

# Photoshop CS3: Improving Image Quality

## Learning Guide

### Dealing with Disappointing Images

We all know that photographs can be disappointing when they come back from the photo-processing counter looking washed-out and altogether unappealing. You may have wondered whether the problem lies with your camera, or perhaps with poor-quality printing. However, you no longer need to throw your disappointing pictures in the trash. This learning guide will help you learn to revitalize those unsatisfactory pictures so that you can enjoy them at home and even use them at work.

### Step One: Adjusting Highlights & Shadows

When improving your images, the first step is to work with highlights and shadows. A highlight is the lightest (whitest) part of an image. A shadow is the darkest (blackest) part of an image. Some photographs contain areas of glare that look as though the image was taken under harsh lighting conditions. Other times, portions of the image can be lost in areas of deep shadow. By adjusting the **levels** of an image in Photoshop, you can change the image's highlights and shadows. This can allow you to brighten a dark image or increase its contrast to make it appear more realistic.

### Step Two: Adjusting Colors

Next, you'll adjust the image's colors by using Photoshop's **Hue and Saturation** tools. Hue is the purest form of a color on the color spectrum. Saturation refers to the brightness of the color or the amount of black and white added to the hue. Adjusting hue and saturation can make your images look more vivid.

### Step Three: Sharpening your Image

The last step in touching up an image is sharpening. Sometimes scanned images can appear fuzzy. Changes to the highlights, shadows, and colors of an image can also cause blurriness. To minimize blur, you can use Photoshop's **Unsharp Mask** filter. This tool sharpens the pixels in an image to make it substantially clearer.

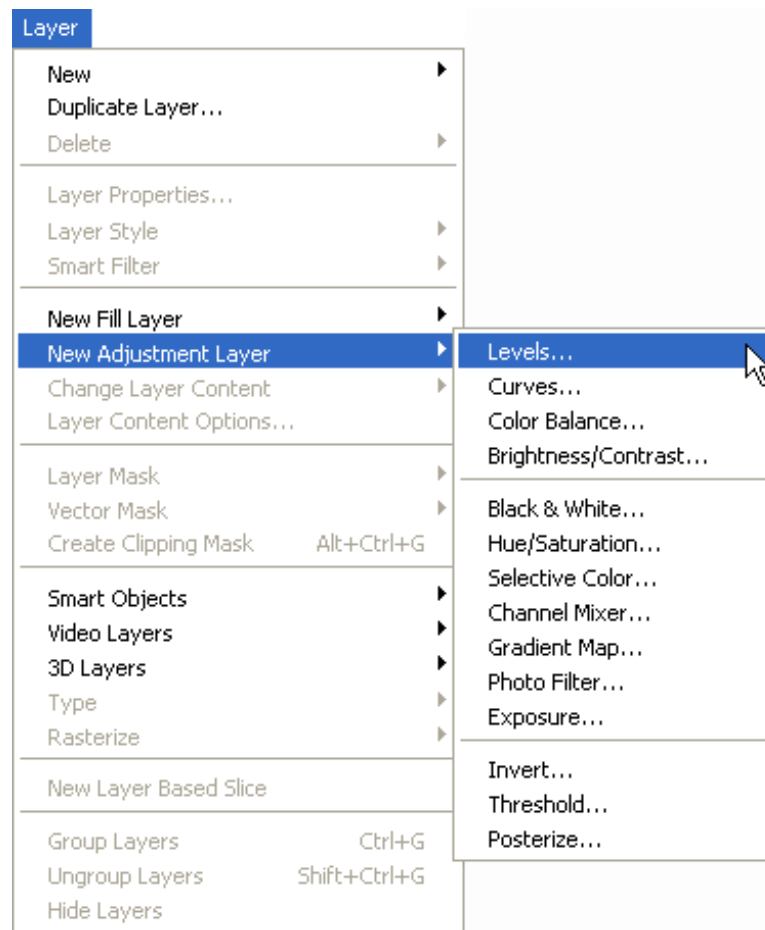
## Adjusting Highlights and Shadows

By brightening or darkening the highlights and shadows in your image, you'll be able to make the image appear much more vibrant. Highlights are the areas of your image that appear the lightest, or that contain the most white pixels. Shadows are the areas of your image that appear the darkest, or that contain the most black pixels. Photoshop's **Levels** window allows you to make these changes to your image.

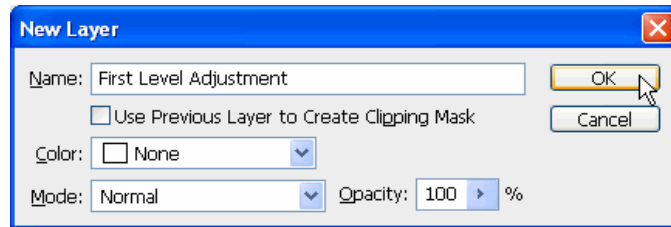
### Creating an Adjustment Layer

Although you can make a levels adjustment directly to your image, these changes can sometimes be more permanent than you'd like. Photoshop's adjustment layers allow you to superimpose one or more adjustments on your image, just as if you were placing a colored transparency film on top of a printed photo. By hiding an adjustment layer, you can view your image as it was before you made the change. Even better, if you're dissatisfied with your change, you can delete the adjustment layer and start again from a clean version of the image. To create an adjustment layer:

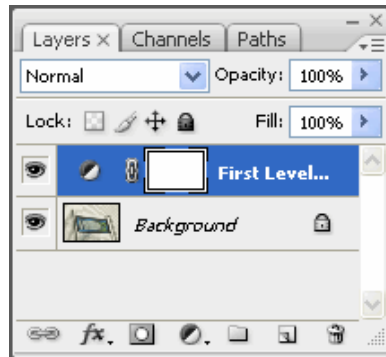
- From the **Layer** menu, select **New Adjustment Layer**.
- From the menu that appears select **Levels**.



- The **New Layer** window will appear.
- In the box labeled **Name**, type a descriptive name for your new layer.
- Click **OK**.



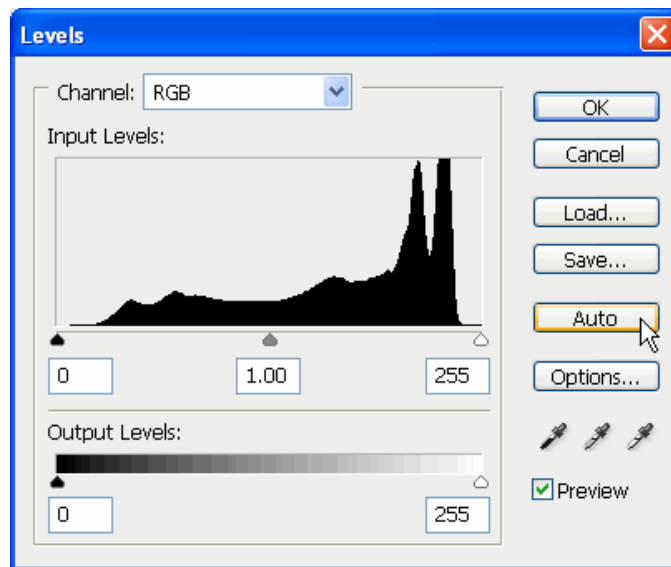
***Tip:** When creating new layers, choose names that summarize the adjustments you are making to your image. Descriptive names will help you distinguish multiple layers within your image. The names you've chosen will appear next to the layer in the **Layers** pallet.*



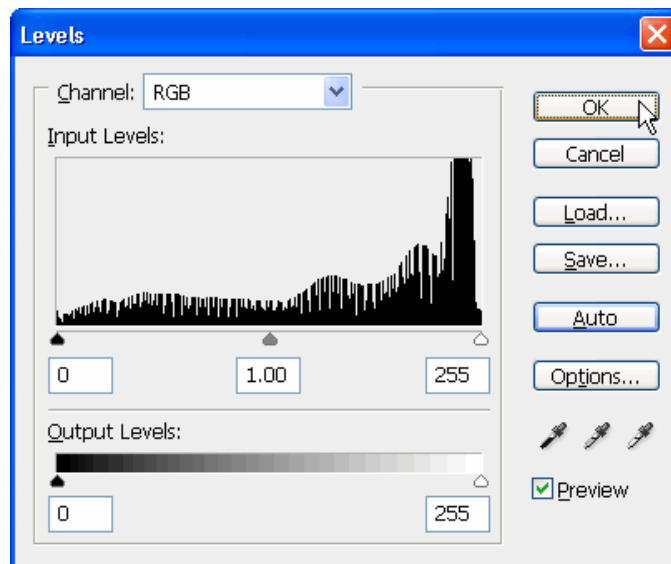
## Making Automatic Adjustments to your Image

Once you've created your adjustment layer you can use Photoshop's **AutoLevels** tool to make initial, automatic adjustments to your image. These changes will often times be enough to produce dramatic improvements to your image.

- On the right side of the **Levels** window, click on the button labeled **Auto**.



- Photoshop will automatically adjust the levels of your image, and, a new graph will appear that depicts the changes.
- Look at your image, and evaluate the effects of Photoshop's changes.
- If you like the changes, click **OK**.



**Tip:** Don't forget to save your changes as you work on your image. Saving your image in the Photoshop (PSD) format allows you to save your image along with any new layers that you have created. This allows you to make future revisions to the layers you've just created.

### **Making Manual Adjustments to your image**

Once Photoshop has made its automatic adjustments to your image, you can fine-tune the quality of your image by making minute changes to your image's highlights (light pixels), shadows (dark pixels), and midtones (pixels midway between light & dark).

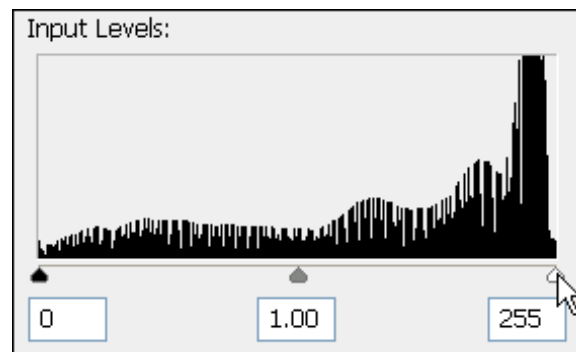
#### *Adding a New Adjustment Layer*

- From the **Layer** menu, select **New Adjustment Layer**.
- From the menu that appears select **Levels**.
- The **New Layer** window's **Name** box, enter a name for your new layer.
- Click on the button labeled **OK**.

#### *Lightening the Highlights in your Image*

To lighten the highlights in your image:

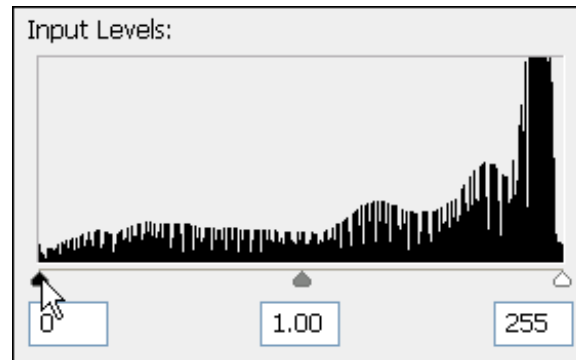
- Locate the **highlights slider**, the white triangle at the far right of the levels graph.
- *Slowly* drag the **highlights slider** to the left.
- Drag the slider only as far as necessary to lighten areas that are in shadow that's too deep.



### *Darkening the Shadows in your Image*

To darken the **shadows** in your image:

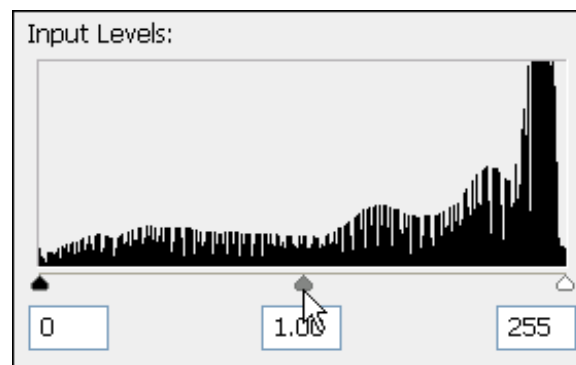
- Locate the **shadows slider**, the black triangle at the far left of the levels graph.
- *Slowly* drag the **shadows slider** to the right.
- Drag the slider only as far as necessary to eliminate any washed-out look that your image might have.



### *Adjusting the Midtones in your Image*

To adjust the **midtones** in your image:

- Locate the **midtones slider**, the gray triangle at the middle of the levels graph.
- To darken the midtones, *slowly* drag the **midtones slider** to the right. Darkening the midtones can help make your shadows more realistic, and can add contrast to your image.
- To lighten the midtones, *slowly* drag the **midtones slider** to the left. Lightening the midtones can reveal areas that were previously obscured by shadow.

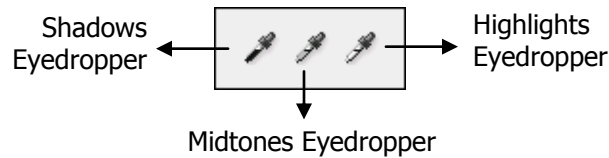


- Once you've finished making adjustments to your image, click on the button labeled **OK**.

**Tip: Choosing highlights, midtones, and shadows**

The **Levels** window also allows you to manually identify the dark, light, and gray areas of your image by using the **eyedropper** tools. This process is similar to the one that the **Autolevels** tool follows, but will sometimes bring better results than using either the **Levels sliders** or **Autolevels**. To use the eyedropper tools:

- In the lower right corner of the **Levels** window, locate the **eyedropper** buttons.



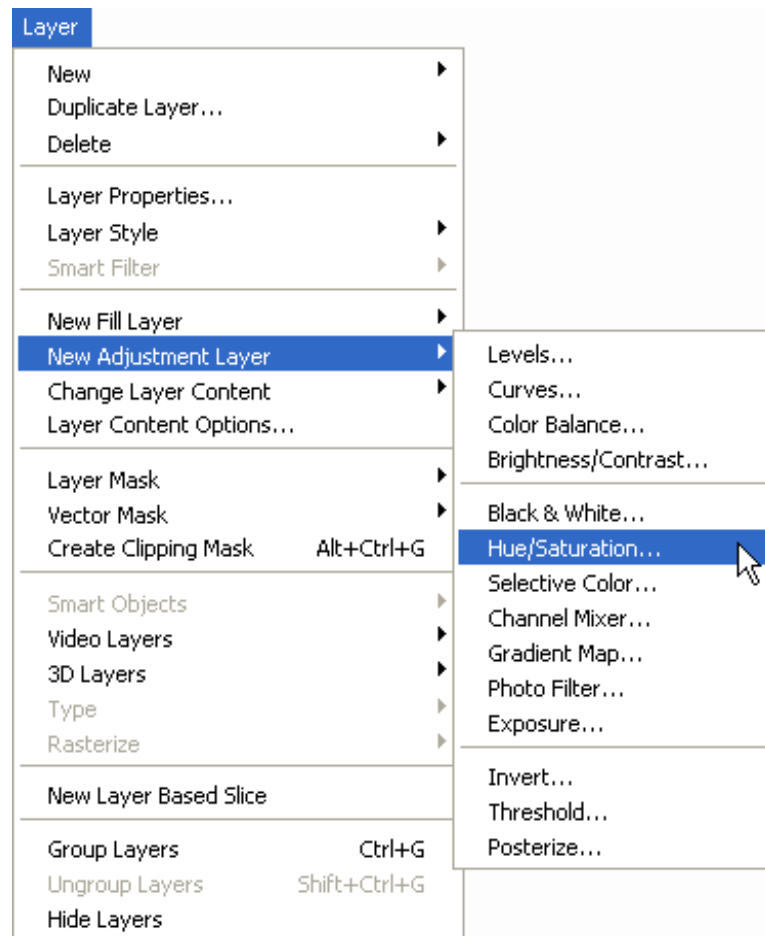
- Click on the **shadows eyedropper** and click on the darkest area of your image.
- Photoshop will darken the rest of your image so that the shadows appear more even.
- Click on the **midtones eyedropper** and then click on a gray area of your image.
- Photoshop will even out the gray tones in your image to create more color contrast.
- Click on the **highlights eyedropper** and click on the brightest area of your image.
- Photoshop will adjust the lightest areas of your image so that they appear more realistic.

## Adjusting Colors

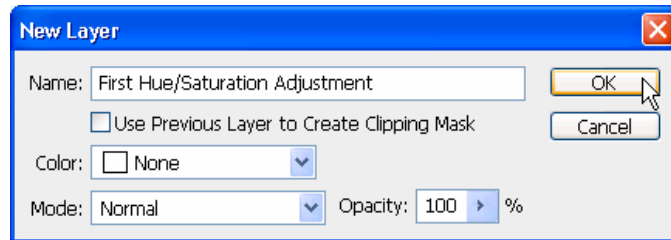
### Working with Hue

Sometimes when you shoot an image under certain light, the image can come out looking too red, too yellow, or too blue. Photoshop's **Hue/Saturation** tools will let you take that slight color variation out of the image. When you adjust a specific hue, your goal is to fine-tune the colors of the image to create more realistic, better-looking colors. To adjust the hues of your image:

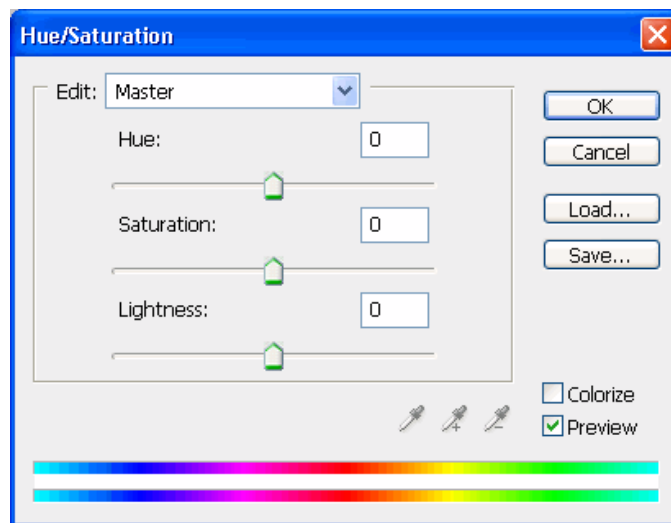
- From the **Layer** menu, select **New Adjustment Layer**.
- From the menu that appears select **Hue/Saturation**.



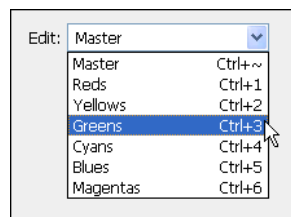
- The **New Layer** window will appear.
- In the box labeled **Name**, type a descriptive name for your new layer.
- Click on the button labeled **OK**.



- The **Hue/Saturation** window will appear.



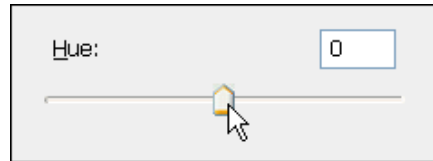
- At the top of the window click in the down-facing arrow next to the box labeled **Edit**.
- From the drop-down menu that appears, select the color you want to adjust (for example, Green).



- Gray brackets will appear in the middle of the two rainbow strips at the bottom of the **Hue/Saturation** window. These brackets delineate the range of color that will be affected when you adjust the hue slider.



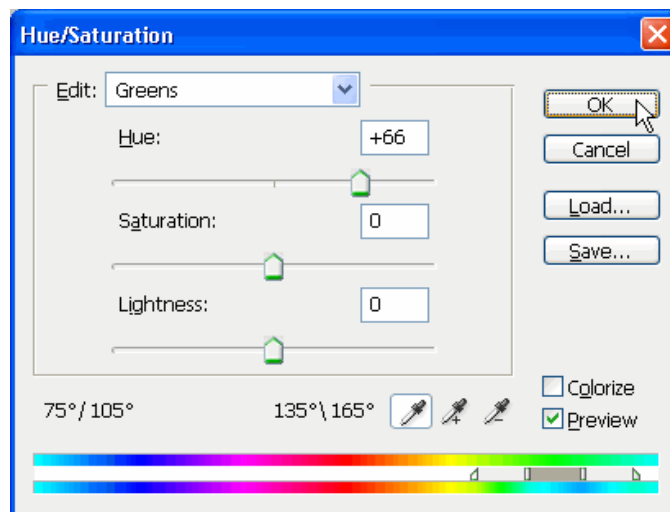
- To adjust the hue of your image, click on the triangle on the slider labeled **Hue**, and drag it to the left or right.



- As you drag the slider, the selected hue in your image will change to the color indicated on the bottom rainbow strip.



- When you are satisfied with the changes to the hue, click **OK** at the top right corner of the **Hue/Saturation** window.



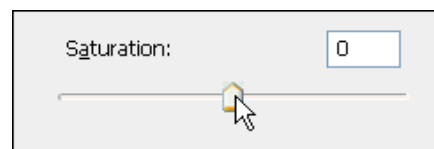
### **Tips:**

- *By default, when the **Hue/Saturation** window appears, Photoshop displays **Master** in the **Edit** box. When **Master** is selected, the sliders will adjust all the colors in the image together. We suggest altering each color individually.*
- *When adjusting **Hue**, **Saturation**, and **Lightness**, in addition to dragging the sliders you can also enter an exact value in the box directly above the slider you wish to adjust.*
- *Don't forget to save your changes as you work on your image.*

### **Working with Saturation**

When you adjust the saturation of a color, you are affecting the intensity of that color. You may want to increase the saturation of certain colors that appear washed out in your original image. On the other hand, if some of your colors are too intense to be realistic (like when the face of someone in your image looks too orange), you may want to tone down the saturation of the image's colors so that they appear more natural. To adjust the saturation of a color:

- From the **Layer** menu, select **New Adjustment Layer**.
- From the menu that appears select **Hue/Saturation**.
- The **New Layer** window will appear.
- Rename your layer and click **OK**.
- Within the **Hue/Saturation** window that appears, click in the down-facing arrow next to the box labeled **Edit** and select the color you want to adjust.
- At the bottom of the **Hue/Saturation** window, gray brackets will appear in the middle of the two rainbow strips, indicating the range of color you have selected
- To adjust the saturation of a color in your image, click on the triangle on the slider labeled **Saturation**, and drag it to the left or right.

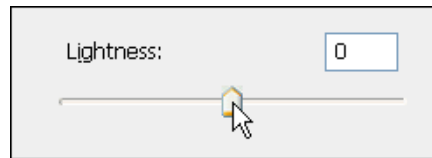


- As you drag the slider, the saturation of your selected color will change as indicated on the bottom rainbow strip.
- When you are satisfied with the changes to the saturation of your selected color, click **OK**.
- To save the changes to the saturation, from the **File** menu select **Save**.

## Working with Lightness

You may want to use the lightness slider to brighten colors that appear washed-out or to darken colors that appear a little too vivid. However, we suggest that you change lightness only after you have adjusted hue and saturation because it can have an overall dulling effect on the highlights and shadows in an image. To adjust the lightness of a color:

- From the **Layer** menu, select **New Adjustment Layer**.
- From the menu that appears select **Hue/Saturation**.
- The **New Layer** window will appear.
- Rename your layer and click **OK**.
- Within the **Hue/Saturation** window that appears, click in the down-facing arrow next to the box labeled **Edit** and select the color you want to adjust.
- At the bottom of the **Hue/Saturation** window, gray brackets will appear in the middle of the two rainbow strips, indicating the range of color you have selected
- To adjust the lightness of a color in your image, click on the triangle on the slider labeled **Lightness**, and drag it to the left or right.



- As you drag the slider, the lightness of your selected color will change as indicated on the bottom rainbow strip.
- When you are satisfied with the changes to the lightness of your selected color, click **OK**.

### ***Tip: Working with other colors in your image***

*Once you have changed the hue, saturation and lightness of one color in your image, you can follow the same process for each additional color that you wish to adjust.*

## Masking

Sometimes, only part of an image will need improvements. In situations like this, masking can be a very useful tool.

If you were preparing to repaint a bedroom, you would mask the trim, fixtures, and anything else on which you did not want to get paint. As you painted, the fixtures or trim would be “masked off,” and protected from the paint.

Similarly, in Photoshop, masks allow you to protect areas of an image so you can make adjustments without affecting the masked areas. Therefore, you can change the levels, hue, and saturation of sections of your image, without affecting the areas that you have masked.

### Masking your Image

Photoshop’s **Quick Mask** mode allows you to easily and quickly mask areas of your image. To begin masking your image:

- At the bottom of the Photoshop toolbox, click the **Edit in Quick Mask** button to enter the Quick Mask Mode.



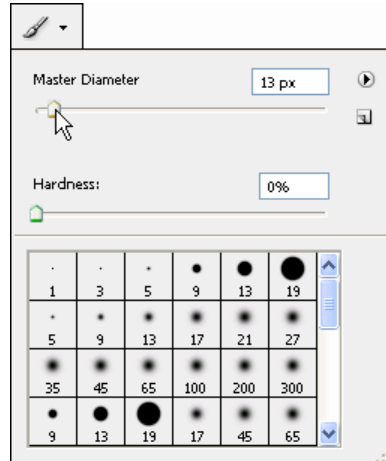
**Edit in Quick Mask Mode & Edit in Standard Mode Toggle Button**

- At the top of the Photoshop toolbox click on the **Brush** tool.



**Brush Tool**

- On the **Options** toolbar, click on the down-facing arrow in the box labeled **Brush**.
- From the drop-down menu that appears, select the brush size you wish to use to outline your masked area.



- Begin masking your image by tracing the outline of the area you wish to mask. *The masked area will appear red.*



*Masking edge of soccer player's shirt*

- Once you have finished outlining the area you wish to mask, choose a larger brush size from the brush menu and fill in the rest of the area you want to mask.



*Masking the rest of soccer player's shirt*

**Tip:** To mask the fine, detailed areas of an image, first magnify the image using the zoom tool. Once you have zoomed in, use a very small brush size to paint the mask on your image.

**Tip: Unmasking a masked area**

As you create your mask, you may paint across an area that you had not intended to mask. To unmask an area of your image:

- At the bottom of the Photoshop toolbox, click once on the double-sided arrow to reverse the background and foreground colors.



- This will make white the foreground color and black the background color.
- Use the paintbrush that you already selected to paint across the area of the image that you wish to unmask.
- Once you've finished unmasking the area, click the double-sided arrow a second time.
- Continue masking your image.

**Making changes to your masked image**

After you have finished masking your image, you can use Photoshop's tools to alter the rest of your image without affecting the portion that you have protected. To make changes to the unmasked portion of your image:

- Return to Standard Mode by clicking the **Edit in Standard Mode** button at the bottom of the toolbox.



- After returning to **Standard Mode**, the perimeter of your image and the area that you masked will be outlined by black and white moving dashes (also known as marching ants). This indicates that the entire image, excluding the area that you masked, is now selected for changes.

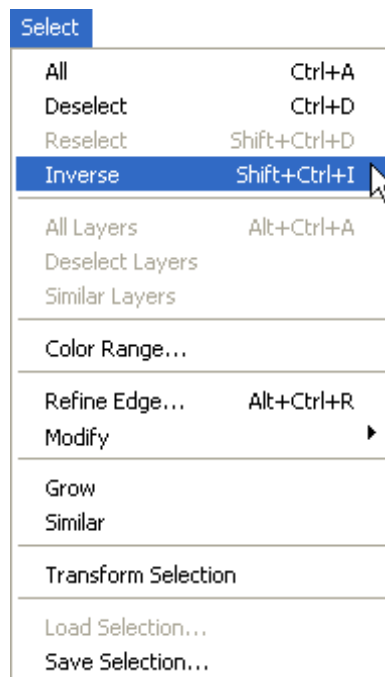


- Now you can apply levels, hue, saturation, and lightness adjustments to the remainder of the image. Only the selected areas will be affected by your changes.

**Tip:** *If you plan on using multiple tools to alter the unmasked portion of your image, you may have to remask the area that you want to protect when you switch between tools. You will know that you need to remask an area if the moving black and white dashes disappear from your image.*

**Tip: Masking a large area**

- *If the area you want to mask is extremely large, it may be easier to mask the smaller portion of your image that you wish to change. In this case, you can mask the smaller portion of your image and then invert your selection to begin making changes to only that smaller area. This technique protects the larger area of your image without you having to manually mask all of it.*
- *Click on the **Edit in Quick Mask Mode** button and mask the small portion of your image that you ultimately wish to change.*
- *Click on **Edit in Standard Mode** to return to the Standard mode.*
- *The small portion of your image will be masked.*
- *From the **Select** menu choose **Inverse**.*



- *Now the large portion of your image will be masked and you can make changes to the smaller area.*
- *If you also want to make changes to the large area:*
  - *Return to the original masked selection by again selecting **Inverse** from the **Select** menu.*
  - *The smaller area will be masked again and you can make changes to the larger area.*

**Tip: Using the quick mask mode for other effects**

*Be creative with your use of masking! You may find that this technique can help you solve many challenging problems with your images. The quick mask mode can also be used to achieve these, and other, effects:*

- **Cutting and pasting portions of an image.** Once you finished masking an area of your image, you can copy the unmasked, selected, area into a new image.
- **Selecting content material and then altering the background.** After masking a figure within an image, you can copy another background into your image and superimpose the figure on the new background.

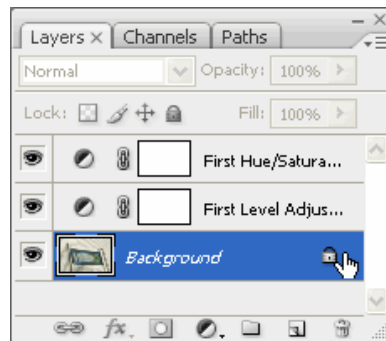
## Sharpening your Image

After adjusting highlights, shadows and colors, the last step in touching up an image is sharpening. Photoshop's **Unsharp Mask** filter allows you to increase the contrast between adjacent pixels in your image. The result is a substantially clearer, sharper image that corrects for any softness you have introduced while adjusting levels and color.

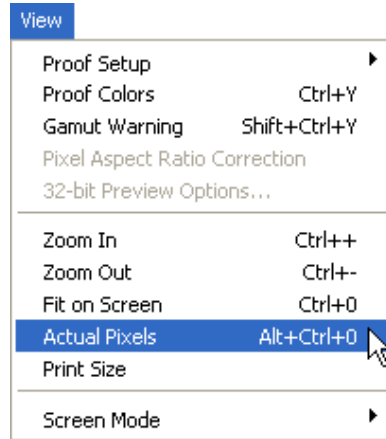
In this section, we're going to offer you a recommended approach to sharpening your images. The settings we suggest are a great way to make subtle adjustments to images that need only slight sharpening. At the end of this section, we will also offer tips for sharpening specific kinds of images.

### Beginning the Sharpening Process

- In the **Layers** palette, click to select your image's background layer.

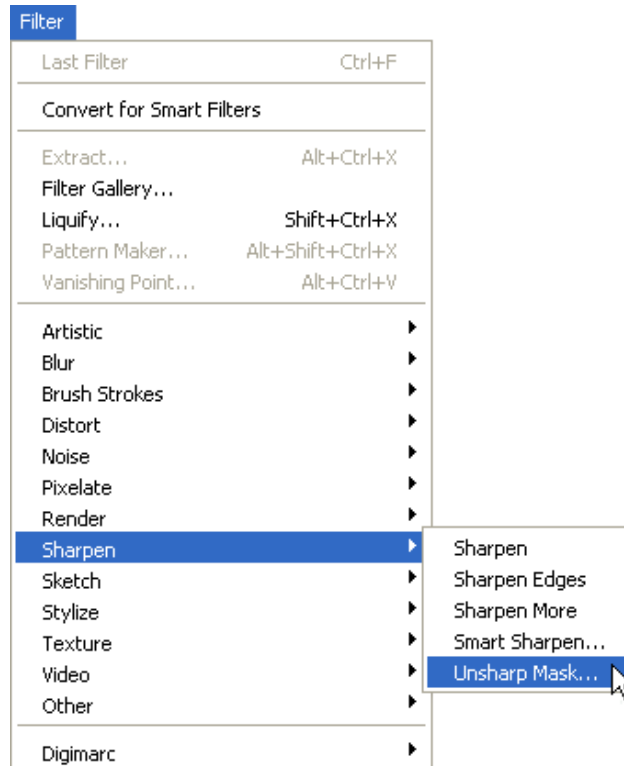


- From the **View** menu, select **Actual Pixels** to view your image at 100% magnification.

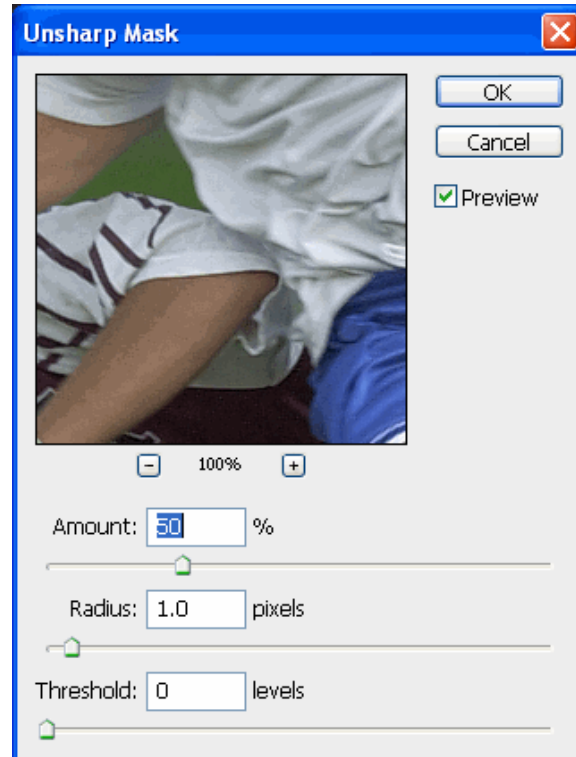


### Sharpening your Image

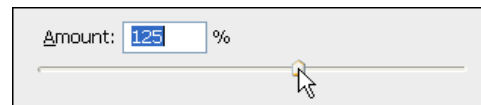
- From the **Filter** menu, select **Sharpen**.
- From the menu that appears select **Unsharp Mask**.



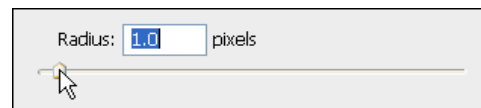
- The **Unsharp Mask** window will appear.



- Drag the **Amount** slider *slowly* to the right until you reach 125%. The **Amount** slider determines the quantity of sharpening.



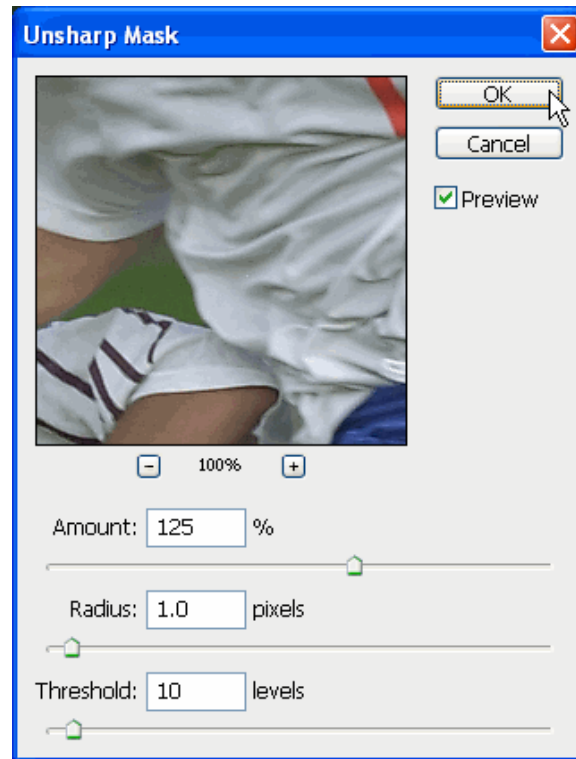
- Drag the **Radius** slider *slowly* to the right until you reach 1.0. The **Radius** slider determines how many pixels will be sharpened.



- Drag the **Threshold** slider *slowly* to the right until you reach 10. The **Threshold** slider determines which pixels are sharpened based on their difference from the surrounding area.



- As you adjust the slider controls in the **Unsharp Mask** window, Photoshop will sharpen your image.
- When you are satisfied with the sharpness of your image, click **OK**.



**Tips:**

- When you are applying the **Unsharp Mask** filter, you must select the background layer of the image. If you select any of the adjustment layers, the filter will not work. Instead, you'll see only a blank box in the thumbnail area of the **Unsharp Mask** window.
- If you plan to use your image primarily in a printed document, you may wish to sharpen it more than if you want to use your image in a PowerPoint presentation or on the web. Take the time to adjust the slider values and carefully evaluate your results by placing a test version of your image in your PowerPoint slide or by printing it. You'll find that this will be time well spent.
- Don't forget to save your image while you work on it!

## Summary of Sharpening Approaches

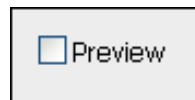
The table below provides some options for sharpening different kinds of images.

| Sharpening for....  | Amount | Radius | Threshold |
|---|--------|--------|-----------|
| All-purpose use; recommended by ITS   | 125%   | 1.0    | 10        |
| Slightly blurry images  | 85%    | 1.0    | 4         |
| Fairly blurry images; also useful for images containing objects with clear edges (for example: buildings, cars, computers, or furniture). | 65%    | 3.0    | 2         |
| Very blurry images  | 65%    | 4.0    | 3         |

### **Tip: Viewing the unsharpened version of your image:**

*Sometimes it's useful to compare the sharpened version of your image with the original. This can help you determine whether you've sharpened your image enough (or perhaps too much).*

- *Click to remove the checkmark from the box labeled **Preview**.*



- *Once you have cleared this checkbox, Photoshop will display the unsharpened version of your image.*
- *To view the sharpened preview image once again, click to replace the checkmark in the **Preview** box.*