Image size, resolution, printing and screens

Pixels and Megapixels

A pixel is a single picture element, which is the smallest element that your photo can be divided into. It contains a single colour

A Megapixel is 1 million pixels

If your camera is a 14.5 Megapixels camera, it means the sensor will record approximately 14.5 million pixels.

The number of pixels is the number in the image and does not imply a certain size of image

If you zoom in on an image in your photo editing software, it will eventually show blocks of single colours, each of which is a pixel.

The maximum dimension for our club's internal PDI competitions is 1024 wide x 768 tall. So that is 786,432 pixels.

Printing

Your printer will require a certain density of pixels to render a print that looks good with smooth colour transitions, smooth curves and lines

The denisty of pixels is stated in pixels per inch or ppi.

If you have insufficient pixels per inch your print will start to look jagged or "pixelated"

Printers typically print in the range 150 to 300 dpi (higher than 300 dpi cannot be detected by the human eye.)

But individual printers will specify the minimum and optimal ppi.

If you want to print a high quality print from a 300 ppi image then you will need a digital image sized as follows:

Print size	Number of pixels		Total pixels	Megapixels
	Dimension 1	Dimension 2		
6 x 4 inch	1,800	1,200	2,160,000	2.16
10 x 8 inch	3,000	2,400	7,200,000	7.20
11.7 x 8.3 inch A4	3,510	2,490	8,739,900	8.74
16.5 x 11.7 inch A3	4,950	3,510	17,374,500	17.37

The above numbers of pixels are, of course, the final sizes after cropping etc., not those of the original image.

Use the image size feature in your software to resize the correct size and ppi, remembering to keep the aspect ratio locked

Screens

You need far fewer pixels to obtain a reasonable quality of image on a screen than when printed.

A typical monitir might be 1920 x 1080 pixels in size (2.1Megapixels)

That is similar to the number of pixels in a 6 x 4 inch print, yet it displays perfectly acceptably on a 23 inch diagonal monitor (20 x 11.3 inch).

So the image printed at 300 ppi displays adequately on screen at a third of the density (resolution)