**Unsharp Mask**

You never had to sharpen your photos when you were using film, so why do digital photos need it? Because film and digital cameras record images differently.

Digital cameras have a fixed grid of pixels, each of which can only capture one color or shade at a time. Say you take a picture that has a sharp edge between black and white. The razor-thin boundary of that edge would look half black and half white to the human eye. But the single pixel that records that hairline edge can only record one color, so it renders it as gray.
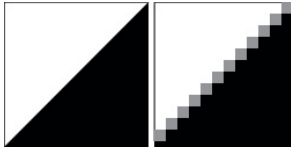
What we think of as sharpness is actually the contrast we see between different colors. A quick transition from black to white looks sharp. A gradual transition from black to gray to white looks blurry. So when we look at the picture you just took of that sharp black & white edge, the gray pixels along the edge will make the photo look blurry.

Sharpening your picture increases the contrast along the edges where different colors meet. This tricks the eye into believing that the photo looks sharper, better, stronger.

Some Basic Rules
Although there are no one-size-fits-all rules, we can give you a couple of rules of thumb.

• You can't add detail that wasn't already there. If the image was out-of-focus to begin with, sharpening won't help
• Don't sharpen until the last step of the editing process. Crop, make all your color adjustments, mess with the contrast, resize. THEN do your sharpening.
• When you're sharpening, view your images at either 100% or 50%.

  Printers and monitors are based on different technology, so you'll always see things differently in print than you will on the monitor. If you're planning to print, the monitor will help get you into the right ballpark.

Unsharp Mask Filter

Pick a digital image you want to edit. Make a copy of the background and edit on that layer. That way if you screw up it's no big deal. In the Filter menu, go to Sharpen -> Unsharp Mask. A window will pop up with three different sliders.
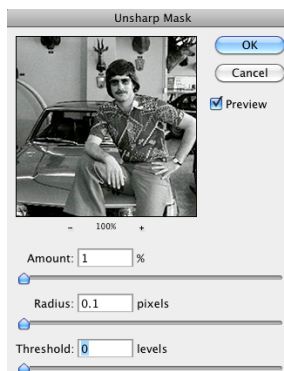
The Sliders

Amount: When you sharpen an image, Photoshop takes the edge between two colors and makes the light pixels lighter and the dark pixels darker. Amount determines how light the lighter pixels get, and how dark the darker pixels get.

If you set the amount too high, your picture will look grainy and overly contrasty, and you'll actually lose some fine detail.

Radius: This determines the area that will be sharpened. A low radius means only the pixels right next to the edge will be sharpened. A high radius means a wider area will be sharpened.

Setting the radius too high will give you weird outlines or halos around your edges. Yech.

Threshold: Threshold determines how much contrast there needs to be between colors for them to be sharpened. A higher threshold means higher contrast areas will be sharpened, but low-contrast areas will not. Sharpening low-contrast areas (like a baby's smooth skin) makes them look rough and speckly.

Setting the threshold too low will give you a grainy look on low-contrast areas, and will make noise stand out.

How To Do It

In a nutshell, you want to set the radius first, then the amount, then the threshold. Here's how:

Step 1: View the image at 100%. Set the radius between 1 and 3. Set the amount between 300 and 500. Set the threshold at 0.

This will look poor. But you're going to fix it in a minute, so don't worry.

Slide the radius level up until you start to see nasty halos forming, then back it off a bit. It's OK if it looks a little bit harsh at this point.

Step 2: Change the image view to 50%. Adjust the amount until it looks grainy and oversharpened, than back it down a little.

Since web images need a fairly high amount of sharpening (in the 300 to 500 range), our example here isn't quite as dramatic as we'd like. We made the "after" image a little soft so you can see what's going on at this stage.

Step 3: Move the threshold slider up until the low-contrast areas look smooth, but you can still see fine details.

All-purpose sharpening: amount=85, radius=1, threshold=4

Sharpening for the web: amount=400, radius=0.3, threshold=0