Home-School Learning Collaboration – Computing

Topics in this cycle: Data Representation	**Taught:** Spring 1	**Year Group: 9**

Key knowledge/concepts to be learnt ('Tell me about….')	**Websites/blogs/YouTube links and further reading to deepen and consolidate learning**
• How do I convert Binary Numbers? Identify the unit measurements used for storing data. Explain why computers use Binary. Demonstrate conversions between Binary and Denary numbers. • How do I add and subtract Binary numbers? Explain the rules associated with Binary addition and subtraction. Explain what an overflow error is. Demonstrate how to add & subtract two binary numbers. • What is a character set? Explain the difference between the ASCII and Unicode character sets. Demonstrate their understanding of the ASCII character set by writing a message in binary using the correct assigned binary numbers for each character. • How are images represented on a computer? Explain why higher resolution images have a bigger file size. Explain what happens to an image when the colour depth rises. Demonstrate how to calculate the file size of an image. • What Is compression and why is it used? Explain why we use compression. Explain the difference between lossy & lossless compression. Demonstrate what Run Length Encoding does to a piece of data.	**Notes/Information** How Computers See The World How Computers See The World | BBC Bitesize | KS3 | Data Representation Converting From Binary to Denary Converting From Binary to Denary | BBC Bitesize | KS3 | Data Representation Converting From Denary to Binary Converting From Denary to Binary | BBC Bitesize | KS3 | Data Representation Adding Binary Numbers Adding Binary | BBC Bitesize | KS3 | Data Representation Overflow Errors Overflow Errors | BBC Bitesize | KS3 | Data Representation Representing Images Representing Images | BBC Bitesize | KS3 | Data Representation Compression Compression | BBC Bitesize | KS3 | Data Representation

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Key Vocabulary and Definitions To Be Learn	
Binary	a number system that uses only the digits 0 and 1 to represent data
Denary	a number system that uses only the digits 0 to 9 to represent data
Hexadecimal	a number system that uses 16 symbols to represent numbers.
Overflow Error	Overflow occurs when the result of a calculation requires more bits - place values - than are in the available range.
Character Set	a collection of characters and their binary codes that a computer can recognise.
ASCII	ASCII stands for American Standard Code for Information Interchange, and is a code that allows computers to represent text
Unicode	a universal character set that assigns a unique numeric value to every character, regardless of the language, program, or platform
Pixel	a single dot of colour in a digital image or on a computer screen.
Colour Depth	the number of bits used to represent the colour of a pixel in an image
Resolution	the number of pixels that make up an image or the number of pixels that can be displayed on a screen
Compression	a technique that reduces the size of a file while retaining most of its original information
Lossy	a technique that reduces the size of a digital file by removing some of its data
Lossless	data compression technique that reduces file size without losing any significant information or quality

What Will The Assessment Look Like?

Extended writing – Image representation and what factors influence the file size of an image including working out the file size of an image.

End of Unit test: 35 minutes/25 marks

- Short answer questions
- Extended writing
- 3 marks for SPAG

Family Learning Opportunities

Work through the different levels with your family on this Binary Conversion game and see who can get the highest score! https://learningnetwork.cisco.com/s/binary-game

Devise a quiz on the different ways data is represented by a computer and test your family members.