



Data Representation: Bitmap Images



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Data Representation

Lesson objective:	Understand how computers store bitmap images.	
All will be able to: Explain how computers use pixels and binary to store images.	Most will be able to: Explain how files are saved in bitmaps and how size and colour depth can affect the file size of an image. Explain the different types of file compression that are available.	Some will be able to: Identify factors that will affect the quality and file size of an image.

Key Facts about the lessons

Key Vocabulary: <ul style="list-style-type: none"> • Bitmap • Pixel • File Size • Resolution • Meta data • Compression • Lossy • Lossless 	Key Questions: <ol style="list-style-type: none"> 1. What is a pixel? 2. What can affect the file size and quality of an image? 3. How do lossy and lossless compressions work?
Method of Assessment: Observation of working practices Classroom Activity Questioning pupils	PLTS: Independent Enquiry Creative Thinking Reflective Learning Effective Participation

Starter

Time	Description	Resources
5 mins	Give out the Starter worksheet. They fill in the coordinates on the grid to create an image.	Bitmap Images.ppt Slides 1 – 2 Starter.doc

Main Activities

Time	Description	Resources
5 mins	Explain the objectives and give out the Homework task so that they have enough time to write it into their planners.	Slide 3 – 4 Homework.doc
30 mins	Explain what a pixel is and then ask them to copy the Bitmap Images spreadsheet into their own work area and then open it up. Go through the slides with the pupils following the instruction to create an 8 x 8 pixel image and a 16 x 16 pixel image. Explain how file size is worked out and introduce the idea of colour depth. They create their own colour image by using the numbers 0 – 3 in a grid.	Slides 5 - 13 Bitmap_Images.xls
10 mins	Explain the ideas of File Size, Resolution and Metadata by going through the slides and explain the different methods of file compression including lossy and lossless.	Slides 14 - 29

Plenary

Time	Description	Resources
10 mins	They find in image from the internet. They use Paint to save it twice, one as a lossy and one as a lossless format. They have a look at the file size and quality of the images to see the difference.	Slide 30