

**Foundations  
of Design**

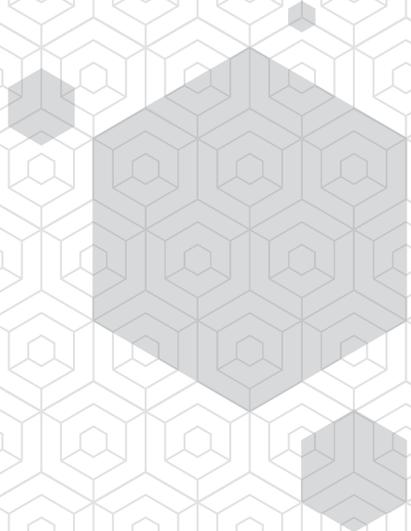
# Graphic Design

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**Foundations  
of Design**

# **Graphic Design**

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# Foundations of Design

## Graphic Design

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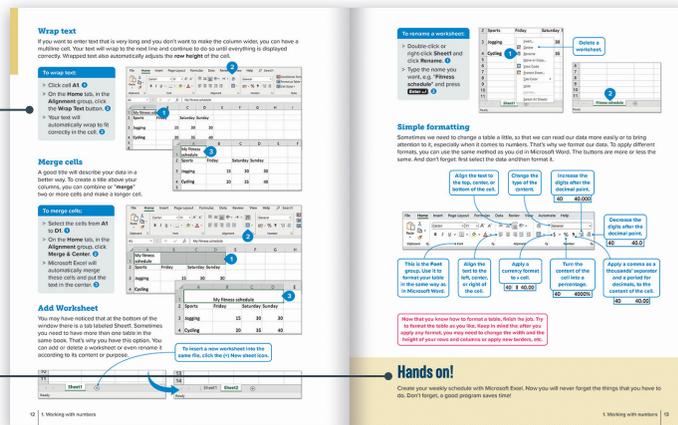
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# Key Features

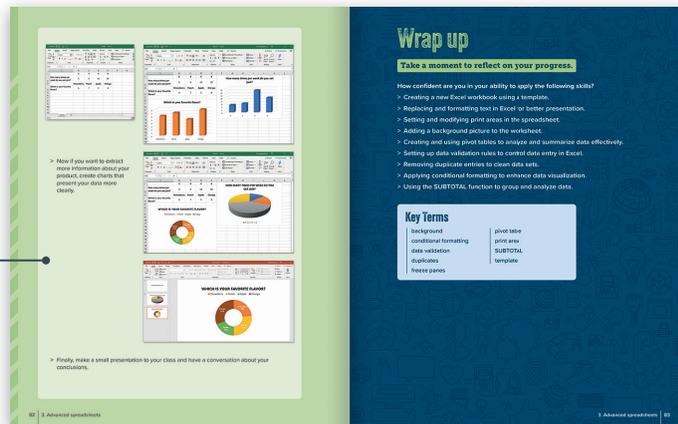
- > An innovative approach to building digital competencies, developed by expert educators.
- > Curriculum aligns with the latest industry standards, preparing students for certifications and future careers.
- > Well-defined learning goals and hands-on, applicable digital skills.

Each unit offers straightforward explanations and contemporary examples, making technology concepts accessible and relevant.

Every unit includes a variety of tasks and activities designed to help students build essential digital competencies.

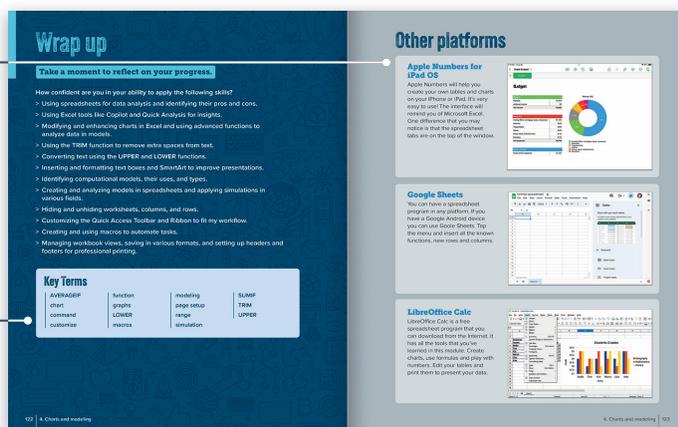


Projects and exercises throughout the course reinforce students' understanding and practical application of digital skills in real-world scenarios.



Students learn about platform diversity expanding their digital toolkit and adaptability.

Each unit organizes key terms that are crucial for digital literacy, equipping students for today's technology-driven workplace.



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# 1

## UNIT 1

# Image editing

Photo editing allows you to enhance your pictures and make them more creative, whether for school projects or sharing on social media. This unit focuses on using Adobe Photoshop to learn how to select and move objects, adjust colors, apply effects, and fix imperfections to create stunning images.

### Learning Objectives

In this unit, you will:

- > understand the structure and components of a picture in digital design.
- > select, move, scale, and rotate objects to organize and arrange visual elements effectively.
- > combine multiple objects in a single file to create engaging collages.
- > add text to pictures and explore various text effects to enhance visual communication.
- > adjust images using filters and effects to refine their appearance.
- > modify or replace colors in pictures to achieve artistic effects.
- > correct imperfections in pictures to improve their quality and clarity.

### Tools

- > Adobe Photoshop

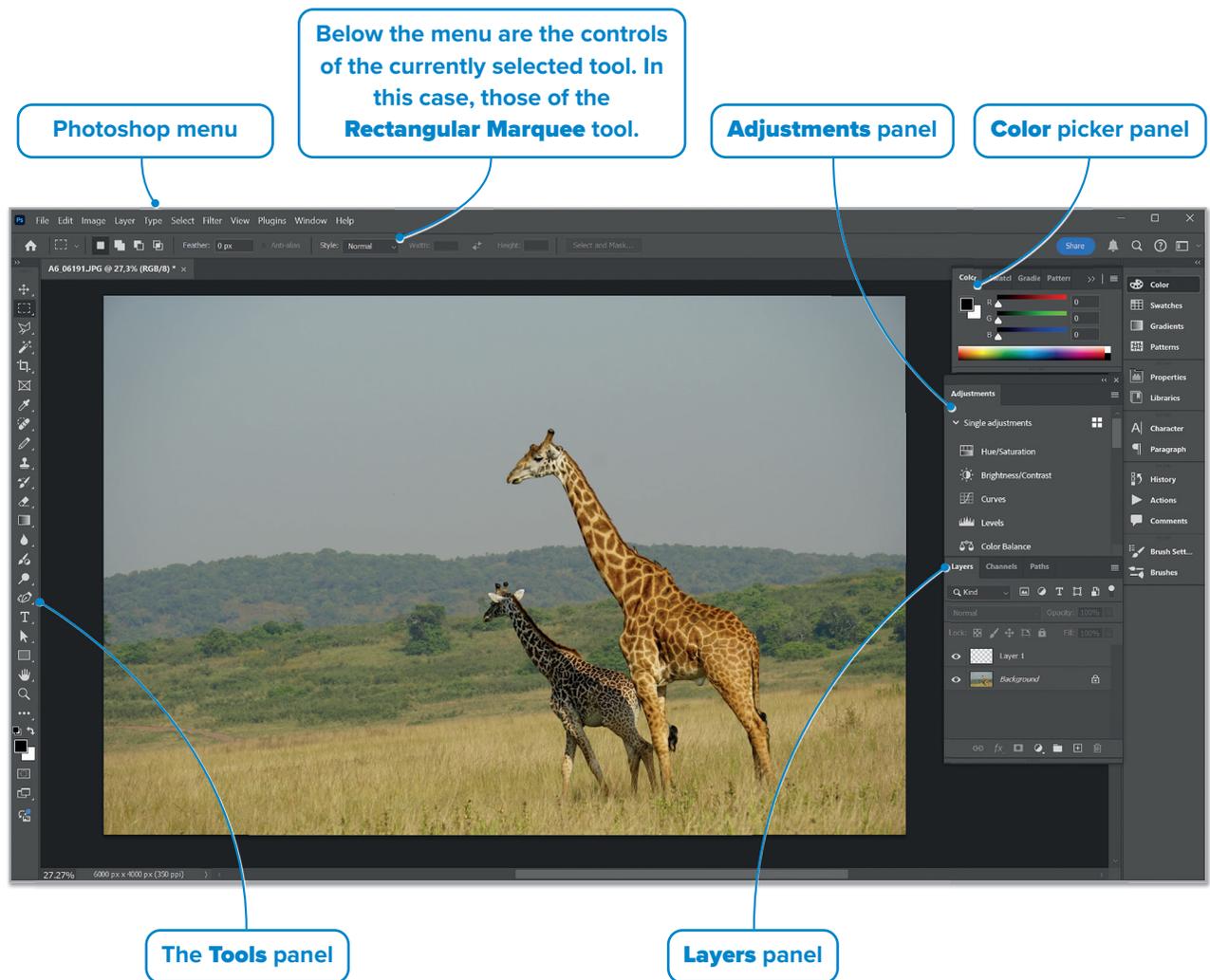
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## LESSON 1

# Image essentials

When it comes to image editing, **Adobe Photoshop** is one of the most powerful programs available. It is used by professionals worldwide to retouch and enhance images, apply various artistic filters and **effects**, and edit images in any way possible.

Here, we will explore some of the most basic features of Photoshop. First, let's get to know the Photoshop user interface.

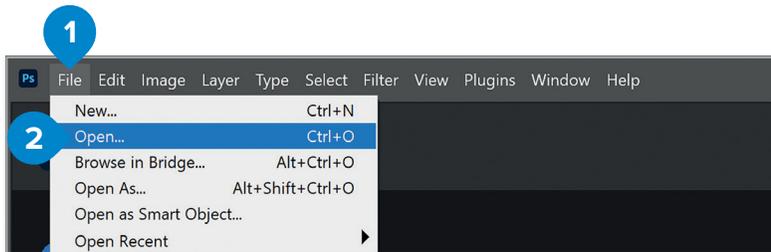


Visit your online course, Unit 1, and download the pictures you will need for this unit.

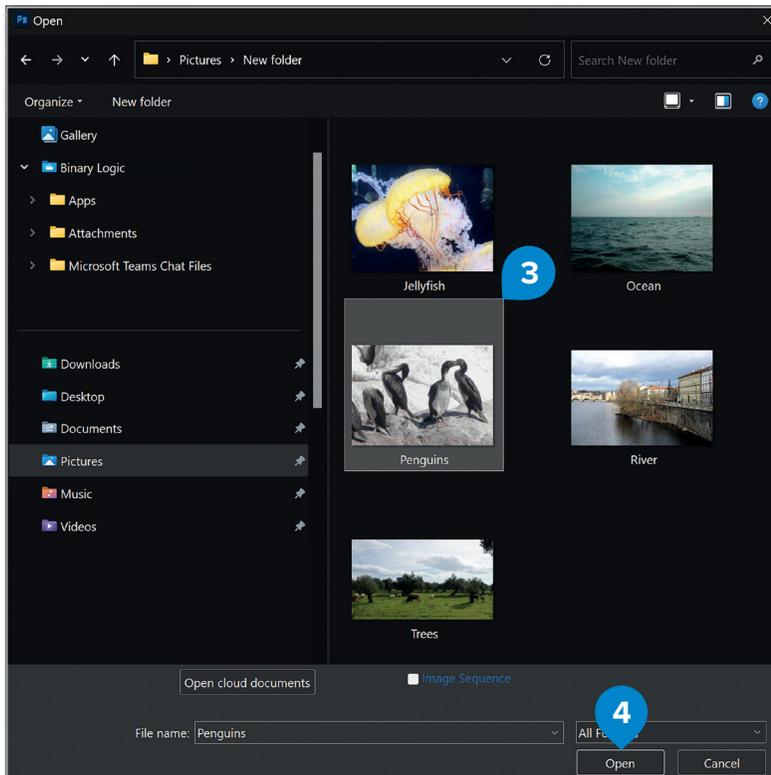
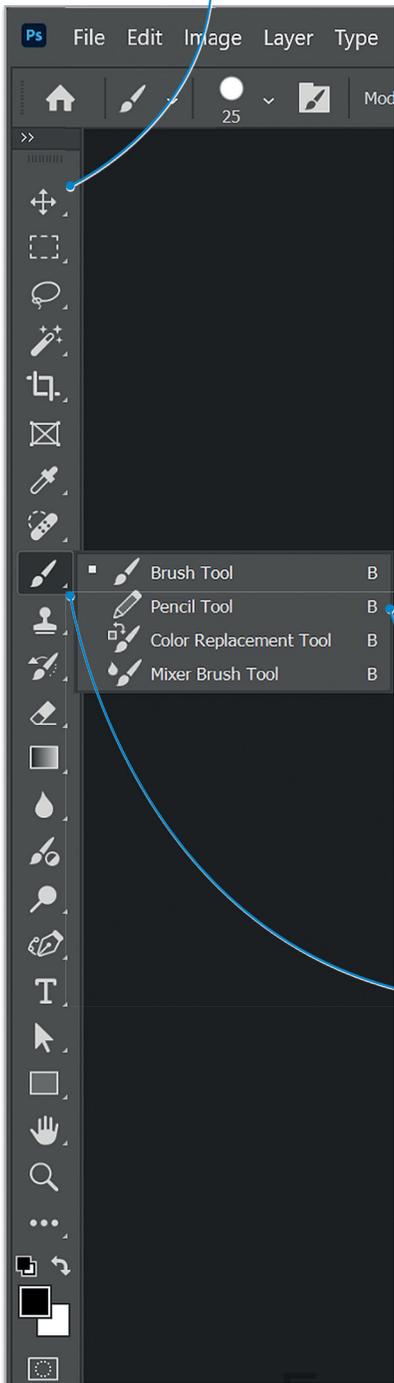
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## To open an image in Photoshop:

- > Click **File**. 1
- > Click **Open**. 2
- > Find the image. 3
- > Click **Open**. 4



On the left side of Photoshop's window, there is a selection of image manipulation tools.



Next to the names of some tools, there is a small letter. You can choose a specific tool by pressing the corresponding key. This is called a shortcut.

Most of the tools have a small arrow in the bottom right-hand corner of the icon. Click or right-click it to access more tools in this group.



### Smart Tip

All tools within the same group share the same keyboard shortcut. If you press a tool shortcut key, the tool from that group that was used last is selected.

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## Image size and resolution

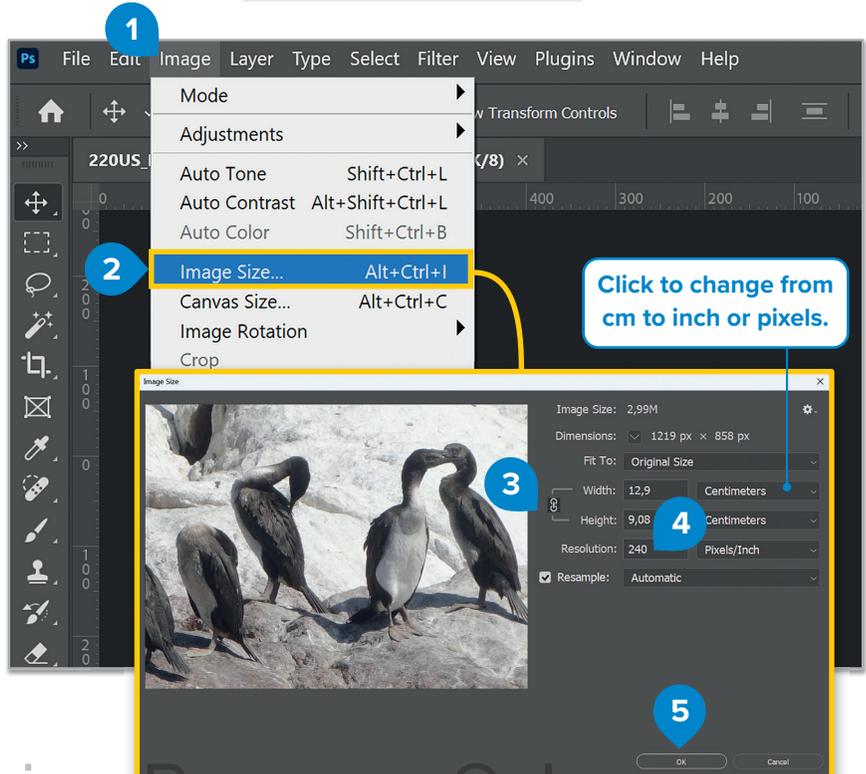
Every digital image consists of many tiny colored dots called **pixels**. Those pixels, when put together side by side, make our image. For example, an image coming straight from your digital camera may be 4,000 x 3,000 pixels. These are your image's pixel dimensions, and since every pixel takes up a certain amount of space on your computer, the pixel dimensions and the color depth determine the final size of your picture on the computer.

You may have also heard the term resolution referring to image resolution, digital camera resolution, etc. This is a very confusing term because it is used to mean different things in different cases. In many cases, resolution is used to refer to the total amount of pixels in an image. This is the case with digital camera resolution which is measured in megapixels. However, in Photoshop, resolution has nothing to do with the amount of pixels in the image file, so it doesn't affect the image file size at all. Resolution in Photoshop is about the level of detail an image will have if it is printed on paper (or another print medium) and it is measured in pixels per inch or ppi. In printed images with a higher resolution, the pixels are more dense, resulting in better images.



### To change an image's pixel dimensions and/or resolution:

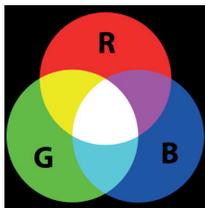
- > Click **Image**. **1**
- > Click **Image Size**. **2**
- > Change either the **Width** or **Height**. **3**
- > You can change the resolution. **4**
- > When done, click **OK**. **5**



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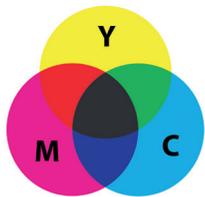
## Color mode

A **color mode** is roughly how each color is represented in each pixel in the image. Some of the most important color modes are explained below.



### RGB — Red, Green, and Blue

This is the same color system that determines how an image is displayed on a computer monitor (and on a TV). Monitors emit light, and each pixel creates its color by mixing various shades of the three primary colors (Red, Green, and Blue). It's the color mode of choice for photos displayed on screen. It gives the widest range of color available for your Photoshop image. RGB uses additive color mixing to create all the colors. Imagine you have three colored flashlights in a completely dark room; one red, one green, and one blue. When no light is on, you have total darkness; black, the absence of colors. Adding red to green creates yellow; adding all three primary colors together creates white.



### CMYK — Cyan, Magenta, Yellow, Key (black)

This process takes four colors and blends them to achieve the desired color of your image. This is how your desktop printer works: it mixes those four inks in different intensities to print your image on paper. Use this color mode to work with images that you are planning to print. That way, the colors displayed on your monitor will be a more accurate representation of the final result you will get on paper.

CMYK uses subtractive color mixing to create all the colors. Here, there's need to create white because that is the color of paper, or the background. You can imagine the three colors (Cyan, Magenta, and Yellow) as filters. If we shine white light through a Yellow filter, the light will of course be yellow. If we put the yellow and the magenta filters together, the light passing through will become red and so on. When all three colors are mixed together, they block or absorb all light, thus creating black.

In printers, however, to save money on ink, and to produce deeper black tones, unsaturated and dark colors are produced by using black ink instead of the combination of cyan, magenta, and yellow.

You can notice that RGB and CMY are complementary colors. Any two colors from one group can produce a basic color from the other group.

## Indexed versus Grayscale modes

### Indexed

A file using indexed color mode can handle only a specific, user-defined color palette, usually used for files to be emailed or on a website. You can use a color range of up to 256 colors to define your image, making it a smaller file size, however the quality of your image is severely affected. A poor choice if you want to print your file, but if it is still good on the screen, it is a good choice for the web.

### Grayscale

Think of a black-and-white photo here. A grayscale image has black, white, and every shade of gray in between (256 shades actually). On the web, grayscale images are generally saved as .jpg files and are smaller in size than those saved in a color format.

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## Color depth

**Color depth** refers to the number of different shades of each color available for editing your image. It determines how many distinct colors can be represented. Photoshop allows you to choose the color depth when working on an image. Color depth is measured in Bits/Channel in Photoshop. A channel represents one of the primary colors in your color mode. For example, in RGB, the channels are red, green, and blue.

If you use 8 bits for the red channel, it means you can have 256 ( $2^8 = 256$ ) different shades of red. By combining various shades from each channel, you can create a wide range of colors. In 8 Bits/Channel, the total possible colors are  $256 \times 256 \times 256 = 16.7$  million. With 16 Bits/Channel, you get  $2^{16} \times 2^{16} \times 2^{16} = 281$  trillion possible colors!

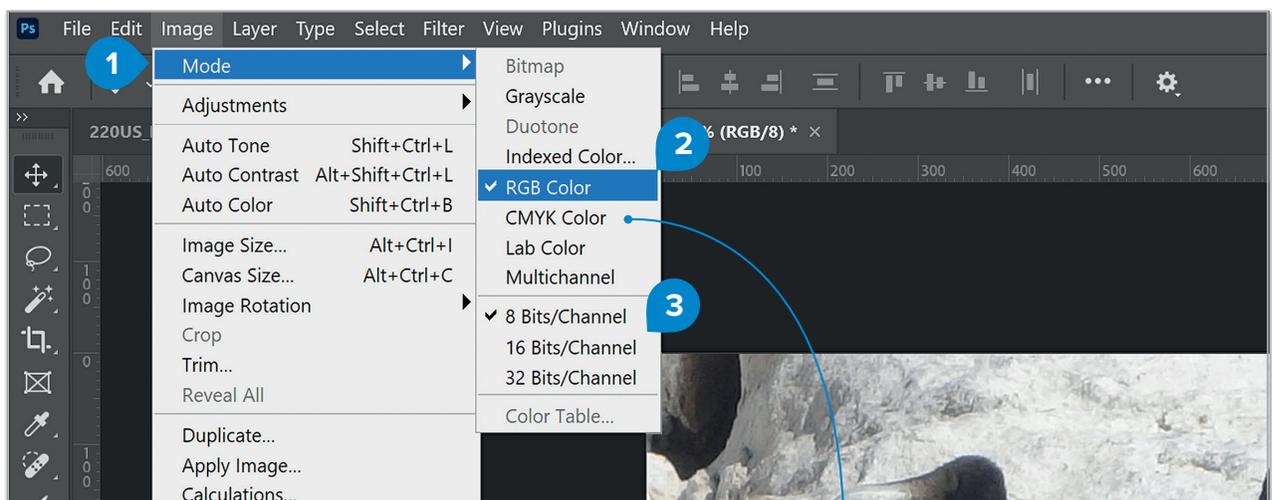
### Which should you choose?

If you plan to make significant changes or adjustments to your image, use 16 Bits/Channel. This depth retains far more color information during editing. However, be aware that 16 Bits/Channel results in file sizes nearly double those of 8 Bits/Channel.

The best practice is to work in 16 Bits/Channel for intensive editing and, once finished, convert to 8 Bits/Channel before saving. Remember, the most common image format, JPEG, supports only 8 Bits/Channel. If you need to save a file in a higher color depth, use a format like TIFF.

#### To change the color mode and depth of an image in Photoshop:

- > From **Image** menu, click **Mode**. 1
- > Click a color mode of your choice. 2
- > Select the color depth. 3



Click to select the  
CMYK color.

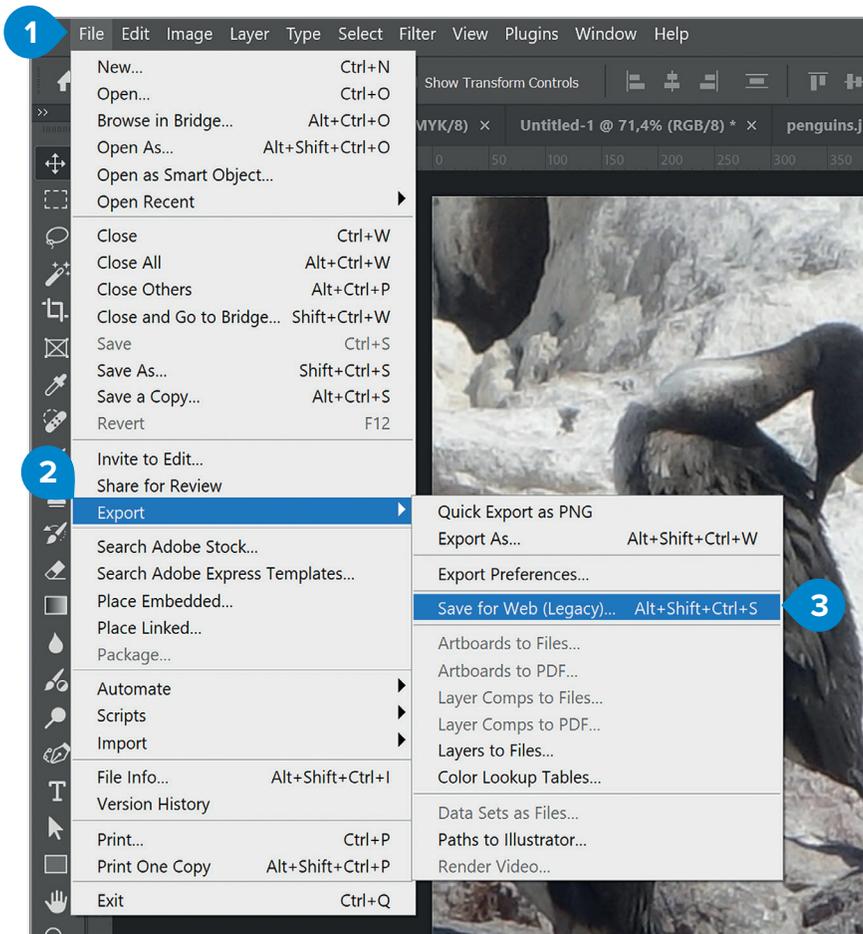
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## Saving images for the web and for print

Typically, when you want to use an image on the web, for example, to attach it to an email, use it on your personal website, upload it to your online profile, and so on, you want the image to be as small in size as possible to be able to upload and download it quickly.

### To save an image for the web:

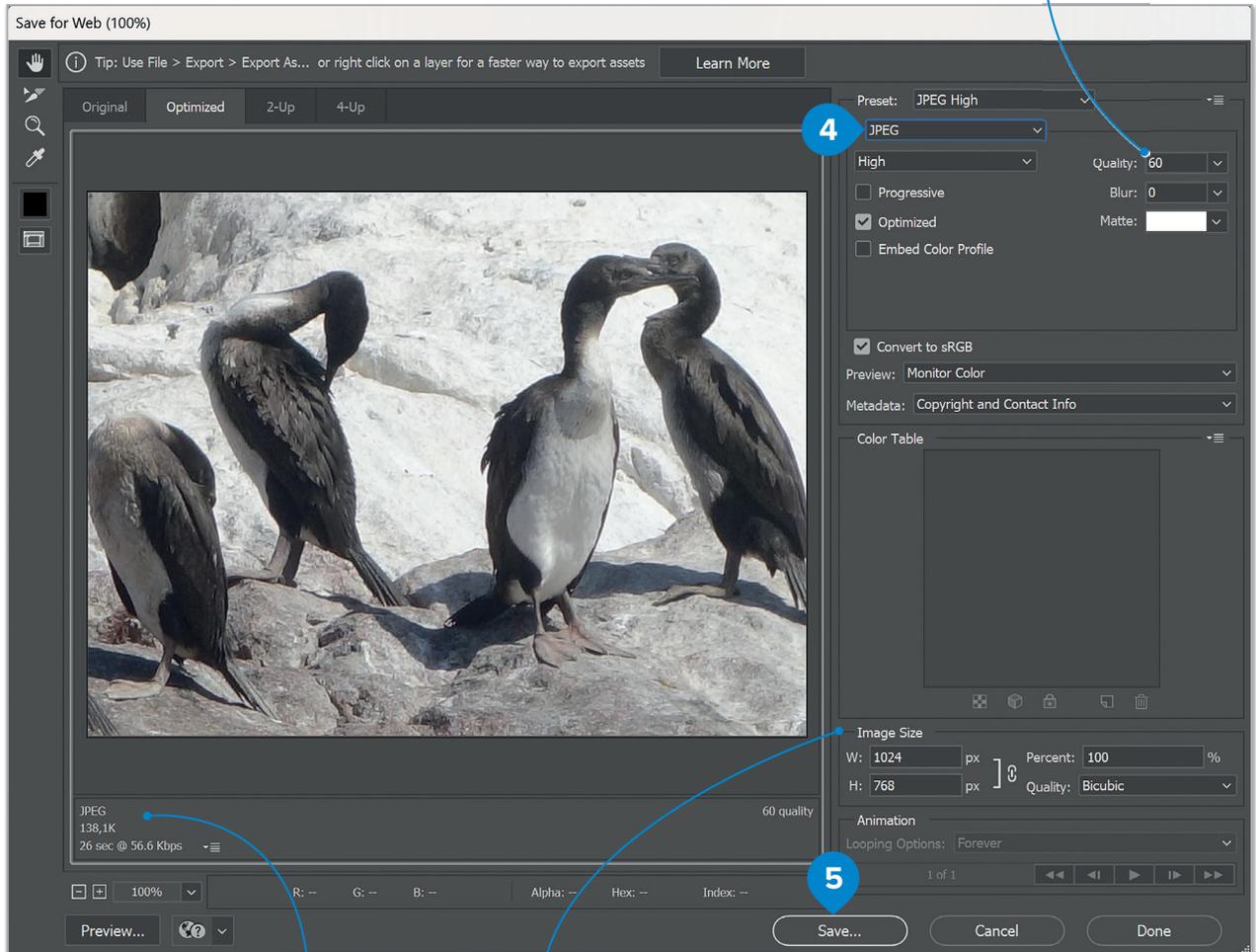
- > Click **File**. **1**
- > Click **Export**. **2**
- > Click **Save for Web (Legacy)**. **3**
- > Select the file type you want. **4**
- > When done, click **Save** **5** and select a place to save your web-optimized image.



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Usually, JPEG is a good choice for most types of images. Use PNG if your image uses transparency.

With **Quality**, you can change the quality of your image and, therefore, its size. You can find a preview of the resulting image after any change.



After any change, you can notice the estimated file size.

If your image is too big (as are pictures that come straight from your camera), reduce the **Image Size**.

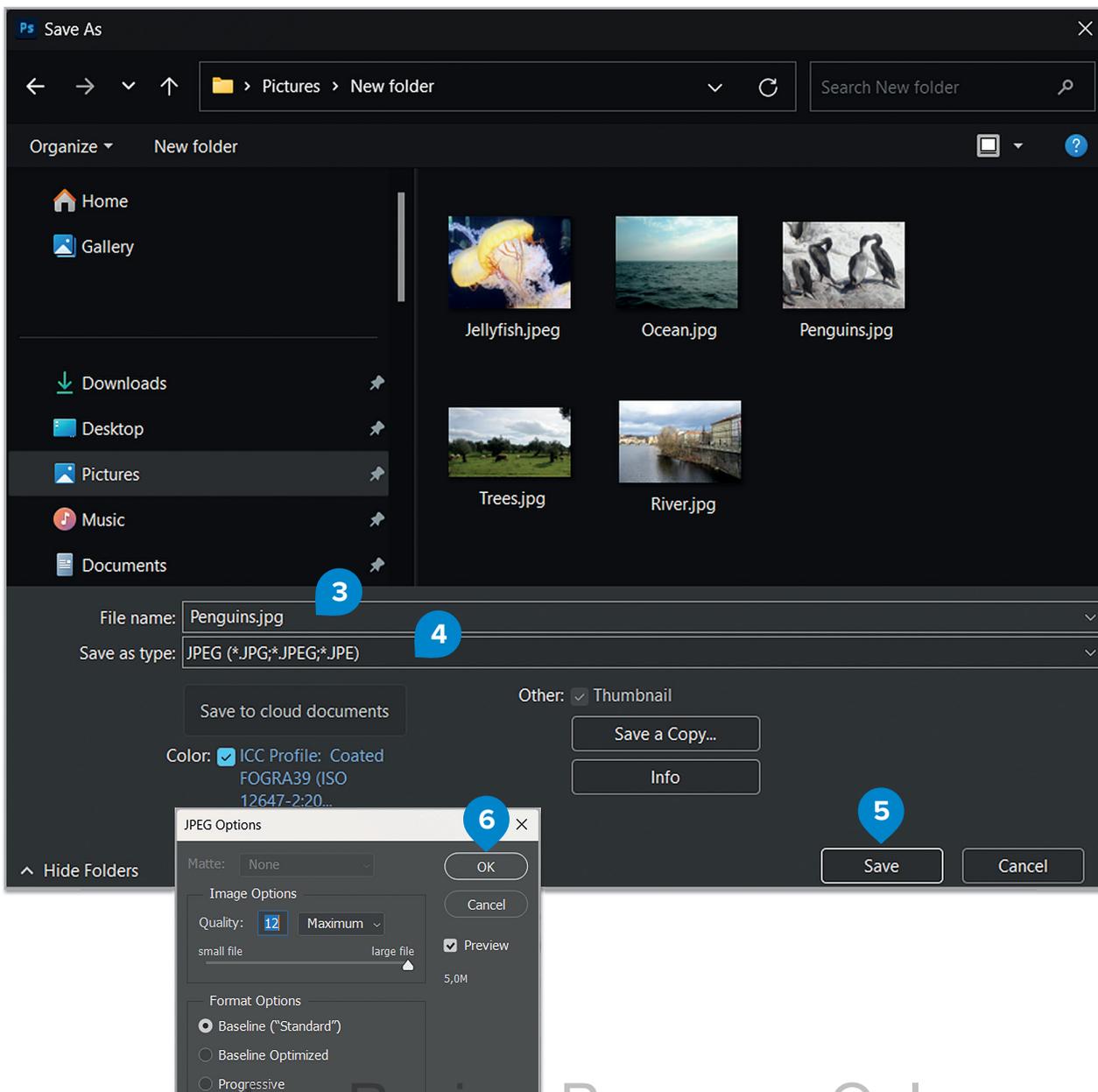
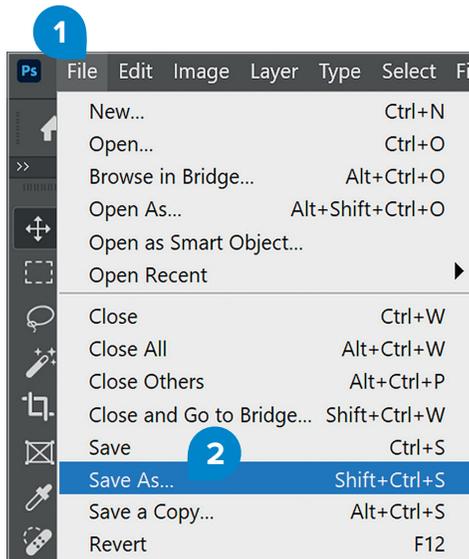
When saving an image intended for printing, make sure you are working with an image with a high enough resolution (typically 200 – 300 ppi for most desktop printers) from the beginning. Changing a low-resolution image to a high ppi value generally produces poor results.

When saving an image for printing, it's best to use an LZW lossless compression and TIFF file format.

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## To save an image in Photoshop:

- > Click **File**. 1
- > Click **Save As**. 2
- > Type a name for your image. 3
- > Select a file format for your image. 4
- > Click **Save**. 5
- > On **JPEG Options** window, press **OK**. 6



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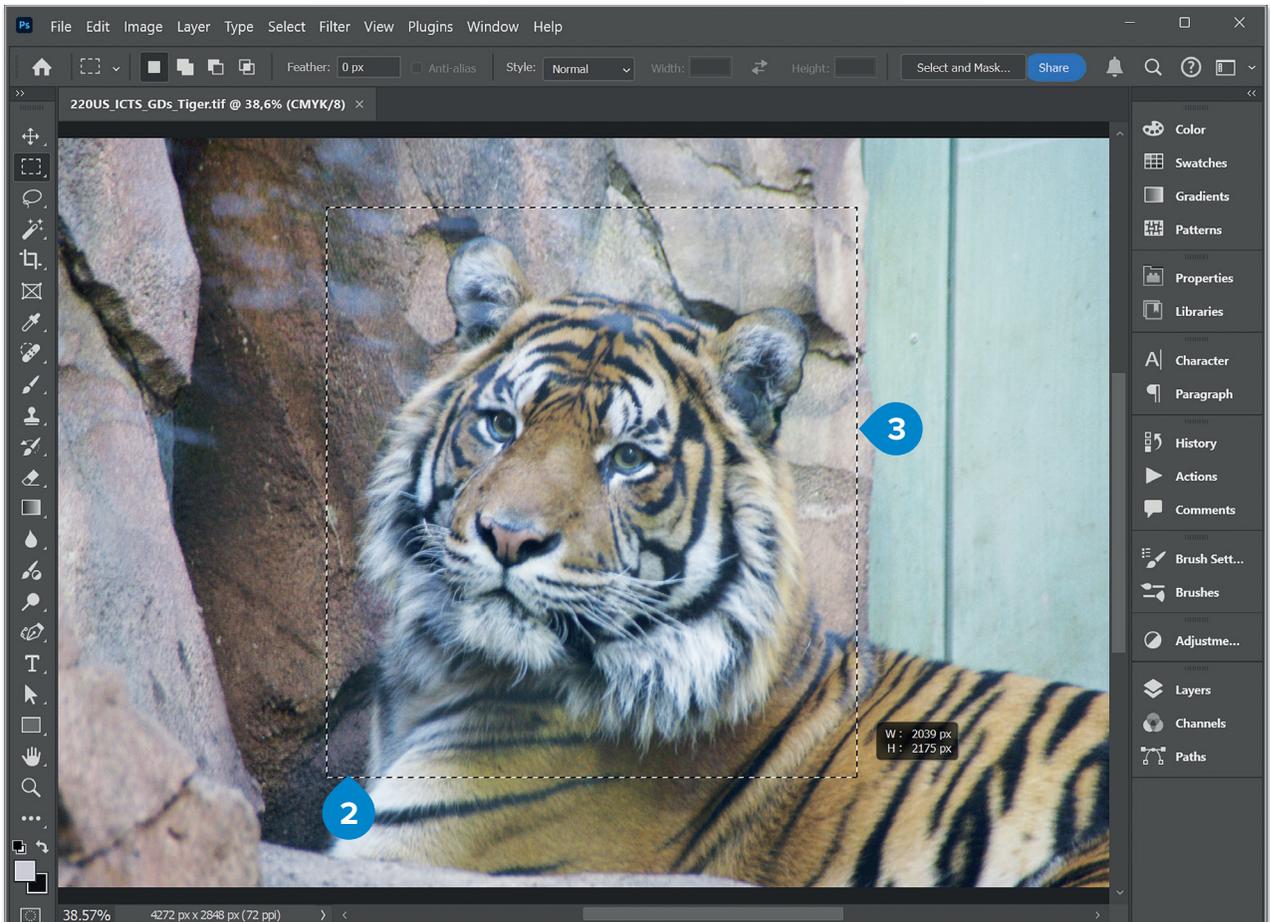
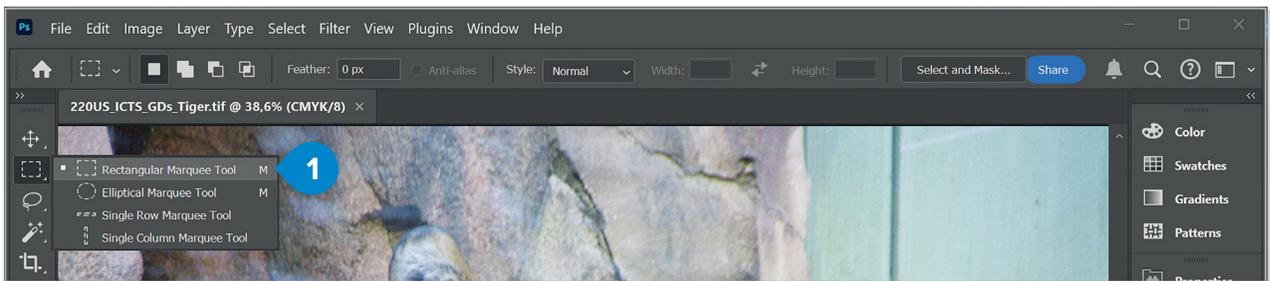
## Making selections

When working on your photos, there will be times when you will want to make changes to just a portion of an image. Maybe you need to brighten a particularly dark area. Or you want to combine part of one image with another and make a collage. In these cases, you will need to make a selection on your image.

In Photoshop, there are various tools that allow you to select parts of your images. Let's find out some of them below.

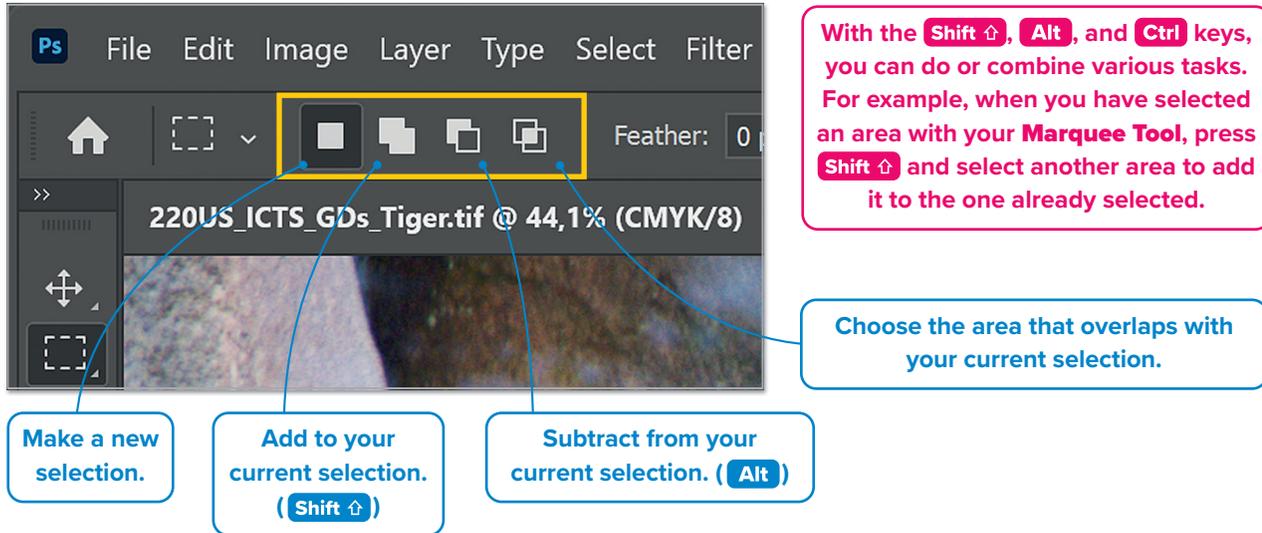
### To make a rectangular selection:

- > Select the **Rectangular Marquee Tool (M)** 1 from the **Tools** panel.
- > Click and drag from one corner of the area that you want to select to the opposite corner. While you drag, a moving dotted outline called the selection border will be on your screen. 2
- > Release your mouse button. Whatever is inside the selection border is your current selection. 3



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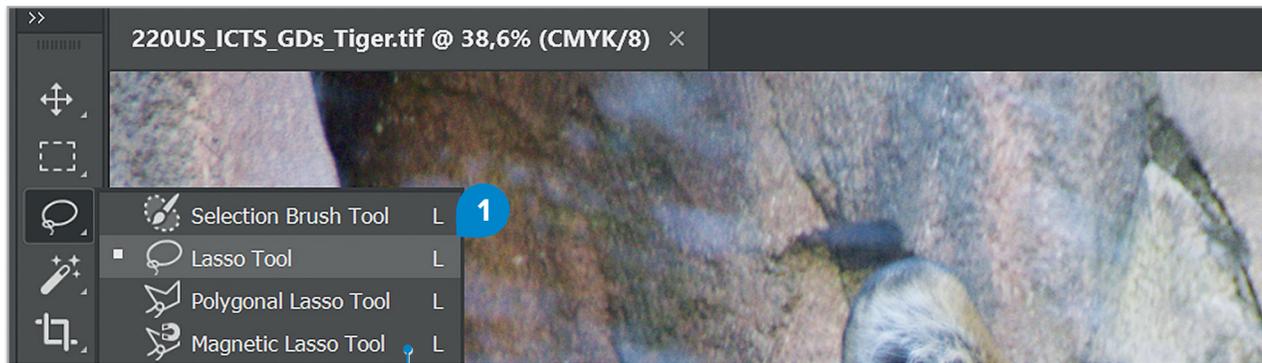
When you are using **marquee** tools, you can modify your selections by choosing between the different selection modes.



To select more complex areas from your pictures, you will need the freeform selection tools like the **Lasso Tool** or the **Magnetic Lasso Tool**.

**To make a freeform selection with the Lasso Tool:**

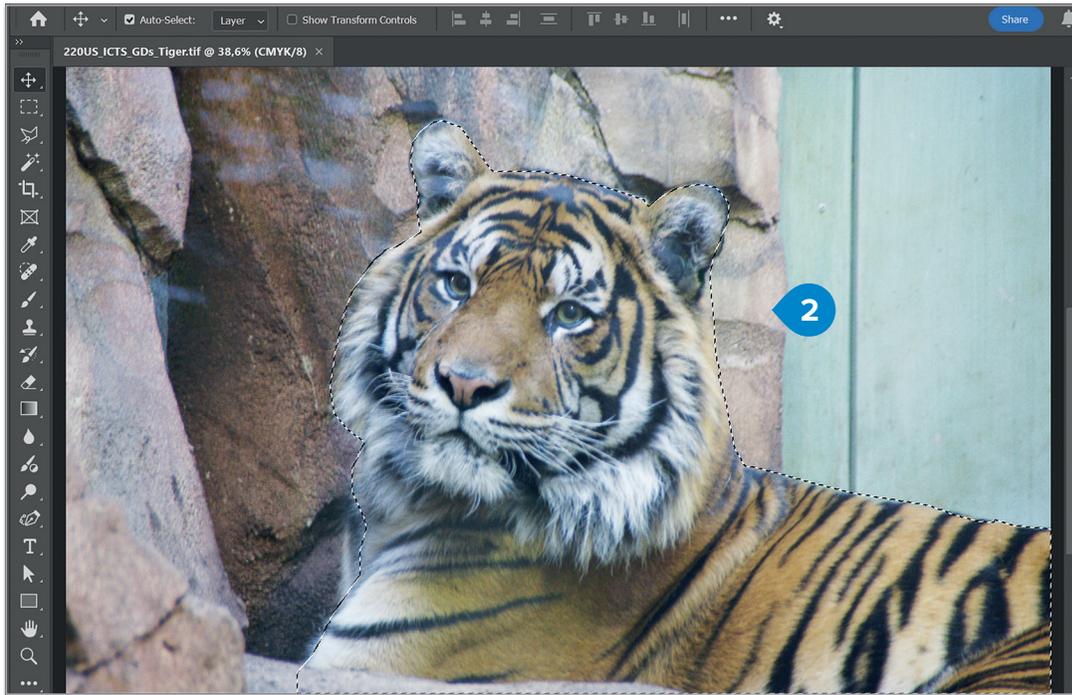
- > Click the **Lasso Tool (L)** from the **Tools** panel. **1**
- > Position the cursor anywhere along the edge of the element you want to select.
- > Hold down the mouse button and trace around the element, trying to include only what you want to select.
- > Continue tracing until you return to your starting point, then release the mouse button. You should notice the selection border match your lasso line, surrounding the element you selected. **2**



Instead of the **Lasso Tool**, you may want to use the **Magnetic Lasso Tool**. It works much like the **Lasso Tool**, but you don't have to be as precise when tracing around an element because the **Magnetic Lasso Tool** automatically detects the edges of the element and sticks to them. Because of that, it works well for elements that are well defined and stand out from their background. Give it a try!

If you release the mouse before you reach the starting point, the program will automatically connect the start and end point with a straight line.

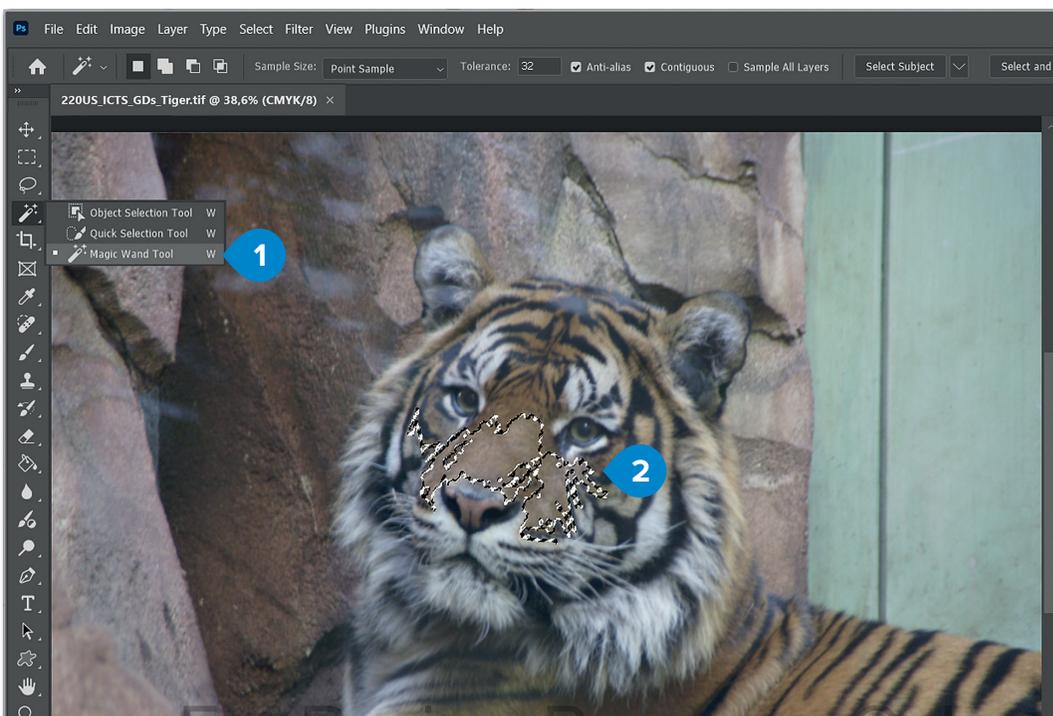
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With **Magic Wand Tool**, you can select an area depending on its color. For example, if you click an area in yellow, Magic Wand Tool will select the whole area with yellow tones. Using **Tolerance**, you can adjust the size of the selection depending on the intensity of the color.

#### To use the Magic Wand Tool:

- > Click the **Magic Wand Tool**. 1
- > Click on the area of the image you want to select. 2



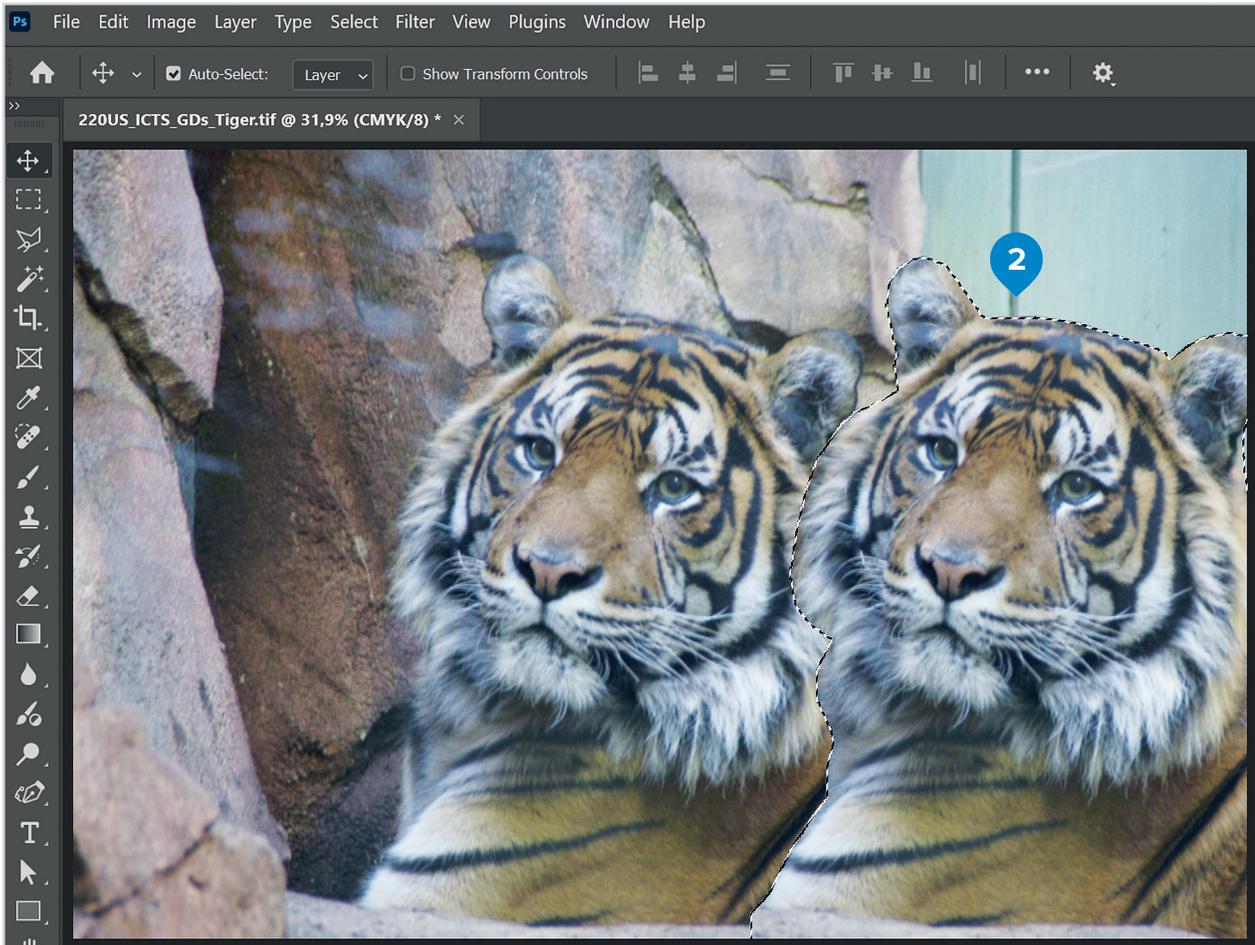
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## Cloning a selection

After selecting an element of your image, you may want to copy it to another image or clone it once or twice in the same image. To copy your selection to another image, make a selection and then click **Edit >Copy**, open an image in **Photoshop** and click **Edit >Paste**. Then use the **Move Tool** to place the element exactly where you want in the new picture. Let's try an example where you are going to clone an object from an image.

### To clone a selection inside the same image:

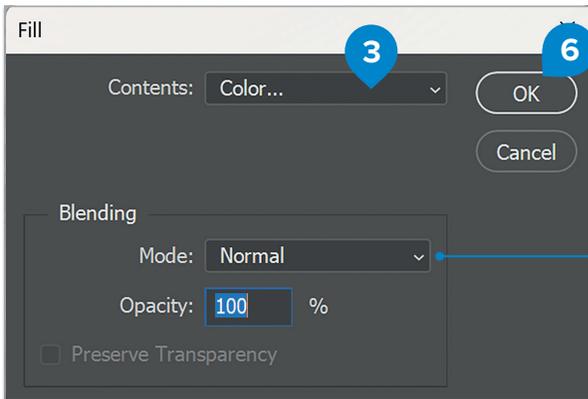
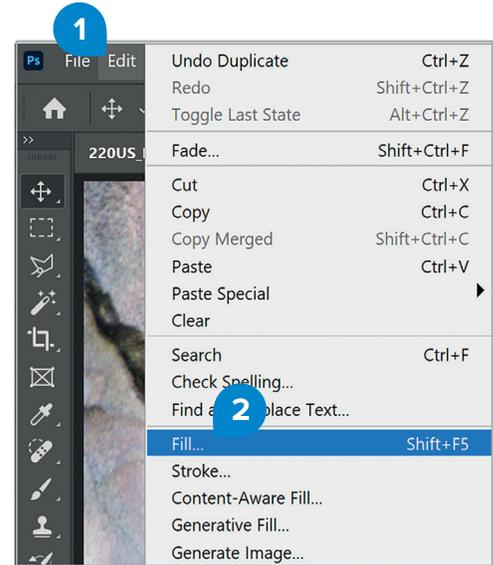
- > Click the **Move Tool (V)** from the **Tools** panel. **1**
- > Hold **Alt** and click and drag your selection.
- > Place it where you want and release the mouse button. **2**



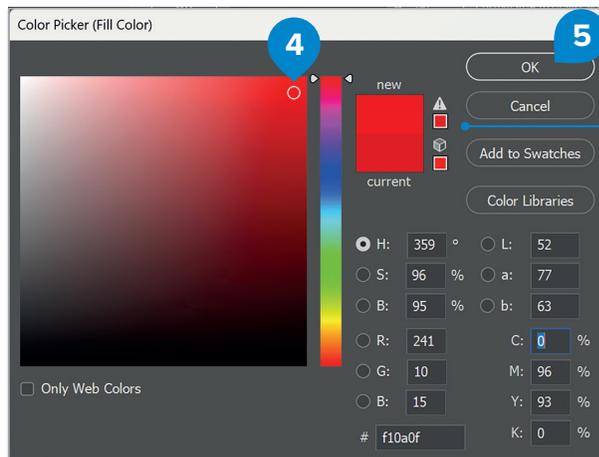
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## To fill a selection with color:

- > After making a selection, click **Edit**. 1
- > Click **Fill**. 2
- > In the **Fill** window, choose **Color**. 3
- > In the **Color Picker (Fill Color)** window, pick a color. 4
- > Click **OK**. 5
- > Click **OK**. 6
- > The color you selected is applied to your selection. 7



You can try different **Blending Modes** and check what happens.



When selecting a color in a **Color Picker** window, you may notice an exclamation mark. This warns you that the selected color will not print as it is on your monitor. Click the exclamation mark if you want to select the closest color that is safe for printing.

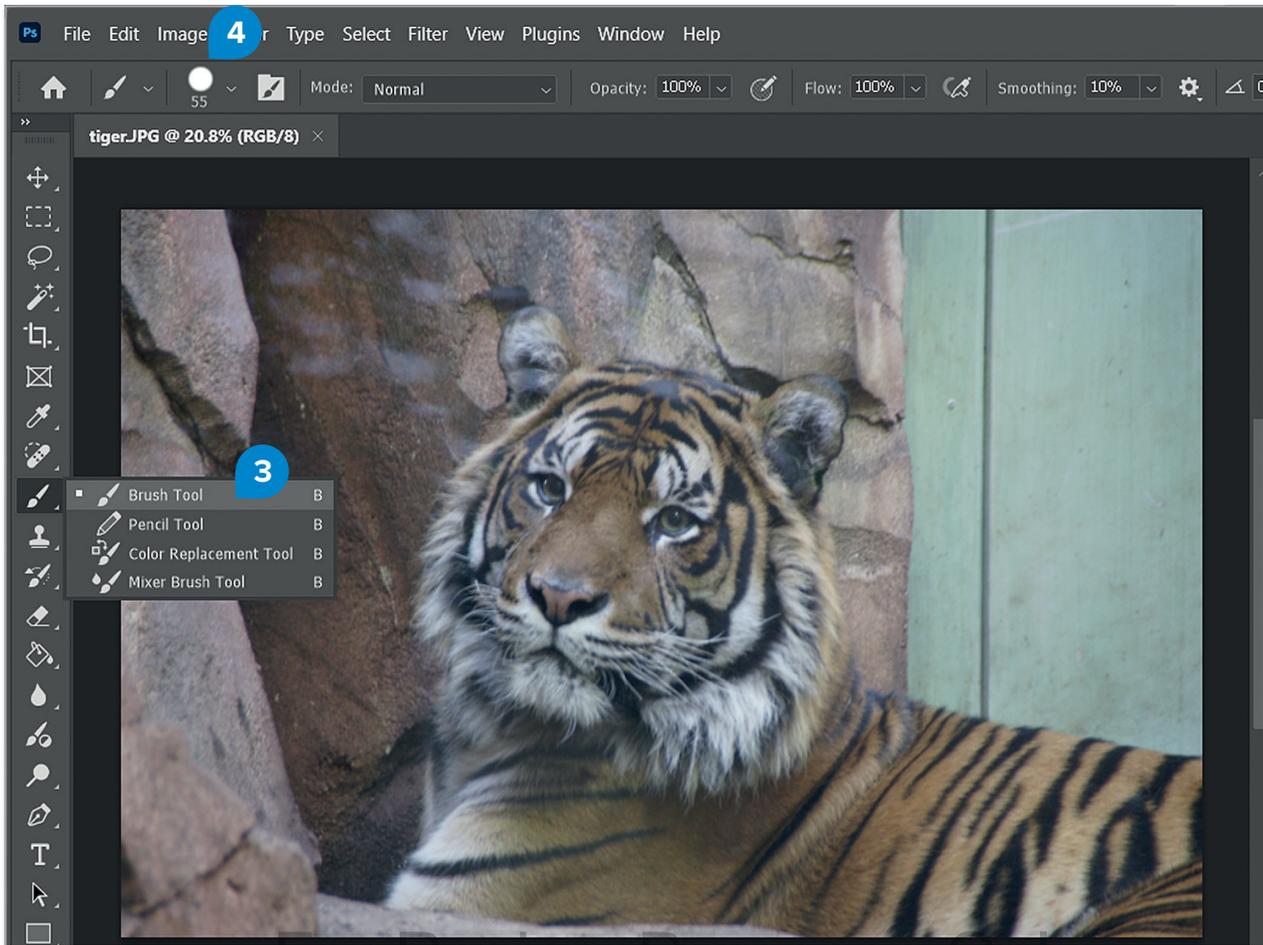
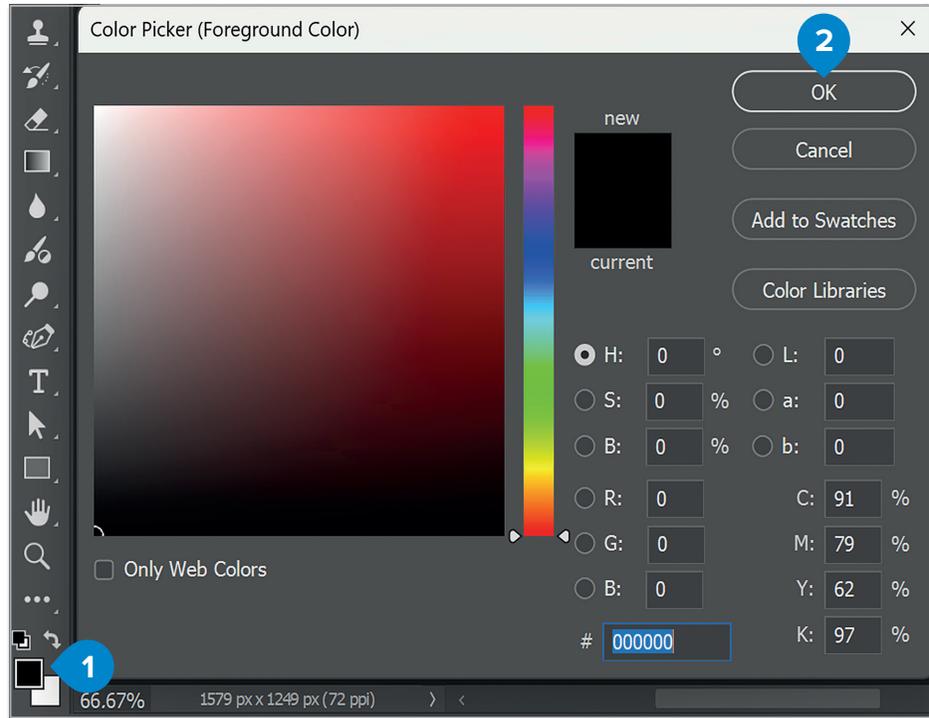


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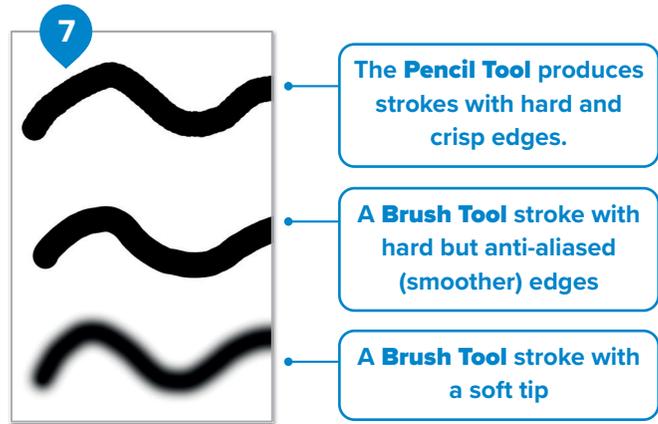
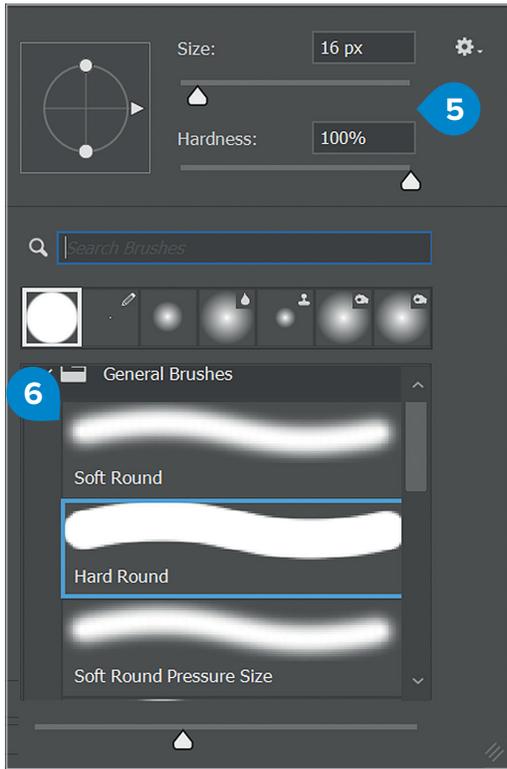
# Painting

You can use the **Brush Tool** or the **Pencil Tool** to paint in Photoshop.

- To paint:**
- > Select a color from the **Set foreground color picker**. **1**
  - > Click **OK**. **2**
  - > Select the **Brush Tool** (or the **Pencil Tool**). **3**
  - > From the tool options bar, click on brush **Size** **4** to set the Brush **Size**, the **Hardness** of your brush tip **5** and your tip type. **6**
  - > Click and drag your mouse to draw. **7**



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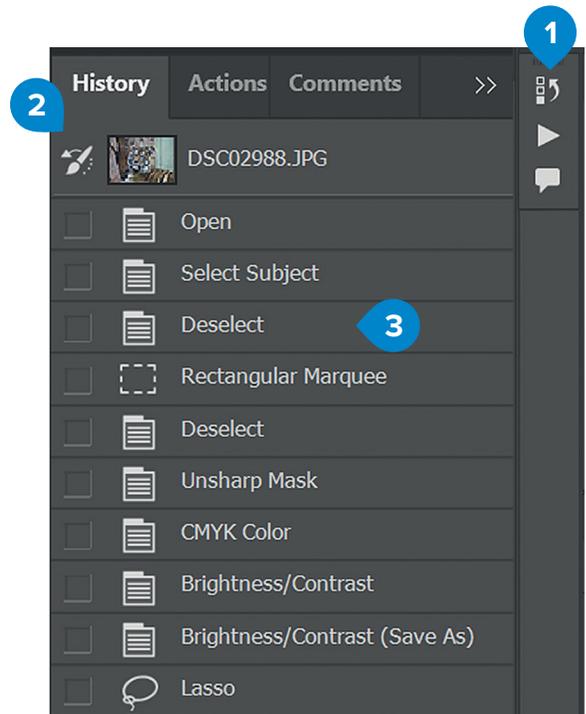


## History panel

Instead of Undo, you can use the **History** panel. History is a panel that records the steps that you're doing. You can undo them up to any point you need.

### To use History:

- > Click on **History**, 1 to open the **History** panel. 2
- > Click to the point you want to undo until. 3



### Smart Tip

Drag to paint, **Shift** +click to paint straight lines, and hold down **Shift** while dragging to constrain the Brush (or Pencil) tool to horizontal or vertical lines.

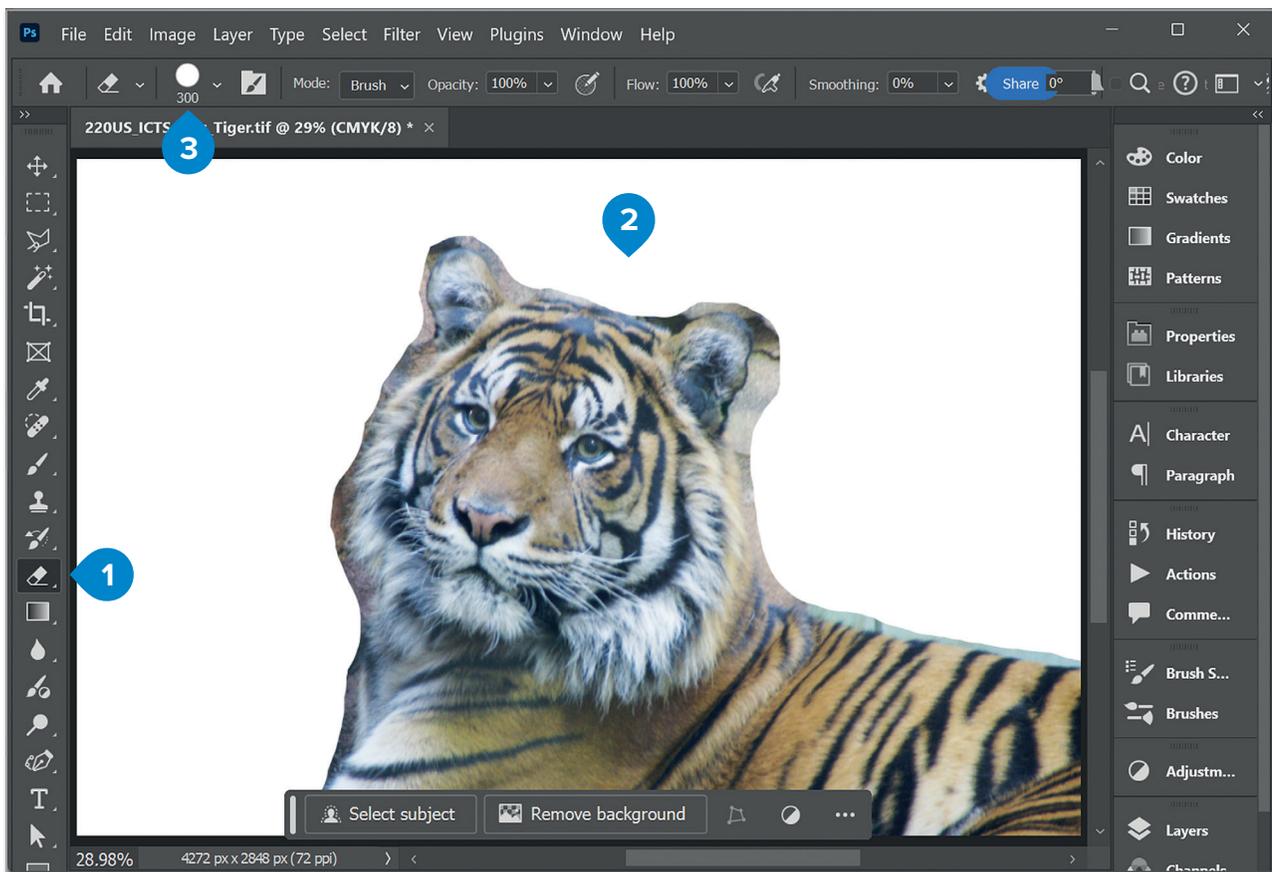
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## Eraser tool

Another way to isolate elements in your images is to use the **Eraser Tool**. Here, instead of making a selection around an element, you just erase its surroundings.

### To use the Eraser Tool:

- > Click the **Eraser Tool** button **1** from the **Tools** panel.
- > Erase the areas you don't want by clicking and dragging over them. **2**
- > As you get closer to the outline of your object, choose smaller brush sizes from the toolbar **3** and zoom in to be more precise.



**Magic eraser is similar to the Magic Wand Tool but erases the color that you click and all the similar tones.**

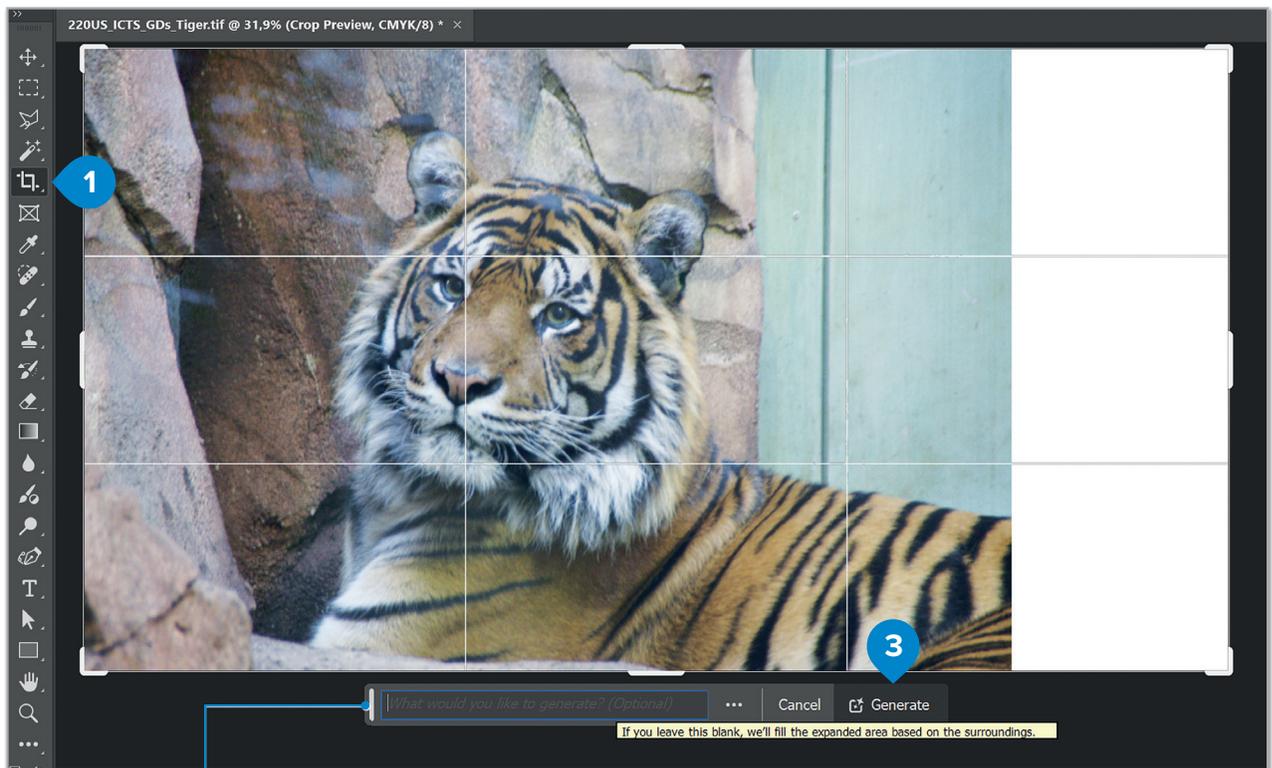
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## AI in Adobe Photoshop

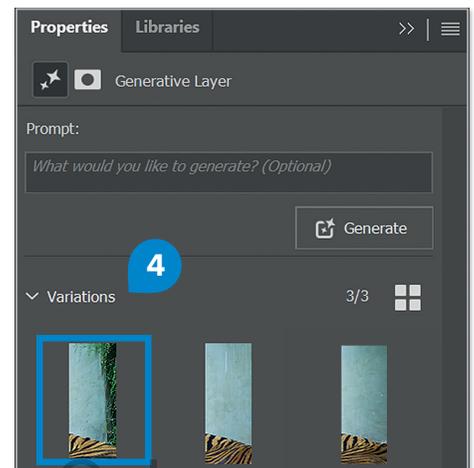
Adobe Photoshop integrates advanced AI technology through its Adobe Sensei. With features like Generative Fill and Generative Expand, you can add, remove, or expand elements in an image by typing a description. This technology uses AI to generate realistic content that blends with the original image, saving time and boosting creativity.

### To expand an image:

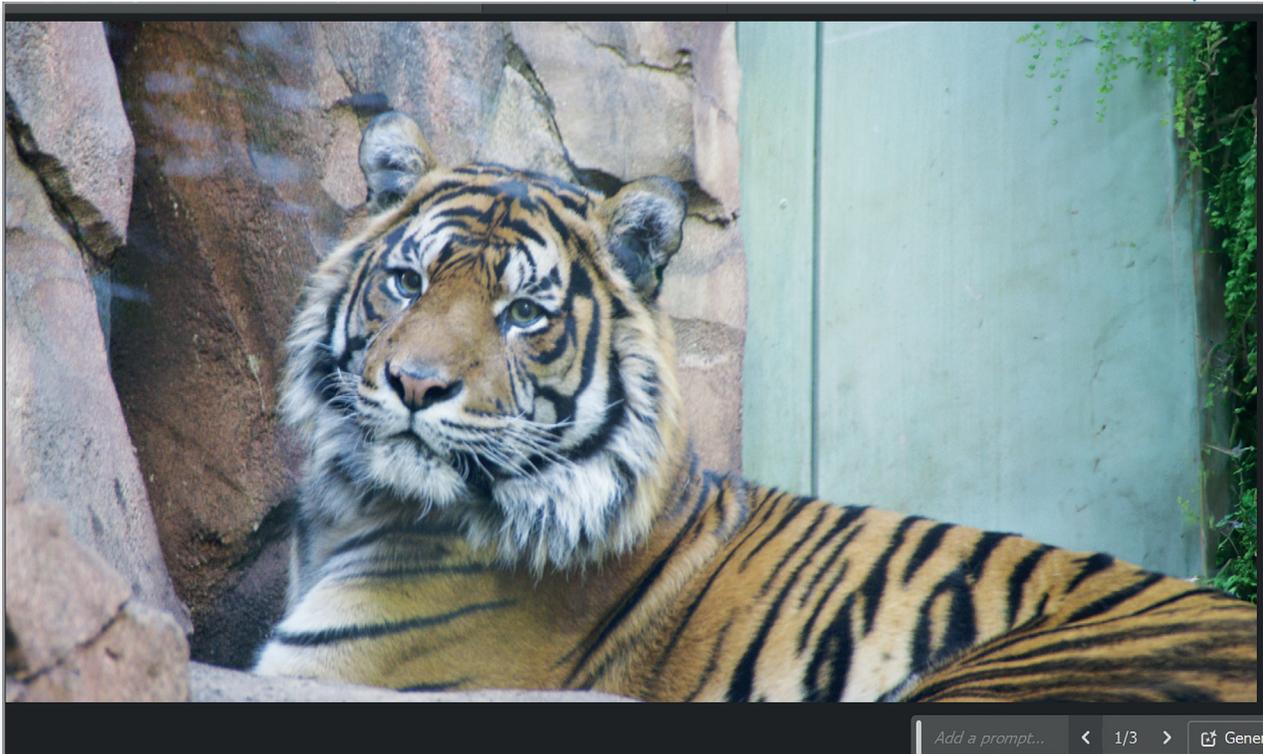
- > From the **Tools** panel, click the **Crop tool** button. ①
- > Extend your image to the right by dragging it. ②
- > On the AI bar, click **Generate**. ③
- > In the **Properties** tab, in **Validations** section, select the variation you want to add. ④
- > The new content has been added to the image. ⑤



You can also write a prompt here.



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See the AI References and Resources section for details on this AI generated content.

## Hands on!

Use the provided images to practice with selections.

Carefully select the geese from the first picture, and then clone your selection multiple times into the second picture.

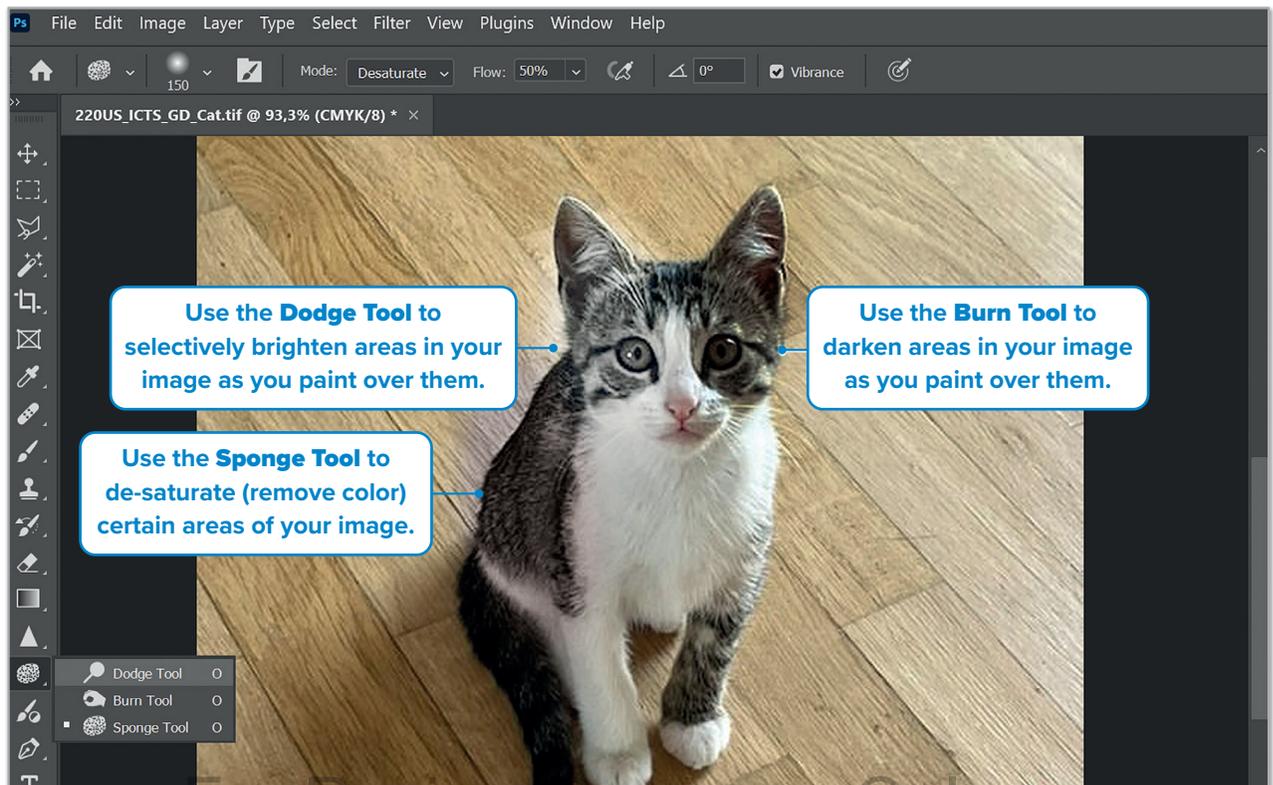
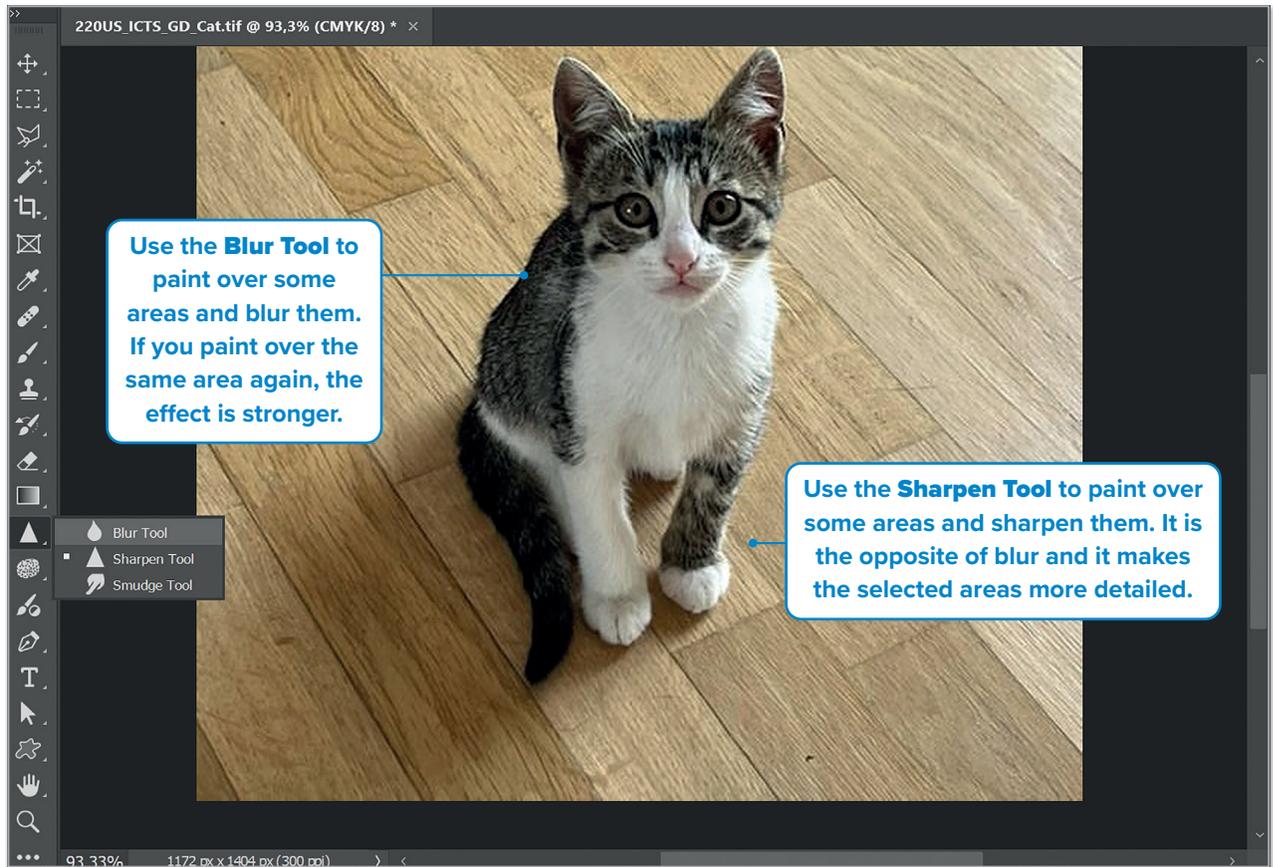
Your result should be like this.



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## Other retouching tools

When you want to retouch specific areas in your images, you can use a set of brush-like tools that are explained below.



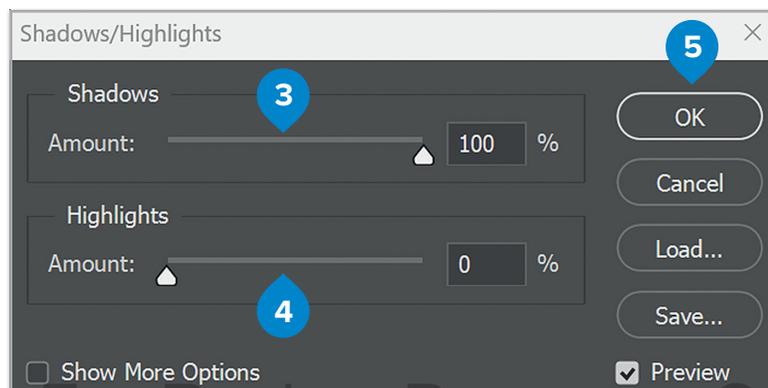
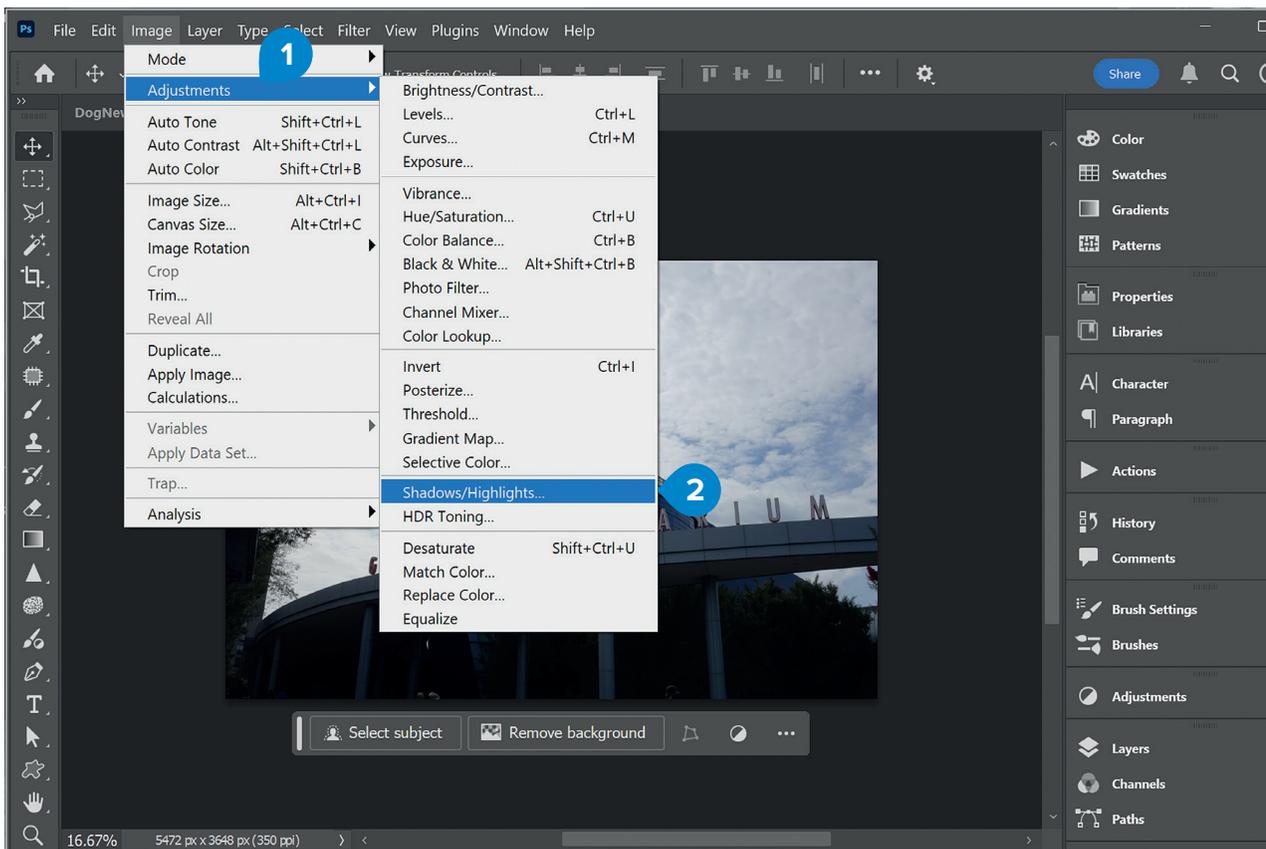
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## Fix lighting with Shadows and Highlights

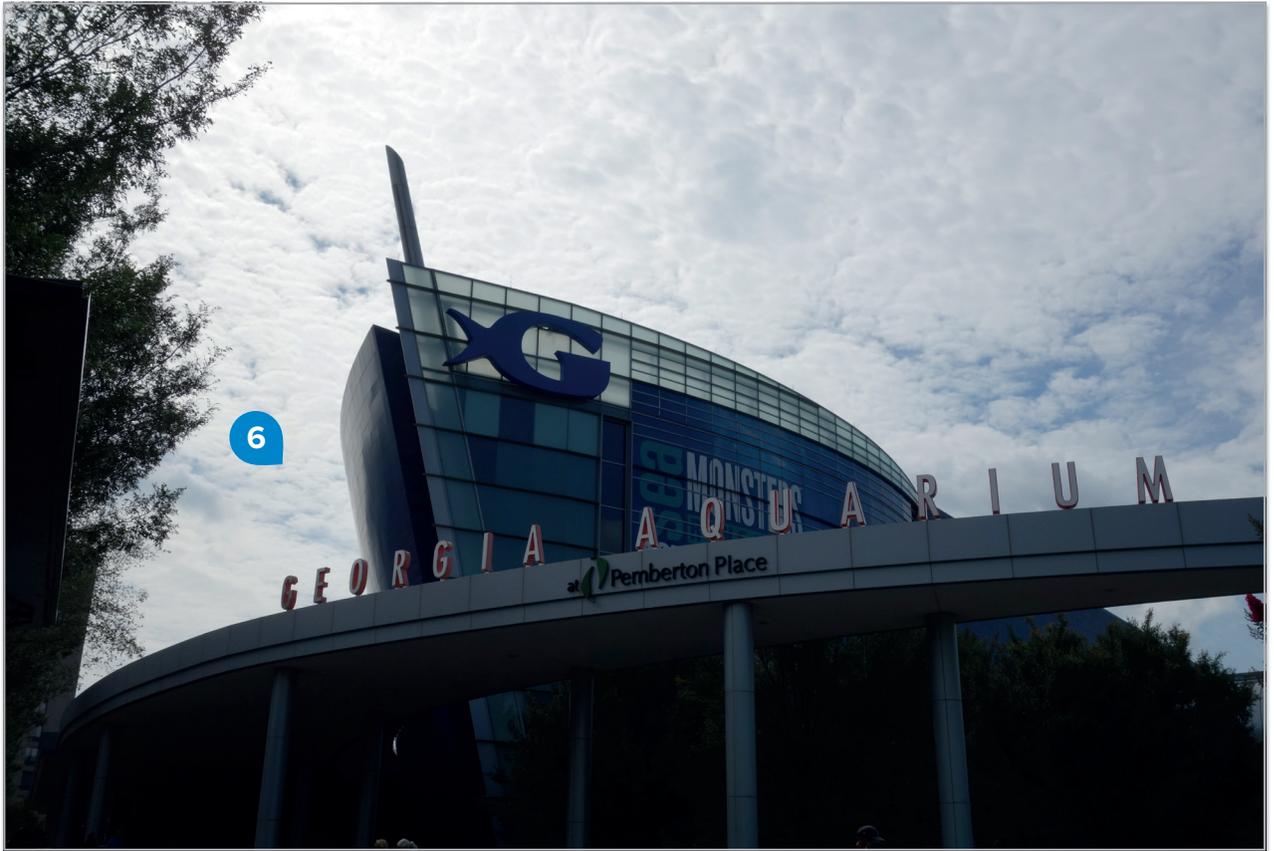
Sometimes, parts of your images are too dark or too bright, while you wanted a more balanced image. You can fix such problems with the **Shadows** and **Highlights** adjustment.

### To use Shadows and Highlights:

- > Open an image.
- > From **Image** menu, select **Adjustments** ① and then click **Shadows/Highlights**. ②
- > In the window that opens, increase the **Shadows** slider ③ to brighten the dark areas of your image and the **Highlights** slider ④ to darken the bright ones. You can preview your changes live.
- > When done, click **OK**. ⑤
- > Check out the before ⑥ and after. ⑦ In this example, we chose to brighten the shadows.



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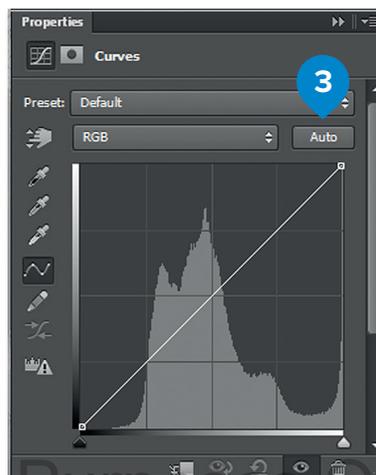
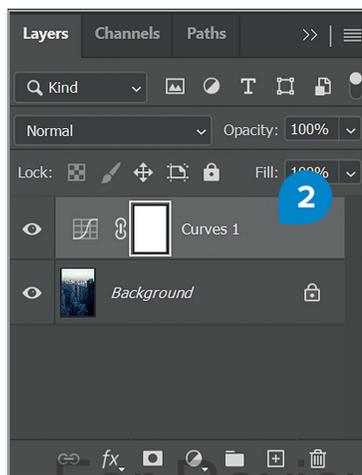
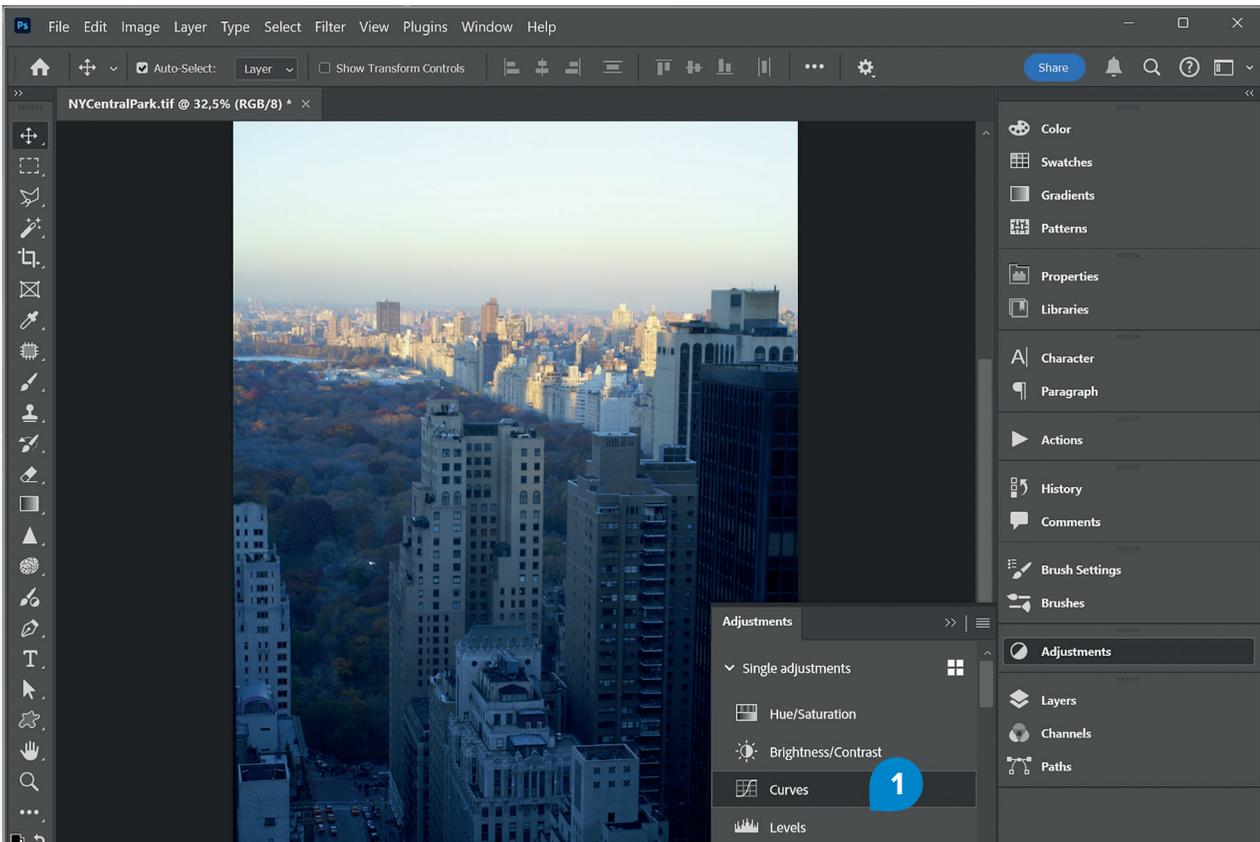
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## Fix contrast and color problems with the Curves Tool

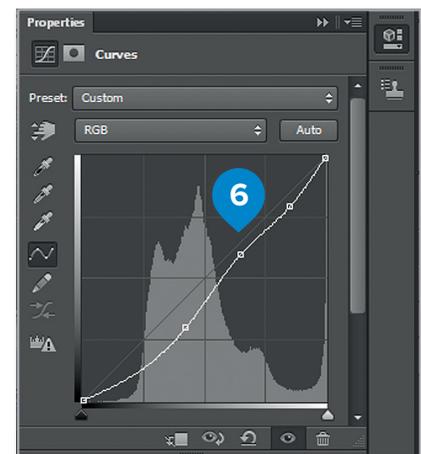
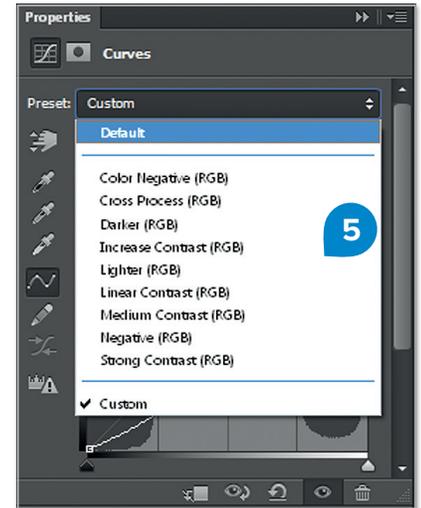
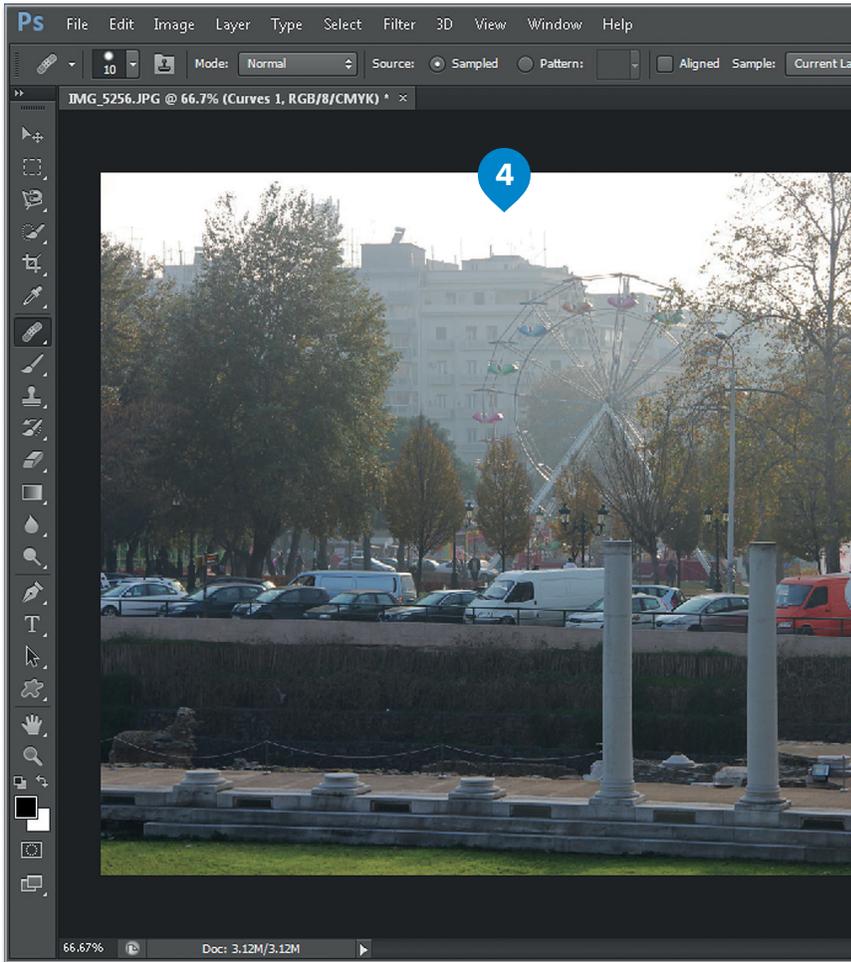
When your photos are too hazy, lack contrast, or the colors are off, you can correct them using the **Curves Tool**.

### To use the Curves Tool:

- > Open an image.
- > From the **Adjustments** panel, click the **Curves** icon **1** to create a new **Curves adjustment layer**. **2**
- > Click **Auto** **3** in the **Properties** panel. This is an one step fix. Check if you like the result. **4**
- > Alternatively, you can try one of the **Presets** by selecting one from the drop-down list. **5**
- > You can also try changing some points in the curve by hand. **6**



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## Hands on!

Now it's time to put your retouching skills to the test. Use the provided image to test your retouching skills.

Can you make it similar to the picture here?

Tip: The image has been straightened, the decorative object in the upper-left corner has been removed with the healing brush tool, and the overall contrast and lighting have been fixed.



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# Project

## Create a poster

In this project, you will use Photoshop to create a poster for a school event, for example, a science fair or a school trip.

Form teams. Try to use what you have learned so far to create a composite of different images related to your subject arranged in a way that will make your poster both informative and interesting.

- > Check out these general guidelines that will help you with your project.
- > Since you are making a poster, you will want to use a background. A single-color background is boring. A gradient is surely better and an abstract image that is not too distracting is even better.
- > You can use your own pictures, if that is possible, or search the Web to supplement your own.
- > Find images related to your subject and use your selection skills to isolate them from their background in order to insert them into your composite.
- > Add informative text into your poster about the event. Don't forget to experiment with the various blending options to make your text more interesting.
- > Remember what you learned about the importance of the order of layers in the Layers panel. Elements higher in the stack will cover the elements below if they are in the same space.
- > It might be fun to use one of your teammates as a model for your team's poster. For example, for a science fair poster, one student can dress up like a scientist and pose for the poster. Don't forget to use your retouching skills to remove any blemishes for a professional poster.
- > When ready, present your poster to the class.
- > Have fun with Photoshop!

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# Wrap up

**Take a moment to reflect on your progress.**

How confident are you in your ability to apply the following skills?

- > Creating dynamic and visually engaging collages.
- > Painting and erasing objects from pictures to achieve specific design goals.
- > Creating and editing layers to organize and enhance your work.
- > Designing and manipulating text layers for impactful visuals.
- > Applying layer styles to add depth and creativity to your designs.
- > Using filters and effects to stylize and enhance pictures.
- > Adjusting the hue, saturation, brightness, shadows, and highlights of pictures for balanced visuals.
- > Replacing colors in images to achieve a desired look or effect.
- > Retouching and enhancing pictures to improve their quality and appearance.

## Key Terms

bevel

brightness

color depth

color mode

contrast

effects

emboss

eraser

exposure

filters

gradient

healing

highlights

hue

layer

liquify

marquee

opacity

perspective

pixel

resolution

saturation

scale

shadows

shape layer

sketches

straighten

text layer

vector

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**Foundations of Design**

# Graphic Design

## Craft and Shape with Precision

Step into the world of graphic design and develop the skills to create stunning visuals across a variety of media. Explore the fundamentals of image editing, vector-based graphics, and desktop publishing. Gain hands-on experience with essential design tools, learn how to manipulate images, create scalable graphics, and produce professional-quality documents.

**Foundations of Graphic Design:** This book covers key principles of graphic design, including image editing techniques, vector-based design, and desktop publishing. You'll learn how to enhance images, create and reshape vector graphics, and design both single-page and multi-page documents. With practical experience in using design tools and software, you'll develop the skills to produce eye-catching graphics and polished publications.

By the end of this book, you'll be equipped to bring your creative ideas to life. Whether enhancing photos, creating logos, or designing complete publications, you'll be prepared to tackle a wide range of design projects. With both theoretical knowledge and hands-on practice, you'll be ready to contribute to the dynamic world of graphic design, ensuring your creations stand out in any digital or print medium.



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