><br>• Consolidate knowledge of topics covered | **Objective assessments:**<br><br>Create own image with binary code.<br>Describe the terms analogue and digital.<br>Complete missing word exercises.<br>Decode binary messages | |
| **Lesson 14 Learning Objectives etc:**<br><br>• DIRT lesson – complete all tasks. | | |