Sharpening is a critical part of a digital workflow aimed at producing the highest quality images possible. Having a good understanding of the use of Photoshop’s Unsharp Mask filter for sharpening your images will enable you to produce the best results possible.

SHARPENING FUNDAMENTALS
The most important thing to know about sharpening is that it doesn’t improve focus. If an image is out of focus, applying some sharpening to it can help improve the overall appearance, but it won’t make it a sharp image. If the image wasn’t sharp to begin with, the final print won’t be sharp. The sharpening tools available with image editing software don’t replace good photographic technique. You need to start with images that are in sharp focus.

Sharpening should be applied as the last step for your image before printing. That means not sharpening until all adjustments have been made to your image. To achieve optimal results, it is also best to sharpen your image after you have sized it for printing. My preference is to apply sharpening as part of the final printing workflow, after the master image has been saved and I’m preparing the file for printing. This sharpened print image may or may not be saved depending on how frequently I think I may print the image.

While sharpening can be a critical step in compensating for the loss of sharpness that occurs in the process of scanning film, recording a digital capture, or printing, it is important to know when sharpening is not only unnecessary, but potentially degrading to the quality of your image. If you don’t need to enhance detail in an image, and you want to be sure to avoid enhancing any grain or noise in the image, sharpening may best be avoided. For example, I have seen many photographs of sunsets where nothing has a crisp sharpness, and sharpening would only serve to enhance grain in the sky and potentially degrade the subtle gradations of tone and color. In such images, it is often wise to avoid sharpening. Just because sharpening is part of your normal workflow doesn’t mean it needs to be applied to every image.

GETTING STARTED
To get started with sharpening using the Unsharp Mask filter, make sure your image layer is selected on the Layers palette and then choose Filter >Sharpen > Unsharp Mask from the menu. This will bring up the Unsharp Mask dialog box, which includes several settings that allow you to control the way sharpening is applied.
It is important to evaluate the effect of sharpening by viewing an "actual pixels" display for the image. This requires that the image be zoomed to a 100% scale, so that one pixel on your monitor represents one pixel in the image. Any other zoom setting requires that the image be displayed with more or fewer pixels on the monitor than exist within the image, which results in a less than accurate preview of the sharpening effect.

However, I personally don’t set the image to a 100% zoom when using Unsharp Mask. Instead, I set the image to fit the screen so I can see all of it at once. Then, I use the preview within the Unsharp Mask dialog box to evaluate sharpening, since that preview defaults to a 100% display. The reason I prefer to have the image sized to fit within the window is that I can then see the entire image, and can click on any area of the image to set it as the preview area seen in the Unsharp Mask dialog box. This provides the best situation, in my opinion, as I’m able to quickly preview any area of the image at 100% simply by clicking on that area of the actual image. To fine-tune the position of the preview within the Unsharp Mask dialog box, simply click and drag the image around within the preview area.

To set the image to fit within the window, you can double-click on the Hand tool button on the Tools palette (which would have to be done before you select Unsharp Mask from the menu), or hold the Ctrl/Command key and press the number zero on your keyboard (which can be done at any time). As you’re adjusting the settings in Unsharp Mask, you can also click on the preview image within the dialog box to see the image without sharpening, and then release the mouse to see it with sharpening applied.

UNSHARP MASK SETTINGS
The Unsharp Mask dialog box contains three sliders that allow you to control the sharpening effect within the image: Amount, Radius, and Threshold. The filter actually enhances edge contrast to increase perceived sharpness, creating halos along contrast edges. The controls allow you to adjust the intensity and size of the halo, as well as mitigating the effect so halos are only added to relatively high contrast edges within the image.

The Amount setting in Unsharp Mask controls the degree to which edge contrast is increased. The higher the number, the more contrast is added along whatever pixels are determined to be edge pixels in your image.

The Radius setting controls the width of the halo that will be added along edges. A very high setting means a thick halo will be added at contrast edges, while a lower setting represents a smaller halo. While large halos are a serious problem in the image, appropriately sized halos add to the perceived sharpness of the image. The radius setting is one of the most critical settings when using the Unsharp Mask filter. Just remember that a little goes a long way.

Threshold can be thought of primarily as a way to maintain smooth textures within an image. It helps to limit the sharpening applied to your images, which in turn helps to avoid halos and noise. It determines how much contrast must exist in order for a given pixel to be considered an edge pixel. The higher the number, the more contrast must exist in order for a pixel to be considered an edge. In other words, a higher setting means more areas of the image will not have sharpening applied to them.

Once you understand the function of each setting, it can be helpful to create some basic ground rules for deciding on the best values. The best settings very much depend on the type of image with which you are working with. Because the Radius setting is the most important, regardless of the image type, I recommend getting the Radius set first, then Amount, and finally Threshold.

HIGH DETAIL IMAGES
With images that contain a significant amount of fine detail, you will want to use a relatively low Radius setting. Keeping the Radius at a low setting means the halo created in sharpening will be quite small. You want to avoid having a halo that is larger than the detail it is accentuating. For these images, I usually recommend a Radius in a range of about 0.4 to 1.0.

With such a small halo, it would be easy to miss if it weren’t very bright. Therefore, to compensate for the smaller radius, a larger Amount setting is required. For high detail images, an Amount of between 200% and 300% is usually best.

Finally, the Threshold setting needs to be established. For high detail images you typically want to sharpen virtually all contrast edges within the image. Therefore, I’ll quite often use a setting of 0 for high detail images to ensure I’m not leaving any edges unsharpened. However, you might use a value in the range from 0 to 4 for these images.
With images that contain less detail, or smooth textures, transition from bright to dark at contrast edges is smoother and covers a wider range of pixels. Therefore, a larger halo is required to bring out those edges and increase perceived sharpness. I would use a Radius setting in the range from 2 to 3.

Because the halos will now be relatively large, it is important that they not be too bright. Therefore, the Amount setting needs to be somewhat low. I recommend a range between 75% and 125%.
For low detail images you'll more likely have smooth textures you want to preserve. To do so, a relatively high Threshold setting should be used. For example, with a portrait you don’t want every pore in the skin to be enhanced, so you would want to raise the Threshold to a value that the minimal contrast within the skin isn’t enough to cause sharpening of those areas. For low detail images, a Threshold of between 8 and 12 is usually best.

SOMEBEWE IN BETWEEN

Of course, there are many situations where you either aren’t sure if an image is high detail or low detail or where an image contains areas of both types. In those situations, values somewhere in between the target ranges for the different image types would be appropriate. That would call for a radius between about 1.0 and 1.5, an Amount between about 125% and 175%, and a Threshold of between about 4 and 8. These values are a good starting point for most photographic images.

WORKING VISUALLY
The guidelines provided here are just that — guidelines, not hard and fast rules. The best settings for a given image
depend on a number of factors and each image will call for different settings. The rules of thumb provided in the previous sections simply provide a good starting point.

When trying to determine the best sharpening settings for a given image, it is generally best to get the Radius set first, as it is the most critical setting. Set the Amount to its maximum value of 500% and the Threshold its minimum value of 0. Then set the Radius to an estimated value based on the type of image you are working with as discussed above. Fine-tune the Radius to find the value that provides the most appropriate halo width in the image. It is also helpful to use the arrow keys on your keyboard when fine-tuning the setting. Set the approximate amount with the mouse, and the value will be highlighted. Then use the up and down arrow keys to increase and decrease the values, respectively. Once you determine the best Radius setting, adjust the Amount to determine how much contrast should be added to edge pixels and then adjust the Threshold to preserve smooth textures as needed within the image.

PRACTICE MAKES PERFECT
The Unsharp Mask filter is a powerful tool for improving the appearance of your images. Understanding the settings available and how they should be adjusted will make it easier for you to find the best settings that enhance perceived sharpness without creating any image quality problems. By being critical of the sharpening you apply and carefully fine-tuning the settings based on an evaluation of key areas of your image at a 100% zoom setting, you'll soon become an expert at applying just the right amount of sharpening to your images.