Photoshop Elements 6 – Preparing an Image for Printing

Print Size

The size of a print you make depends on your purpose for the picture, how much money you want to spend on framing, and the maximum print size possible for images from your digital camera.

The purpose usually is fairly obvious. If you want the picture to sit on your desktop you probably want a 4” x 6” or 5” x 7” print. On the other hand if you want to hang a picture on your wall, you want it to be large enough that it is visible, at least 8” x 10” or 11” x 14”.

Framing a print for wall-mounting depends on the equipment you have available and the amount of money you want to spend. Unless you want do expensive custom framing or cut your own mats, the only option is to choose a print size for which pre-cut mats and ready-made frames are available. Here are some examples of readily available pre-cut mat sizes for wall-mounting:

- 8”x 10” picture and 11” x 14” frame
- 11” x 14” picture and 16” x 20” frame

You can find other pre-cut mat sizes on the web:
http://www.dickblick.com/categories/precutmats/
http://www.logangraphic.com/products/palettes/
http://www.jerrysartarama.com/art-supply-stores/online/2051)

Finally, if you want a large print you need to be aware of the limitations of your camera. Images from a camera with a small number of pixels are not large enough to make a large print. As the number of pixels goes up, so does the possible print size.

It is possible to estimate the maximum print size from the number of pixels in an image. A good rule of thumb for an ink jet photo printer, such as the Canon i9900 that we have at Wofford, is that you will an image resolution of 200 dots per inch (dpi) to get a good print. Suppose that you want to make a print from a 3.2 MP camera image that has dimensions 1600 x 2000 pixels.

<table>
<thead>
<tr>
<th>Image Pixel Dimensions</th>
<th>Printer Needs</th>
<th>Maximum Print Dimensions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Height: 1600 pixels</td>
<td>200 pixels/inch</td>
<td>(1600/200) = 8 inches</td>
</tr>
<tr>
<td>Width: 2000 pixels</td>
<td>200 pixels/inch</td>
<td>(2000/200) = 10 inches</td>
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The largest picture you are going to be able to make from this image without magnification is around 8”x 10”.

David Whisnant
If you have a camera with a larger sensor, you will be able to print larger pictures. For example, a 6 MP camera image can produce an 11”x 14” print, with slight magnification.

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<th>maximum print dimensions</th>
</tr>
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<tbody>
<tr>
<td>width: 3000 pixels</td>
<td>200 pixels/inch</td>
<td>(3000/200) = 15 inches</td>
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</table>

*You often can do better than the above estimates by magnifying an image (increasing its pixel dimensions).* Although, adding pixels to an image would appear to degrade its quality, in practice the loss in quality may not be significant, particularly for landscape and portrait images that do not have a lot of straight lines and sharp edges. You simply need to try it on a picture-by-picture basis to see how it works. So far, I have had good luck.

**Cropping a Photo So One Dimension is the Same as the Original**

Open Smith.jpg. Adjust the Levels of the photo and then save it as a PSD file, Smith_1.psd.

This image has dimensions 2000 pixels x 3008 pixels. If we want to print it as an 8” x 10” photo, we may need to cut off (crop) some of the image to make one side shorter.

The first step is to set the image resolution so that one side of the image matches the print we want. Select Image, Resize, Image size from the main menu.

Uncheck the Resample Image box, so that the change we make in the document size will be nondetrimental (won’t change the number of pixels in the image).
Look at the **Document Size** section of the window. We want to set the short side (the height in this case) of the document to match the size in the picture we want.

Change the smallest dimension of the document to match the smallest dimension of the print (in other words, change the **Height** from 6.33” to 8”). When you change the Height, the Width changes to 12.434 inches. This is longer than 10 inches, but that is OK — we will need to crop off some of the width.

Notice also that Resolution changes to 237.5 dpi. This is an acceptable value because inkjet printers generally give good prints when the resolution is greater than 200 dpi. Click on **OK**.

Now we will cut off some of the long side of the image. To crop an image, choose the **Crop tool**.

Open the **Aspect Ratio** menu in the options bar and select **Use Photo Ratio**.

You should see the width (12.434 in) and height (8 in) displayed at the new resolution.

Enter the desired width (10) in the Width box.
Starting in the upper left corner of the image, sweep the cursor over the image until the dotted rectangle fills the image. The area to be cropped is darkened. The rectangular area to be retained remains bright.

Stretch the height of the rectangle so that it matches the actual height of the image. Once you have stretched the cropping rectangle to your satisfaction, move it back and forth by pulling the small symbol in the center around with the mouse.

When you have the rectangle positioned, click on the Check icon. Save the cropped picture as Smith_2.psd.

Look at the size of the picture again. Choose Image, Resize, Image size from the main menu. You should see that the Document Size now is 8” x 10”. This image is ready to print as an 8” x 10”.
Cropping a Photo So Both Dimensions Are Smaller Than the Original

Suppose we want to crop both the width and the height of an image. Open Smith_1.psd again so we can crop it in a different way.

First, go to the main menu and use **Image, Resize, Image Size** to find out the resolution of the image – in this case 300 dpi.

Suppose that you want to use an interior section of the image and make an 8” x 10” print. Choosing the **Crop** tool (as in the section above), set its **Aspect Ratio** to 8 x 10 in.

Use the Crop tool to crop the image.

Check the image size again. The resolution must be above 200 dpi for the picture to print adequately on the printer.
Increasing the Pixel Dimensions to Make a Large Print

Open the file **Bunny.jpg** and save it as **Bunny_1.psd**. We want an 11”x14” print of this image.

Look at the image size. (**Image, Resize, Image Size** from the main menu.)

Uncheck **Resample Image** and change the smallest dimension of the document to match the smallest dimension of the print (i.e., change the **Height** from 5.12” to 11”).

Unfortunately to make an 11” x 14” print, the **Resolution** must be 139.6 dpi, which is far below the 200 dpi generally needed to print the photo on an inkjet printer. **To produce an 11” x 14” print at an acceptable resolution, we are going to need to magnify the image size by increasing its pixels dimensions.**

Increasing the number of pixels in an image might appear to be problematic at best. Where will the new pixels be added and how will they be chosen to match the existing pixels? Luckily, the bicubic interpolation resampling option often does a good job of choosing new pixels to add, especially if you use “stair interpolation,” in which you increase the size of the image by only 10% at a time.
With the **Resample Image box unchecked**, set the **Resolution** to the value we need for our inkjet printer -- **200 pixels/inch**.

Click on **OK**.

Open the **Image Size** window again. Now click on **Resample Image** so that it is checked. The resampling should be set to **Bicubic**.

In the **Pixel Dimensions** section, change pixels to **percent** and enter **110** in the Width. The Height will change automatically because the proportions are constrained.

Note that the size of the document has increased from 9.775” x 7.68” to 10.753” x 8.448”.

Click on **OK**.

Do this two more times. Note that, after the second time, the dimensions are close to 11” x 14”.

For the last resizing, you can use less than 110% to bring the image to the size you desire.

**Sharpen the picture using Unsharp Mask.** Increasing the pixel dimensions on an image will decrease its sharpness somewhat.
Photo Paper

You will have several decisions to make when you choose the type of paper on which to print your photo.

- **Size:** from small (4” x 6”) to large (13” x 19”)
- **Finish:** gloss or matte
- **Quality:** high or medium

The size of the photo will be determined by its expected use (sitting on a desk, hanging on a wall, in an album) and the resolution of the original digital image.

Gloss finish papers have reflective coatings that give your digital prints the look and feel of photographic prints\(^1\). Matte finish papers appear soft and non-reflective, not shiny. Many matte finish papers can be printed on both sides. High quality photo paper is more expensive, but will last longer and produce a better image.

*Regardless of what type of paper you choose, it is important to only use paper recommended by the printer manufacturer.* This usually will be the printer manufacturer’s proprietary paper that is matched with their inks for optimum quality and superior longevity. We use only Canon papers with our Canon printer – usually their highest quality gloss paper, Photo Paper Pro.

Digital prints can last as long as, or even longer than, traditional photographic prints\(^2\) if you are careful. Testing by an imaging research company (using accelerated tests, obviously) has found that digital prints on high-quality paper can last more than 25 years – more than 100 years in one case (Epson Stylus Photo 2000P printer with pigmented archival inks). Traditional color photographs are expected to last between 22 and 60 years.

Here are some tips for preserving your digital prints:

1. Use the manufacturer’s recommended inks and high quality paper.
2. Don’t touch the paper surface any more than is necessary.
3. Let the prints dry for 24 hours before using them.
4. Store the prints in albums, but avoid albums with self-stick pages and PVC plastic covers.
5. If you frame your pictures for display, use picture frames with glass. Don’t leave them exposed to the air.
6. Use aluminum frames, which are unaffected by humidity.
7. Put an acid-free mat between the frame and the photo.
8. Keep the prints out of the direct sunlight, humid rooms, and intense heat.

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\(^{1}\) [http://desktoppub.about.com/cs/paper/bb/inkjetpaper.htm]

\(^{2}\) [http://pcworld.com/resource/printable/article/0,aid,50663,00.asp]
Practice Problems

1. Open Park.jpg and save it as Park_1.psd. Resize and crop the image so it can be printed as an 8” x 10” print similar to the one shown here.

2. Open Park.jpg and save it as Park_2.psd. Resize and crop the image so it can be printed as a 4” x 6” print. Very little of the image will need to be cropped because 4” x 6” matches the proportions of the image fairly closely.

3. Open Park.jpg and save it as Park_3.psd. We want to print it as an 11” x 14” print similar to the one at the right.
   - When you change the smallest dimension of the document to 11” (Resample Image unchecked!), notice that the resolution is considerably less than 200 dpi. We need to increase the pixel dimensions of the image.
   - Use the 110% method to increase the pixel dimensions to a level that will allow an 11” x 14” print. (It should take only one 110% magnification.)
   - Sharpen the image with Unsharp Mask
   - Crop the image to 11” x 14”

4. Open Park.jpg and save it as Park_4.psd. We want to print it as a 13” x 19” print similar to the one at the right.
   - You will find that you need to increase the pixel dimensions of the image. (No surprise – it wasn’t large enough even for an 11” x 14” print.)
   - Use the 110% method to increase the pixel dimensions to a level that will allow a 13” x 19” print.
   - Sharpen the image with Unsharp Mask
   - Crop the image to 13” x 19”
5. Do the following with two of your own images:
   - Improve the image -- Levels, Unsharp mask, anything else required.
   - Resize or increase the pixel dimensions as needed to crop and print it in 8” x 10” format
   - Crop to a size appropriate for an 8” x 10” image
   - Save as a PSD file