

### Introduction

This can be a problem area because of misunderstandings about what is meant by image size.

So let us start by defining image size. We have a possible case for confusion since a digital image has 2 different types of dimensions and they are interlinked.

A) First we have the physical dimensions such as inches or centimetres.

B) Second we have digital dimensions. These are the small pictures elements or pixels that contain the colour information.

### Physical Dimensions

These are what we use everyday to say how big something is. If we make a print from a computer we can measure the size in (say) inches as perhaps 6x4.

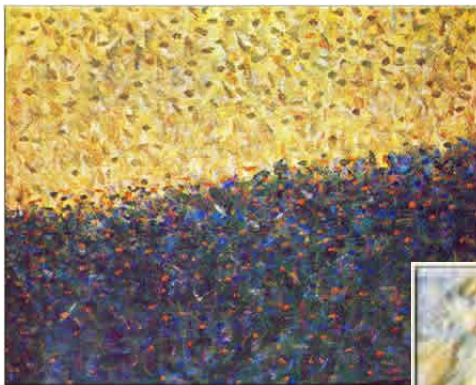
If we look at this image on the computer screen we can easily alter its apparent size with the Zoom tool. So we can make it much smaller than 6x4 on screen. However, if we were to print this now it would still print at 6x4 inches because we have only zoomed out and not changed the image file.

### Digital Dimensions

Art lovers will know of Seurat and his Pointillist paintings.

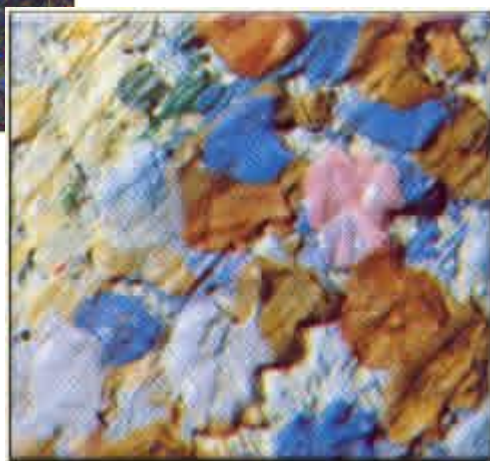
Well digital images are the same! The only differences are the shape of the points and the much larger number of points (or pixels) that are used.

*Sunday Afternoon on the Island of La Grande Jatte.*



Detail above the dog.

A micro detail showing the paint dots.



## A detail of The Circus.



The digital equivalent from a photo taken in Mulcheny Abbey.

Seurat's paintings are huge and when looked at from a distance look almost normal in the smoothness of tones. Get closer and you can see the points. This is the same for a digital image. You can check this by zooming in more and more as you can see in the example above.

The reason for needing more megapixels (millions of picture elements) in a camera is to hide the points and get smoother tones. Try taking the same scene with your digital camera set to its highest and lowest setting. You will be able to see the pixels at less zoom on the lower setting.

## Resolution



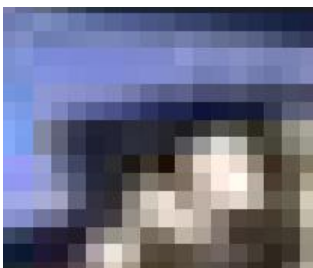
No we are not talking of those made on New Year's Day! We are thinking of the ability of the eye to separate 2 small close points or pixels. If these points are close enough they appear as one point.

If a photo is printed with the points or pixels too big then the print will appear grainy.

As a rule of thumb it has been found that providing the printing is done at 150 dots per inch or more (up to a sensible 300 dpi) then the picture will be smooth.

Taking the happy medium of 200 dpi means we will have 200 pixels for each inch of print. So we will need 2000 for a 10 inch print. And for our 6x4 print we will need 1200 x 800 pixels.

Resolution thus limits us to a maximum print size for any given megapixel size that we set the camera to. This is the Crux to understanding image size in the digital world.



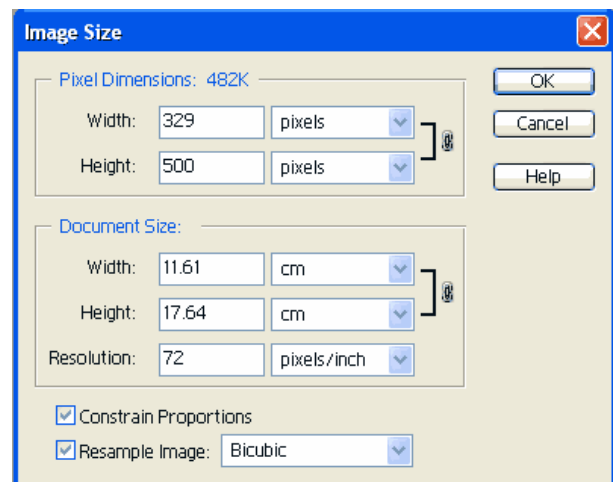
## Image Size Box

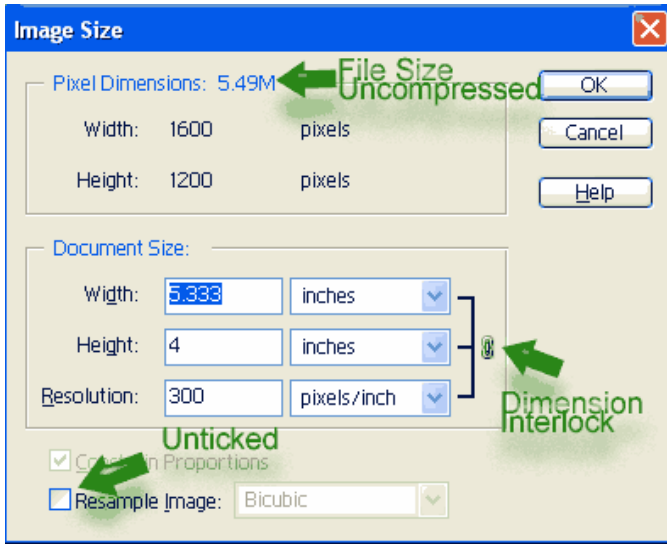
This box is found by clicking on *Image > Resize > Image Size*.

Note the box is in 3 sections.

- 1) Top one defines the digital dimensions.
- 2) Middle defines the physical dimensions.
- 3) Bottom allows you to alter these dimensions independently.

There is also information at the very top telling you the file size and if altered the new file size too. This size is prior to any compression used when saving.





The first step is to remove the tick from the Resample Image box as seen on the left. Now the top section is 'greyed out' and you cannot change this section.

In the middle section any of the 6 white boxes can be altered. Notice the Dimension Interlock symbol that shows that if you alter the Width then the other 2 dimensions alter in sympathy.

If we increase the Width, the Height also increases BUT the Resolution reduces. So you can alter the Width until the Resolution gets to about 150 pixels per inch. Or you can change the Resolution directly and the Width and Height change accordingly. When you resize an image without resampling you make the image larger or smaller without altering the File Size. It is always best to keep the file size unchanged if possible because if altered then pixels have to be made or destroyed.

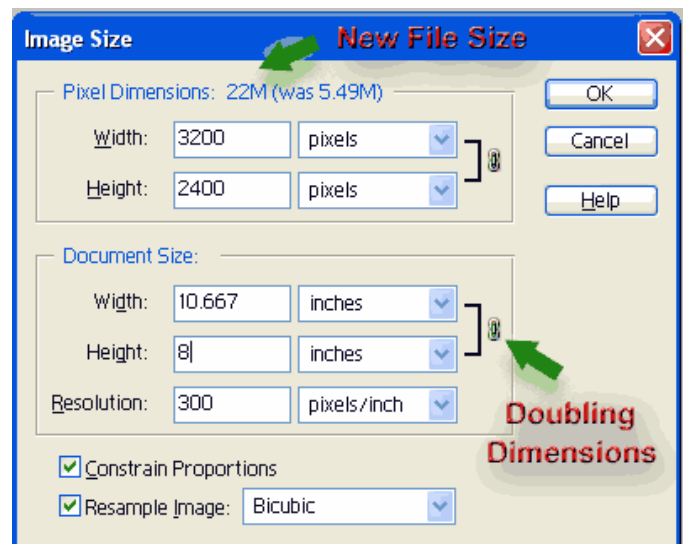
When the Resample Image box is ticked the relationship alters.

You can see this on the picture left. Now the Interlocks do not include the Resolution but changes to any of the four items linked will change the others too. This time the File Size will alter. Because the Constrain Proportions box is ticked the ratio of Width to Height remain the same.

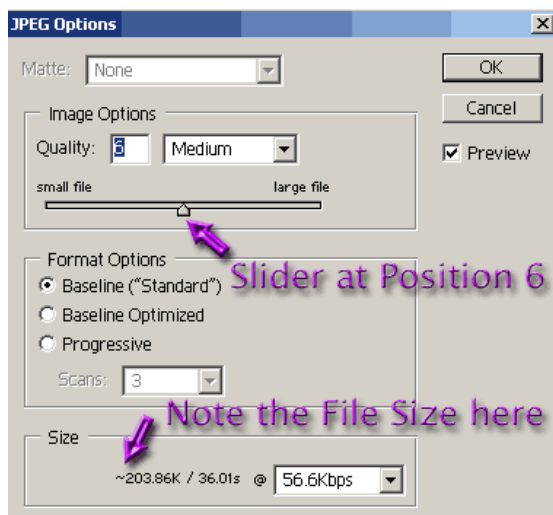
Only Un-tick this last box if you wish to distort your image deliberately.

If you want to increase the image file size ensure that Bicubic is selected as shown. [Note for PSE3, 4 & 5 there are 2 extra Bicubic resampling and these may well give superior results from the standard Bicubic].

The other options [nearest neighbour and bi-linear] available will not work well with photographs and are intended for use with graphic images that do not concern us in this course. To select Bicubic the Resample Image box must be selected.



## Digital Image Projection.



In our club we currently use the standard size for images to be projected as 1400x1050 pixels. The Resolution can be any setting.

Having changed the size you must then save the image with a new name. Save the name in the following way: **Your Name\_ Image Name\_B.jpg**.

When you progress to the Advanced section then use **A** instead of B. For example:

**Romsey Abbey In The Rain\_Peter Read\_A**

When saving in JPG it is best to use a quality of about 6 using the sliding scale. This will result in a file size of 200 to 300kb and should not show banded skies.

**The PDI Checklist should be used to ensure correct submissions**