REPRESENTATIONS GOING AUDIO VISUAL

Computers represent all data, including numbers, letters, symbols, images, videos and sounds using binary numbers. All binary numbers are made up of the digits) and 1.

0s and 1s are called binary digits, or bits. All characters are represented using sequences of bits.

Computers only use the two binary digits 0 and 1 because all computers are built out of electrical switched which can only be on (1) or off (0).

When computers store **bitmap or raster** images they are broken down into individual elements called **pixels** and each pixel is represented by a binary number which the computer can interpret to determine what colour to display.

The **more pixels** you have in an image the **higher the resolution is**. This allows you to capture more detail and have **higher quality** but it also makes the **file larger** which means you need more storage space, **more processing time** and **more time for transmission** (e.g. over the internet)

Image manipulation is when we change or edit an image in some way. No matter what type of manipulation we use, the computer has to perform arithmetic operations on the digits that store our image in order for our changes to be displayed.

All sound is created by a variation in air pressure. Microphones convert those variations in air pressure into variations in electric voltage. Digital devices represent these waveforms as sequences of bits this is called digitising.

Key Words	
Binary number	A number system that contains two symbols, 0 and 1. Also known as base 2
Pixel	The elements of a digital image are called pixels (**pict**ure **el**ements)
Bit (b)	The smallest unit of data. 0 or 1.
Resolution	The number of pixels in a digital image.
megapixels	1 Megapixel is a million individual pixels.
Colour depth	The fixed number of binary digits used to represent each pixel's colour. E.g. in a black and white image we would only need to use 0 for white and 1 for black so we have a colour depth of 1 bit.
Bitmaps or raster images	Digital images that are formed using a binary representation of each pixel's colour.
RGB colour	One way of representing colour is to use a sequence of 24 bits, which are divided into three separate 8-bit components, each representing the quantity of red, green, and blue in the combination .
Representation size	How many bits are required to represent an image or sound
Digitising	Converting analogue data to digital data.
Sampling rate	The number of samples taken per second.
Sample Size	The number of bits recorded per sample.

Sound Representation Size = Sampling rate x sample size x duration x channels

Image Representation Size = Resolution (rows x columns) x Colour depth