



Adobe Photoshop

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release



Classroom in a Book[®]

The official training workbook from Adobe

Conrad Chavez & Andrew Faulkner

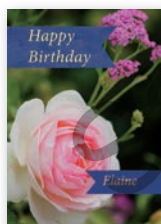
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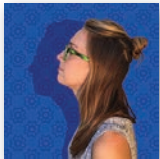



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6

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.
- Create a pattern by drawing a star-shaped vector graphic with rounded corners.



This lesson will take about an hour to complete. To get the lesson files used in this chapter, download them from the web page for this book at adobe.com/PhotoshopCIB2022. For more information, see “Accessing the lesson files and Web Edition” in the Getting Started section at the beginning of this book.

As you work on this lesson, you'll preserve the start files. If you need to restore the start files, download them from your Account page.



Photography © Andrew Faulkner

PROJECT: PODCAST EPISODE GRAPHICS

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.

► **Tip:** The way masks work is similar to applying masking tape to panes or wall trim before you paint a house: Masked areas are protected from being changed.

● **Note:** Masks and alpha channels don't print and aren't visible; you see their effects only on visible layers.

● **Note:** If Bridge isn't installed, the File > Browse In Bridge command in Photoshop will start the Creative Cloud desktop app, which will download and install Bridge. After installation completes, you can start Bridge.

● **Note:** If Photoshop displays a dialog box telling you about the difference between saving to Cloud Documents and On Your Computer, click Save On Your Computer. You can also select Don't Show Again, but that setting will deselect after you reset Photoshop preferences.

Working with masks and channels

When you want to edit a specific area of a layer, it can be difficult to keep edits from going past the precise edge you want. Or you might want to apply an adjustment layer or a filter to only part of a layer. Both are easier using a *mask*, a type of image overlay that controls which layer areas will be affected by edits.

You can also use a *layer mask* to mark transparent areas of a layer. Layer masks are essential for removing backgrounds, combining multiple images into a composite image, and controlling which areas are affected by adjustment layers. A layer mask is more useful than deleting unwanted areas of a layer, because it's reversible: By painting in a layer mask, you can make hidden areas visible again.

In addition to color channels, an image can contain *alpha channels*, useful for saving and reusing selections and marking transparent areas for an entire document.

It can be challenging to paint or draw a mask or channel edge that precisely follows a nonsharp border of a subject, such as fuzzy hair. Photoshop provides tools that use automation to help you quickly create complicated selections and masks.

Getting started

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

- 1 Start Photoshop, and then simultaneously hold down Ctrl+Alt+Shift (Windows) or Command+Option+Shift (macOS) to restore the default preferences. (See "Restoring default preferences" on page 5.)
- 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 graphic for a podcast. The model was photographed in front of a different background. You'll use Select And Mask to quickly isolate the model over the final background. You'll also tilt the model's head up a little more and create a pattern for the background.

- 6 Double-click the 06Start.psd thumbnail to open it in Photoshop. Click OK if you see an Embedded Profile Mismatch dialog box.
- 7 Choose File > Save As, rename the file to **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.

About masks and alpha channels

Alpha channels, quick masks, clipping masks, layer masks, vector masks—what's the difference? They're all forms of the same idea: an image overlay that uses white, black, and gray areas to control which areas of a layer are visible or transparent. Choose the right one by understanding the following important differences:

- A **color channel** stores one of the visible components of a color image. For example, an RGB image has three color channels: red, green, and blue.
- An **alpha channel** stores a selection as a grayscale image. Alpha channels exist independently of layers and color channels. You can convert alpha channels to and from selections or paths. In some file formats such as PNG, an alpha channel marks transparent areas of an image in a way that other applications recognize.
- A **layer mask** is an alpha channel attached to a specific layer in Photoshop, controlling which parts of the layer are revealed or hidden. It appears as a white thumbnail next to the layer thumbnail in the Layers panel until you paint black in it; an outline around the layer mask thumbnail indicates that it's selected.
- A **vector mask** is a layer mask made of resolution-independent vector objects, not pixels, useful when precise mask edge control is more important than being able to edit a mask with a brush. You create vector masks using the commands on the Layer > Vector Mask submenu and using the pen or shape tools.
- A **clipping mask** is created when a layer masks another layer. The thumbnail preview of a clipped layer is indented in the layer list, with a right-angle arrow pointing to the layer below. The name of the clipped base layer is underlined.
- A **channel mask** is a mask created using the tonal contrast in a color channel, such as in the green channel in an RGB image. Creating channel masks is useful for advanced techniques for masking, color correction, and sharpening. For example, the edge between trees and sky may be clearest in the blue channel.
- A **quick mask** is a temporary mask you create to restrict painting or other edits to a specific area of a layer. It's a selection in pixel form; instead of editing the selection marquee, you edit a quick mask using painting tools.

► **Tip:** Because masks mark which areas of a layer are visible, they also control where your edits are visible. For example, if you paint a masked layer with the Brush tool, the brush strokes are visible only on the unmasked (white) areas of a layer.

Using Select And Mask and Select Subject

Photoshop provides a set of tools focused on creating and refining masks, collected in a task space called Select And Mask. Inside Select And Mask, you'll use the Select Subject tool to get a fast head start on the mask that will separate the model from the background. Then you'll refine the mask using other Select And Mask tools, such as the Quick Selection tool.

- 1 In the Layers panel, make sure both layers are visible and the Model layer is selected.
- 2 Choose Select > Select And Mask.

► **Tip:** When any selection tool is active, the Select And Mask button is available in the options bar. When the Select And Mask button is not available, you can still use the Select > Select And Mask command.

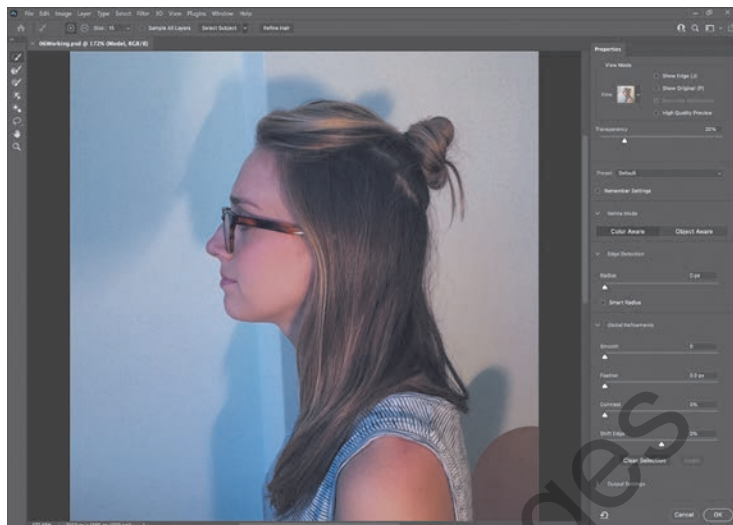
► **Tip:** The first time you use Select And Mask, a tutorial tip may pop up. You may view it before you continue with the lesson, or you can click Later or Close.

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

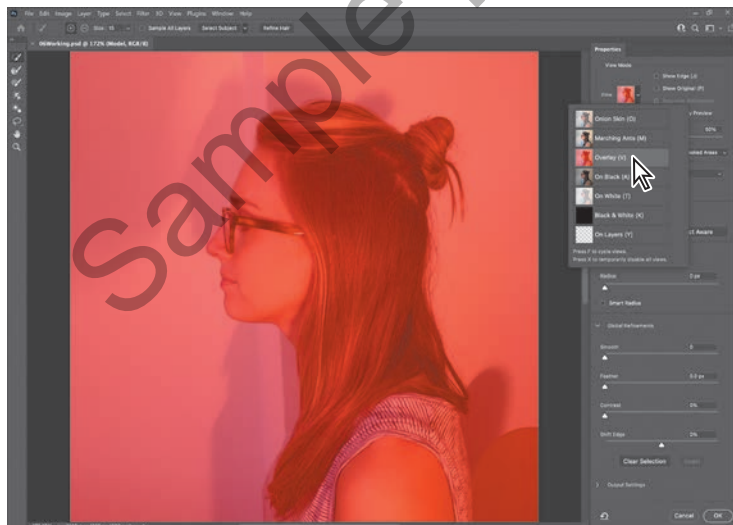
► **Tip:** When a selection tool is active, you can enter Select And Mask by clicking the Select And Mask button in the options bar instead of having to find the command in the menus.

► **Tip:** Quickly cycle through the View Modes by pressing the F key. Viewing different modes helps you spot selection mistakes that might not be obvious in other modes.

Select And Mask opens with the image. A semitransparent “onion skin” overlay indicates masked areas. For now, the checkerboard pattern covers the entire image, because you haven’t yet identified the areas to unmask.

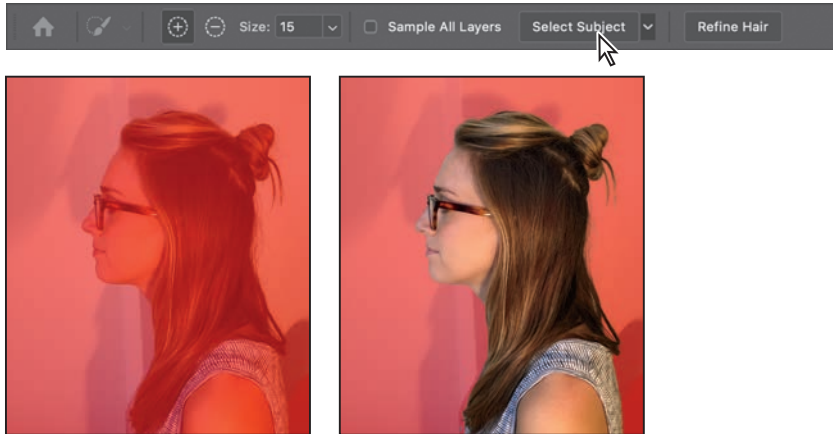


3 Click the View menu in the View Mode section of the Properties panel, and choose Overlay. The masked area is now shown as a semitransparent red color instead of the onion skin checkerboard. It’s solid because nothing is masked yet.



The different View Modes are provided so that you can see the mask more easily over various backgrounds. In this case, the red overlay will make it easier to see missed areas and edges where loose hair isn’t properly masked.

- 4 In the Options bar, click the Select Subject button.



● **Note:** If you don't see the Select Subject button in the Select And Mask task space, make sure the Quick Selection tool (the first one in the toolbox) is selected.

Using advanced machine learning technology, the Select Subject feature is trained to identify typical subjects of a photo, including people, animals, and objects, and then create a selection for them. The selection may not be perfect, but it's often close enough for you to refine easily and rapidly with other selection tools.

- 5 Click the View menu in the View Mode section of the Properties panel, and choose Black & White. This View Mode helps make the mask edge easier to see.
- 6 In the Properties panel, expand the Refine Mode if needed, and click Color Aware. If a message appears, click OK. The mask edge changes.

The two Refine Modes interpret potential subject edges differently. Color Aware can work well on simple backgrounds like the one in this lesson. Object Aware may work better on more complex backgrounds. If you want to compare the two results, choose Edit > Toggle Last State to switch between them.

- 7 Click the View menu in the View Mode section of the Properties panel, and choose Overlay to better compare the edge to the actual image.

Notice that there are a few areas over the chest that were missed by Select Subject. You can easily add them to the selection using the Quick Selection tool.

- 8 Make sure the Quick Selection tool (👉) is selected. In the options bar, set up a brush with a size of 15 px.
- 9 Drag the Quick Selection tool over the missed areas (without extending into the background) to add the missed areas to the selection. Notice that the Quick Selection tool fills in the selection as it detects content edges, so you don't have to be exact. It's OK if you release the mouse button and drag more than once.



▶ **Tip:** You don't have to be in the Select And Mask dialog box to use the Select > Subject command. It's available even when a selection tool is not active. Also, it's OK to use Select Subject first and then enter Select And Mask to refine the selection.

▶ **Tip:** When editing a selection, increase the magnification if it helps you see missed areas.

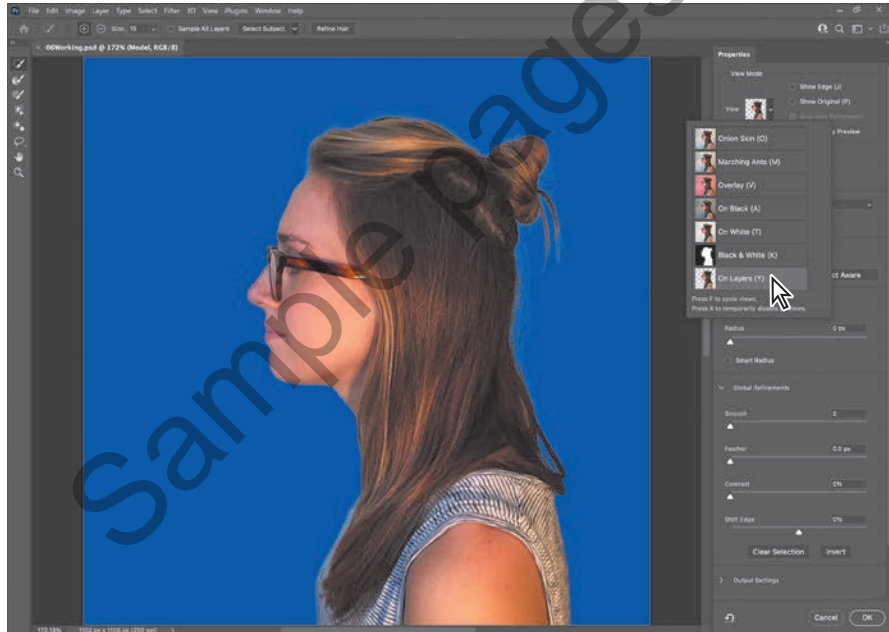
Where you drag teaches the Quick Selection tool which areas should be revealed and are not part of the mask. Do not drag the Quick Selection tool over or past the model's edge to the background, because this teaches the Quick Selection tool to include part of the background in the mask, and you don't want that. If you accidentally add unwanted areas to the mask, either choose Edit > Undo or reverse the edit by painting over it with the Quick Selection tool in Subtract mode. To enable Subtract Mode for the Quick Selection tool, click the Subtract From Selection icon (⊖) in the options bar.

► **Tip:** You can adjust the opacity of the onion skin by dragging the Transparency slider under the View Mode options.

As you drag the Quick Selection tool over the model, the overlay disappears from the areas that you are marking to be revealed. Don't worry about total perfection at this stage.

10 Click the View menu in the View Mode section again, and choose On Layers.

This shows you how the current Select And Mask settings look over any layers that are behind this layer. In this case, you're previewing how the current settings will mask the Model layer over the Episode Background layer.



Inspect the edges around the model at a high magnification, such as 400%. Some of the original light background may still show between the model's edge and the podcast background, but overall the Select Subject and Quick Selection tools should have created clean edges for the shirt and face. Don't be concerned about edge gaps or imperfect hair edges, because you'll take care of those next.

Getting better and faster results with Select And Mask

When using Select And Mask, it's important to use different tools for image areas that should be fully revealed, for areas that should be fully masked, and for partially masked edges (such as fuzzy dog hair). Try these recommendations:

- The Select Subject button can be a fast way to create an initial selection.
- The Quick Selection tool is useful for rapidly touching up a selection produced by Select Subject or for creating an initial selection. As you drag it, it uses edge detection technology to find mask edges automatically. Don't drag it on or over a mask edge; keep it fully inside (in Add mode) or outside (in Subtract mode) the areas that should be revealed.
- To paint or draw solid mask edges manually (without using any automatic edge detection), use the Brush, Lasso, or Polygonal Lasso tool. These also have an Add mode for marking revealed areas and a Subtract mode for marking masked areas.
- Instead of having to switch between Add and Subtract modes with the toolbar, you can leave a tool in Add mode, and when you want to temporarily use the tool in Subtract mode, hold down the Alt (Windows) or Option (macOS) key.
- To improve the mask along edges containing complex transitions such as hair, drag the Refine Edge Brush along those edges. Do not drag the Refine Edge brush over areas that should be fully revealed or fully masked.
- You don't have to do all of your selecting inside Select And Mask. For example, if you've already created a selection with another tool such as Color Range, leave that selection active, and then click Select > Select And Mask in the options bar to clean up the mask.

► **Tip:** In Select And Mask, the Polygonal Lasso tool is grouped with the Lasso tool.

Refining a mask

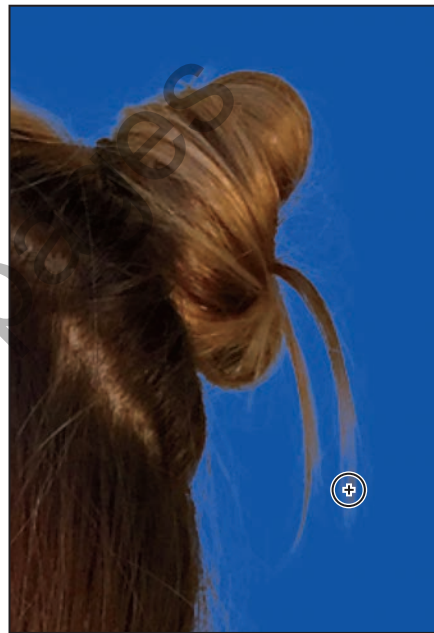
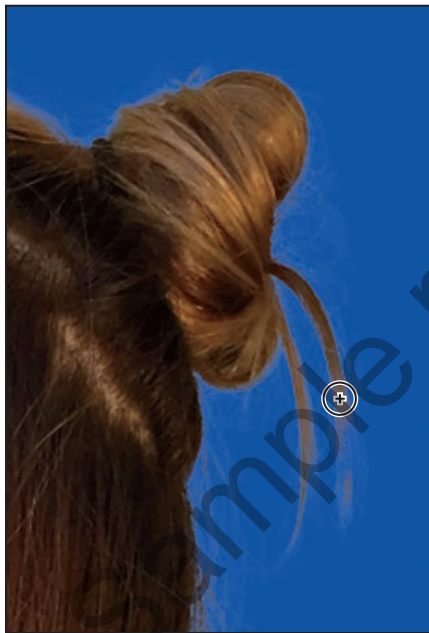
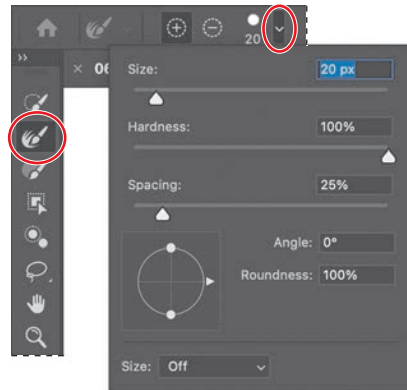
The mask is pretty good so far, but Select Subject didn't quite capture all of the model's hair. For example, some of the strands coming off of the bun on the back of the model's head are discontinuous. In Select And Mask, the Refine Edge Brush tool is designed to mask edges with challenging details.

- 1 At a magnification of 300% or higher, inspect the hair edges at the back of the model's head.



► **Tip:** If you use a tool to make the initial selection (instead of Select Subject), click the Refine Hair button. It should result in less manual brushing with the Refine Edge Brush tool.

- 2 Select the Refine Edge Brush tool (🖌️). In the options bar, set up a brush with a size of **20 px** and Hardness of **100%**.
- 3 Drag the Refine Edge Brush tool between the hair bun and the ends of the hair, where the selection needs to be improved. As you drag the Refine Edge Brush tool over the hair edge, you should see that the missing hair strands falling from the bun are now included in the visible areas.



- 4 Scroll down to the loop of hair that falls over the back of the shirt. Select Subject correctly masked the background inside the hair loop. However, a more subtle hole above still needs to reveal the podcast background, so you'll use the Refine Edge Brush to add that hole to the mask.
- 5 In the options bar, set up a Refine Edge brush with a size of **15 px**, with a Hardness of **100%**.

Julianne Kost is an official Adobe Photoshop evangelist.

Tool tips from the Photoshop evangelist



Zoom tool shortcuts

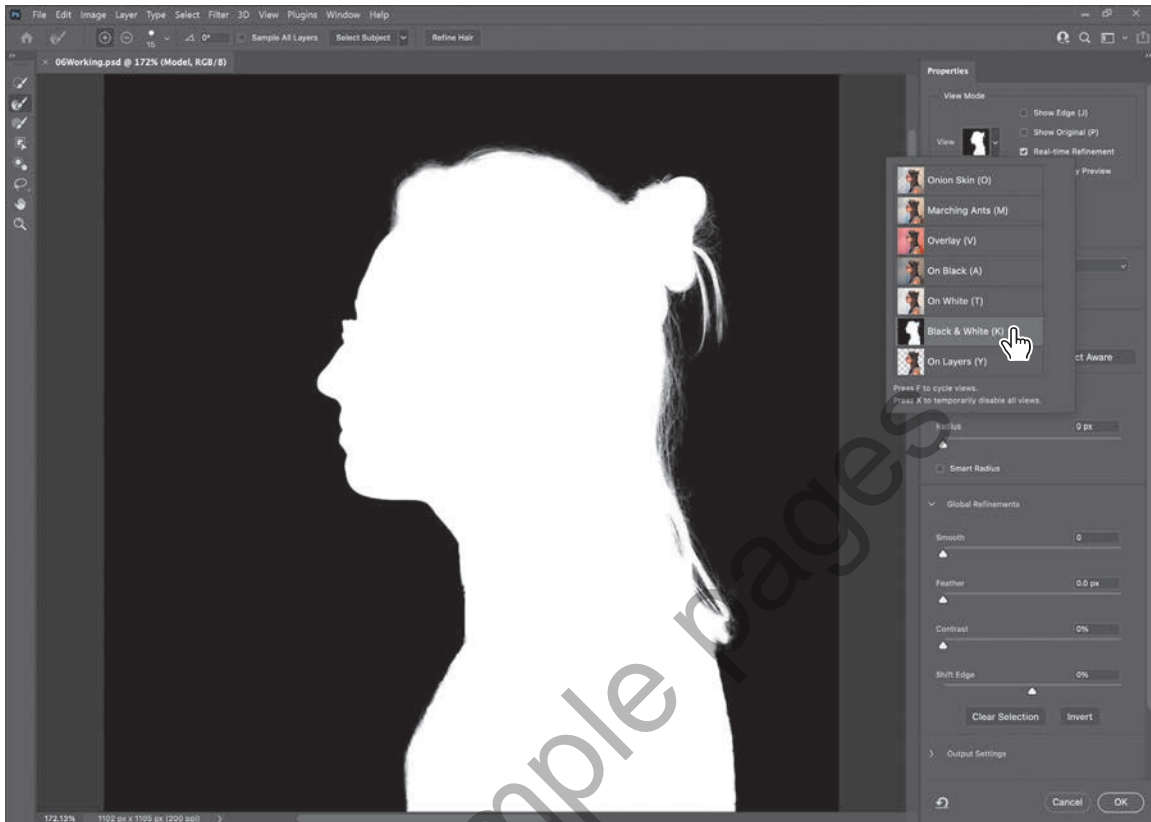
Often when editing an image, you'll need to zoom in to work on a detail and then zoom out again to see the changes in context. Here are several keyboard shortcuts that make zooming faster and easier.

- With any tool selected, press Ctrl (Windows) or Command (macOS) with the plus sign (+) to zoom in, or with the minus sign (-) to zoom out.
- 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 out or to the right to zoom in.
- Press Alt (Windows) or Option (macOS) to change the Zoom In tool to the Zoom Out tool, and click the image. Each Alt/Option-click reduces the image by the next preset increment, centering the image where you clicked.

- 6 Drag the Refine Edge Brush tool over the enclosed area that should be transparent. Gaps in the hair should become masked as transparent, and fine hairs are added to the visible edge.



- 7 Click the View option, and choose Black & White. This is another good way to check your mask. Inspect the mask at different magnifications, and when you're done, choose View > Fit On Screen. Black areas indicate transparency.



► **Tip:** Gray pixels should appear only in transitional edges of a mask. All areas fully outside the subject should be solid black, and all areas fully inside should be solid white.

► **Tip:** A quick way to remember what color to paint in a mask is the phrase "black conceals, white reveals."

If you see hairs or other details that are masked but should be visible, drag the Refine Edge brush over them. The finer the details you want to mask, the smaller you should set the Refine Edge brush size. It's OK if the brush size is slightly larger than the details you want to mask, and you don't have to drag the Refine Edge Brush tool precisely.

If you see Refine Edge Brush tool mistakes that need to be erased, such as inner areas incorrectly added to the mask, drag the Refine Edge Brush tool over the mistakes while holding down the Alt (Windows) or Option (macOS) key.

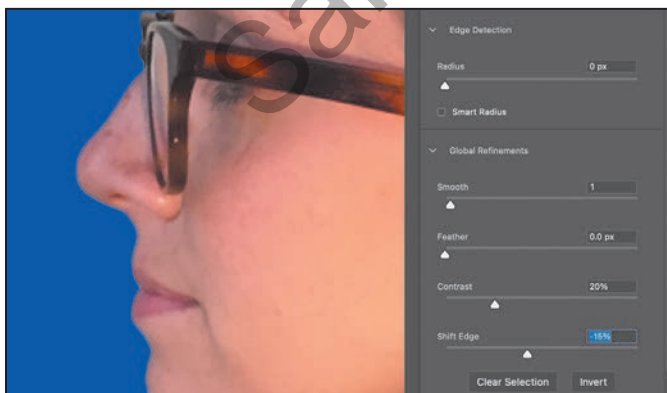
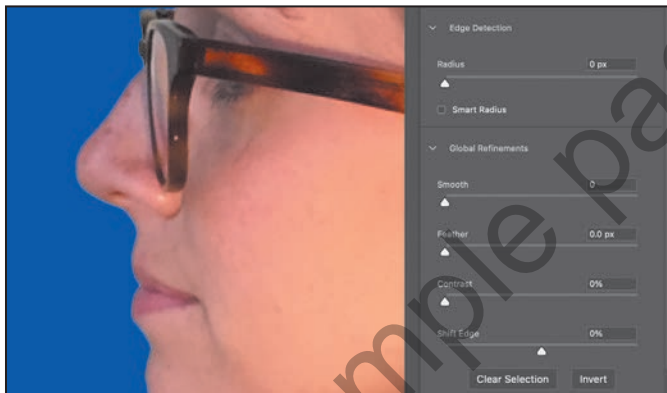
If you see individual spots or discrete areas that need to be fully visible or fully transparent, you can paint them out using the Brush tool, the third one down in the toolbox. To make areas visible, paint them with white; to make areas hidden, paint them with black.

Adjusting Global Refinements

At this point the mask is in good shape, but needs to be tightened up a little. You can tune the overall appearance of the mask edge by adjusting the Global Refinements settings.

- 1 Click the View menu in the View Mode section of the Properties panel, and choose On Layers. This lets you preview adjustments over the Episode Background layer, which is behind the Model layer.
- 2 In the Global Refinements section, move the sliders to create a smooth, unfeathered edge along the face. The optimal settings depend on the selection you created, but they'll probably be similar to ours. We moved the Smooth slider to 1 to reduce the roughness of the outline, Contrast to 20% to sharpen the transitions along the selection border, and Shift Edge to -15% to move the selection border inward and help remove unwanted background colors from selection edges. (Adjusting Shift Edge to a positive number would move the border outward.)

● **Note:** Pay attention to details while using Global Refinements. For example, if you adjust Smooth and the mask edge starts to round important details, that means Smooth is set too high. Similarly, setting Feather too high can create unsightly halos along the edge.



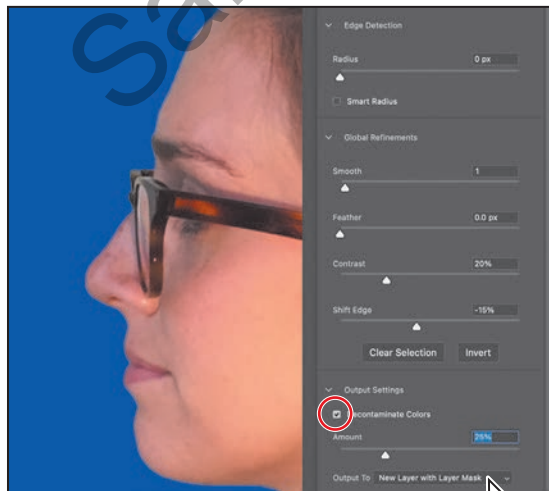
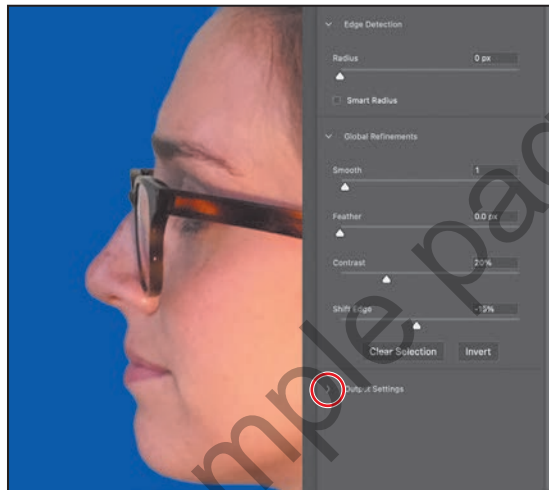
- 3 Take one more look at this preview of the current mask over the background layer, and make any remaining corrections as needed.

► **Tip:** If you mask many images that need similar settings, click the Preset menu and choose Save Preset to create a named preset of Select and Mask properties that you can apply at any time.

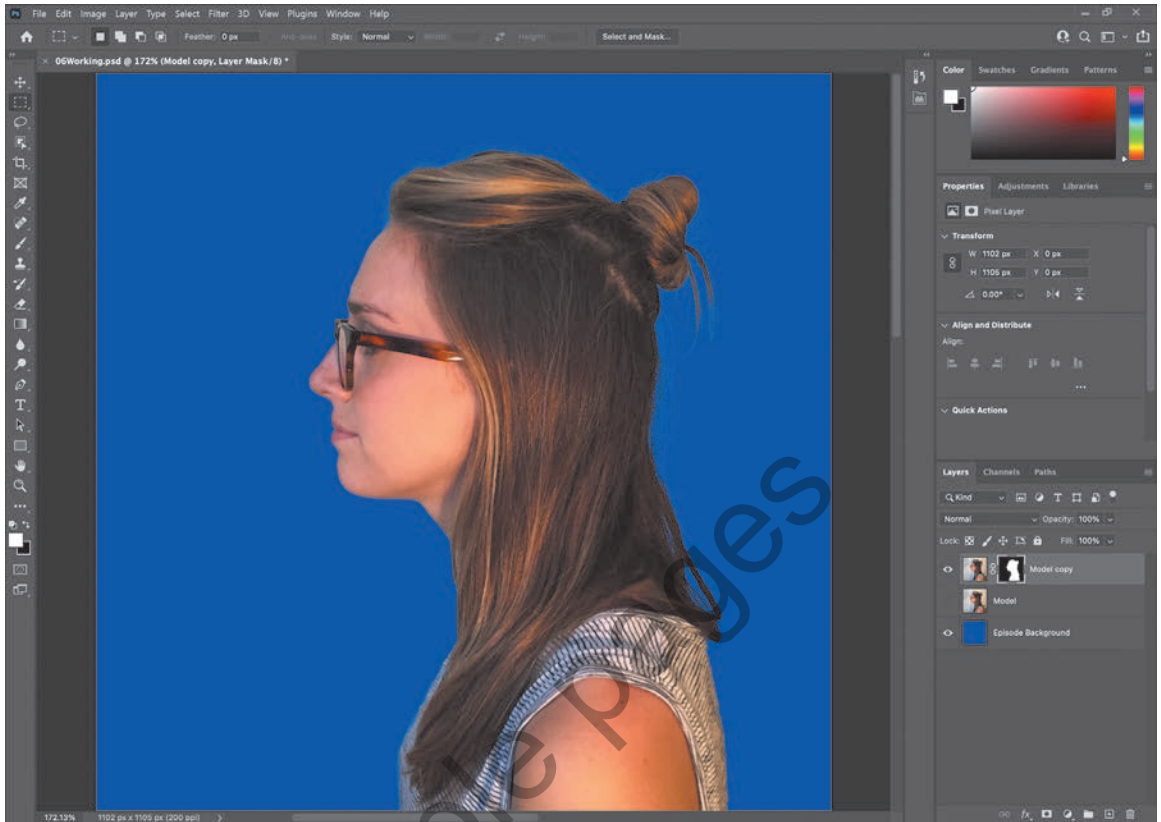
Completing the mask

When you're satisfied with the mask preview, you can create its final output as a selection, a layer with transparency, a layer mask, or a new document. For this project, we want to use this as a layer mask on the Model layer, which was selected when you entered Select And Mask.

- 1 If the Output Settings are hidden, click the disclosure icon (>) to reveal them.
- 2 Zoom in to 200% or more so that you can more easily see the light fringing around the face edge that's due to the Model layer's original background color seeping in behind the mask.
- 3 Select Decontaminate Colors to suppress those color fringes. If Decontaminate Colors creates unwanted artifacts, reduce the Amount until the effect looks the way you want. We set Amount to 25%.



- 4 Choose New Layer With Layer Mask from the Output To menu. Then click OK.



Clicking OK exits Select And Mask. In the Layers panel, the Model Copy layer now has a layer mask (pixel mask) that was generated by Select And Mask.

The layer was copied because using the Decontaminate Colors option requires generating new pixels. The original Model layer is preserved and automatically hidden. If you wanted to start over, you could delete the Model Copy layer, make the original Model layer visible again and selected, and open Select And Mask again.

If the mask isn't perfect, you can continue to edit it at any time. When a layer mask thumbnail is selected in the Layers panel, you can click the Select And Mask button in the Properties panel, click it in the options bar (if a selection tool is active), or choose Select > Select And Mask.

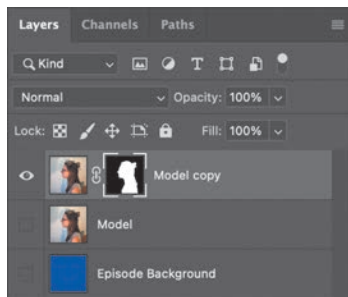
- 5 Save your work.

Note: If you had not selected Decontaminate Colors, it would have been possible to choose a Layer Mask output option that would have added a layer mask to the Model layer without copying it.

Creating a quick mask

To change the color of the glasses frames, you'll use a quick mask, because you won't need the mask after you're done with this one task and so that you can create the mask by painting. First, you'll clean up the Layers panel.

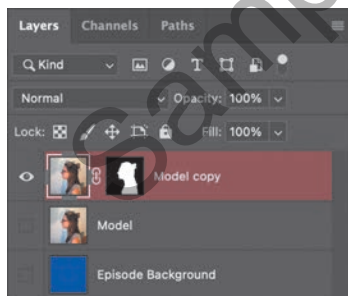
- 1 Hide the Episode Background layer so you can concentrate on the model. Make sure the Model copy layer is selected.



● **Note:** If you are using a small display and the Tools panel is in single-column mode, the Quick Mask Mode button may be past the bottom of the screen. If the Tools panel is in two-column mode, the Quick Mask Mode button is at the bottom left corner of the panel.

- 2 Click the Edit In Quick Mask Mode button near the bottom of the Tools panel. (Until now, you have been working in the default 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. (This idea is similar to the Overlay view mode you saw in Select And Mask.) You can apply changes only to the unprotected area that is visible and selected. Notice that the highlight color for the selected layer in the Layers panel is red, indicating you're in Quick Mask mode.



- 3 In the Tools panel, select the Brush tool (🖌).
- 4 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 and a Hardness of 100%. Click outside the panel to close it.
- 5 Paint the earpiece of the glasses frames. (Magnify the view if it helps you paint more precisely.) The area you paint will appear red, creating a mask.

- 6 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. You can stop where the earpiece goes under the hair.



► **Tip:** Here, you're making a selection by painting the area you want to select. Compare this to Chapter 3, where you made selections using tools that create a selection marquee.

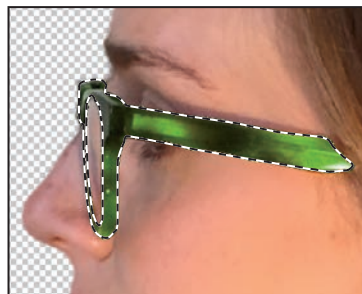
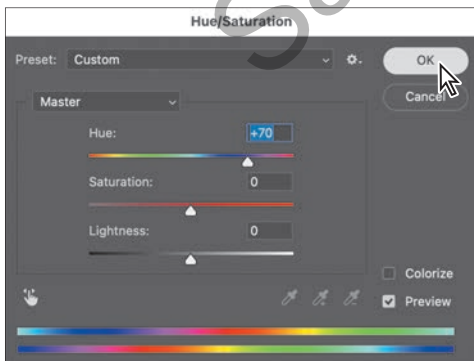
In Quick Mask mode, Photoshop treats the red overlay as a grayscale mask, where shades of gray correspond to degrees of mask transparency. When using a painting or editing tool in Quick Mask mode, keep these principles in mind:

- Painting with black adds to the mask (the red overlay), subtracting from the selected area.
 - Painting with white erases the mask, adding to the selected area.
 - Painting with gray or reduced opacity adds semitransparent areas to the mask, where darker shades are more transparent (more masked).
- 7 Click the Edit In Standard Mode button (🗑️), which is the same as the Enter Quick Mask Mode button.

Exiting Quick Mask mode converts the Quick Mask into a selection.

- 8 Choose Select > Inverse to select the area you originally masked.
- 9 Choose Image > Adjustments > Hue/Saturation. The selection is converted to a layer mask that restricts the Hue/Saturation adjustment to the unmasked area.
- 10 In the Hue/Saturation dialog box, change the Hue to +70. The new green color fills the glasses frame. Click OK.

► **Tip:** If you want to keep the selection for future use, save it as an alpha channel (Select > Save Selection); otherwise, it will be lost as soon as the area is deselected.



- 11 Choose Select > Deselect.

Manipulating an image with Puppet Warp

● **Note:** Photoshop provides several different ways to warp a layer. You'll use Puppet Warp because it's the easiest way to pivot part of an image, such as tilting the head back in this example.

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. Place pins wherever you want to control movement. You'll use Puppet Warp to tilt the model's head back so she appears to be looking up.

- 1 Zoom out so you can see the entire model.
- 2 With the Model Copy layer selected in the Layers panel, choose Edit > Puppet Warp.

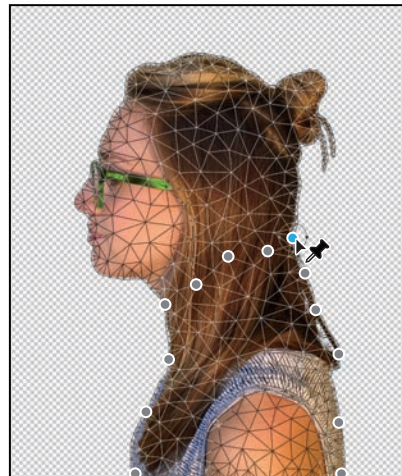
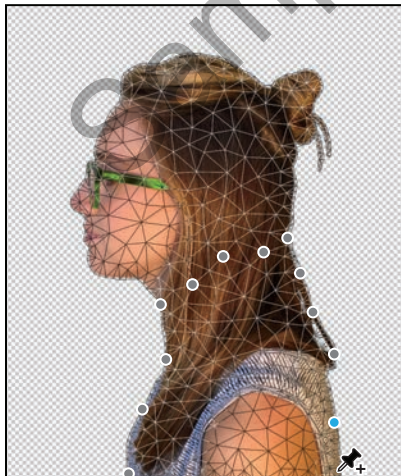
A mesh appears over the visible areas in the layer—in this case, the mesh appears over the model. You'll use the mesh to place pins where you want to control movement (or to ensure there is no movement).

- 3 Click to add pins around the body and along the base of the head, as shown below. Each time you click, Puppet Warp adds a pin. About 10 to 12 pins should work.

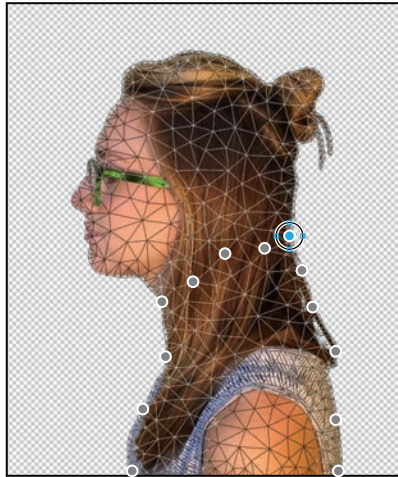


The pins you've added around the shirt will keep it in place as you tilt the head.

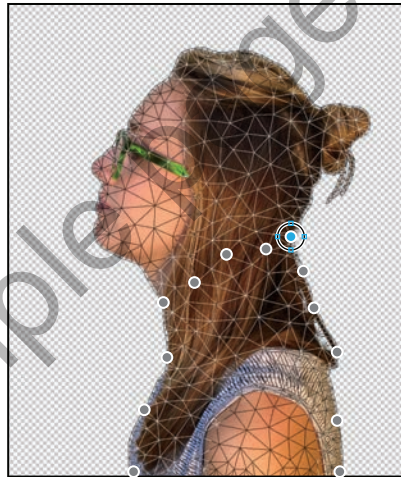
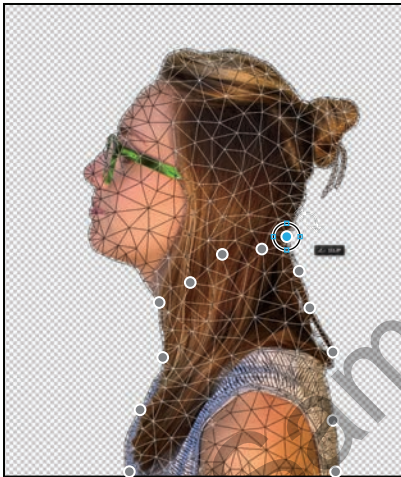
- 4 Select the pin at the nape of the neck. A blue dot appears in the center of the pin to indicate that it's selected.



- 5 Press Alt (Windows) or Option (macOS). 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 **170** there to rotate the head back.
- 6 When you're satisfied with the rotation, click the Commit Puppet Warp button (✓) in the options bar, or press Enter or Return.



Note: Be careful not to Alt-click or Option-click the dot itself, or you'll delete the pin.



- 7 Save your work so far.

Using an alpha channel to create a shadow

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, and think of layers as containing painting, shapes, text, and other content.