

# Web Graphics

## Technical tutorial

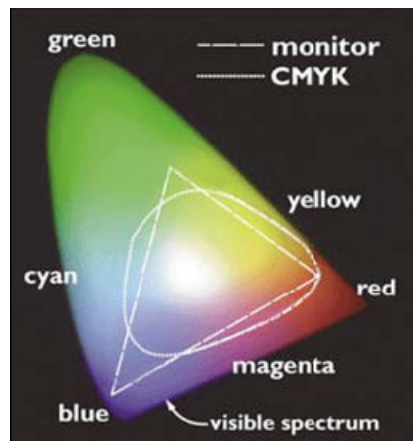
### Web Graphics

#### Colour Spaces

Photoshop has a number of different colour spaces you can choose to work in. By colour spaces, it means that we are working in a particular mode of colour to create and edit our image. The two main colour spaces are RGB and CMYK.

##### RGB (red green blue)

These are colours described by light, or displayed on a screen. This is the colour mode that is appropriate for creating images that are going to be displayed on a computer monitor (e.g. website graphics). If you project red, green and blue light onto a surface, the spot where they all overlap equally will be white. RGB is known as the additive colour space, as the presence of all colour is white. In RGB mode, an intensity value is assigned to each pixel ranging from 0 (black) to 255 (white). For example, a bright red colour might have an R value of 246, a G value of 20, and a B value of 50. When the values of all three components are equal, the result is a neutral grey. When the value of all components is 255, the result is pure white; when the value of all components is 0, you have black.



##### CMYK (cyan magenta yellow black)

These are printed colours, the colours of process inks. The K stands for black because of the possible confusion with blue. This colour mode is appropriate for creating images that are going to be printed.

If you overlap cyan magenta and yellow equally, you will produce black, because the inks absorb light. Hence, CMYK is known as the subtractive colour space, as the absence of all colour is black.

In CMYK mode, each pixel is assigned a percentage value for each of the process inks. The lightest colours are assigned small percentages of process ink colours, and the darker colours are given higher percentages. For example a bright red might contain 2% cyan, 93% magenta, 90% yellow, and 0% black. In CMYK images, pure white is generated, when all four components have values of 0%.

See more about colour spaces at: [http://dx.sheridan.com/advisor/cmyk\\_color.html](http://dx.sheridan.com/advisor/cmyk_color.html)

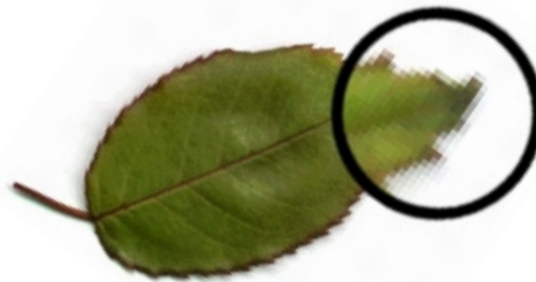
When creating images with digital cameras and scanners, your image is saved in RGB format. This is because they are using light to capture the colour information. If you want to create an image to print from a photograph or scanned document, it is best to convert the image from the RGB colour space to the CMYK colour space before you begin to alter and edit it. This is because process inks do not always translate the RGB colours correctly, as some RGB colours exist outside the CMYK range. Photoshop will do its best to match the colours correctly, but this will not always happen.

## Bitmaps and Vectors

There are 2 types of 2D graphic images: bitmaps and object-oriented. Most programs work with graphic file formats as bitmaps, but there are particular programmes that work with object-oriented. Photoshop creates bitmap images.

### Bitmaps

Bitmaps are also known as raster images. They are comprised of pixels in a grid. Pixels are small squares of tones that are placed together to make up an image. Each pixel or bit in the image contains information about the colour to be displayed. If you zoom in on a bitmap image, these pixels become visible. When an image has a high **resolution**, the pixels are smaller and there is more detail in the picture, and therefore you can output to the highest quality at any scale. Photoshop is a pixel based software program which means it rasterizes its images into bitmaps.



### Object-oriented

Object-oriented or vector images work very differently to bitmaps. They are images made up of objects defined by mathematical equations rather than a grid of different coloured pixels. The objects in vector images are made up of a number of properties, including colour, fill and outline. The main reason for using vector is that it is **resolution independent**, meaning that you can output to the highest quality at any scale. When you zoom in on any part of a vector image, there is no loss of quality and the edges of your picture stay crisp at any magnification.

The programs that use vector graphics are Adobe Illustrator, Fireworks and Flash. Flash has the ability to vectorize bitmap images to create workable paths from pixel images. You can also import vector images into Photoshop, and it will automatically transfer the information into pixels. This process of changing vector graphics to bitmap images is called rasterizing.



# Resolution

Resolution refers to how well text or an image is resolved through your eyes to your brain. Photoshop measures the resolution of an image in pixels per inch (ppi). The more pixels per inch in an image, the more data can be stored in the image.

When we talk about resolution, we are discussing numerous properties which determine size and quality:

## Pixel dimensions

These are the dimensions of an on-screen image measured in pixels i.e. the number of pixels along the height and width of a bitmap image.

## Image resolution

This is the number of pixels displayed per unit of printed length in an image. When we talk about unit, we mean a measuring length such as inch, cm, or mm. The image resolution measurement is referred to as dpi (dots per inch) or sometimes called ppi (pixels per inch). Broadly speaking, the higher the dpi, the higher quality your image output will be.

## Monitor resolution

This is the number of pixels or dots displayed per unit of length on a monitor, again measured in dpi. Mostly we are working with 72 dpi monitors, (although now monitors can be 96 dpi or greater) which is why web imagery is created at this resolution. This fixed monitor resolution is the reason why imagery is a different size on screen than on the printed page. If an image has a higher resolution than the monitor can display, it will appear much larger on screen than it will in print.

# Sourcing Imagery for your Assignment

For those who would like to source their imagery from the web, please be aware of copyright issues before downloading. Read the copyright notice or the terms and conditions on the web page that you want to retrieve the image from. This should give you an indication on the use and copying of their page contents. For some examples, see these websites' copyright information:

<http://www.bigfoto.com/copyright.htm>

<http://www.freefoto.com/browse/99-11-0?ffid=99-11-0>

There are some web pages that provide images for free:

[www.freeimages.co.uk](http://www.freeimages.co.uk)

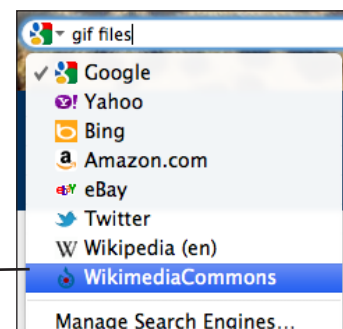
[www.bigfoto.com](http://www.bigfoto.com)

[www.freefoto.com](http://www.freefoto.com)

[www.specialweb.com/original](http://www.specialweb.com/original)

Also, don't forget to check out the websites that are connected with **Creative Commons**. The Fact Sheet is available in Unit Documents in MySCU.

**If you are using Firefox, a great way to source royalty free images and other forms of media is by adding the Wikimedia Commons search facility. Click on Manage Search Engines to add it.**



# Optimizing images for Web

When preparing graphics for web the main issues to be thinking about are file size and transmission of data. When you save your graphics your goal will be to compress your images enough that they download quickly on the Web while preserving their quality as much as possible.

## Image Size

The length of time it takes for an image to load into a webpage is related directly to its file size. The file size, in turn, is governed by the dimensions of the image in pixels and the amount and kind of compression you apply to the file.

When deciding on your page layout, which in turn will help in choosing dimensions for your images, keep in mind that most people view the web in a browser window that's either 800 x 600 pixels, or 1024 x 768 pixels.

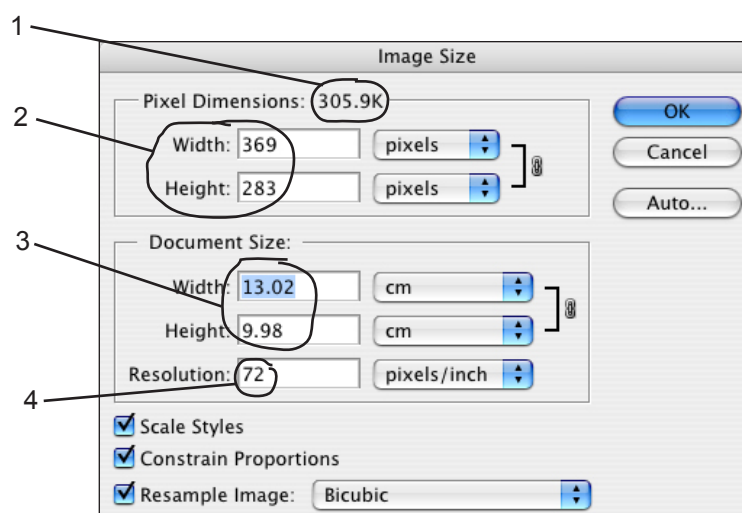
For a good discussion on this visit <http://www.hobo-web.co.uk/tips/25.htm>

The best way to find out information about an image is to go to the Image Size window –

Image > Image Size

This gives you information about the image such as:

- the size (1)
- the pixel dimensions (2)
- the document size, in this example in cm (3)
- the resolution in pixels per inch (ppi) (4)



If you want to change the size your image appears on the screen (and it is already 72ppi), you can do this through the Image Size window.

Make sure **Resample Image** and also **Constrain Proportions** (to preserve width-to-height ratio of the image) are both checked.

From the menu at the bottom of the dialogue box choose the **Bicubic Sharper (best for reduction)** resampling method, which will degrade the image the least.

In the Pixel Dimensions area, choose pixels from the menu (the default unit), then enter the exact Width and/or Height dimensions needed.

- Remember, because graphics for web are bitmapped images, they cannot be enlarged as they may lose image quality.
- If you have loaded your image into your page in Dreamweaver and you want to reduce it, you must reduce it in Photoshop. You can resize it in Dreamweaver when you are testing out your page layout (this will give you the image dimensions), but once you have determined your size, it is much better for file optimization to then resize it in Photoshop.

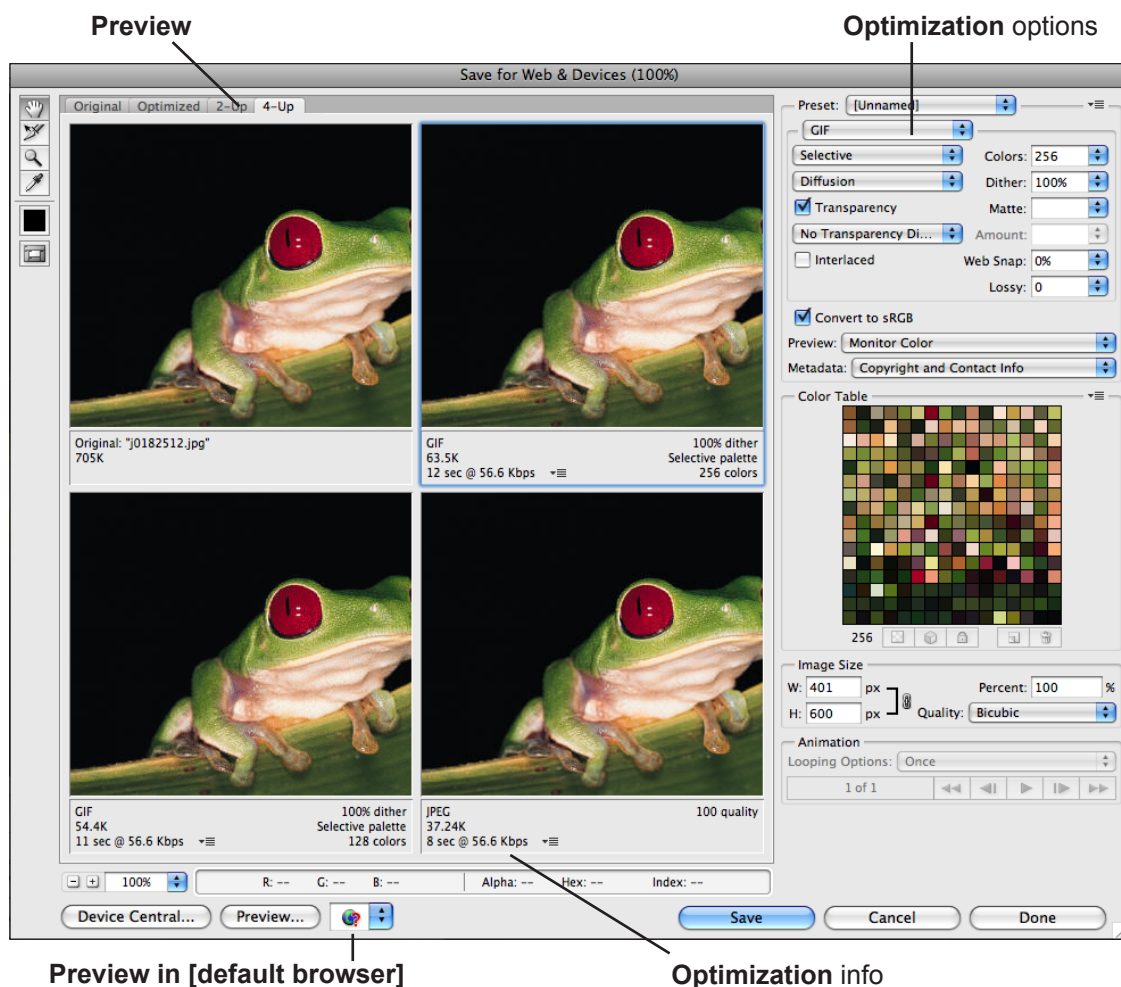
## Previewing optimized files

In the Save for Web & Devices dialogue box, you'll find everything you need to optimize graphics for the Web. Here, multiple previews let you test the effects of different optimization settings.

To use the Save for Web & Devices previews:

1. Choose File > **Save for Web & Devices**. The dialogue box opens.
2. Click the **4-Up** tab to see the original image and three previews simultaneously. Photoshop will use the current optimization options to generate the first preview (to the right of the original), then automatically generate the two other previews as variations on the current optimization settings. You can click any preview and change the optimization settings for just that preview.

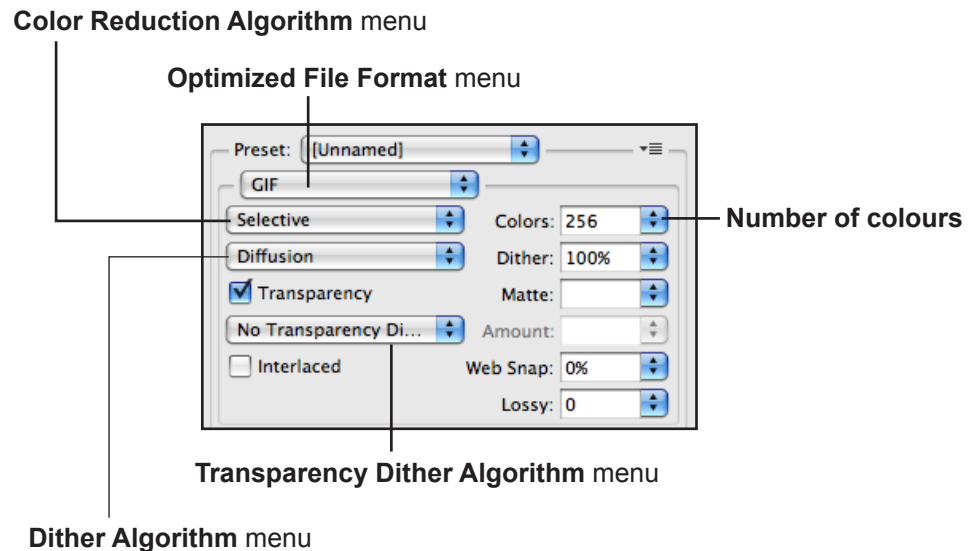
The **Save for Web & Devices** dialog box



Before optimising a file as a JPEG or GIF, it's best to change its resolution to 72ppi.

**To optimize a file in the GIF format:**

1. Save your file.
2. Choose File > **Save for Web & Devices** to open the Save for Web & Devices dialogue box.
3. Click the **2-Up** tab at the top of the dialogue box to display both the original and optimized previews of the image.



4. From the **Optimized File Format** menu, choose **GIF**
5. From the **Color Reduction Algorithm** menu, choose a method for reducing the number of colours in the image.

**Restrictive (Web)** generates a colour table by changing the image colours to those that are available on the standard Web-safe palette. (This palette contains only 216 colours that the Windows and Macintosh browser palettes have in common.) This choice produces the least number of colours and the smallest file size but not necessarily the best image quality.

**Perceptual** generates a colour table based on the colours currently in the document, with a bias toward how people actually perceive colours.

**Selective**, the default option, generates a colour table based on the colours currently in the image, with a bias toward preserving flat colours, Web-safe colours, and overall colour integrity.

**Adaptive** generates a colour table based on the part of the colour spectrum that represents the most colours in the document. This choice produces a slightly larger optimized file.

6. Choose the maximum number of colours to be generated in the colour table by choosing a preset from the menu. Lowering the number of colours reduces the file size.
7. Choose a dither method from the **Dither Algorithm** menu. Dithering is a process by



which Photoshop mixes dots of a few different colours to simulate a greater colour range. Although the Diffusion option produces a larger file size, it also yields the best compromise between quality and file size.

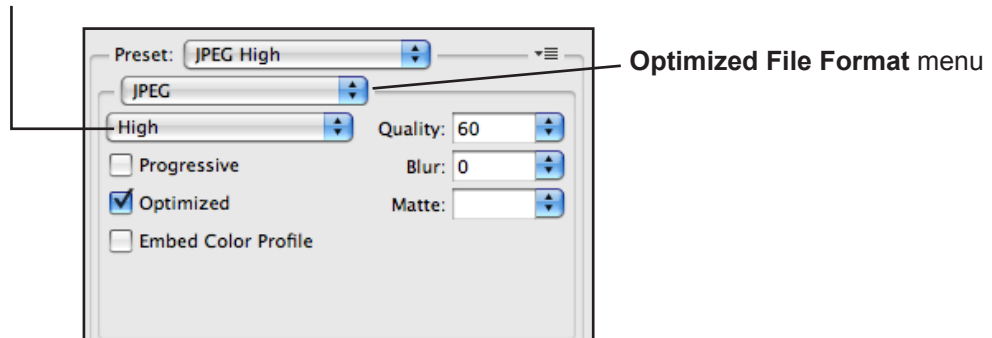
Also choose a Dither percentage. A higher dither value will produce more colour simulation and a larger file size.

8. Check Transparency to preserve fully transparent pixels in the image.
9. To control how semitransparent pixels along the edge of an image blend with the background of a Web page, choose a **Matte** option. Set the Matte colour to the colour of the Web page background. Any soft-edged effect (such as a drop shadow) on top of transparent areas will fill with the current Matte colour.
10. Click Save. The **Save Optimized As** dialogue box opens. Name your file, choose a location, then click Save.

#### To optimize an image in the JPEG format:

1. Save your file.
2. Choose File > **Save for Web & Devices** to open the Save for Web & Devices dialogue box.
3. Click the **2-Up** tab at the top of the dialogue box to display both the original and optimized previews of the image.

#### Compression Quality menu



4. From the **Optimized File Format** menu, choose **JPEG**.
5. Do either of the following:  
From the Compression Quality menu, choose a quality level for the optimized image,  
or  
Move the Quality slider to the desired compression level.  
The higher the compression quality, the higher the image quality – and the larger the file size.
6. Increase the Blur value to lessen the visibility of the JPEG artifacts that arise from the JPEG compression method, and to reduce the file size. Be careful not to overblur the image, though, or the details will be softened too much.

7. Choose a matte colour to be substituted for areas of transparency in the original image (if there is any). The JPEG format doesn't support transparency. To have the Matte colour simulate transparency, make it the same solid colour as the background of the Web page.
8. Leave the Progressive and ICC Profile options unchecked.
9. Click Save. The **Save Optimized As** dialogue box opens. Name your file, choose a location, then click Save.

## Basic housekeeping for your website project

Before you start your site it's important to build a file structure for storage and working with your files. You will need to create what Dreamweaver calls a **local root folder** (remember we did this in the Tables Tutorial when we defined our site).

Set up a folder that you will be saving all the files associated with your site to. Name it appropriately. In this folder you will save your HTML pages, you may create another folder that will contain say all the images for your site, another for your Flash files if you have any, another for video, another for your stylesheets and so on.

Once these are created and named **don't change the name or where they are situated**, particularly once you have started to create and add content to your pages. The HTML code tells Dreamweaver (and the browser) where these files are situated. If you change a name or move things around, the file path in the code will be wrong and Dreamweaver (and the browser) will not be able to find the link. This will result in broken links and images that do not load.

When you eventually upload your files to the server, you will mirror the file structure that is on your computer. This ensures that file paths are not lost or broken.

Local Files		Size
▼	Site - my websit...	
	about.html	4KB
	clients.html	2KB
	contact.html	3KB
▶	CSS	
	Flash	
▼	images	
	starfis...	84KB
	sydne...	108KB
	sydne...	88KB
	index.html	3KB
▶	nav images	
	portfolio.ht...	3KB
	services.html	3KB

**Remember that your first page in your website is always called 'index.html'**