Resizing Digital Images to Actual Size (1:1) Using Adobe® Photoshop®

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Abstract: This article demonstrates how to resize a digital image to actual size (1:1) using Adobe® Photoshop®.

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Introduction

Photographing fingerprints, footwear prints and impressions, and tool marks is standard practice during a crime scene investigation. However, if those photographs are going to be of use for comparison at a later date it may be necessary to print the images to a 1:1 scale. Of course, there are cameras and lenses available that will capture 1:1 images automatically, but most of us use a standard 35mm or digital SLR camera. Using Adobe® Photoshop®, it is relatively easy to print 1:1 images, regardless of the type of camera you use or the relative size of the original image.

Capture the Image

In order to have a quality 1:1 image you must start with a quality initial capture. To capture a good image, use the following steps:

• Set your camera at the highest resolution setting possible.
• If your camera has the option, capture the image in TIFF or another lossless compression format.
• Compose the image so the print/impression, etc. fills the frame.
• Include an accurate horizontal and vertical scale. An ABFO #2 scale is ideal.
• Use a macro lens or a 50mm lens (or equivalent) to minimize distortion in the image.
• Position the camera so the plane of the film/CCD/CMOS is parallel and 90 degrees to the print. This step is critical to avoid distortion of the scales.

Photoshop® CS4 is shown in the following examples, but previous versions will have virtually the same functions.

Copy the Image

Always work with copies of the original image to maintain the integrity of the original; if the original is in a JPG format, save it as a TIFF. To make a copy select File>Save As. In the format menu select TIFF and then check the box next to as a copy. Finally, click the Save button.

Determine the Size of the Copied Image

Open the image in Photoshop®, then select Image>Image Size to see the starting resolution and size of the image. ▶
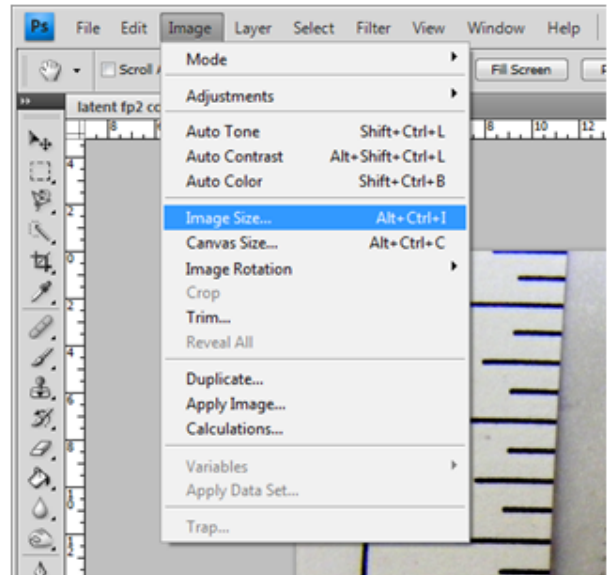

An Image Size window will open. In this image downloaded from the camera the actual image size if printed as is, would be 42.667 inches wide by 32 inches high. The resolution of the image is 72 pixels per inch. Click the Cancel button. ▶
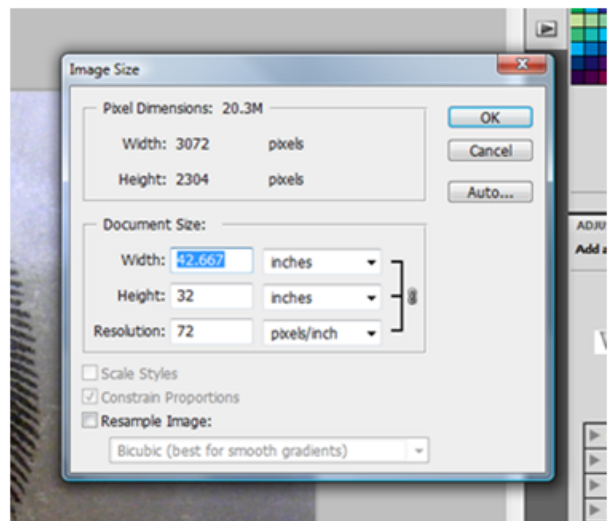

Determine the Number of Pixels per Inch

Select the zoom tool and drag a box around an area of the scale that is slightly larger than 1 inch to make the scale easier to see. ▶
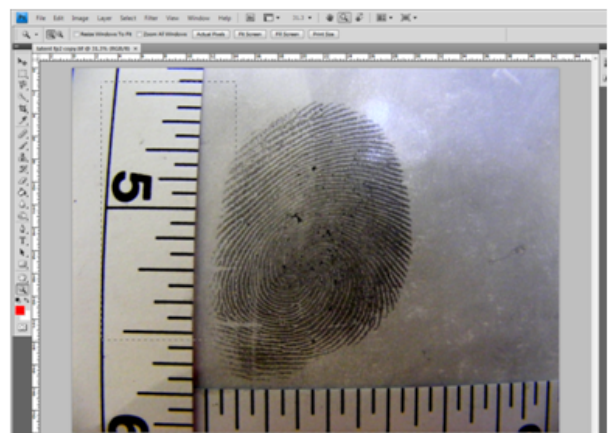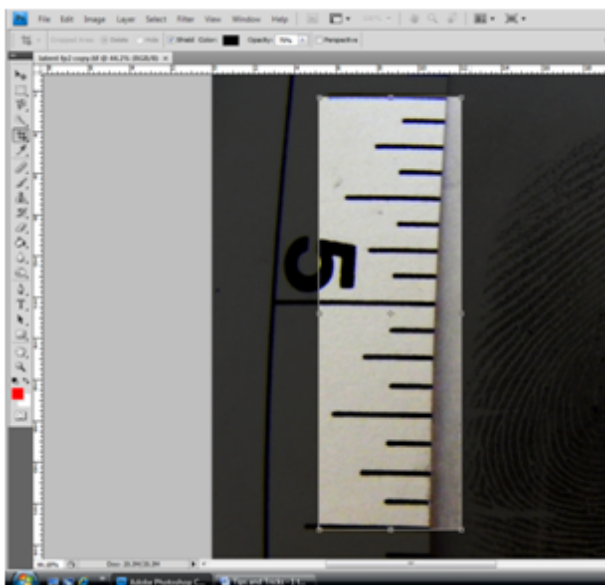
◄ Select the crop tool and carefully crop off exactly 1 inch on the scale, making sure the crop line splits the line marks on the scale. Once you are satisfied with the crop area, place the cursor inside the crop box and double click to crop the image.
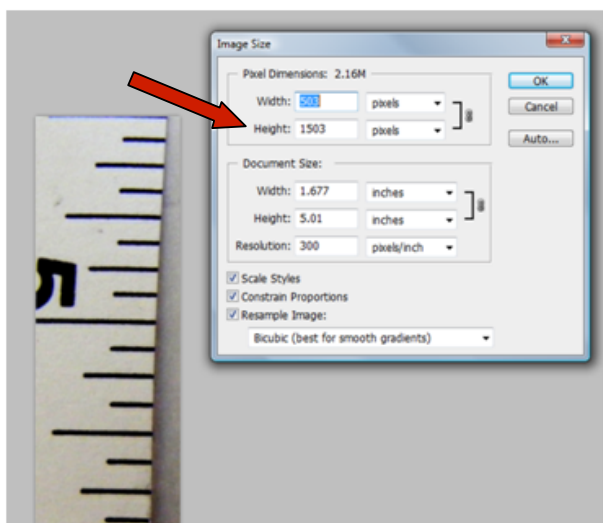
◄ Select Image>Image Size. Write down the pixel dimension of the section of the scale just cropped. In this case the vertical scale was used so we will note the height of the crop, which is 1503 pixels. If the horizontal scale had been used, the width would be noted.

Once you have written down the pixel dimension click the cancel button and select Edit>Undo Crop to return to the original image.

Assign the number of Pixels in an Inch

▼ With the crop tool selected, look at the top of the page and you will find a box for resolution. Type the number you wrote down into the resolution box and press Enter. Make sure pixels/inch is selected next to it.
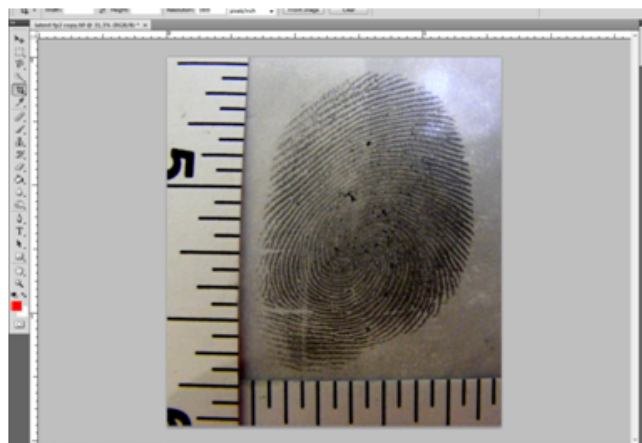
By setting the resolution like this, you have told the program how many pixels are in an inch and you are ready to crop the image for 1:1 printing.
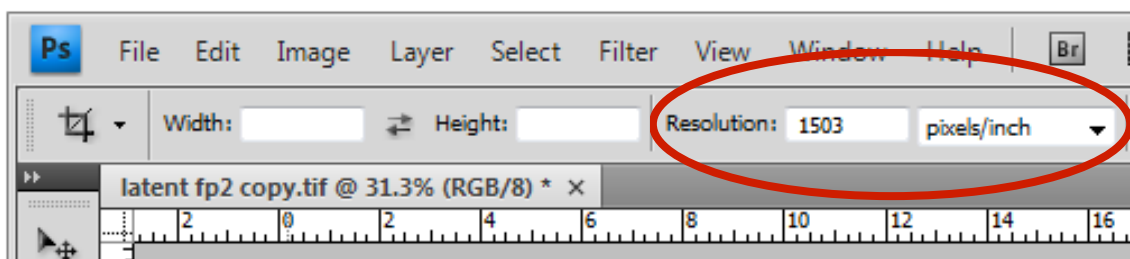
Zoom out to see your entire image. Select the crop tool and crop the image to include some of the scales so you can check the size.

Now select View>Rulers from the top menu and rulers will show on the top and left side of the image.

Select the move tool ▸ and position the cursor over the top ruler. When the cursor changes to a white arrow click>hold>drag toward the image and a guideline will appear. Drag a second guideline into the image. To move the guidelines hold your cursor over the line until it changes to a double arrow, then click and drag. Position the guides over the image scale so they are one inch or one half inch apart and use the guides to compare the scale of the image to the scale bordering the window.

The border scale is what the actual print size will be and 1 inch on the border should also be 1 inch in your photo. To remove the guidelines select View>Clear Guides.

Guidelines
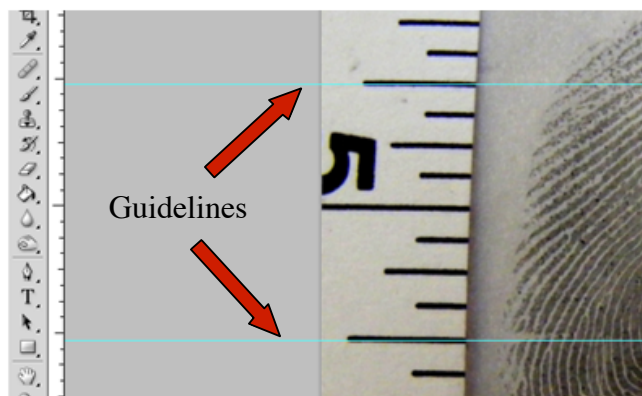
Print the Image

With the image resized you can now print the image and it should print at the actual size (1:1). Print results may vary depending on the make/model of the printer and its settings. Verify the print is actual size and note the print settings used for that.

View the video tutorial version of this article by clicking this icon or visiting www.acsr.org.