Module 2: Sizing Images

Objectives:

At the completion of this module, you will be able to:

- Understand the purpose and particulars of image size and resolution.
- Understand and use the cropping tool to crop an image

Topics

Image Size and Resolution 2
Cropping.....7
Exercises.....10

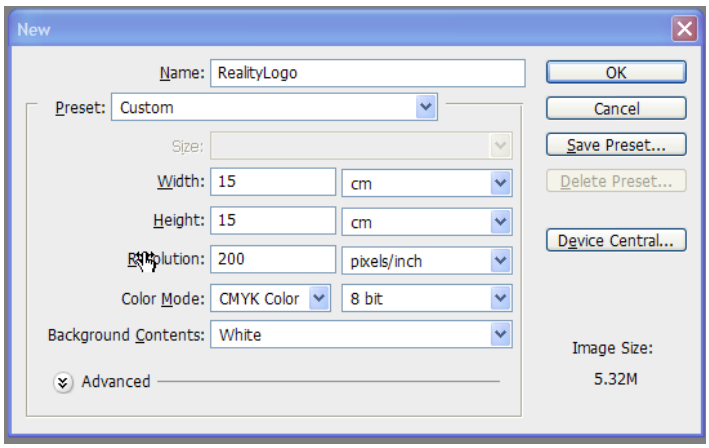
Image Size and Resolution

Image Size

Image size is a term for the linear measurement (width and height) of an image as it will be displayed. For example, if an image printed in a magazine has a width of 15 cm and a height of 12 cm, that is the image size.

To specify an image size for a new file in Photoshop:

You are designing a logo for a realty company. They want a logo that's roughly square in shape, that will appear on their business cards and letterhead, and possibly on realty signs. The maximum size it will appear is 15 centimetres square.



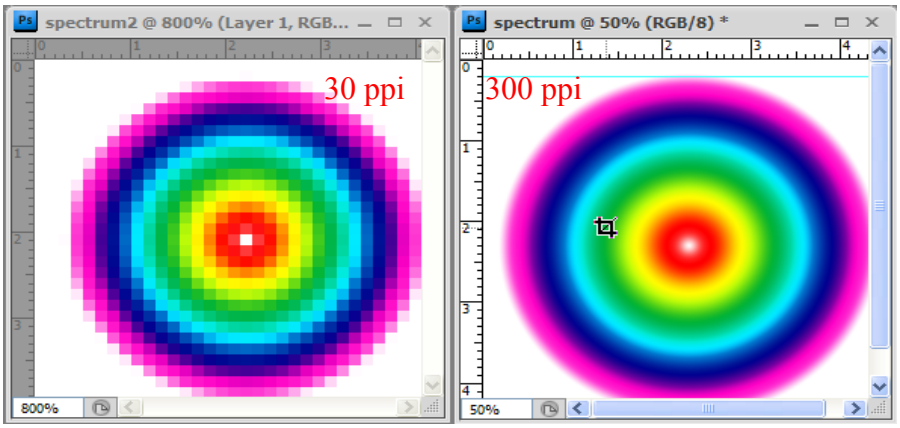
1. Choose **File/New** from the **Menu** bar. A window will open, asking for the dimensions of the image, and a list of measurement units is provided for you to choose from (shown below).
2. Choose **cm** as the unit of measurement in the dropdown menus, and enter **15** for the width and the height.
3. Set resolution to **200** pixels/inch.
4. Set mode to CMYK. Both resolution and color modes will be discussed later.
5. Name the file "**Realtylogo.psd**".
6. Note that based on these factors, Photoshop has already calculated the file size of the image at just over 5 Meg.
7. Choose **inches** from the dropdown for measurement units, and note that the dimension is recalculated in those units. This is useful anytime, for calculating unit conversions.
8. Set the units back to **cm**.
9. Click **OK**. A new image window will appear on the Photoshop work area.
10. Close without saving.

Resolution

Resolution relates to the pixel unit. As mentioned previously, pixels are the building blocks of raster graphics. Resolution is the number of pixels across a given unit of linear measurement. For example, 300 pixels in one inch of linear measurement is written as a resolution of 300 pixels per inch, or 300 ppi. This means at a resolution of 300 ppi, an image 4 inches wide would have 1200 pixels to its width (300 pixels x 4 inches).

NOTE THAT SINCE THE 300 PIXEL RESOLUTION IS APPLICABLE TO BOTH WIDTH AND HEIGHT OF AN IMAGE, THERE ARE NOT 300 PIXELS IN ONE SQUARE INCH, BUT RATHER 300^2, OR 300X300. 90,000 PIXELS!

Resolution is vitally important to an image, to ensure that there are enough pixels in the chosen image size dimensions to bring about the required optical effect satisfactorily. The less pixels per image size unit of measurement, the less convincing the effect.



Resolution is chosen based on the display or output device. For home printers, a specification of dots per inch (dpi) states how many droplets of ink can be printed in one inch of paper. If the image resolution is noticeably less than the printer output resolution, the printed image will not be convincingly realistic. If the image resolution is unreasonably higher than what the printer can output, the extra resolution is wasted and the resulting file size can be extremely unwieldy.

For computer screens, resolution is measured by the number of pixels the monitor is set to project. If a monitor is set to display 1024 X 800 pixels, an image with 300 pixels of width would be less than one third of the screen. Compare this with a 300 dpi printer, which would print the same 300 pixels using only one inch of paper.

Resolution also relates to how Photoshop figures magnification percentages. When an image is viewed at 100% magnification, this does not mean that a 3 inch image size will appear to be three inches in width onscreen. 100% magnification indicates that for every pixel in the image there is a corresponding pixel on the monitor. A magnification of 50% therefore means that for every two pixels in the image there is one pixel lit on the monitor.

To specify a resolution for a new file in Photoshop:

1. Choose **File/New** from the **Menu** bar.
2. Set resolution to **200** pixels/inch
3. Normally, the physical dimensions would also be entered for the file size, as in the previous exercise.
4. Close without saving.

The resolution of an image can be stated in pixels per inch (ppi) or pixels per centimetre (ppc).

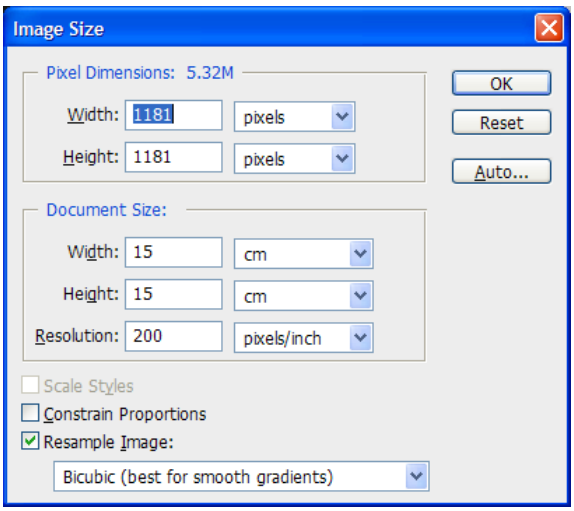
Using the Image Size/Canvas Size Menu Options

When an image needs to be resized in Photoshop, either the image size, the resolution, or a combination of both must be changed. There are two menu options that handle this. The **Image Size** menu option allows new image size dimensions to be specified, or a new resolution to be created. The **Canvas Size** option allows the existing image to remain, while appending or removing areas from it according to the dimensions entered.

Image Size Menu Option

To specify a new image size for a file in Photoshop:

5. Choose **File/Open**.
6. Go to the folder called "**Module 2**". The instructor can help direct you there.
7. Open the file called "**Realtylogo.tif**".
8. Select **Image/ Image Size** from the **Menu** bar. A window will appear stating the current linear dimensions of the image, the current resolution, and at the top, the total number of pixels (shown right).



9. Change the **Document Size** width dimension, with **Constrain Proportions** activated, but **Resample Image** not activated, from 15 cm to 10 cm.
10. Note that the pixel dimensions remain unchanged, and the resolution increases to accommodate the total number of pixels.
11. Set the resolution back to 200 ppi. The size dimensions will reset back to 15 cm.
12. Repeat step 9 with **Resample Image** selected. The resolution stays the same, and the total number of pixels indicated at the top of the window reduces.

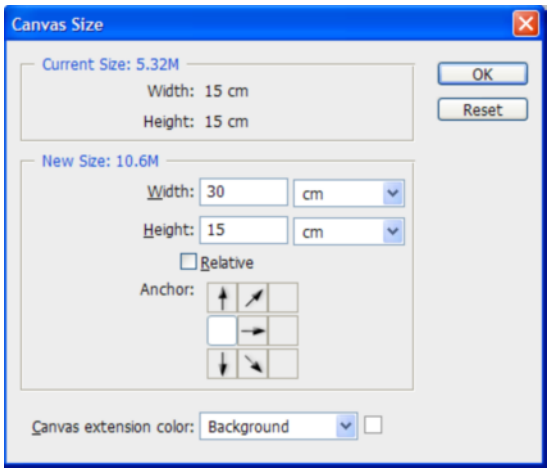
13. Click **OK**. The image onscreen will shrink from 15 cm to 10.
14. Save the file.

Canvas Size Menu Option

To specify a new dimension for a file without resizing the existing elements:

15. Choose **File/Open**.
16. Go to the folder called "**Module 2**". The instructor can help direct you there.
17. Open the file called "**Realtylogo.tif**".
18. Choose **Image/Canvas Size** from the **Menu** bar.
19. A window appears stating the current image size dimensions.

Increasing the dimensions will add area to the image, while decreasing the dimensions will subtract area from the image. To control where area is to be added or subtracted, an **anchor point** can be specified, such as upper left corner), and area will be added or subtracted opposite this point. If no anchor point is selected, the area affected will be equal on all sides.



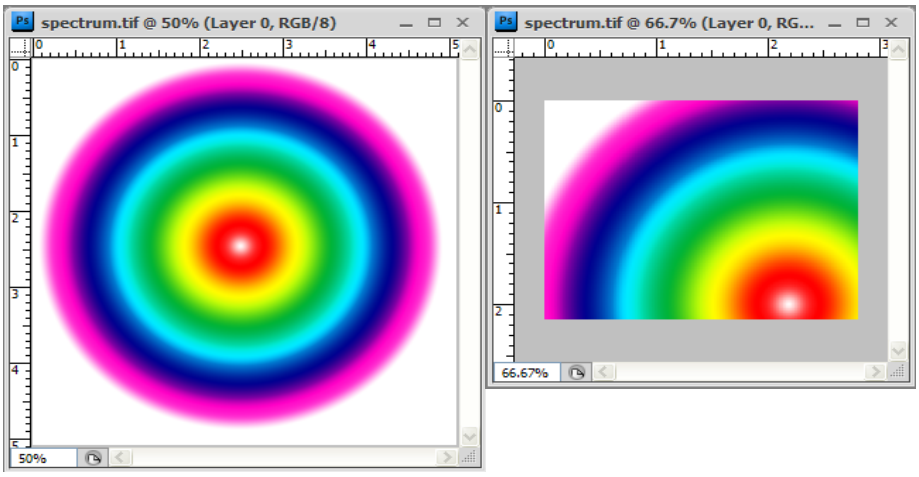
20. Enter a new width of 30 cm and leave the height as-is.
21. Click the **Anchor** image on the middle left-hand square (shown right).
22. Click **OK**. Your image has been left alone, while additional space has been added to the right of the image (shown below).

23. Save the file.

Cropping

What is Cropping?

Cropping an image is the process of removing unwanted areas, or cutting a selected area out of an image, much like using scissors. Cropping defines the parts of an image which you want to keep.



Cropping in Photoshop can be achieved by using the Crop tool or by using the Crop menu command.

To crop using the Crop menu command:

1. Open the file called "**Realtylogo.tif**".
2. Choose the **Rectangular Marquee** tool from the **Toolbox** bar.
3. Click and drag a selection area that encompasses all of the logo, but does not encompass the newly created white area (as shown below).

4. Choose **Image/Crop** from the **Menu** bar. The area outside the selection will be removed. Close the file without saving.

The Crop Tool

The Crop tool expands the functionality of the **Menu** bar crop option, by allowing the user to interactively fine-tune the selection prior to cropping. The selected crop area can be resized, moved and rotated to position itself exactly as desired.

To use the Crop tool:

1. Select it from the **Toolbox** bar (shown right).
2. Click and drag to position a proposed area to be cropped. The area outside the selection will become dimmed, and a series of handles will appear on the sides and corners of the selection.
3. Click and drag on these handles to **resize** the selected area.
4. Click and drag within the selected area to allow the selection to be **moved**.
5. Click and drag within the dimmed area to allow the selection to be **rotated**.

Make a selection that looks like this:

6. Press Enter to complete the crop process. You should have an image that looks like this:

Save the file into your **Module 2** folder as "**Realtycrop.tif**". Close the file.

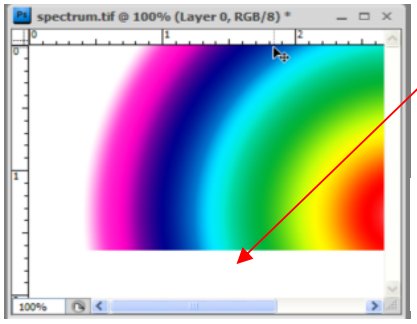
Cropping a Selection

The **Crop** tool allows certain modifications to be made to elements placed in an image file when they reside on a **layer**. Layers will be discussed in detail in Module 5. Using the **Crop** tool on a layer will trim the file to the new dimensions, but the selected area of the layer can be set to perform in two ways.

To crop a layer:

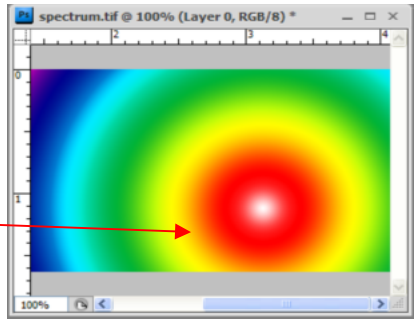
1. Open the file called "**realty_ad.psd**" in your **Module 2** folder. Look familiar? This file has some layers added to it. Make the **Layers** panel visible, and you'll see three layers.
2. Click once on the layer labelled "**Call today**". This makes it the active layer.
3. Choose the **Crop** tool from the **Toolbox** bar. Look at the options displayed.

- The cropping option **Delete** results in the unwanted image areas being discarded.
- The cropping option **Hide** keeps the unwanted image areas from sight. All of the hidden image area is still present, and moving elements on that layer will result in new parts of the image being seen in the cropped area, much like moving an object being looked at through a keyhole (shown below).



Cropped layer with Delete (spectrum) after moving layer

Cropped layer with Hide (spectrum) after moving layer



4. Choose the cropping option **Delete**. Select all of the image, except the bottom half of the words "call today".
5. Press **Enter** to apply the crop.
6. Choose the **Move** tool from the **Toolbox** bar (shown right).
7. Move the image slightly. The words "Call me" are missing their lower half!
8. Choose **File/Revert** from the **Menu** bar. (This restores the file to its original state as of when it was saved.)
9. Repeat steps 2 through 7, but instead choose the cropping option **Hide**. The words still have their lower portion, because the image data was retained.
10. Close the file without saving.

While these options are also available for the **Crop** tool when the main image layer (called the **background layer**) is being cropped, the **Hide** option will not perform in this manner, as the background layer is a fixed layer and cannot be repositioned in the same way as other layers.

Exercises

Exercise1: Choosing a Size and Resolution

Objectives:

- To create images having specific sizes.
- To create images having specific resolutions.
- To illustrate how changing an image size can affect resolution, and vice versa.

---

1. Create a new image document by selecting **File/New** from the **Menu** bar.
2. Make the width and height of the new document 7 centimetres, and the resolution 100 pixels per inch, using the fields provided in the window which appears.
3. Click on **OK** to create the new image document.
4. Create two other image documents with the same width and height, but make one resolution 200 pixels per inch, and the other only 10 pixels per inch.
5. Zoom each one to 100% magnification.
6. Note that although the linear dimensions are all 3 inches, the files are different sizes at 100% magnification, because there are more pixels in some than others.
7. Use the same filters and settings as in Mod 1, Exercise 3 on all three image documents.
8. Zoom the 10 pixels per inch document to 400% magnification, and the 100 pixel per inch document to 50%. This will approximate how each would appear if printed side-by-side.
9. Compare the quality of the images. Note how the 10ppi image is chunky, and the 100 ppi image has much more fine detail than the 72ppi one.
10. Select any one of the images, then select **Image/Image Size** from the **Menu** bar.
11. Make sure **Resample Image** is not selected at the bottom of the window that appears.
12. Change the width or height dimension. Note how the resolution is recalculated.
13. Change the resolution amount. Note how the linear dimensions are recalculated.
14. Keep the file open for the following exercise.

Exercise 2: Changing an Image's Size

Objectives:

- To use the **Image Size** and **Canvas Size** menu options to affect changes in an image's physical size or shape.
- To change an image's resolution without affecting the physical size of the image.

USE THE 100 PPI IMAGE FROM THE PREVIOUS EXERCISE.

1. Select **Image/Image Size** from the **Menu** bar.
2. Ensure **Resample Image**, and **Constrain Proportions** are both selected.
3. Change the width from 7 centimetres to only 5. Note that because proportions are being constrained, the height automatically reduces to match. Because **Resample Image** is selected, the resolution will not increase as in Exercise 1, but will instead remain as-is. This means that pixels will instead be discarded from the image, as indicated in the top two fields of the window.
4. Deselect **Constrain Proportions** and change the width from 5 to 13 inches. Because **Resample Image** is selected, the resolution will not increase, but pixels will instead have to be created to make up the difference. This is done by distributing the existing pixels evenly, then averaging their color values to create the new ones.
5. Select **OK**. The image will be recalculated to create the new pixels. The new measurement of the file dimensions will be reflected in the rulers, if visible.
6. Keep the file open for exercise 3.

Exercise 3: Cropping

Objectives:

- To practise discarding unwanted areas of an image by using the **Crop** tool.
- To explore editing a Cropping selection before applying it.

USE THE 100 PPI IMAGE FROM THE PREVIOUS EXERCISE.

1. Select the **Crop** tool from the **Toolbox** bar.
2. Click and drag the mouse pointer across the image document, to select an area roughly two thirds of the image.
3. Click and drag on each of the handles shown on the sides of the crop selection.
4. Click and drag on each of the handles shown on the corners of the crop selection.
5. Click and drag within the highlighted crop selection.
6. Click and drag outside the crop selection, in the grayed-out area.
7. Make a crop selection which is 3/4 of the image size, square, centered, and rotated approximately 20 degrees.
8. Press **Enter**. The image will be cropped and the unselected portions discarded.