COURSE : **III BBA (CA)**
SEMESTER : **VI**
SUBJECT : **MULTIMEDIA AND ANIMATION**
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UNIT : **V**

Introduction of layers, Creating & editing New layers, Adding a background, Creating Layer Mask, Layer Masks, Adjustment Layers, Layer style, Adding Fills and Gradients, Filling with paint bucket tools, Filling type with grading Fills, Applying Filters, Blur Filters, Render Filters, Sharpen Filters, Sketch Filters, Texture Filters, Other Special Filters, Printing your document

1. INTRODUCTION OF LAYERS

A layer is simply one image stacked on top of another. Imagine I have a piece of paper and I paint it red. Then I take a peice of clear celophaine and paint a yellow circle, and lay it over the paper. Now I take another peice of cellophane and paint some blue type and laythat on top of the yellow circle. I now have a background (red) and 2 layers (yellow and blue.) Just like in the picture below.

A background with 2 layers.

This is how your image with would look on the screen or when printed.

Broken apart so you can see how the layers work

Each layer stacks on top of the previous one.

That is it! The concept of layers is that simple. Photoshop uses the Layers Pallete to allow you to do this with your images. More than one layer is called a composition.

LAYERS PANEL

Photoshop's layers Panel is a powerful tool that allows you do many special things to your layed compositions. Next we will look at the Photoshop layers pallete.
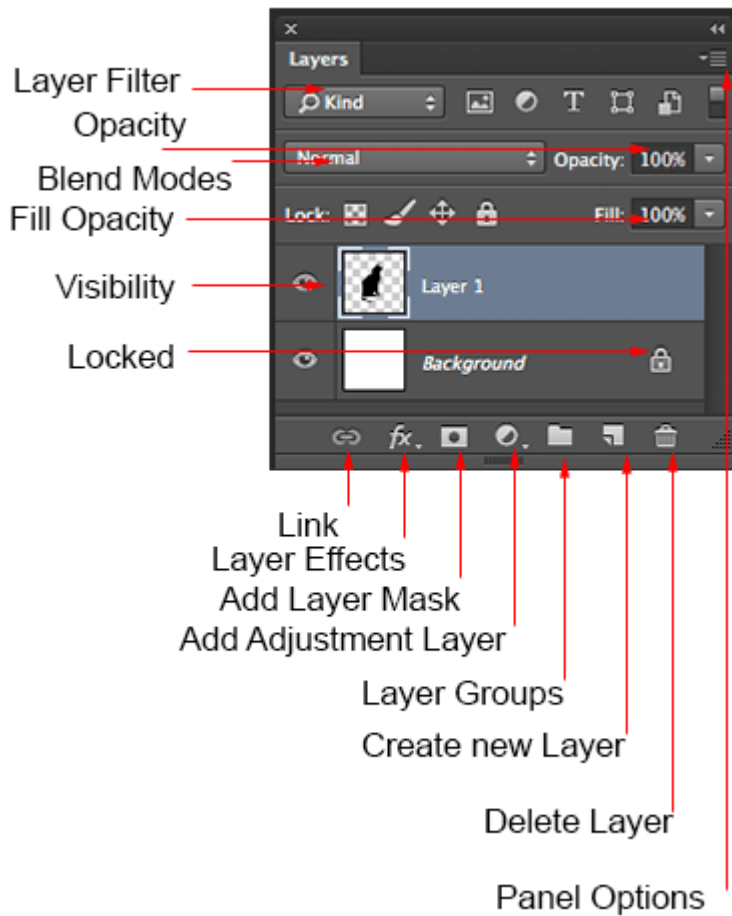
Have you ever wondered what all the parts of a layers panel do? Here is a screen grab of the layers Panel.

Layer Filter: This enables you to hide layers based on different things. Makes it easier to find the layers that you want to work with.

Opacity: 0= transparant 100 = fully opaque. press number keys on keyboard to instantly set to multiples of 10, or adjust the slider for an exact amount of transparency on each layer.

Blend Modes: Change these to change the way that the selected layer blends with the layers underneath it. Great for compositing and special effects. (With the move tool selected, press *Shift+ or Shift-* to cycle through blending modes.

Fill opacity: Adjusts the amount of opacity of the pixels only, but any layer styles are uneffected and remain 100% opaque.

visibility: If the eye is showing that layer is visible. Click on the eye and the layer will still be there but invisible until you click on the eye again.

Locked: The padlock means that something is locked in the layer. (Also click in the 4 icons in the "lock" next to fill opacity to make certain things editable of locked). Here are the different things that can be locked/unlocked.

Lock all: If the box is checked the layer is totally protected from any editing.

Lock Position: You can make any changes except for moving the image.

Lock Image pixels: You cannot draw on this layer if checked.

Lock transparent: You can paint on this layer but not where it is transparent. Useful tools at the bottom of the panel

Link: Enabled you to link layers. These will all move together unless unlinked.

Layer Effects (Styles): Special effects applied to your image layer. Noted by the little f. Each effect will be listed. multiple effects may be used at once.

Add Layer Mask: This is the button to press to add a layer mask to the currently selected layer. Allows you to paint away parts of your layer without damaging your original image.

Add Adjustment Layer: The best way to apply image adjustments. There can change the color or tone of an image. All layers are affected underneath an adjustment layer (Unless clipped). This is a good option to using Image>Adjustments because adjustment layers are non-destructive and re editable.

Layer Groups: A good organizational tool. This puts layers into a folder. You can choose multiple layers and press Cmd/Ctrl+G to put them in a group, or create a group by clicking this icon. Layers can be dragged in or out of groups in the Layers panel.

Create New Layer: Press this icon to create a new layer. Drag an existing layer into this icon to create a duplicate of that layer,

Delete Layer: Drag a layer into this icon to remove it. Or select the layer and then press this icon to get the same result.

Panel Options: This will open a drop down menu that provides a number of options, many that aren't listed anywhere else.

TYPES OF LAYERS

In Photoshop there are a number of different types of layers. They are usually indicated by icons, here is what they all do.

Thumbnail: A small picture of the layers contents.
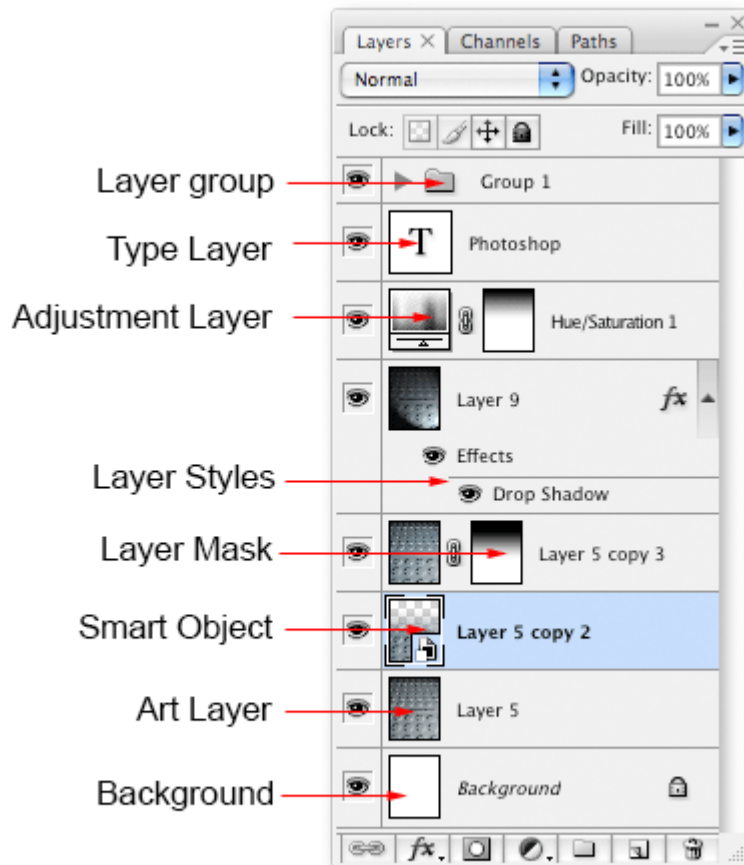
Layer Group: This puts layers into a folder. Layers can be dragged in or out of groups in the Layers panel.

Type Layer: The same as an image layer, except this layer contains type that can be edited; (Change character, color, font or size)

Adjustment Layer: An adjustment layer is changing the color or tone of all the layers underneath it. To only affect th layer directly underneath it (an ignore the other underlying layers): Move your pointer on the line between the adjustment layer and the layer directly beneath it, hold down Alt/Option. You will see a symbol appear. Click to limit the adjustment. (clip to layer) do the same thing again to toggle this option off.

Layer Style: An effect has been applied. Click the eye to turn it on or off. Double click "effects" to open the Layer Styles options.

Layer Mask: Allows you to paint on the mask to show and reveal portions of the image.

Smart Object: A special type of layer that is actually a container that can hold; multiple (or 1) layers, vectors for illustrator, raw files, video, 3D or many other types of objects. To learn about Smart Objects in depth, check out this video,

SPECIAL TYPES OF LAYERS

There are two different types of layers that have appeared in newer version of Photoshop. These used to only be in Photoshop Extended. With Photoshop CC, there is no longer a seperate Extended version, all the features are now inluded with every copy of photoshop.
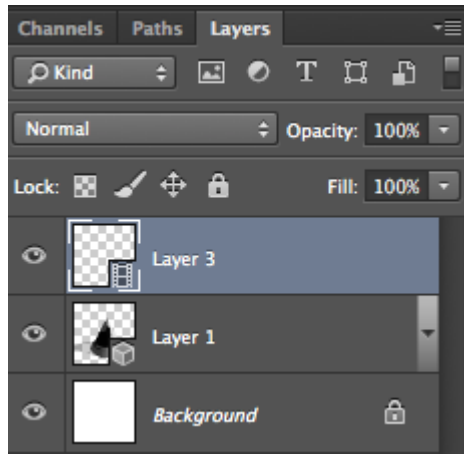
Video Layer: This indicates that there is video on this layer. Photoshop is now able to be used as a video editor, to worki with video, animated slideshows and motion graphics. See Video in Photoshop if you want to learn about video editing in Photoshop.

3D Layer: Photoshop is capable of importing and working with 3D objects. It also has the ability to do 3D printing.
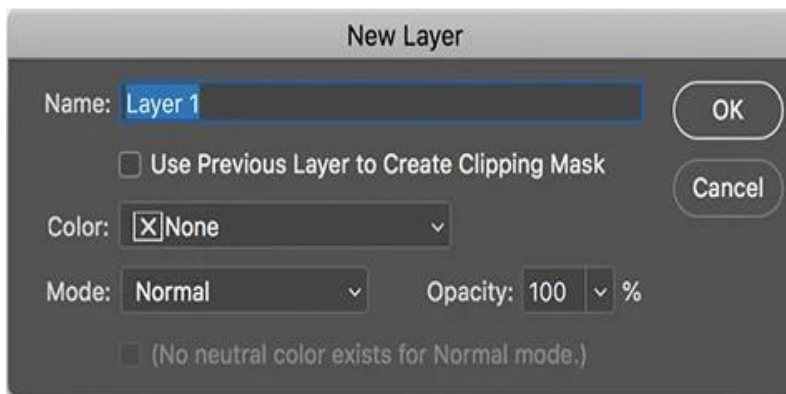
2. CREATING & EDITING NEW LAYERS

CREATING NEW LAYERS

There are several ways to create a new Layer in Photoshop. The quickest method is to type SHIFT+CTRL+N (SHIFT+COMMAND+N on a Mac) to automatically create a new Layer on top of any existing Layers in your document.

You can also create a new Layer by clicking on the Layers panel menu (which looks like four horizontal lines on the right-hand side of the panel) and selecting New Layer.
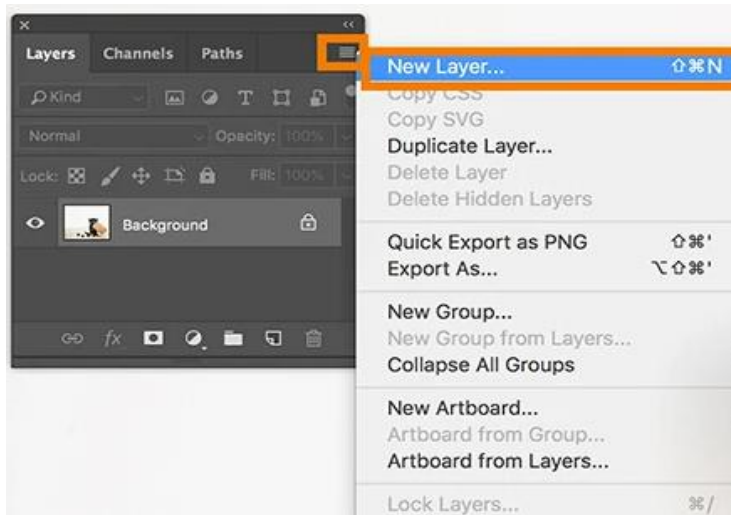
A dialog box will pop up with options for the new Layer you're about to create. You can change each of these options afterwards, so it's fine to leave everything as is and click OK.

Once you've created a new Layer, you can add an object to it or draw in it without affecting the background.

EDITING NEW LAYERS

Now that you understand how layers work, you'll start editing them in your file.

Converting the Background layer into a regular layer

The Background layer is always the bottom layer in an image. Other layers stack on top of the Background layer, which often contains the actual image data of a photo.

The Background layer is always locked by default to protect that image. In order to rename (and later re-stack) the Background layer, you'll need to convert it to a regular layer.

1. In the Editor, double-click the Background layer in the Layers panel. The New Layer dialog box opens.
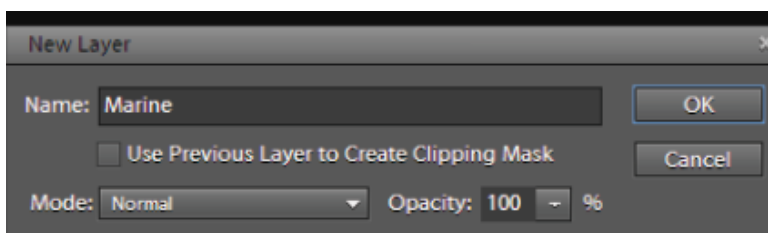
In the New Layer dialog box, you can set the Name, Blending mode, and Opacity of the converted layer.

2 Type Marine in the Name text field and leave the other options at their defaults. Press OK.

3 To avoid confusion, double-click the flag layer (currently Layer 1) and name it Flag. Press OK.

3. ADDING A BACKGROUND

When we create a new Background layer, Photoshop will fill the layer with our current **Background color**. So before we go any further, and to avoid unexpected results, we should check to make sure that our Background color is set to the color we need.

We can see our current Foreground and Background colors in the **color swatches** near the bottom of the **Tools panel**. By default, Photoshop sets the Foreground color to black and the Background color to white. Since white is the most common color for the background, these default colors work great.

If your Foreground and Background colors are set to something other than the defaults, press the letter **D** on your keyboard to quickly reset them (think "D" for "Default colors"):

The Foreground (upper left) and Background (lower right) color swatches.

If you'd rather fill your Background layer with black instead of white, first press the letter **D** on your keyboard to reset the Foreground and Background colors to their defaults (if needed). Then press the letter **X** on your keyboard to swap them, which sets your Background color to black:


Press X to swap the Foreground and Background colors.

You can press X again if you change your mind to swap them back to the default settings, which is what I'm going to do because I want my Background layer to be filled with white. Either way, just make sure you check your Background color before creating the Background layer.

4. CREATING LAYER MASK

So far, we've seen that the Opacity option in the Layers panel can only affect entire layers at once, and that the Eraser Tool causes permanent damage to an image. Let's see if a layer mask can give us better results.

We want to blend the top image in with the layer below it, which means that we'll need to hide some of the top layer to let the bottom layer show through. The first thing we'll need to do, then, is select the top layer in the Layers panel (if it isn't selected already):
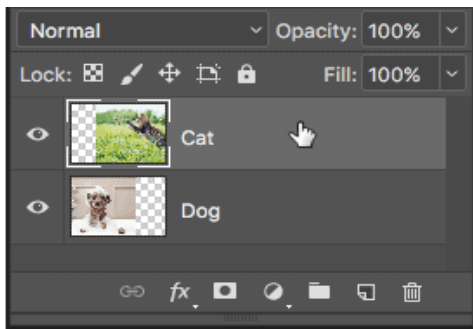

Selecting the top layer.

Then, to add a layer mask to the selected layer, we simply click the **Add Layer Mask** icon (the rectangle with a circle in the middle) at the bottom of the Layers panel:
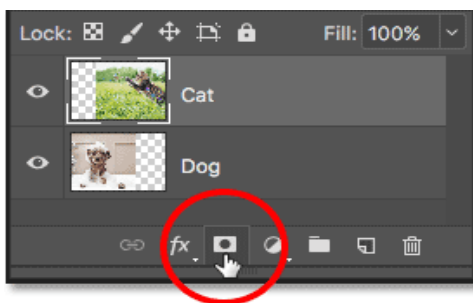
Clicking the "Add Layer Mask" icon.

Nothing will happen to the images in the document, but if we look again in the Layers panel, we see that the top layer now shows a **layer mask thumbnail** to the right of its preview thumbnail:
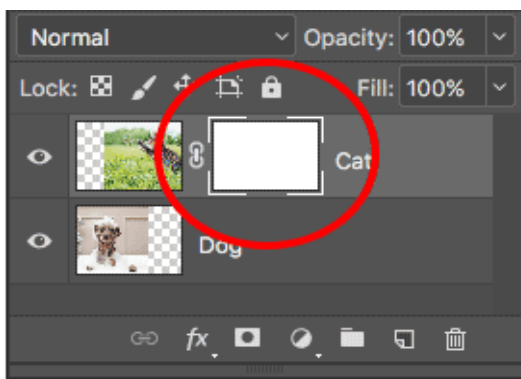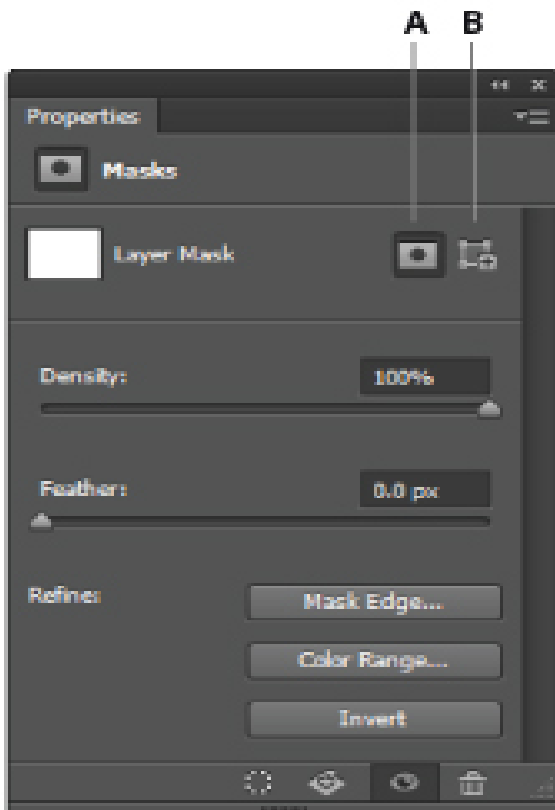

A layer mask thumbnail appears on the selected layer.

5. LAYER MASKS

Layer masking is a reversible way to hide part of a layer. This gives you more editing flexibility than permanently erasing or deleting part of a layer. Layer masking is useful for making image composites, cutting out objects for use in other documents, and limiting edits to part of a layer.

You can add black, white, or gray color to a layer mask. One way to do that is by painting on the layer mask. Black on a layer mask hides the layer that contains the mask, so you can see what is underneath that layer. Gray on a layer mask partially hides the layer that contains the mask. White on a layer mask shows the layer that contains the mask.

A. Layer Mask
B. Vector Mask

Create a layer mask
1. Select a layer in the Layers panel.
2. Click the Add layer mask button at the bottom of the Layers panel. A white layer mask thumbnail appears on the selected layer, revealing everything on the selected layer.

Add black to a layer mask to conceal

Adding black to a layer mask hides the layer that contains the mask.
1. In the Layers panel, make sure there is a white border around the layer mask thumbnail. If there is not a white border, click the layer mask thumbnail.

2. Select the Brush tool in the Toolbar. In the Options bar, open the Brush Picker and choose the size and hardness of the brush.

3. Press D to set the default colors of white and black in the Toolbar. Then press X to switch the colors, so black becomes the foreground color.

4. Paint over the image, which adds black to the layer mask. Black on the layer mask hides the layer with the mask, so you can see the layer below or the checkerboard pattern that represents transparency.

Add white to a layer mask to reveal

Adding white to a layer mask shows the layer that contains the mask. You can paint with white on a layer mask to reveal content you had previously concealed with black on the layer mask.

1. Press X to switch the foreground and background colors in the Toolbar, so white becomes the foreground color.

2. Paint over hidden areas of the image. This adds white to the layer mask, bringing back into view corresponding areas of the masked layer.

Fine-tune the layer mask with black, white, and gray

Switching between black and white as you paint on a layer mask is a flexible way to fine-tune the mask edge. If you use a soft brush, the edges of the brush will apply shades of gray, partially hiding that part of the layer with the mask.

Save your work with layers

- Save the image in .PSD or .TIFF format to retain the layers and layer masks for future editing.

6. ADJUSTMENT LAYERS

The Adjustment Layers in Photoshop are a group of a super useful, <u>non-destructive image editing</u> tools that add color and tonal adjustments to your image without permanently changing its pixels.

With the adjustment layers, you can edit and discard your adjustments or restore your original image at any time. This will make your workflow in Photoshop more flexible and efficient, and is an absolute must-know.

When you add an adjustment layer to your image, a new layer will appear over your image and a Properties panel specific to the type of adjustment you've selected will pop up. The Properties panel will allow you to modify your adjustment layer, which in turn will modify your image.
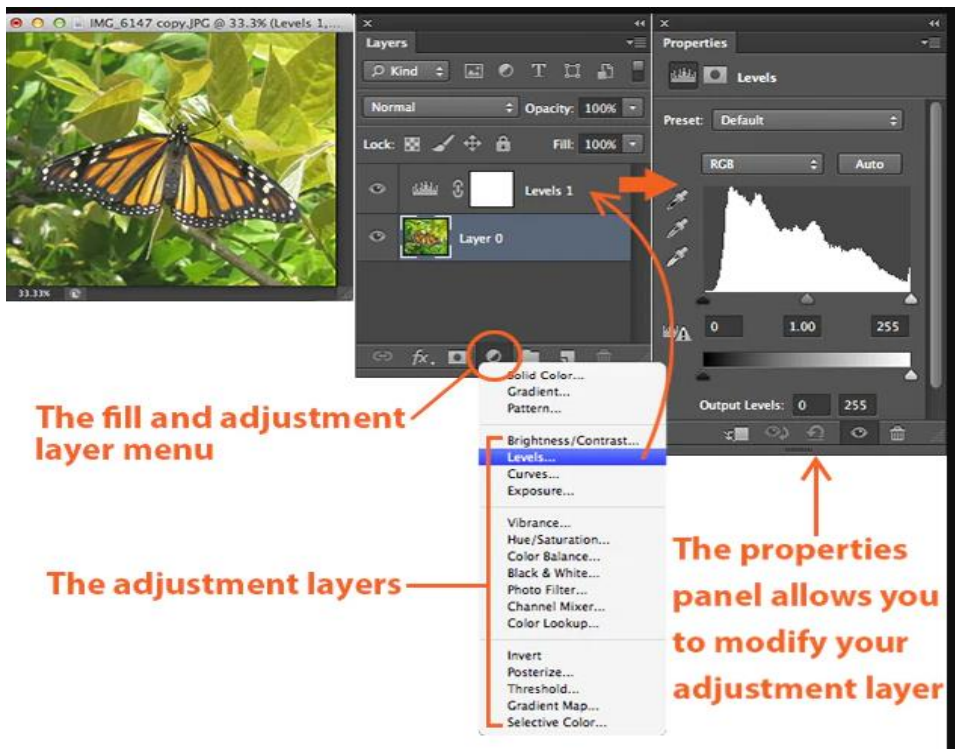
1. Brightness/Contrast
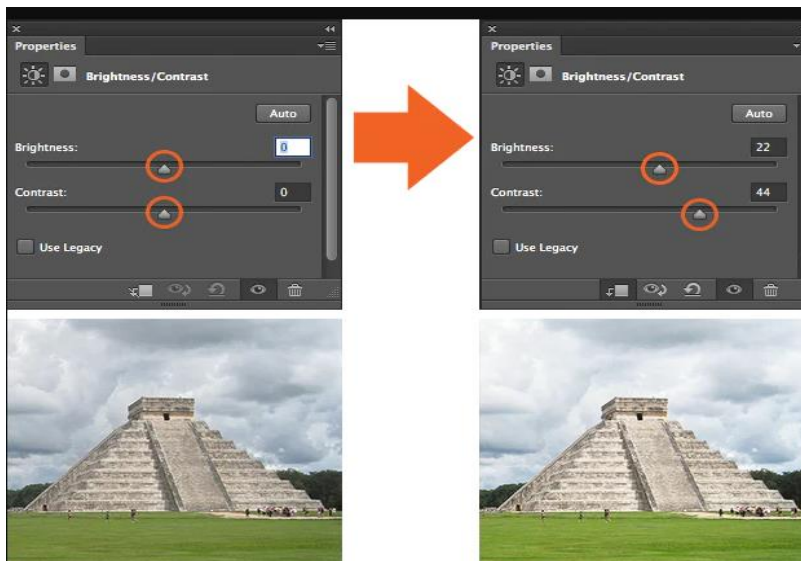
Brightness/Contrast makes adjustments to the tonal range of your image. The brightness slider is for adjusting the highlights in your image and the Contrast slider is for adjusting the shadows in your image.

2. Levels

Levels modify the tonal values in an image by adjusting the levels of the shadows, midtones, and highlights. It's one of the most used tools in the adjustment layer panel, and using just a touch of levels will go a long way in correcting your images.
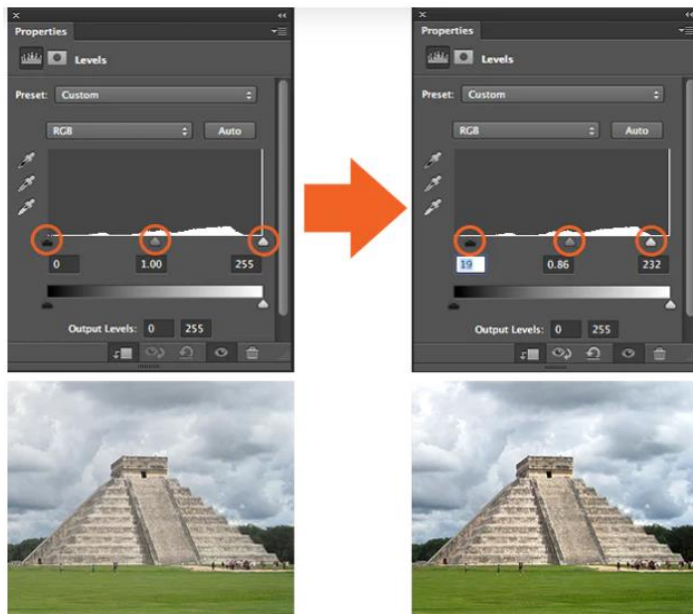
3. Curves
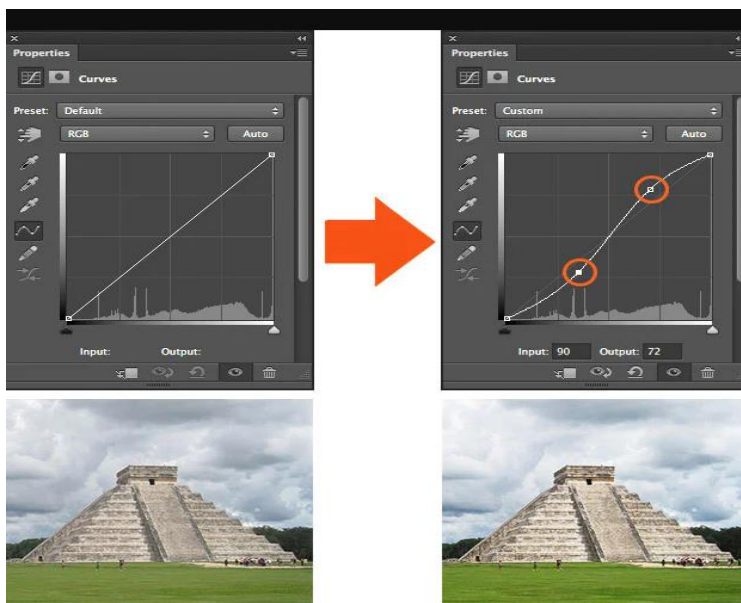
Curves let you adjust as many points as you want throughout the entire tonal range of your image, and is the most powerful and precise tool for editing the tones in an image. When you click on the curves adjustment, a diagonal line on a graph appears *(left)* which represents your image's tonal range. The x-axis represents the original values in the image, while the y-axis represents the new adjusted values. Along each axis, you can see that there's strip that's a gradient from black to white, representing the tonal range of the image.

To increase the overall quality and contrast of your image, click to add points on the line of your graph. Once you've added a point, you can drag the point up or down with your mouse. Pulling the point down darkens your image, pulling the point up brightens it. What I've done above is add two points to my graph, pulling one up to enhance the highlights, and pulling one down to enhance the shadows in the image, creating a slight "S" curve. This is just the basics, but even the most simple uses of the curves tool can greatly improve your images.

4. Exposure
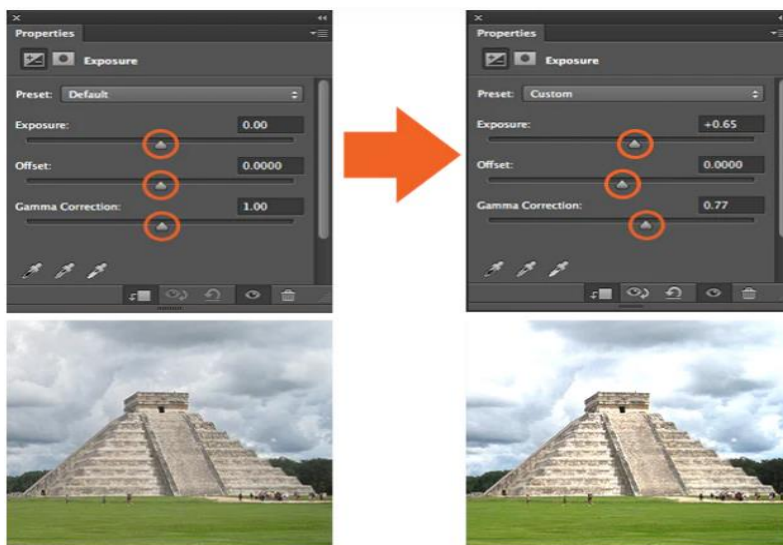
Exposure lets you adjust exposure levels with three sliders: **Exposure, Offset and Gamma**. Exposure will adjust only the highlights of the image, Offset adjusts the mid tones and Gamma will adjust the dark tones only.

5. Vibrance
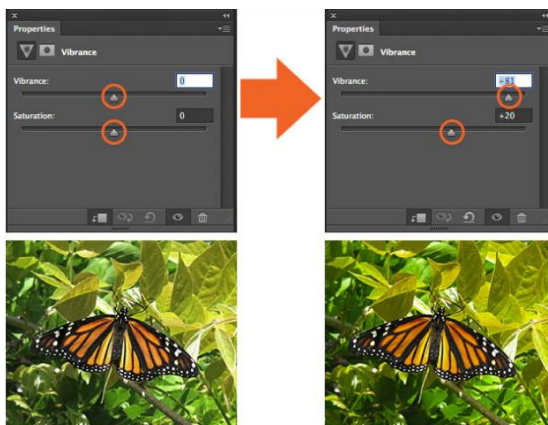
This adjustment layer modifies the vibrance of an image in two ways. The **Saturation slider** evenly increases the saturation of all the colors in the image. The **Vibrance slider** modifies the level of saturation of all the colors too but more selectively, focusing on the least saturated colors and avoiding over saturation of skin tones.

6. Hue/Saturation

Hue/Saturation lets you adjust the hue, saturation, and lightness of your entire image or in a specific range of colors in your image.

In the first example, I adjusted the sliders to increase the saturation of the entire image. In the second example, I clicked on the "Preset" drop down menu, which gave me the option to select "Greens." I selected the greens because I wanted to decrease the saturation of only the greens in my image to make it easier on the eyes.

It's usually better to not affect saturation on an entire image — doing this reduces the overall tonal range. Instead try affecting the saturation of specific colors in your image to have greater control over your image editing. This tool is also good for colorizing grayscale images.
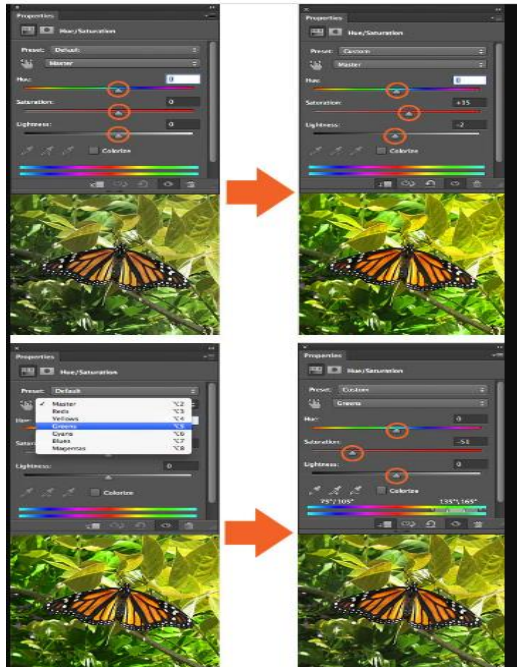

7. Color Balance
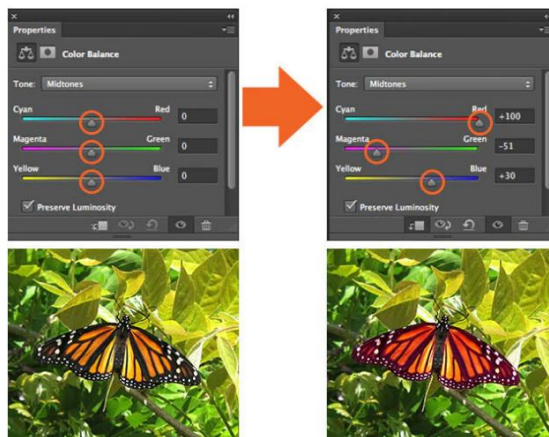
The **Color Balance adjustment** changes the mixture of colors in an image. In this example, I've made a selection of the butterfly's wings only and adjusted the color balance sliders to bring out the reds and magentas in its wings.

8. Black & White

The **Black and White adjustment** lets you make grayscale versions of your images. The image on the left is the default setting. In the image on the right I changed the preset to "Custom" adjusting the sliders so that I have more control over how the reds in the wings of my butter fly were converted to black and white.
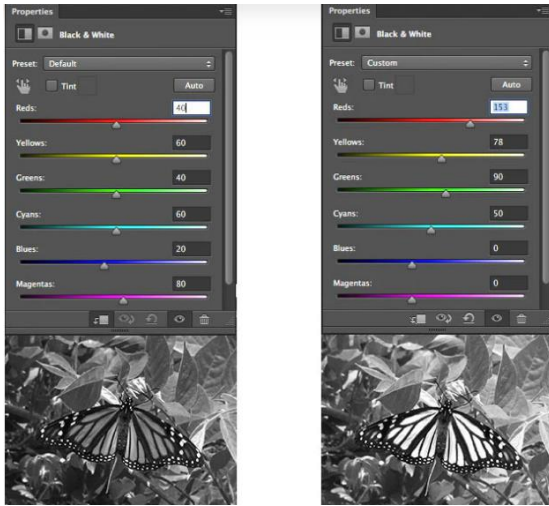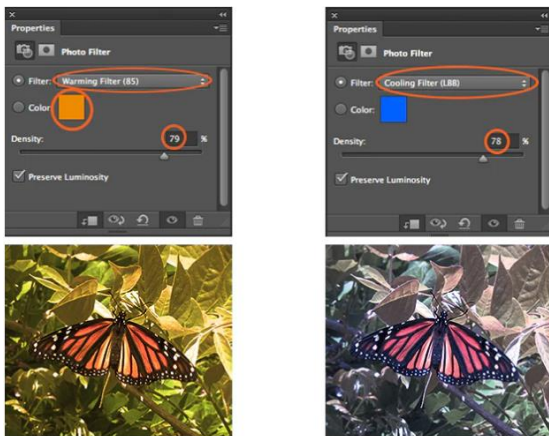
9. Photo Filter

Photo Filter adds different color filters on top of your image. For both of the examples above the "Preserve Luminosity" box is checked by default and I adjusted the "Density" slider to intensify the effect of the filter. You can also customize each color filter by double-clicking the color swatch in the properties panel an adjusting it in the Color Picket window that pops up.

## 10. Channel Mixer
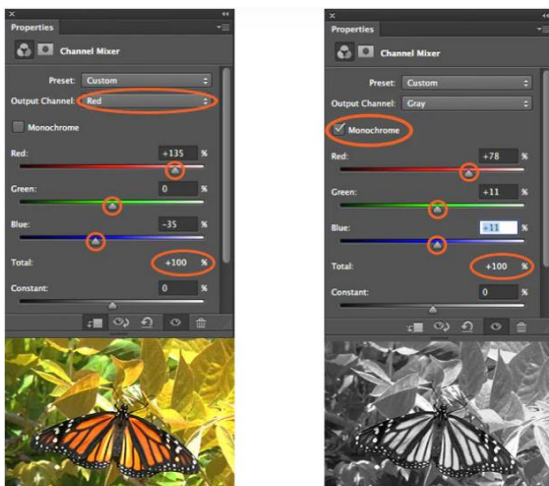
Channel Mixer modifies the colors in your image to create tinted or grayscale images. On the right we've used the red channel to bring out a red tint in the image. On the left we've checked

the "Monochrome" box and adjusted the sliders to ensure a better color conversion to grayscale. For the best results with this tool, make sure that your channels add up to 100%.

11. Color Lookup
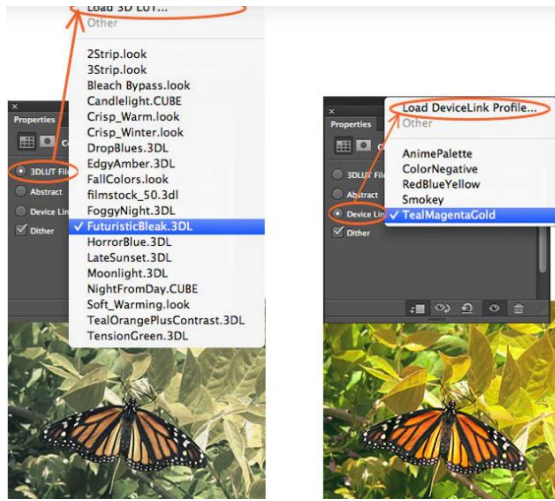
This adjustment comes with a bunch of pre-packaged "looks" for you to apply to your image. Three options (**3DLUT File, Abstract, and Device Link**) that are used to load these different looks. Each "look" remaps the colors in your image by using a lookup table (LUT). These effects are pretty interesting, and you can even create your own LUTs in Adobe Speedgrade and load into Photoshop to stylize your images.

12. Invert

The **Invert adjustment layer** makes a photo negative effect by inverting the colors of your image.

13. Posterize
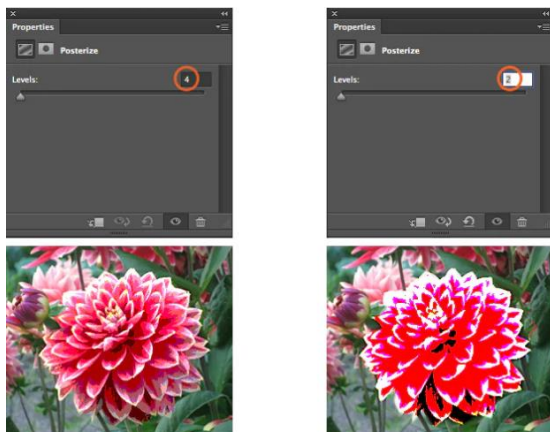
Posterize produces a flat, poster-like appearance to a photo by reducing the number of brightness values (levels) in the image.

14. Threshhold
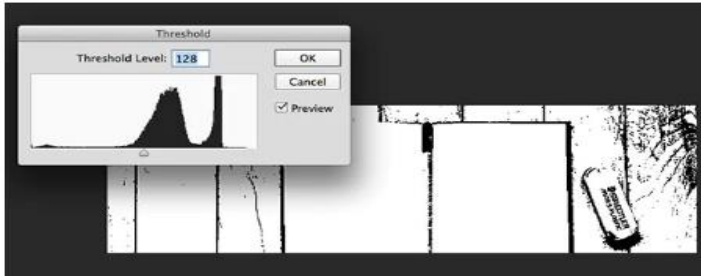
The **Threshold tool** turns your image into a black and white image. For this example I made of selection of only the flower so that the threshold was only applied to the flower. Increasing and decreasing the Threshhold level controls the number of pixels turning black or white.

15. Gradient Map
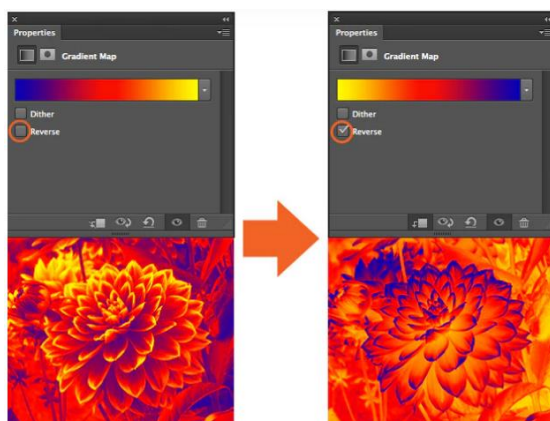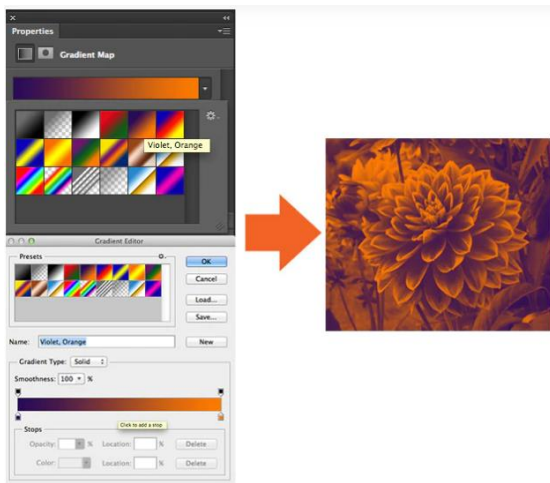
This tool converts the grayscale range of an image to a custom gradient fill. The **Gradient Map tool** comes with a bunch of different gradients, all of which you can adjust to your liking in the gradient editor window. Checking the "Reverse" box inverts the colors of your gradient.

16. Selective Color
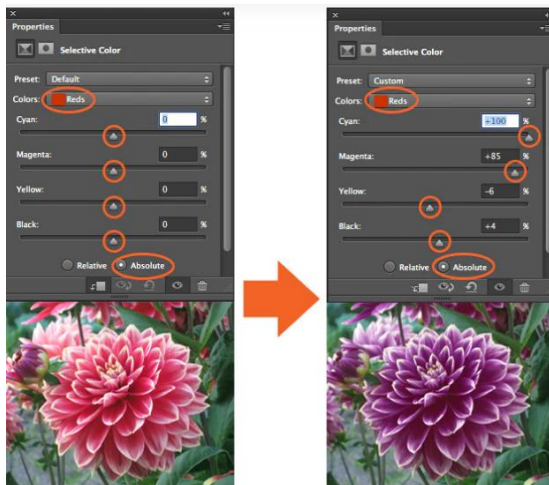
       The **Selective Color** adjustment layer selectively modifies the amount of a primary color without modifying the other primary colors in your image. Since there's a lot of reds in my flower photo, I've selected red from the "Color" drop down menu as the color in my photo that I want to select and change. By default the "Absolute" box is checked in CS6, which adjusts the color in absolute values. (The "Relative" option changes the existing amount of cyan, magenta, yellow, or black by its percentage of the total.)

7. LAYER STYLE

       A layer style is simply one or more layer effects and blending options applied to a layer. Layer effects are things like drop shadows, stroke, and color overlays.
Here is an example of a layer with three layer effects (Drop Shadow, Inner Glow, and Stroke).
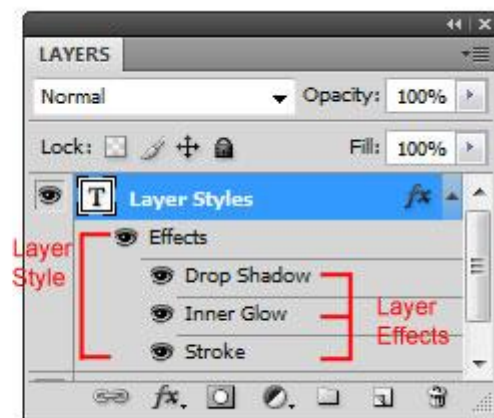
You can turn off a layer style by clicking on the eye icon beside Effects so that you can see how the original layer looks without its layer style.
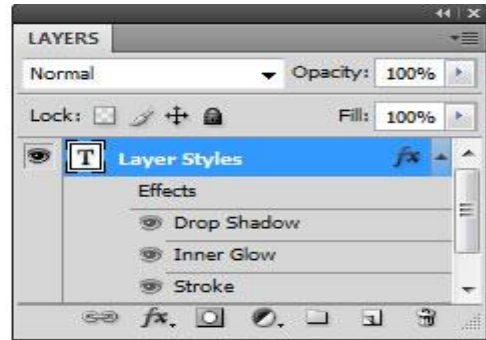
Similarly, you can turn off the visibility of each layer effect. In the following example, the Drop Shadow layer effect was disabled.
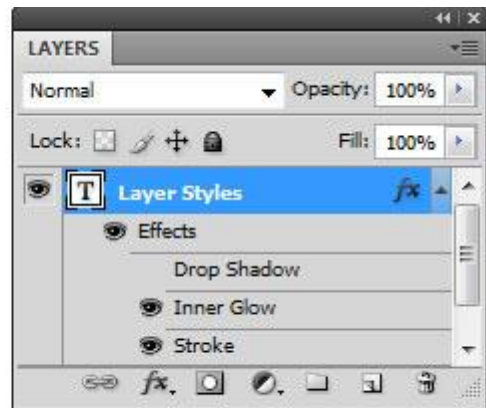
You can tell that a layer has a layer style because of the fx icon on its right side.
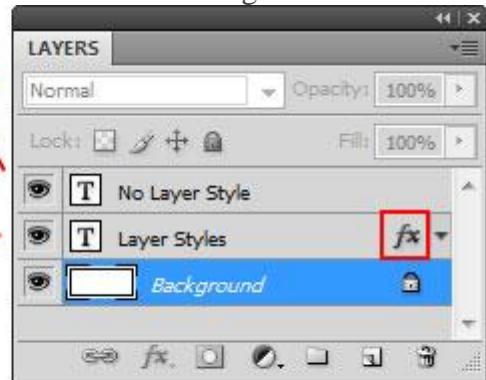
Applying Layer Styles
To set up a layer style, you will use the Layer Style dialog window. There are various ways to access the Layer Style dialog window.
Right-Clicking on a Layer
By right-clicking on your layer, you can select *Blending Options* to open up the Layer Style dialog window.
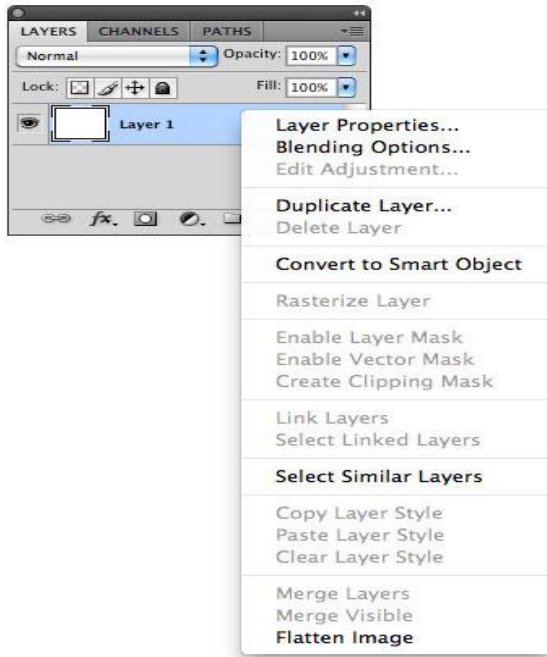
Double-Clicking on a Layer

By double-clicking on your layer's thumbnail preview in the Layers Panel, you can open up the Layer Style window.
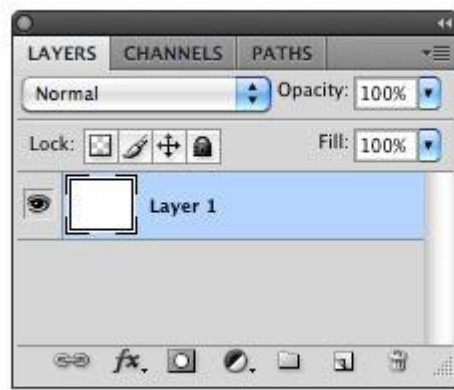
Application Bar Menu

Like most things in Photoshop, you can access the Layer Style dialog window through the Application Bar menu by going to Layer > Layer Style. You can find each individual layer effect (Drop Shadow, Inner Shadow, etc.), as well as an option to open up the Layer Style dialog window (Blending Options).
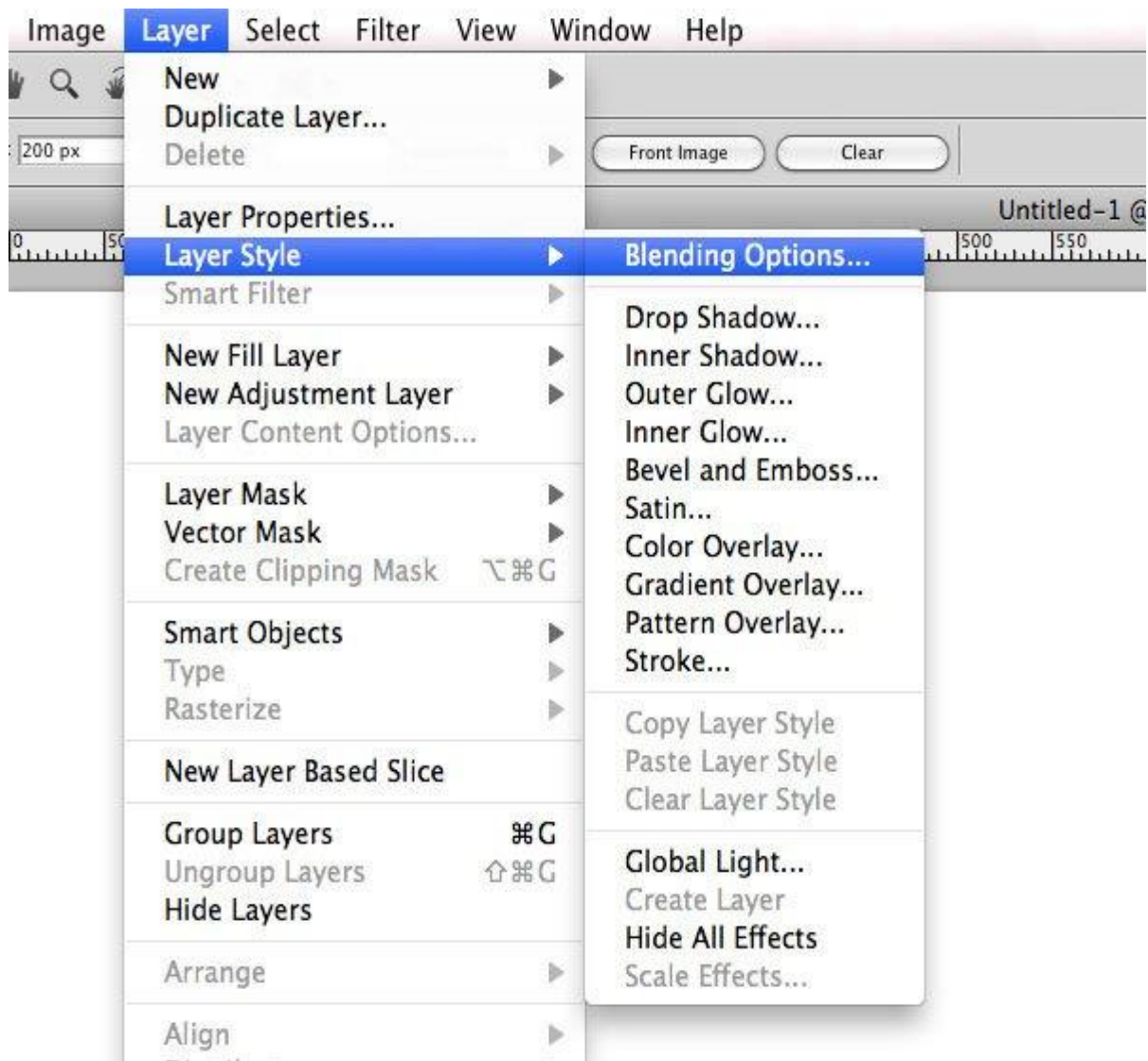
Use Preset Layer Styles Using Styles Panel

The Styles Panel features preset layer styles such as "Sunspots" or "Tie-Dyed Silk". Just select a layer and click on the appropriate preset layer style to apply it.

You can view the Styles Panel by going to Window > Styles.
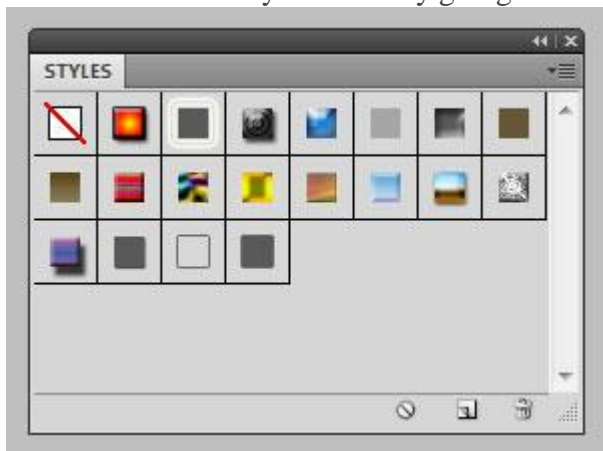
The Layer Style Dialog Window

When you first open the Layer Style window, you will see the Blending Options. Here you can adjust the Blend Mode and layer Opacity, as well as some more advanced blending effects.
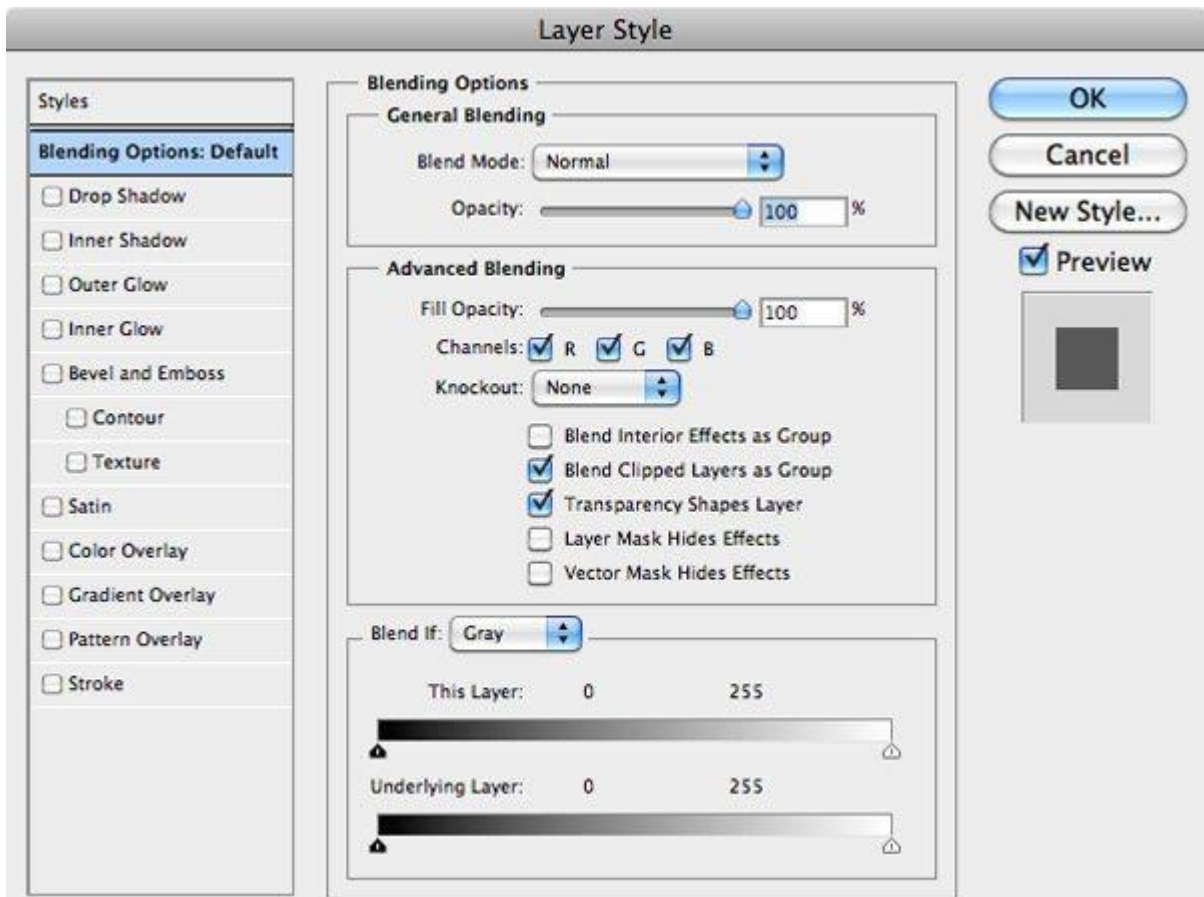
A layer style can have one or more different layer effects. To apply a layer effect, check the box beside it.

Be sure to enable the **Preview** option so that you can see your changes in real-time.

To quickly preview what your layer style looks like, there's a thumbnail on the right side of the window to help remind you.
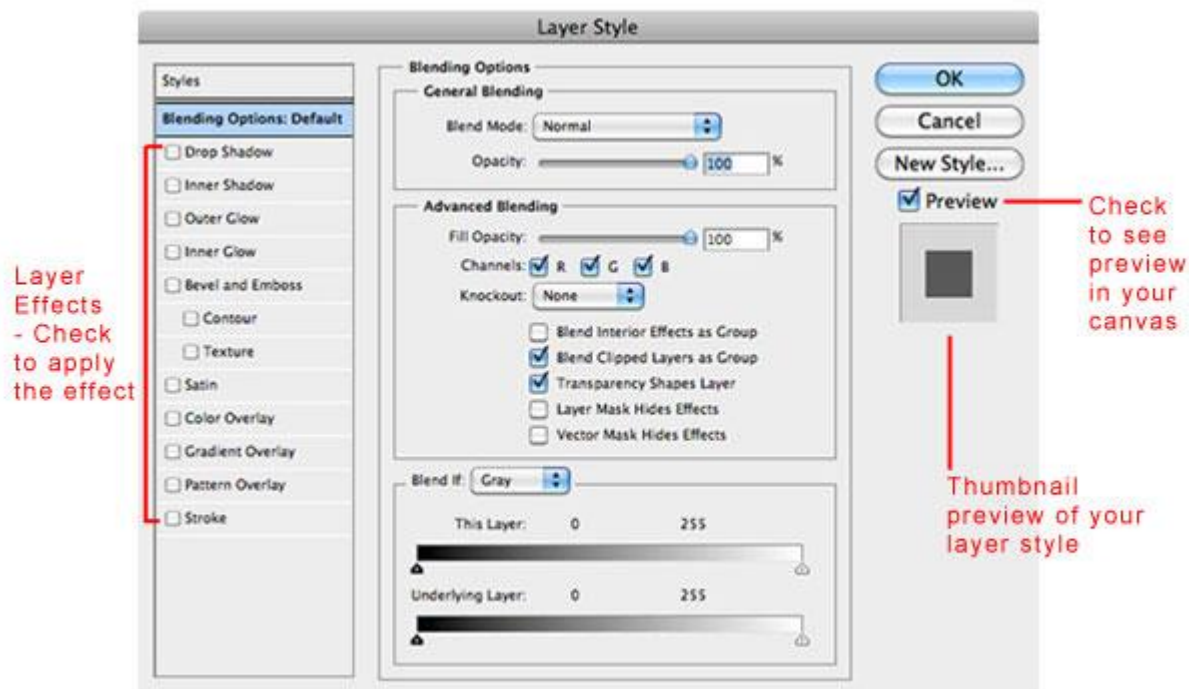
8. ADDING FILLS AND GRADIENTS

You have lots of options for adding gradients, from simple built-in gradients to ones you create yourself. You can add gradients to basic shapes and text boxes, as well as shapes that are part of charts, SmartArt, and WordArt. You can quickly apply preset gradients, or you can create your own gradient fill with custom colors and specified brightness, transparency, gradient directions, and positioning.

The simplest way is to click the shape to select it, and then click the **Format** tab that appears:

- For shapes, text boxes, and WordArt, the **Format** tab appears under **Drawing Tools**.
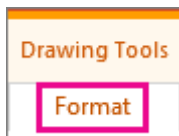
- For chart shapes, the Format tab appears under **Chart Tools**.
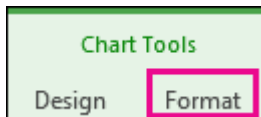
- For SmartArt shapes, the **Format** tab appears under **SmartArt Tools**.
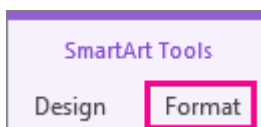
On the **Format** tab, click **Shape Fill**, click **Gradient**, and select the one you want.
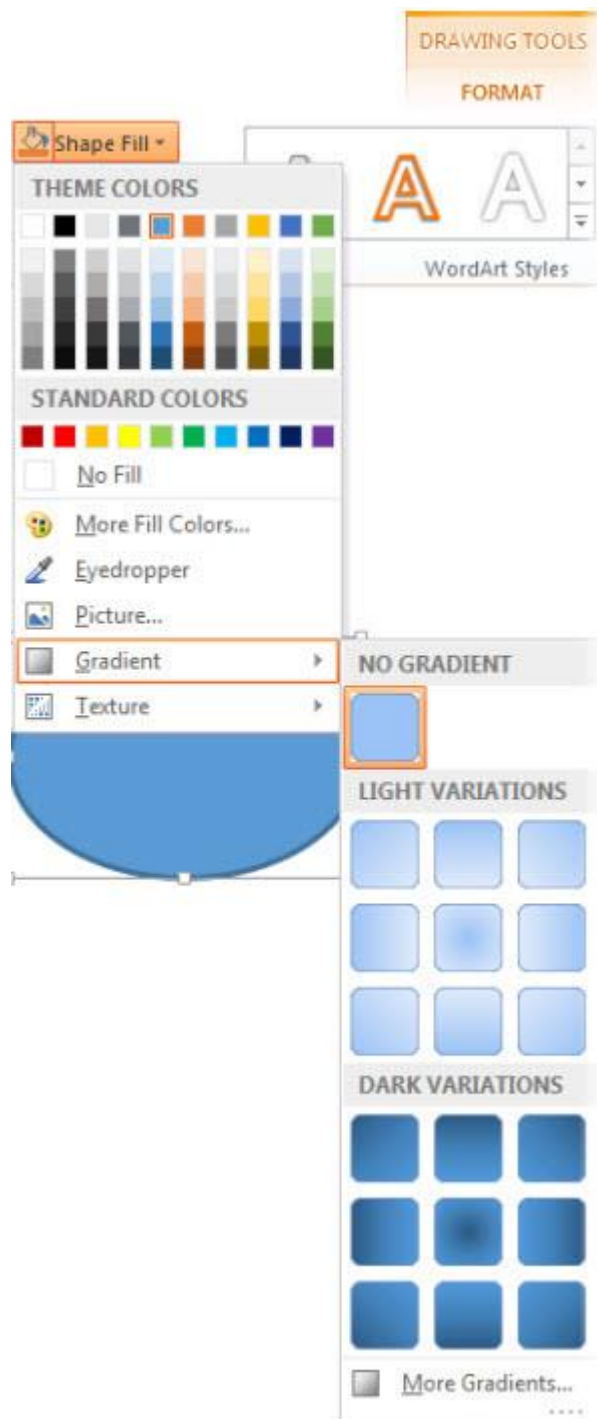
Apply a preset gradient

1. Click the shape, and when the **Format** tab appears, click **Shape Fill**.
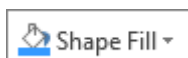
2. Click **Gradient** > **More Gradients**.

3. Under **Fill**, click **Gradient fill** > **Preset gradient** and pick the one you want.

For each of the fill colors that you want in your gradient:

- To apply a color a gradient stop, click a stop on the **Gradient Stops** bar, and then click **Color** to choose the color you want.

  Here's an example of a linear rainbow gradient fill that was created by using six gradient stops, each with a different color.

- If you want to move a particular gradient stop into a precise position, click a percentage in the **Position** box.

- If you want, adjust the **Brightness** or **Transparency** sliders for each gradient stop. This must be done independently for each stop.

  More about gradient fill:

  - A gradient fill is a shape fill that gradually changes from one color to another across the surface of the shape.
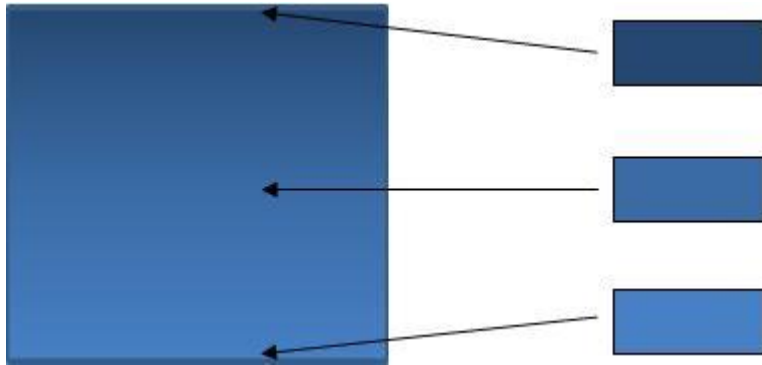
- A shape fill that gradually changes between three colors
- It can be a variation of one color as shown above, or a blending of two or more different colors to create stunning effects like the examples below.

- Preset **Horizon** gradient fill
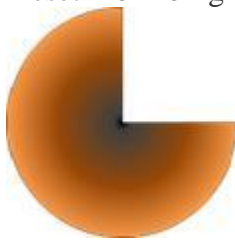
- Custom gradient fill

9. FILLING WITH PAINT BUCKET TOOLS

The Paint Bucket tool fills adjacent pixels that are similar in color value to the pixels you click.
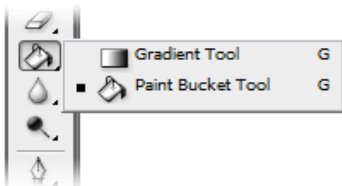
1. Choose a foreground color. (See Choose colors in the toolbox.)
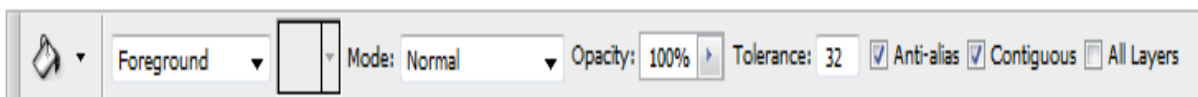
2. Select the Paint Bucket tool .
3. Specify whether to fill the selection with the foreground color or with a pattern.
4. Specify a blending mode and opacity for the paint. (See Blending modes.)
5. Enter the tolerance for the fill.
   The tolerance defines how similar in color a pixel must be (to the pixel you click) to be filled. Values can range from 0 to 255. A low tolerance fills pixels within a range of color values very similar to the pixel you click. A high tolerance fills pixels within a broader range.
6. To smooth the edges of the filled selection, select Anti-aliased.

7. To fill only pixels contiguous to the one you click, select Contiguous; leave Contiguous unselected to fill all similar pixels in the image.
8. To fill pixels based on the merged color data from all visible layers, select All Layers.
9. Click the part of the image you want to fill. All specified pixels within the specified tolerance are filled with the foreground color or pattern.
   If you're working on a layer and don't want to fill transparent areas, make sure that the layer's transparency is locked in the Layers panel.

The example below shows how a simple gradient is filled with green when the center of the image is clicked. The first fill uses a tolerance of 16, the second uses a tolerance of 64:

10. FILLING TYPE WITH GRADING FILLS

You fill an area with a gradient by dragging within the image or by selecting with the Gradient tool. The distance between the starting point (where you first press the mouse button) and ending point (where you release the mouse button) affects the gradient appearance, as does the gradient type.
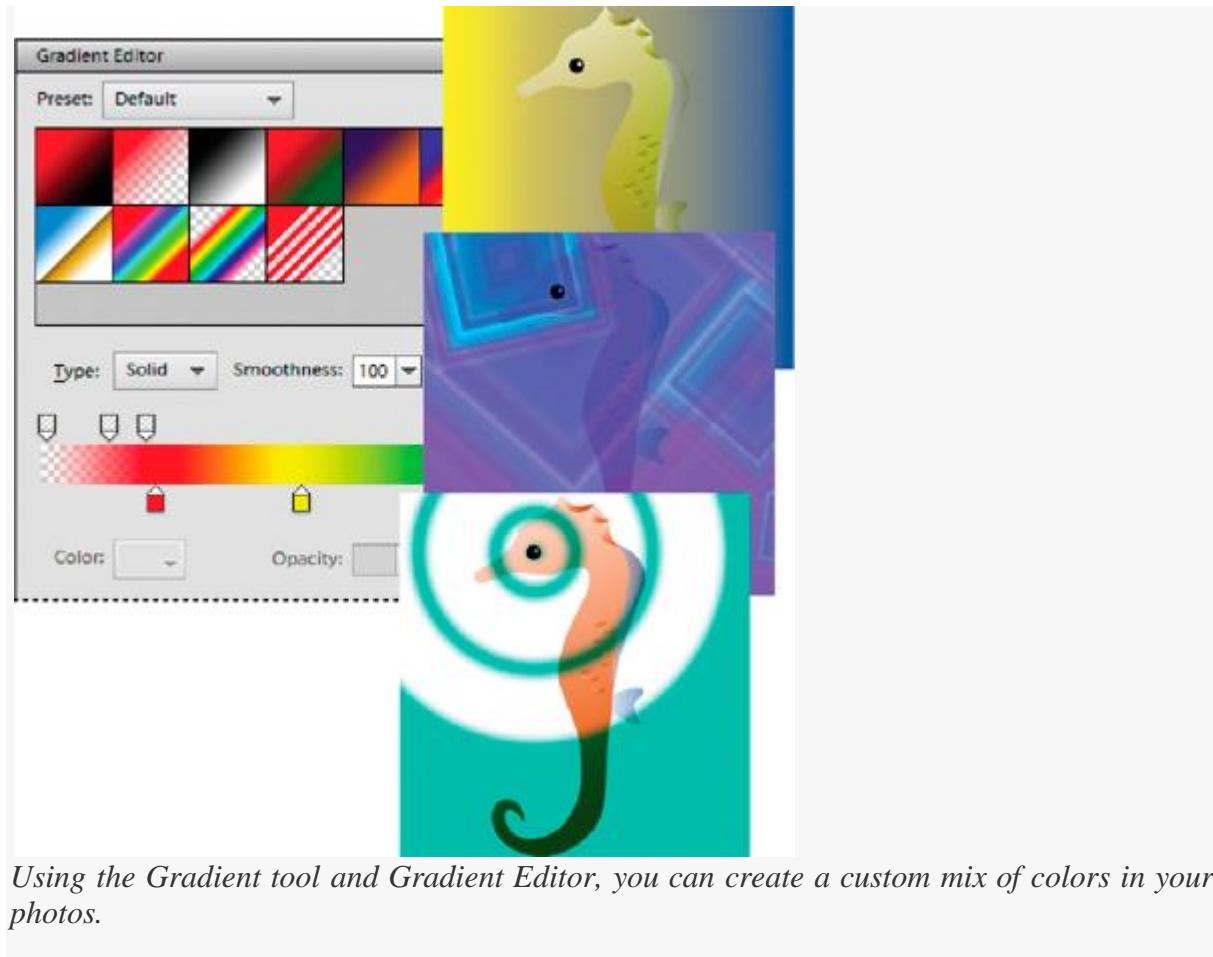
Using the Gradient tool and Gradient Editor, you can create a custom mix of colors in your photos.

You can choose any of the following gradient types in the Tool Options bar.

Linear gradient
Shades from the starting point to the ending point in a straight line.

Radial gradient
Shades from the starting point to the ending point in a circular pattern.

Angle gradient
Shades in a counterclockwise sweep around the starting point.

Reflected gradient
Shades using symmetric linear gradients on either side of the starting point.

Diamond gradient
Shades from the starting point outward in a diamond pattern. The ending point defines one corner of the diamond.

Gradients are stored in libraries. You can choose a different library of gradients to display in the Gradient Picker menu by clicking the the menu and selecting a library at the bottom of the list. You can also save and load your own libraries of gradients in this menu. You can also manage gradients by using the Preset Manager.

APPLY A GRADIENT

1. To fill part of the image, select the area with one of the selection tools. Otherwise, the gradient fill is applied to the entire active layer.
2. Select the Gradient tool .
3. In the Tool Options bar, click the desired gradient type.
4. Choose a gradient fill from the Gradient Picker panel in the Tool Options bar.
5. (Optional) Set gradient options in the Tool Options bar.

Mode
Specifies how the gradient blends with the existing pixels in the image.

Opacity
Sets the opacity of the gradient. A low opacity setting allows pixels under the gradient to show through. Drag the slider or enter an opacity value.

Reverse
Switches the order of the colors in the gradient fill.

Transparency
Uses the gradient's transparency (instead of any transparent areas in the image) if the gradient has transparent areas.

Dither
Creates a smoother blend with less obvious bands of color.

6. In the image, position the pointer where you want to set the starting point of the gradient, and drag to define the ending point. To constrain the gradient angle to a multiple of 45°, hold down Shift as you drag.

Apply Gradient Fill To Text

1. Select the text you want to fill.
2. Choose Layer > Simplify Layer to convert the vector text to a bitmap image. You won't be able to edit the text after you simplify the layer.

3. Control-click (Command-click in Mac OS) the thumbnail for the text layer in the Layers panel to select the text.
4. Select the Gradient tool.
5. In the Tool Options bar, click the desired gradient type.
6. Choose a gradient fill from the Gradient Picker panel.
7. Position the pointer on the text where you want to set the starting point of the gradient, and drag to define the ending point.

Define a gradient

You can define your own gradients in the Gradient Editor dialog box. A gradient can include two or more colors, or one or more colors that fade to transparency.

Gradient Editor dialog box.

A. Color Stop **B.** Color Midpoint **C.** Opacity Stop
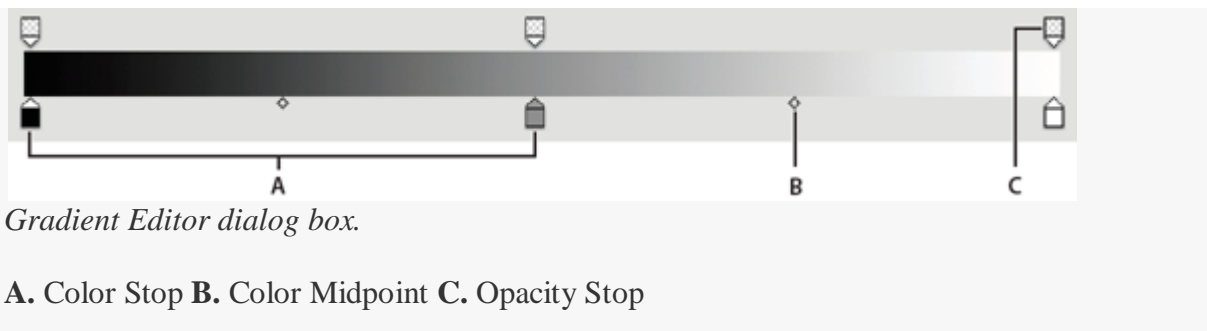
To define a gradient, you add a color stop to add a color to the gradient, drag the color stop and the midpoint icon to define the range between two colors, and adjust the Opacity stops to specify the transparency that you want in the gradient.

1. From the Draw section in the toolbox, select the Gradient tool.
2. To display the Gradient Editor dialog box, click the Edit button below the gradient sample.
3. In the Preset section of the Gradient Editor dialog box, select a gradient on which to base your new gradient.
4. To choose colors for your gradient, double-click the color stop, or click the Color swatch to display the Color Picker. Choose a color, and click OK.
5. To adjust the color stop location of a color, drag the stop left or right.
6. To add a color to the gradient, click below the gradient bar to define another color stop.
7. To adjust the location of the transition midpoint between colors, drag the diamond below the gradient bar to the left or right.
8. To delete the color stop you are editing, click Delete.
9. To set the color transition's smoothness, enter a percentage in the Smoothness text box, or drag the slider.
10. If desired, set transparency values for the gradient by dragging the Opacity stops.
11. To save the gradient in the gradient presets, enter a name for the new gradient, and then click Add to preset.
12. Click OK. The newly created gradient is selected and ready to use.

Specify Gradient Transparency

Each gradient fill contains settings (opacity stops) that control the opacity of the fill at different locations in the gradient. The checkerboard pattern indicates the amount of transparency in the gradient preview. Gradients need at least two opacity stops.

1. Create a gradient.
2. To adjust the starting opacity in the Gradient Editor, click the left opacity stop above the gradient bar. The triangle below the stop turns black, indicating that you're editing the starting transparency.
3. Set the Opacity by doing one of the following:

- Enter a value between 0 (fully transparent) and 100% (fully opaque).

- Drag the arrow on the Opacity slider.

  To adjust the opacity of the endpoint, click the right transparency stop above the gradient bar. Then set the opacity as described in step 3.
  To adjust the location of the starting or ending opacity, do one of the following:

- Drag the corresponding opacity stop to the left or right.

- Select the corresponding opacity stop, and enter a value for Location.

  To adjust the location of the midpoint opacity (the point midway between the starting and ending opacities), do one of the following:

- Drag the diamond above the gradient bar to the left or right.

- Select the diamond, and enter a value for Location.

  To delete the opacity stop you are editing, click Delete, or drag the stop away from the gradient bar.
  To add an intermediate opacity, click above the gradient bar to define a new opacity stop. You can then adjust and move this opacity as you would a starting or ending opacity.
  To remove an intermediate opacity, drag its transparency stop up and off the gradient bar, or select the stop and click the Delete button.

  To save the gradient to the gradient presets, enter a new name in the Name text box, and then click New. This creates a new gradient preset with the transparency setting you specified.
  Click OK to exit the dialog box and select the newly created gradient. Make sure that Transparency is selected in the Tool Options bar.

11. APPLYING FILTERS

You can apply a filter to the active layer, or to a Smart Object. Filters applied to a Smart Object are nondestructive and can be readjusted at any time.

1. Do one of the following:

- To apply a filter to an entire layer, make sure the layer is active or selected.

- To apply a filter to an area of a layer, select that area.

- To apply a filter nondestructively so you can change your filter settings later, select the Smart Object that contains the image content you want to filter.

  Choose a filter from the submenus in the Filter menu.
  If no dialog box appears, the filter effect is applied.

  If a dialog box or the Filter Gallery appears, enter values or select options, and then click OK.

Note:

Applying filters to large images can be time consuming, but you can preview the effect in the filter dialog box. Drag in the preview window to center a specific area of the image. In some filters, you can click in the image to center it where you click. Click the + or – buttons under the preview window to zoom in or out.

12. BLUR FILTERS

The Blur filters soften a selection or an entire image, and are useful for retouching. They smooth transitions by averaging the pixels next to the hard edges of defined lines and shaded areas in an image.

Before (left) and after (right) using the Lens Blur filter; the background is blurred but the foreground stays sharp.

Average

Finds the average color of an image or selection, and then fills the image or selection with the color to create a smooth look. For example, if you select an area of grass, the filter changes the area into a homogeneous patch of green.

Blur and Blur More

Eliminate noise where significant color transitions occur in an image. Blur filters smooth transitions by averaging the pixels next to the hard edges of defined lines and shaded areas. The effect of the Blur More filter is three or four times stronger than that of the Blur filter.

Box Blur

Blurs an image based on the average color value of neighboring pixels. This filter is useful for creating special effects. You can adjust the size of the area used to calculate the average value for a given pixel; a larger radius results in greater blurring.

Gaussian Blur

Quickly blurs a selection by an adjustable amount. *Gaussian* refers to the bell-shaped curve that is generated when Photoshop applies a weighted average to the pixels. The **Gaussian Blur** filter adds low-frequency detail and can produce a hazy effect.

Note: When Gaussian Blur, Box Blur, Motion Blur, or Shape Blur are applied to a selected image area, they will sometimes produce visually unexpected results near the edges of the selection. This is because these blur filters will use image data from outside the selected area to create the new, blurred pixels inside the selected area. For example, if the selection represents a background area that you want to blur while keeping the foreground sharp, the edges of the blurred background area will be contaminated with colors from the foreground, producing a fuzzy, muddy-looking outline around the foreground. To avoid this effect in such cases, you can use Smart Blur or Lens Blur.

Lens Blur

Adds blur to an image to give the effect of a narrower depth of field so that some objects in the image stay in focus and others areas are blurred. See Add lens blur.

Motion Blur

Blurs in the specified direction (from –360º to +360º) and at a specified intensity (from 1 to 999). The filter's effect is analogous to taking a picture of a moving object with a fixed exposure time.

Radial Blur

Simulates the blur of a zooming or rotating camera to produce a soft blur. Choose Spin to blur along concentric circular lines, and then specify a degree of rotation. Choose Zoom to blur along radial lines, as if zooming into or out of the image, and specify a value from 1 to 100. Blur quality ranges from Draft (for fast but grainy results) or Good and Best for smoother results, which are indistinguishable from each other except on a large selection. Specify the origin of the blur by dragging the pattern in the Blur Center box.

Shape Blur

Uses the specified kernel to create the blur. Choose a kernel from the list of custom shape presets, and use the radius slider to adjust its size. You can load different shape libraries by clicking the triangle and choosing from the list. Radius determines the size of the kernel; the larger the kernel, the greater the blur.

Smart Blur

Blurs an image with precision. You can specify a radius, a threshold, and a blur quality. The Radius value determines the size of the area searched for dissimilar pixels. The Threshold value determines how dissimilar the pixels must be before they are affected. You also can set a mode for the entire selection (Normal) or for the edges of color transitions (Edge Only and Overlay Edge). Where significant contrast occurs, Edge Only applies black-and-white edges, and Overlay Edge applies white.

Surface Blur

Blurs an image while preserving edges. This filter is useful for creating special effects and for removing noise or graininess. The Radius option specifies the size of the area sampled for the blur. The Threshold option controls how much the tonal values of neighboring pixels must diverge from the center pixel value before being part of the blur. Pixels with tonal value differences less than the Threshold value are excluded from the blur.

13. RENDER FILTERS

The Render filters create 3D shapes, cloud patterns, refraction patterns, and simulated light reflections in an image. You can also manipulate objects in 3D space, create 3D objects (cubes, spheres, and cylinders), and create texture fills from grayscale files to produce 3D-like effects for lighting.

Clouds

Generates a soft cloud pattern using random values that vary between the foreground and the background colors. To generate a more stark cloud pattern, hold down Alt (Windows) or Option (Mac OS) as you choose Filter > Render > Clouds. When you apply the Clouds filter, the image data on the active layer is replaced.

Difference Clouds

Uses randomly generated values that vary between the foreground and background color to produce a cloud pattern. The filter blends the cloud data with the existing pixels in the same way the Difference mode blends colors. The first time you choose this filter, portions of the image are inverted in a cloud pattern. Applying the filter several times creates rib and vein patterns that resemble a marble texture. When you apply the Difference Clouds filter, the image data on the active layer is replaced.

Fibers

Creates the look of woven fibers using the foreground and background colors. You use the Variance slider to control how the colors vary (a low value produces long streaks of color, and a high value results in very short fibers with more varied distribution of color). The Strength slider controls how each fiber looks. A low setting produces a loose weave, and a high setting produces short, stringy fibers. Click the Randomize button to change how the pattern looks; you can click the button a number of times until you find a pattern you like. When you apply the Fibers filter, the image data on the active layer is replaced.

Note:

Try adding a gradient map adjustment layer to colorize the fibers.

Lens Flare

Simulates the refraction caused by shining a bright light into a camera lens. Specify a location for the center of the flare by clicking anywhere inside the image thumbnail or by dragging its cross hair.

14. SHARPEN FILTERS

The Sharpen filters focus blurred images by increasing the contrast of adjacent pixels.

Sharpen and Sharpen More

Focus a selection and improve its clarity. The Sharpen More filter applies a stronger sharpening effect than does the Sharpen filter.

Sharpen Edges and Unsharp Mask

Find the areas in the image where significant color changes occur and sharpen them. The Sharpen Edges filter sharpens only edges while preserving the overall smoothness of the image. Use this filter to sharpen edges without specifying an amount. For professional color correction, use the Unsharp Mask filter to adjust the contrast of edge detail and produce a lighter and darker

line on each side of the edge. This process emphasizes the edge and creates the illusion of a sharper image.

Smart Sharpen
Sharpens an image by letting you set the sharpening algorithm or control the amount of sharpening that occurs in shadows and highlights. This is the recommended way to sharpen if you don't have a particular sharpening filter in mind. See Sharpen using Smart Sharpen.

In Photoshop, the enhanced Smart Sharpen filter empowers you to produce high-quality results through adaptive sharpening technology that minimizes noise and halo effects. The streamlined UI design for this filter offers optimized controls for targeted sharpening. Use the sliders for quick adjustments and advanced controls to fine-tune your results.

Smart sharpening in Photoshop supports CMYK. Additionally, you can sharpen arbitrary channels. For example, you can choose to sharpen just the blue channel, green channel, or the alpha channel.
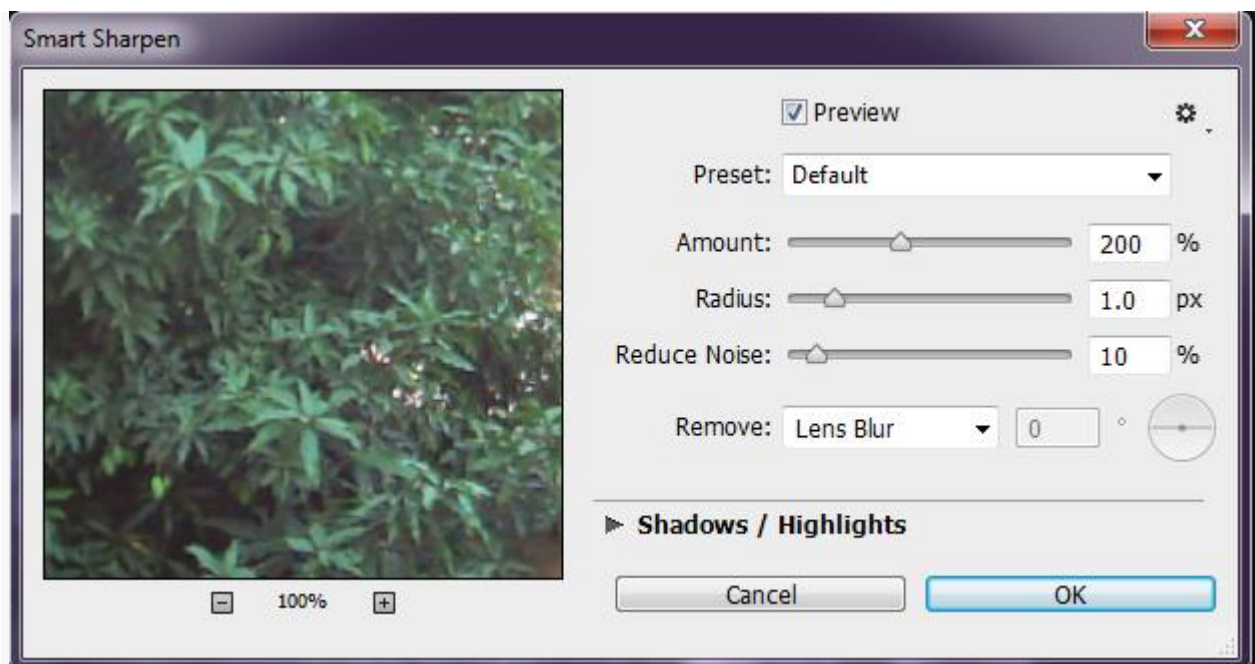
Enhanced Smart Sharpen filter UI

Here is a recommended approach to sharpening images with Photoshop:

1. To begin, set **Amount** to a high value.
2. Increase the **Radius** to a value that introduces a halo effect.
3. Decrease the **Radius** until the halo effect disappers. You've arrived at the optimal value for **Radius**.
4. Now, decrease the Amount value as necessary.
5. Adjust the **Reduce Noise** slider, such that the noise in the image looks similar to how it was before you began sharpening the image. Too much noise reduction can result in a plasticy look. Higher **Amount** values require greater noise reduction.

15. SKETCH FILTERS

Filters in the Sketch submenu add texture to images, often for a 3D effect. The filters also are useful for creating a fine-arts or hand-drawn look. Many of the Sketch filters use the foreground and background color as they redraw the image. All the Sketch filters can be applied through the Filter Gallery.

Bas Relief

Transforms an image so that it appears carved in low relief and lit to accent the surface variations. Dark areas of the image take on the foreground color, and light colors use the background color.

Chalk & Charcoal

Redraws highlights and midtones with a solid midtone gray background drawn in coarse chalk. Shadow areas are replaced with black diagonal charcoal lines. The charcoal is drawn in the foreground color; the chalk, in the background color.

Charcoal

Creates a posterized, smudged effect. Major edges are boldly drawn, and midtones are sketched using a diagonal stroke. Charcoal is the foreground color, and the background is the color of the paper.

Chrome

Renders the image as if it had a polished chrome surface. Highlights are high points, and shadows are low points in the reflecting surface. After applying the filter, use the Levels dialog box to add more contrast to the image.

Conté Crayon

Replicates the texture of dense dark and pure white Conté crayons on an image. The Conté Crayon filter uses the foreground color for dark areas and the background color for light areas. For a truer effect, change the foreground color to one of the common Conté Crayon colors (black, sepia, or sanguine) before applying the filter. For a muted effect, change the background color to white, add some of the foreground color to the white background, and then apply the filter.

Graphic Pen

Uses fine, linear ink strokes to capture the details in the original image. The effect is especially striking with scanned images. The filter replaces color in the original image, using the foreground color for ink and the background color for paper.

Halftone Pattern

Simulates the effect of a halftone screen while maintaining the continuous range of tones.

Note Paper

Creates an image that appears to be constructed of handmade paper. This filter simplifies images and combines the effects of the Stylize > Emboss and Texture > Grain filters. Dark areas of the image appear as holes in the top layer of paper, revealing the background color.

Photocopy

Simulates the effect of photocopying an image. Large dark areas tend to be copied only around their edges, and midtones fall away to either solid black or solid white.

Plaster

Molds an image from 3D plaster, and then colorizes the result using the foreground and background color. Dark areas are raised, and light areas are recessed.

Reticulation

Simulates the controlled shrinking and distortion of film emulsion to create an image that appears clumped in the shadows and lightly grained in the highlights.

Stamp

Simplifies the image so that it appears to be created with a rubber or wood stamp. This filter is best used with black-and-white images.

Torn Edges

Reconstructs the image so that it appears composed of ragged, torn pieces of paper, and then colorizes the image using the foreground and background colors. This filter is particularly useful for text or high-contrast objects.

Water Paper

Uses blotchy daubs that appear painted onto fibrous, damp paper, causing the colors to flow and blend.

16. TEXTURE FILTERS

Use the Texture filters to simulate the appearance of depth or substance, or to add an organic look.

Craquelure

Paints an image onto a high-relief plaster surface, producing a fine network of cracks that follow the contours of the image. Use this filter to create an embossing effect with images that contain a broad range of color or grayscale values.

Grain

Adds texture to an image by simulating different kinds of grain—Regular, Soft, Sprinkles, Clumped, Contrasty, Enlarged, Stippled, Horizontal, Vertical, and Speckle, available from the Grain Type menu.

Mosaic Tiles

Renders the image so that it appears to be made up of small chips or tiles and adds grout between the tiles. (In contrast, the Pixelate > Mosaic filter breaks up an image into blocks of different-colored pixels.)

Patchwork

Breaks up an image into squares filled with the predominant color in that area of the image. The filter randomly reduces or increases the tile depth to replicate the highlights and shadows.

Stained Glass

Repaints an image as single-colored adjacent cells outlined in the foreground color.

Texturizer

Applies a texture you select or create to an image.

17. OTHER SPECIAL FILTERS

Filters in the Other submenu let you create your own filters, use filters to modify masks, offset a selection within an image, and make quick color adjustments.

Custom

Lets you design your own filter effect. With the Custom filter, you can change the brightness values of each pixel in the image according to a predefined mathematical operation known as *convolution*. Each pixel is reassigned a value based on the values of surrounding pixels. This operation is similar to the Add and Subtract calculations for channels.

You can save the custom filters you create and use them with other Photoshop images. See Create a custom filter.

High Pass

Retains edge details in the specified radius where sharp color transitions occur and suppresses the rest of the image. (A radius of 0.1 pixel keeps only edge pixels.) The filter removes low-frequency detail from an image and has an effect opposite to that of the Gaussian Blur filter.

It is helpful to apply the High Pass filter to a continuous-tone image before using the Threshold command or converting the image to Bitmap mode. The filter is useful for extracting line art and large black-and-white areas from scanned images.

Maximum and Minimum

The Maximum and Minimum filters are useful for modifying masks. The Maximum filter has the effect of applying a spread (dilation)—spreading out white areas and choking in black areas. The Minimum filter has the effect of applying a choke (erosion)—shrinking white areas and spreading out the black areas. Like the Median filter, the Maximum and Minimum filters operate on selected pixels. Within a specified radius, the Maximum and Minimum filters replace the current pixel's brightness value with the highest or lowest brightness value of the surrounding pixels.

 These filters, especially with larger radii, tend to promote either corners or curves in the image contours. In Photoshop, you can choose from the Preserve menu to favor squareness or roundness as you specify the radius value.
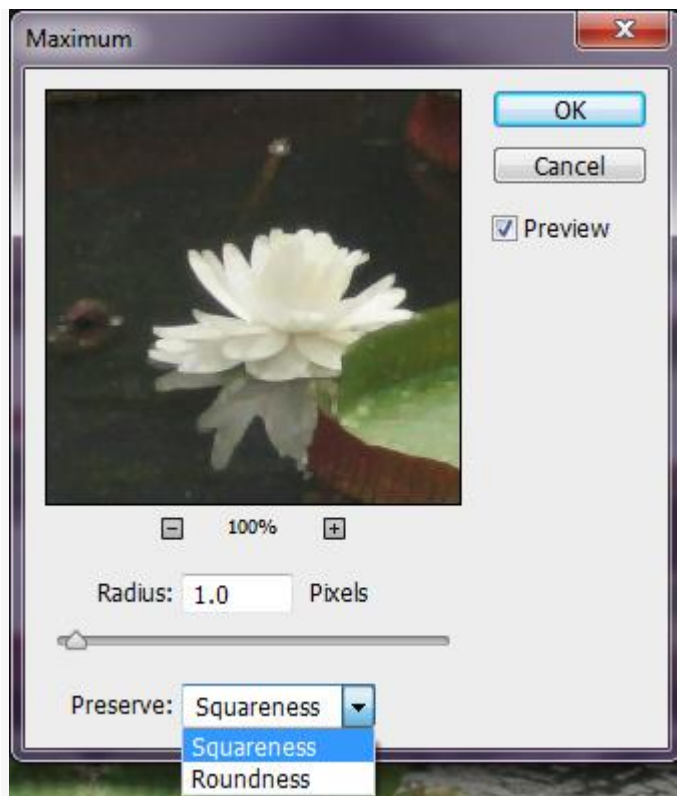
Preserve squareness or roundness

Offset

Moves a selection a specified horizontal or vertical amount, leaving an empty space at the selection's original location. You can fill the empty area with the current background color, with another part of the image, or with your choice of fill if the selection is near the edge of an image.

18. PRINTING YOUR DOCUMENT

Whether you are printing an image to your desktop printer or sending it to a prepress facility, knowing a few basics about printing makes the print job go more smoothly and helps ensure that the finished image appears as intended.

Types of printing

For many Photoshop users, printing a file means sending the image to an inkjet printer. Photoshop can send your image to a variety of devices to be printed directly onto paper or converted to a positive or negative image on film. In the latter case, you can use the film to create a master plate for printing by a mechanical press.

Types of images

The simplest images, such as line art, use only one color in one level of gray. A more complex image, such as a photograph, has varying color tones. This type of image is known as a *continuous-tone image*.

Color separation

Artwork intended for commercial reproduction and containing more than one color must be printed on separate master plates, one for each color. This process, called *color separation*, generally calls for the use of cyan, magenta, yellow, and black (CMYK) inks. In Photoshop, you can adjust how the various plates are generated.

Quality of detail

The detail in a printed image depends on image resolution (pixels per inch) and printer resolution (dots per inch). Most PostScript laser printers have a resolution of 600 dpi, while PostScript imagesetters have a resolution of 1200 dpi or higher. Inkjet printers produce a microscopic spray of ink, not actual dots, resulting in an approximate resolution of 300 to 720 dpi.

About desktop printing

Unless you work in a commercial printing company or service bureau, you probably print images to a desktop printer, such as an inkjet, dye sublimation, or laser printer, not to an imagesetter. Photoshop lets you control how your image is printed.

Monitors display images using light, whereas desktop printers reproduce images using inks, dyes, or pigments. For this reason, a desktop printer can't reproduce all the colors displayed on a monitor. However, by incorporating certain procedures (such as a color management system) into your workflow, you can achieve predictable results when printing your images to a desktop printer. Keep these considerations in mind when working with an image you intend to print:

- If your image is in RGB mode, do not convert the document to CMYK mode when printing to a desktop printer. Work entirely in RGB mode. As a rule, desktop printers are configured to accept RGB data and use internal software to convert to CMYK. If you send CMYK data, most desktop printers apply a conversion anyway, with unpredictable results.

- If you want to preview an image as printed to any device for which you have a profile, use the Proof Colors command.

- To reproduce screen colors accurately on the printed page, you must incorporate color management into your workflow. Work with a monitor that is calibrated and characterized. Ideally, you should also create a custom profile specifically for your printer and the paper you print on, though the profile supplied with your printer can produce acceptable results.

Print images

Photoshop provides the following printing commands in the File menu:

Print

Displays the Print dialog box, where you can preview the print and set options. (Customized settings are saved as new defaults when you click Done or Print.)

Print One Copy

Prints one copy of a file without displaying a dialog box.

Set Photoshop print options and print

1. Choose File > Print.
2. Select the printer, number of copies, and layout orientation.

3. In the preview area at left, visually adjust the position and scale of the image relative to the selected paper size and orientation. Or to the right, set detailed options for Position And Size, Color Management, Printing Marks, and so on.

4. Do one of the following:
- To print the image, click Print.
- To close the dialog box without saving the options, click Cancel.
- To preserve the options and close the dialog box, click Done.

Position and scale images

You can adjust the position and scale of an image using options in the Print dialog box. The shaded border at the edge of the paper represents the margins of the selected paper; the printable area is white.

The base output size of an image is determined by the document size settings in the **Image Size** dialog box. Scaling an image in the Print dialog box changes the size and resolution of the printed image only. For example, if you scale a 72-ppi image to 50% in the Print dialog box, the image will print at 144 ppi; however, the document size settings in the **Image Size** dialog box will not change. In the Print dialog box, the Print Resolution field at the bottom of the Position And Size section shows the print resolution at the current scaling setting.

Many third-party printer drivers provide a scaling option in the Print Settings dialog box. This scaling affects everything on the page, including the size of all page marks, such as crop marks and captions, whereas the scaling percentage provided by the Print command affects only the size of the printed image (and not the size of page marks).

Reposition an image on the paper

1. Choose File > Print, and expand the Position And Size settings at right. Then do one of the following:
- To center the image in the printable area, select Center Image.
- To position the image numerically, deselect Center Image, and then enter values for Top and Left.
- Deselect Center Image, and drag the image in the preview area.

Scale the print size of an image

1. Choose File > Print, and expand the Position And Size settings at right. Then do one of the following:
- To fit the image within the printable area of the selected paper, click Scale To Fit Media.
- To rescale the image numerically, deselect Scale To Fit Media, then enter values for Scale, Height and Width.
- To achieve the desired scale, drag the bounding box around the image in the preview area.

Print part of an image

1. With the Rectangle Marquee tool, select the part of the image you want to print.
2. Choose File > Print, and select Print Selected Area.
3. If desired, adjust the selected area by dragging the triangular handles on the perimeter of the print preview.
4. Click Print.

Print vector data

If an image includes vector graphics, such as shapes and type, Photoshop can send the vector data to a PostScript printer. When you choose to include vector data, Photoshop sends the printer a separate image for each type layer and each vector shape layer. These additional images are printed on top of the base image, and clipped using their vector outline. Consequently, the edges of vector graphics print at the printer's full resolution, even though the content of each layer is limited to the resolution of your image file.

1. Choose File > Print.
2. In the options box at right, scroll to the bottom, and expand PostScript Options.
3. Select Include Vector Data.