

6

MASKS AND CHANNELS

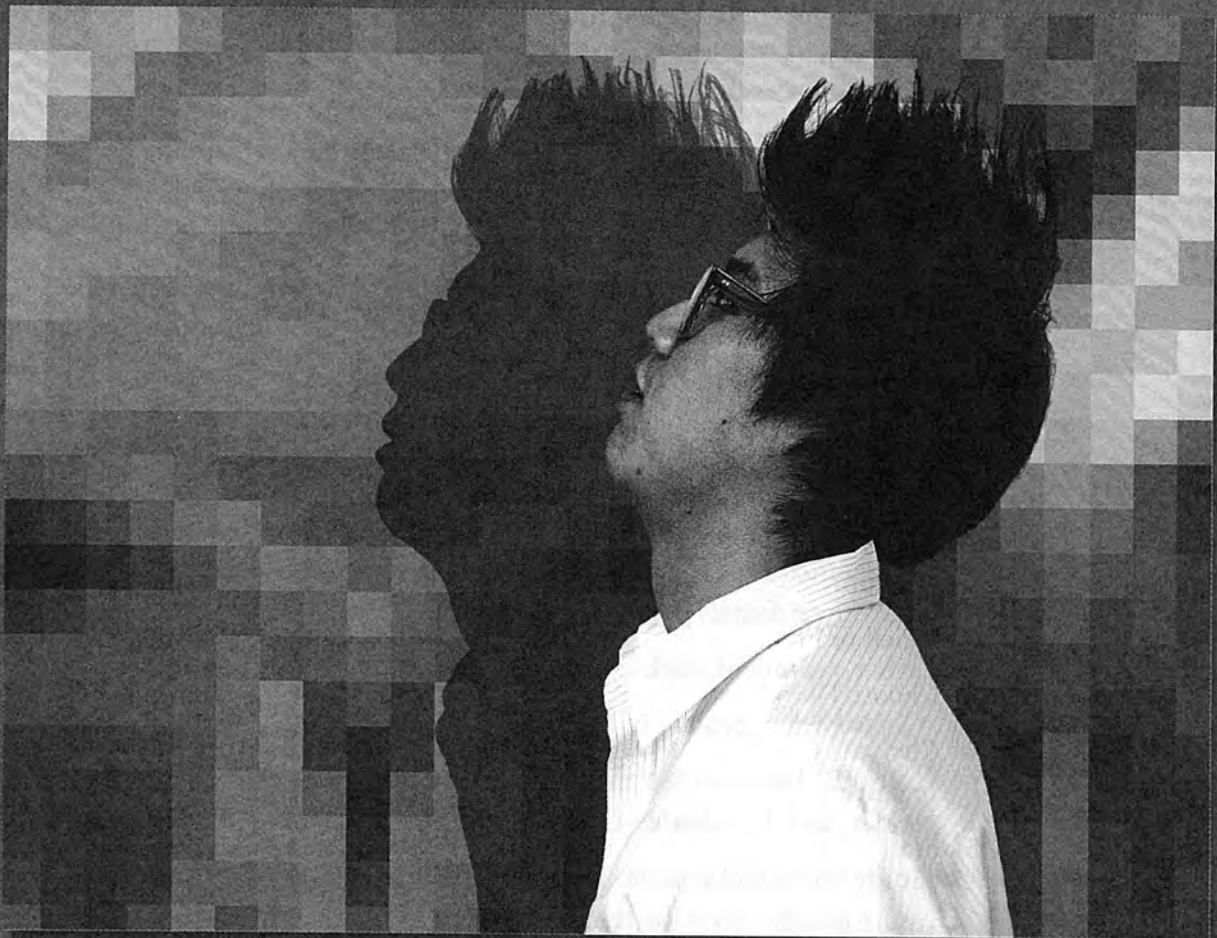
Lesson overview

In this lesson, you'll learn how to do the following:

- Create a mask to remove a subject from a background.
- Refine a mask to include complex edges.
- Create a quick mask to make changes to a selected area.
- Edit a mask using the Properties panel.
- Manipulate an image using Puppet Warp.
- Save a selection as an alpha channel.
- View a mask using the Channels panel.
- Load a channel as a selection.
- Isolate a channel to make specific image changes.



This lesson will take about an hour to complete. Copy the Lesson06 folder onto your hard drive if you haven't already done so. As you work on this lesson, you'll preserve the start files. If you need to restore the start files, copy them from the *Adobe Photoshop CS6 Classroom in a Book* DVD.



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Use masks to isolate and manipulate specific parts of an image. The cutout portion of a mask can be altered, but the area surrounding the cutout is protected from change. You can create a temporary mask to use once, or you can save masks for repeated use.

Working with masks and channels

Photoshop masks isolate and protect parts of an image, just as masking tape protects window panes or trim from paint when a house is painted. When you create a mask based on a selection, the area you haven't selected is *masked*, or protected from editing. With masks, you can create and save time-consuming selections and then use them again. In addition, you can use masks for other complex editing tasks—for example, to apply color changes or filter effects to an image.

In Photoshop, you can make temporary masks, called *quick masks*, or you can create permanent masks and store them as special grayscale channels called *alpha channels*. Photoshop also uses channels to store an image's color information. Unlike layers, channels do not print. You use the Channels panel to view and work with alpha channels.

A key concept in masking is that black hides and white reveals. As in life, rarely is anything black and white. Shades of gray partially hide, depending on the gray levels (255 is the value for black, hiding artwork completely; 0 is the value for white, revealing artwork completely).

Getting started

First, you'll view the image that you'll create using masks and channels.

- 1 Start Photoshop, and then immediately hold down Ctrl+Alt+Shift (Windows) or Command+Option+Shift (Mac OS) to restore the default preferences. (See "Restoring default preferences" on page 4.)
- 2 When prompted, click Yes to delete the Adobe Photoshop Settings file.
- 3 Choose File > Browse In Bridge to open Adobe Bridge.
- 4 Click the Favorites tab on the left side of the Bridge window. Select the Lessons folder, and then double-click the Lesson06 folder in the Content panel.
- 5 Study the 06End.psd file. To enlarge the thumbnail so that you can see it more clearly, move the thumbnail slider at the bottom of the Bridge window to the right.

In this lesson, you'll create a magazine cover. The model for the cover was photographed in front of a different background. You'll use masking and the Refine Mask feature to place the model on the appropriate background.


- 6 Double-click the 06Start.psd file's thumbnail to open it in Photoshop. Click OK if you see an Embedded Profile Mismatch dialog box.

Creating a mask

You'll use the Quick Selection tool to create the initial mask in order to separate the model from the background.


- 1 Choose File > Save As, rename the file **06Working.psd**, and click Save. Click OK if the Photoshop Format Options dialog box appears.

Saving a working version of the file lets you return to the original if you need it.

- 2 Select the Quick Selection tool () . In the options bar, set up a brush with a size of **15 px** and hardness of **100%**.
- 3 Select the man. It's fairly easy to select his shirt and face, but the hair is trickier. Don't worry if the selection isn't perfect. You'll refine the mask in the next exercise.

► **Tip:** For help making selections, refer to Lesson 3, "Working with Selections."



- 4 At the bottom of the Layers panel, click the Add Layer Mask button () to create a layer mask.



The selection becomes a pixel mask, and it appears as part of Layer 0 in the Layers panel. Everything outside the selection is transparent, represented by a checkerboard pattern.

Julianne Kost is an official Adobe Photoshop evangelist.



Tool tips from the Photoshop evangelist

Zoom tool shortcuts

Often when you are editing an image, you'll need to zoom in to work on a detail and then zoom out again to see the changes in context. Here are several keyboard shortcuts that make zooming even faster and easier.

- Press Ctrl+spacebar (Windows) or Command+spacebar (Mac OS) to temporarily select the Zoom In tool. When you finish zooming, release the keys to return to the tool you were previously using.
- Press Alt+spacebar (Windows) or Option+spacebar (Mac OS) to temporarily select the Zoom Out tool. When you finish zooming, release the keys to return to the tool you were using.
- Double-click the Zoom tool in the Tools panel to return the image to 100% view.
- When Scrubby Zoom is selected in the options bar, just drag the Zoom tool to the left to zoom in or drag it to the right to zoom out.
- Press Alt (Windows) or Option (Mac OS) to change the Zoom In tool to the Zoom Out tool, and click the area of the image you want to reduce. Each Alt/Option-click reduces the image by the next preset increment.
- With any tool selected, press Ctrl (Windows) or Command (Mac OS) with the plus sign (+) to zoom in, or with the minus sign (-) to zoom out.

Refining a mask

The mask is pretty good, but the Quick Selection tool couldn't quite capture all of the model's hair. The mask is also a little choppy around the contours of the shirt and face. You'll smooth the mask, and then fine-tune the area around the hair.

- 1 Choose Window > Properties to open the Properties panel.
- 2 If it isn't already selected, click the mask on Layer 0 in the Layers panel.

- 3 In the Properties panel, click Mask Edge. The Refine Mask dialog box opens.



- 4 In the View Mode area of the dialog box, click the arrow next to the preview window. Choose On Black from the pop-up menu.

The mask appears against a black background, which makes it easier to see the edge of the white shirt and the face.

- 5 In the Adjust Edge area of the dialog box, move the sliders to create a smooth, unfeathered edge along the shirt and face. The optimal settings depend on the selection you created, but they'll probably be similar to ours. We moved the Smooth slider to 15, Contrast to 40%, and Shift Edge to -8%.




- 6 In the Output area of the dialog box, select Decontaminate Colors. Choose New Layer With Layer Mask from the Output To menu.
- 7 Select the Zoom tool in the Refine Mask dialog box, and then click the face to zoom in so you can see its edges more clearly.
- 8 Select the Refine Radius tool (⌘) in the Refine Mask dialog box. Use it to paint out any white background that remains around the lips and the nose. Press the left bracket ([) to decrease the brush size and the right bracket (]) to increase it.
- 9 When you're satisfied with the mask around the face, click OK.

A new layer, named Layer 0 copy, appears in the Layers panel. You'll use this layer to add the spikes to the mask of the hair.

- 10 With Layer 0 copy active, click Mask Edge in the Properties panel to open the Refine Mask dialog box again.
- 11 From the View pop-up menu, choose On White. The black hair shows up well against the white matte. If necessary, zoom out or use the Hand tool to reposition the image so that you can see all of the hair.
- 12 Select the Refine Radius tool in the Refine Mask dialog box. Press the] key to increase the size of the brush. (The options bar displays the brush size; we used 300 px at first.) Then, begin brushing along the top of the hair, high enough to include the spikes. Press the [key to decrease the brush size by about half. Then, paint along the right side of the head, where the hair is a solid color, to pick up any small, fine hairs that protrude.



As you paint, Photoshop refines the mask edge, including the hair, but eliminating most of the background. If you were painting on a layer mask, the background would be included. The Refine Mask feature is good, but it's not perfect. You'll clean up any areas of background that are included with the hair.

- 13** Select the Erase Refinements tool () , hidden behind the Refine Radius tool in the Refine Mask dialog box. Click once or twice in each area where background color shows. When you erase an area, the Refine Mask feature erases similar colors, cleaning up more of the mask for you. Be careful not to erase the refinements you made to the hair edge. You can undo a step or use the Refine Radius tool to restore the edge if necessary.
- 14** Select Decontaminate Colors, and move the Amount slider to 85%. Choose New Layer With Layer Mask from the Output menu. Then click OK.



- 15** In the Layers panel, make the Magazine Background layer visible. The model appears in front of an orange patterned background.



Masking tips and shortcuts

Mastering masks can help you work more efficiently in Photoshop. These tips will help get you started.

- Masks are nondestructive, which means that you can edit the masks later without losing the pixels that they hide.
- When editing a mask, be aware of the color selected in the Tools panel. Black hides, white reveals, and shades of gray partially hide or reveal. The darker the gray, the more is hidden by the mask.
- To reveal a layer's content without masking effects, turn off the mask by Shift-clicking the layer mask thumbnail, or choose Layer > Layer Mask > Disable. A red X appears over the mask thumbnail in the Layers panel when the mask is disabled.
- To turn a layer mask back on, Shift-click the layer mask thumbnail with the red X in the Layers panel, or choose Layer > Layer Mask > Enable. If the mask doesn't show up in the Layers panel, choose Layer > Layer Mask > Reveal All to display it.
- Unlink a layer from its mask to move the two independently and shift the mask's boundaries separately from the layer. To unlink a layer or group from its layer mask or vector mask, click the link icon between the thumbnails in the Layers panel. To relink them, click the blank space between the two thumbnails.
- To convert a vector mask to a layer mask, select the layer containing the vector mask you want to convert, and choose Layer > Rasterize > Vector Mask. Note, however, that once you rasterize a vector mask, you can't change it back into a vector object.
- To modify a mask, use the Density and Feather sliders in the Properties panel. The Density slider determines the opacity of the mask: At 100%, the mask is fully in effect; at lower opacities, the contrast lessens; and at 0%, the mask has no effect. The Feather slider softens the edge of the mask.

Creating a quick mask

You'll create a quick mask to change the color of the glasses frames. First, you'll clean up the Layers panel.

- 1 Hide the Magazine Background layer so you can focus on the model. Then delete the Layer 0 and Layer 0 copy layers. Click Yes or Delete to confirm deletion of the layers or their masks, if prompted; you do not need to apply the mask to the current layer because Layer 0 copy 2 already has the mask applied.

- 2 Double-click the Layer 0 copy 2 layer name, and rename it **Model**.



- 3 Click the Edit In Quick Mask Mode button in the Tools panel. (By default, you have been working in Standard mode.)

In Quick Mask mode, a red overlay appears as you make a selection, masking the area outside the selection the way a rubylith, or red acetate, was used to mask images in traditional print shops. You can apply changes only to the unprotected area that is visible and selected. Notice that the highlight for the selected layer in the Layers panel appears gray instead of blue, indicating you're in Quick Mask mode.



- 4 In the Tools panel, select the Brush tool (🖌).
- 5 In the options bar, make sure that the mode is Normal. Open the Brush pop-up panel, and select a small brush with a diameter of 13 px. Click outside the panel to close it.
- 6 Paint the earpiece of the glasses frames. The area you paint will appear red, creating a mask.
- 7 Continue painting with the Brush tool to mask the earpiece of the frames and the frame around the lenses. Reduce the brush size to paint around the lenses. Don't worry about the part of the earpiece that is overlapped by hair; the color change won't affect that area.



In Quick Mask mode, Photoshop automatically defaults to Grayscale mode, with a foreground color of black, and a background color of white. When using a painting or editing tool in Quick Mask mode, keep these principles in mind:

- Painting with black adds to the mask (the red overlay) and decreases the selected area.
- Painting with white erases the mask (the red overlay) and increases the selected area.
- Painting with gray partially adds to the mask.

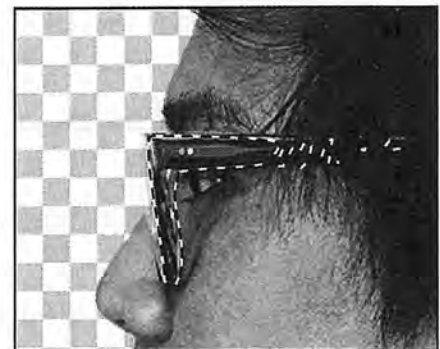
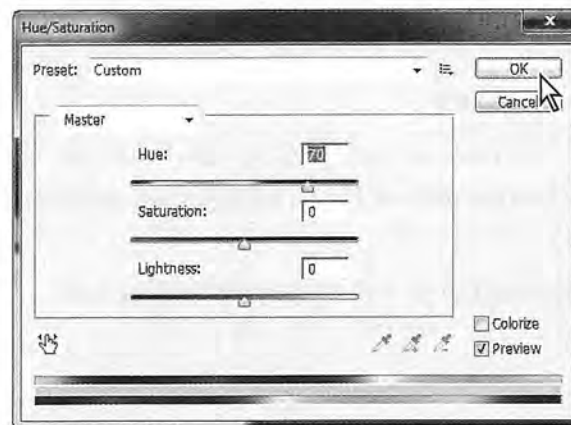
8 Click the Edit In Standard Mode button to exit Quick Mask Mode.

The unmasked area is selected. Unless you save a quick mask as a more permanent alpha-channel mask, Photoshop discards the temporary mask once it is converted to a selection.

9 Choose Select > Inverse to select the area you originally masked.

10 Choose Image > Adjustments > Hue/Saturation.

11 In the Hue/Saturation dialog box, change the Hue to 70. The new green color fills the glasses frame. Click OK.



12 Choose Select > Deselect.

13 Save your work so far.

Manipulating an image with Puppet Warp

The Puppet Warp feature gives you flexibility in manipulating an image. You can reposition areas, such as hair or an arm, just as you might pull the strings on a puppet. You place pins where you want to control movement. You'll use Puppet Warp to tilt the model's head back, so he appears to be looking up.

- 1 With the Model layer selected in the Layers panel, choose Edit > Puppet Warp.

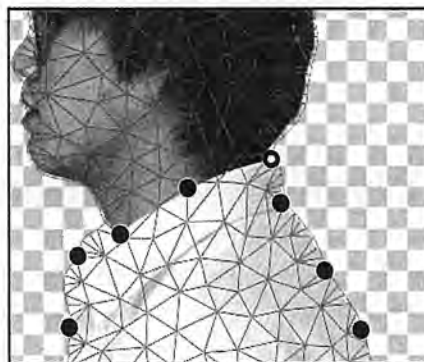
A mesh appears over the visible areas in the layer—in this case, the mesh appears over the model. You'll use the mesh to place pins where you want to control movement (or to ensure there is no movement).

- 2 Click around the edges of the shirt. Each time you click, Puppet Warp adds a pin. Approximately 10 pins should work.

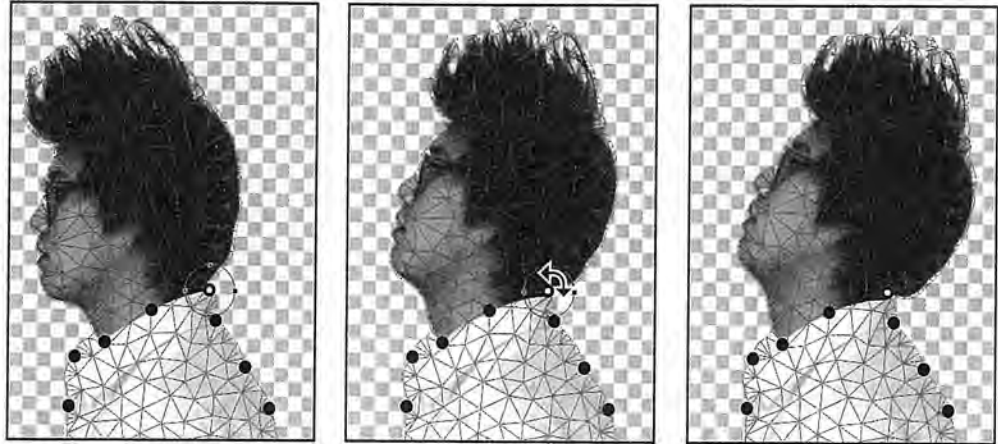


The pins you've added around the shirt will keep it in place as you tilt the head.

- 3 Select the pin at the nape of the neck. A white dot appears in the center of the pin to indicate that it's selected.



- 4 Press Alt (Windows) or Option (Mac OS). A larger circle appears around the pin and a curved double arrow appears next to it. Continue pressing Alt or Option as you drag the pointer to rotate the head backwards. You can see the angle of rotation in the options bar; you can enter **135** there to rotate the head back.



- 5 When you're satisfied with the rotation, click the Commit Puppet Warp button (✓) in the options bar, or press Enter or Return.
- 6 Save your work so far.

Working with channels

Just as different information in an image is stored on different layers, channels also let you access specific kinds of information. Alpha channels store selections as grayscale images. Color information channels store information about each color in an image; for example, an RGB image automatically has red, green, blue, and composite channels.

To avoid confusing channels and layers, think of channels as containing an image's color and selection information; think of layers as containing painting and effects.

You'll use an alpha channel to create a shadow for the model. Then, you'll convert the image to CMYK mode and use the Black channel to add color highlights to the hair.

Using an alpha channel to create a shadow

You've already created a mask of the model. To create a shadow, you want to essentially duplicate that mask and then shift it. You'll use an alpha channel to make that possible.

- 1 In the Layers panel, Ctrl-click (Windows) or Command-click (Mac OS) the layer icon in the Model layer. The masked area is selected.
- 2 Choose Select > Save Selection. In the Save Selection dialog box, make sure New is chosen in the Channel menu. Then name the channel **Model Outline**, and click OK.

Nothing changes in the Layers panel or in the image window. However, a new channel named Model Outline has been added to the Channels panel.

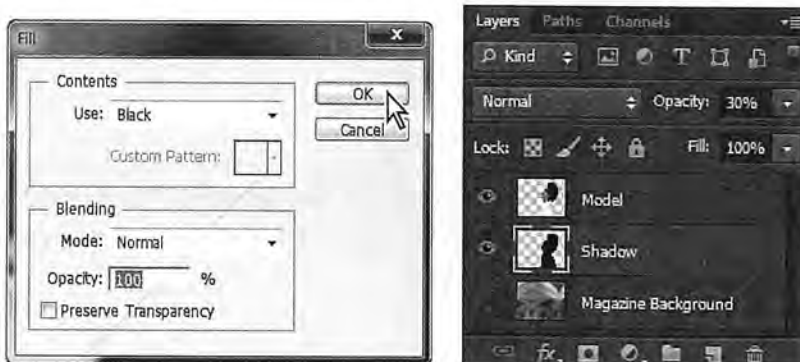
- 3 Click the Create A New Layer icon at the bottom of the Layers panel. Drag the new layer below the Model layer. Then double-click its name, and rename it **Shadow**.



- 4 With the Shadow layer selected, choose Select > Refine Edge. In the Refine Edge dialog box, move the Shift Edge slider to **+36%**. Then click OK.
- 5 Choose Edit > Fill. In the Fill dialog box, choose Black from the Use menu, and then click OK.

The Shadow layer displays a filled-in black outline of the model. Shadows aren't usually as dark as the person that casts them. You'll reduce the layer opacity.

- 6 In the Layers panel, change the layer opacity to **30%**.



The shadow is in exactly the same position as the model, where it can't be seen. You'll shift it.

- 7 Choose **Select > Deselect** to remove the selection.
- 8 Choose **Edit > Transform > Skew**. Rotate the shadow by hand, or enter **-15°** in the Rotate field in the options bar. Then drag the shadow to the left, or enter **845** in the X field in the options bar. Click the **Commit Transform** button (✓) in the options bar, or press **Enter** or **Return**, to accept the transformation.
- 9 Choose **File > Save** to save your work so far.



About alpha channels

If you work in Photoshop very long, you're bound to work with alpha channels. It's a good idea to know a few things about them.

- An image can contain up to 56 channels, including all color and alpha channels.
- All channels are 8-bit grayscale images, capable of displaying 256 levels of gray.
- You can specify a name, color, mask option, and opacity for each channel. (The opacity affects the preview of the channel, not the image.)
- All new channels have the same dimensions and number of pixels as the original image.
- You can edit the mask in an alpha channel using the painting tools, editing tools, and filters.
- You can convert alpha channels to spot-color channels.

Adjusting an individual channel

You're almost done with the magazine cover image. All that remains is to add color highlights to the model's hair. You'll convert the image to CMYK mode so you can take advantage of the Black channel to do just that.

- 1 Select the **Model** layer in the Layers panel.

- 2 Choose Image > Mode > CMYK Color. Click Don't Merge in the dialog box that appears, because you want to keep your layers intact. Click OK if you're prompted about color profiles.
- 3 Alt-click (Windows) or Option-click (Mac OS) the visibility icon for the Model layer to hide the other layers.
- 4 Select the Channels tab. In the Channels panel, select the Black channel. Then choose Duplicate Channel from the Channels panel menu. Name the channel **Hair**, and click OK.

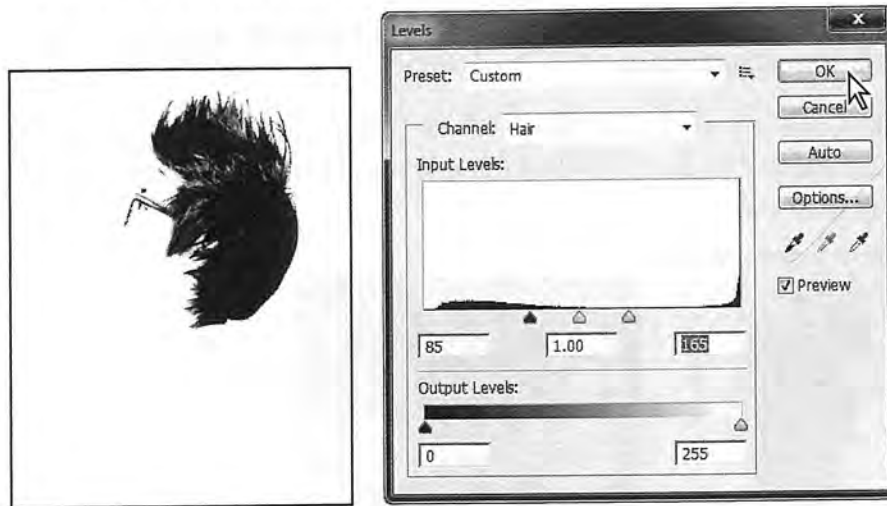


Individual channels appear in grayscale. If more than one channel is visible in the Channels panel, the channels appear in color.

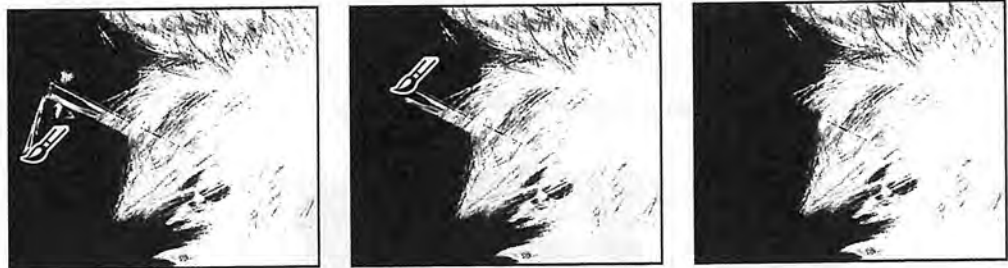
- 5 Make the Hair channel visible, and hide the Black channel. Then select the Hair channel, and choose Image > Adjustments > Levels.



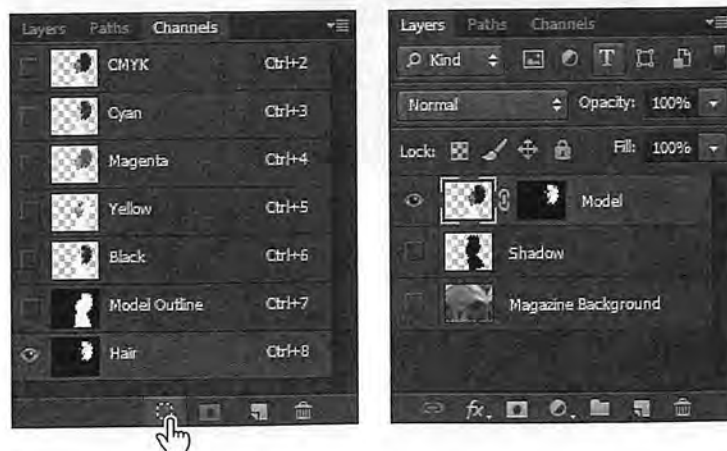
- 6 In the Levels dialog box, adjust the levels to move Black to 85, Midtones to 1, and White to 165. Click OK.



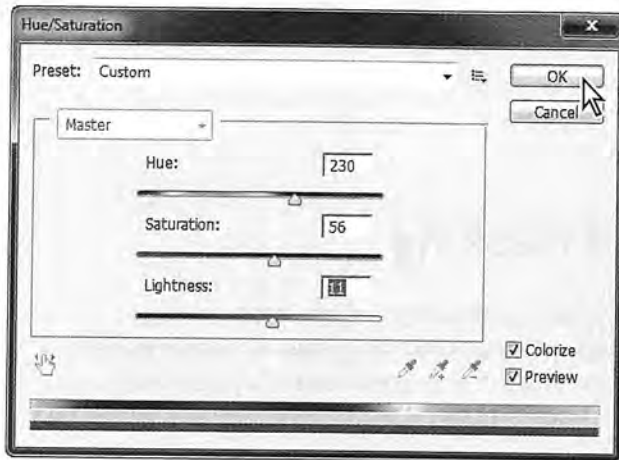
- 7 With the Hair channel still selected, choose Image > Adjustments > Invert. The channel appears white against a black background.
- 8 Select the Brush tool, and click the Switch Foreground And Background Colors icon in the Tools panel to make the Foreground color black. Then paint over the glasses, eyes, and anything in the channel that isn't hair.



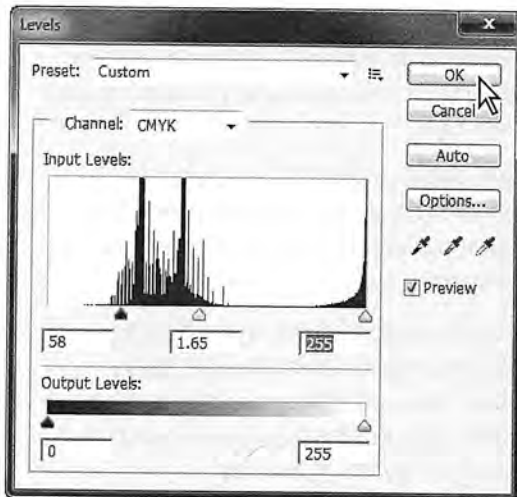
- 9 Click the Load Channel As Selection icon at the bottom of the Channels panel.
- 10 Select the Layers tab. In the Layers panel, select the Model layer.



- 11 Choose Select > Refine Edge. In the Refine Edge dialog box, move the Feather slider to 1.2 px, and then click OK.
- 12 Choose Image > Adjustments > Hue/Saturation. Select Colorize, and then move the sliders as follows, and click OK:
 - Hue: 230
 - Saturation: 56
 - Lightness: 11



- 13 Choose Image > Adjustments > Levels. In the Levels dialog box, move the sliders so that the Black slider is positioned where the blacks peak, the White slider where the whites peak, and the Midtones in between. Then click OK. We used the values 58, 1.65, 255, but your values may vary.



14 In the Layers panel, make the Shadow and Magazine Background layers visible.

15 Choose Select > Deselect.

16 Choose File > Save.

Your magazine cover is ready to go!



About masks and masking

Alpha channels, channel masks, clipping masks, layer masks, vector masks—what’s the difference? In some cases, they’re interchangeable: A channel mask can be converted to a layer mask, a layer mask can be converted to a vector mask, and vice versa.

Here’s a brief description to help you keep them all straight. What they have in common is that they all store selections, and they all let you edit an image nondestructively, so you can return at any time to your original.

- An **alpha channel**—also called a *mask* or *selection*—is an extra channel added to an image; it stores selections as grayscale images. You can add alpha channels to create and store masks.
- A **layer mask** is like an alpha channel, but it’s attached to a specific layer. A layer mask controls which part of a layer is revealed or hidden. It appears as a blank thumbnail next to the layer thumbnail in the Layers panel until you add content to it; a black outline indicates that it’s selected.
- A **vector mask** is essentially a layer mask made up of vectors, not pixels. Resolution-independent, vector masks have crisp edges and are created with the pen or shape tools. They don’t support transparency, so their edges can’t be feathered. Their thumbnails appear the same as layer mask thumbnails.
- A **clipping mask** applies to a layer. It confines the influence of an effect to specific layers, rather than to everything below the layer in the layer stack. Using a clipping mask clips layers to a base layer; only that base layer is affected. Thumbnails of a clipped layer are indented with a right-angle arrow pointing to the layer below. The name of the clipped base layer is underlined.
- A **channel mask** restricts editing to a specific channel (for example, a Cyan channel in a CMYK image). Channel masks are useful for making intricate, fringed, or wispy-edged selections. You can create a channel mask based on a dominant color in an image or a pronounced contrast in an isolated channel, for example, between the subject and the background.

Review questions

- 1 What is the benefit of using a quick mask?
- 2 What happens to a quick mask when you deselect it?
- 3 When you save a selection as a mask, where is the mask stored?
- 4 How can you edit a mask in a channel once you've saved it?
- 5 How do channels differ from layers?

Review answers

- 1 Quick masks are helpful for creating quick, one-time selections. In addition, using a quick mask is an easy way to edit a selection using the painting tools.
- 2 The quick mask disappears when you deselect it.
- 3 Masks are saved in channels, which can be thought of as storage areas for color and selection information in an image.
- 4 You can paint on a mask in a channel using black, white, and shades of gray.
- 5 Channels are used as storage areas for saved selections. Unless you explicitly display a channel, it does not appear in the image or print. Layers can be used to isolate various parts of an image so that they can be edited as discrete objects with the painting or editing tools or other effects.