



Activity type	classroom <input checked="" type="checkbox"/> homework <input checked="" type="checkbox"/> independent learning <input type="checkbox"/> other <input type="checkbox"/>		
Activity objectives(s)	Understand the effect of colour depth on file size Understand the effect of compression on file size Understand the difference between bit map and vector image formats		
Activity resources(s)	Bitmap and vector graphics image editing software		
Delivery mode	teacher led <input checked="" type="checkbox"/> student led <input type="checkbox"/>	Collaboration type	individual <input checked="" type="checkbox"/> pairs <input checked="" type="checkbox"/> groups <input type="checkbox"/>
Task description	Students create a single colour bit map image and save it using a variety of bit depths, comparing the resulting file size. Students create a single colour bit map image and save it using a variety of image compression formats, comparing the resulting file size. Students create two similar images using bit map and vector graphics software, comparing the resulting file size. Students change the complexity of the their bit map and vector graphics images and compare the resulting file size. Follow up tasks: Questions in Unit1 Topic 2.6.1 Calculating Memory requirements. Example: in Unit 1 Topic 2.6.3 Calculating bit mapped graphic file sizes. Set some homework questions calculating the file size for a selection of bit mapped graphic images of different resolution, area and colour depth.		



SCHOLAR Lesson Outline

Differentiation (Alternative use)	This lesson could be used with both National 5 and Higher
Hints & Tips	<p>Ask students to create a simple image such as an overlapping rectangle and circle using a bit mapped graphic package. They should save the image, then create the same image as far as is possible using a vector graphics package. Ask them to compare file sizes and explain the difference.</p> <p>Ask then to make each image substantially more complex and to save them with different names. If they compare the file sizes of the new images, the bit mapped one will not have changed but the vector graphics one will. Ask them to explain why this is.</p> <p>Ask the students to use a bit map image editor to create an image which is filled with a single colour. They should save the image, noting the image dimensions and bit depth.</p> <p>Ask them to save the same image using different bit depths and to compare the file sizes.</p> <p>Ask them to save the image using different compression formats (GIF, JPG, PNG) and to compare the file sizes.</p> <p>Ask them to explain the differences in each case.</p> <p>Does making the image more complex affect the file size of the compressed image?</p>
Notes	<p>SCHOLAR links: Unit 1 Topic 2.6 Unit 2 Topics 3.3, 3.5</p> <p>Web links: There are a number of videos on the web showing the effect of continuously saving and re-saving an image using JPG (lossy) compression.</p> <p>http://www.semifluid.com/2013/08/05/effect-of-repeated-jpeg-compression-on-image-quality-and-content/</p>