How to generate file formats

Different mediums—print, web and mobile, and video—require different file formats to achieve the best results. Furthermore, graphics file formats differ in the way they represent image data (as pixels or as vectors), and support different compression techniques. You need to understand the difference between these formats and know when to apply them to a project.

Adobe Photoshop supports a vast range of file formats (See Adobe Help for a complete list). This guide will describe the most common ones, and show you how to generate files for print, web and video mediums using Photoshop. To preserve all features (layers, effects, masks, and so on), be sure to save a copy of your image in Photoshop format (PSD) before exporting as another format. When generating any image in Photoshop, it's important to remember that when you save an image, Photoshop saves the image as it appears onscreen. That is, if you have hidden some layers, they will not appear in the saved image. Download the assets used in this tutorial here.

Saving files for the web and mobile

The three most common image file formats used for the web are: Graphics Interchange Format (GIF), Joint Photographic Experts Group (JPEG or JPG), and Portable Network Graphics (PNG) (**Figure 1**). GIFs are great for simple, optimized graphics like logos with areas of flat color and no gradients. JPGs work well for photographs by keeping all of the color information intact while also compressing file size by selectively discarding data. PNGs suit complex images with gradients and transparency, where it's important to see through to a background color or pattern in your web page or mobile app.

GIF   JPG   PNG

Figure 1 Comparing cmmon web image file formats: GIF (left), JPG (center), PNG (right)

You select one of these formats to achieve an ideal balance between quality of the image and file size.

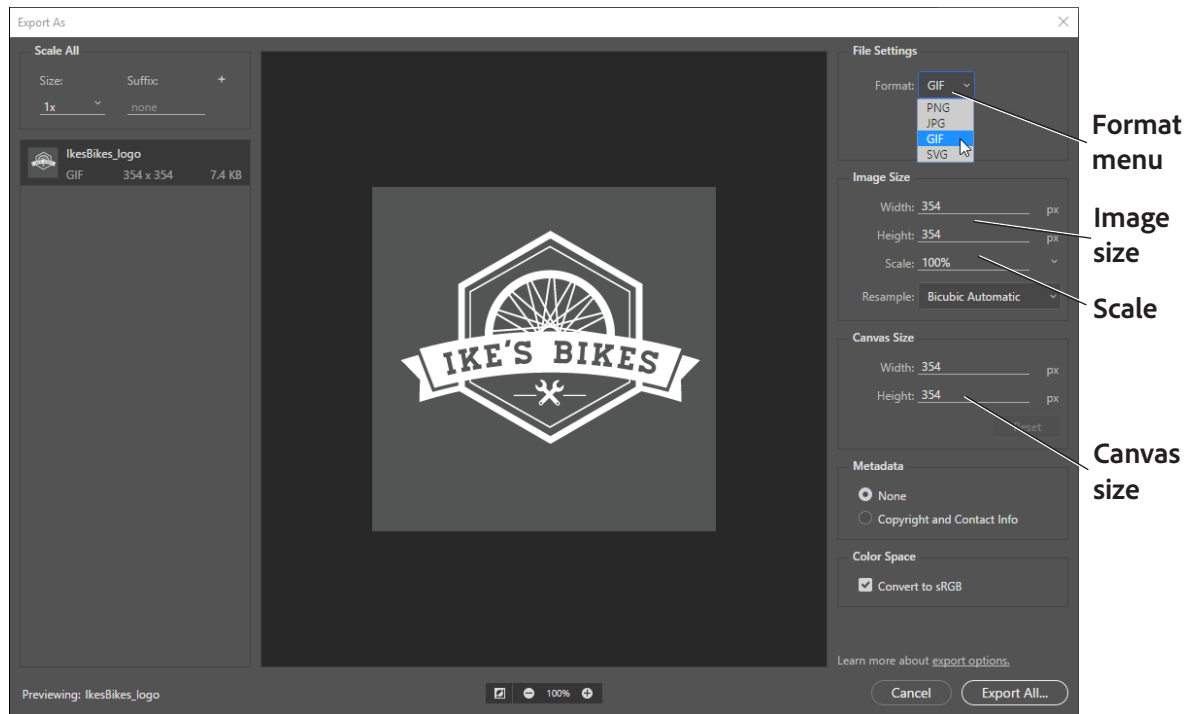You can specify the format type in the Export As dialog box (**Figure 2**).

Figure 2 *Export As dialog box, , GIF settings*

GIF

GIFs are made up of pixels of *indexed color*, which means that it is limited to a reference library of 256 colors, plus transparency. These are not a lot of colors, so it is not suitable for images with a wide range, like a photograph. The limited palette does work very well for logos or simple illustrations, and for minimizing file size and electronic transfer time.

To save a file as a GIF:

1. In Photoshop, open an image that features flat areas of color.

2. Select **File > Export > Export As** to export the current Photoshop document.

   The **Export As** dialog box opens (**Figure 2**).

3. Choose **GIF** from the **Format** menu.

   GIF images are transparent by default.

4. Set any of the other settings, such as:

   • **Size** Specify the width and height of the image asset. Width and height are locked together by default. Changing the width automatically changes the height proportionately.

   • **Scale** Choose how big the exported image should be. This option is useful for exporting larger- or smaller-resolution assets. Changing the scale impacts the image size.

   • **Canvas Size** If your asset needs to occupy a certain width and height, specify those values as the Canvas Size. This option is useful in several scenarios, such as the following:

   • You're exporting icons that have various sizes, but that need to be centered within 50x50 px boxes.

   • You're exporting banner images that are smaller or larger than the required dimensions.

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4. Click **Export All**.

   The **Export** dialog box opens.

5. Navigate to the location you want to export your image, specify a file name and click **Save**.

   After you save, the original file stays open in Photoshop.

JPG

You will generally want to save photos in JPG format. JPG is used more than any other format for photos on web pages. JPG is popular because it compresses well—that is, you can make files smaller without sacrificing quality. However, if you compress too much, file quality will suffer; the trick is to find the right balance between image quality and compression. JPGs do not support transparency.

To save a file as a JPEG:

1. In Photoshop, open a photographic image.

2. Select **File > Export > Export As** to export the current Photoshop document.

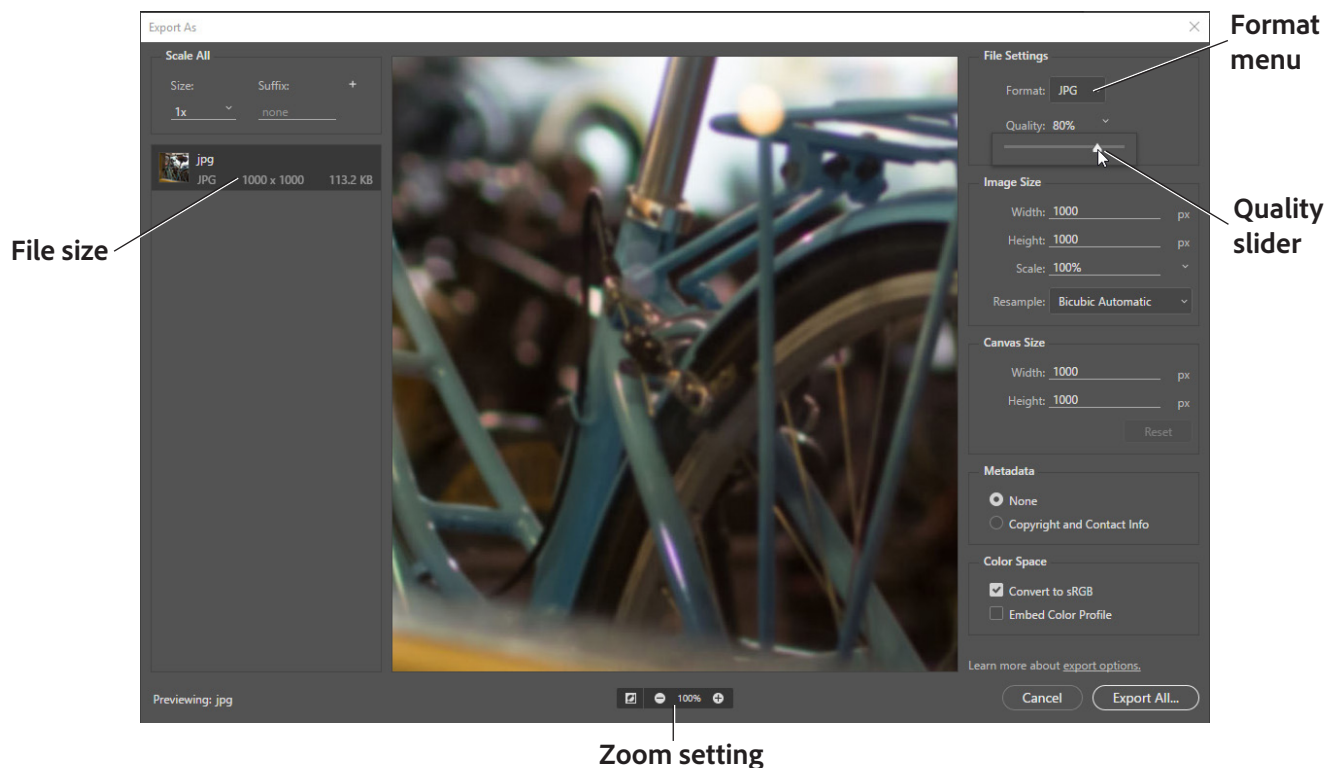   The **Export As** dialog box opens (**Figure 3**).

Figure 3 *Export As dialog box, JPG settings*

3. Choose **JPG** from the **Format** menu.

4. Click the Zoom setting to view the image at **100%** or larger.

   Zooming in allows you to see degree of compression you will be setting in the next step.

5. Adjust for desired image quality by using the **Quality** slider.

As you change settings, observe how the quality of preview appears compared to the file size. Ideally, you want to find the right balance between preserving compressed image quality against smallest file size.

6. Set any of the other settings as needed.

7. When you are satisfied, click **Export All**.

    The **Export** dialog box opens.

8. Navigate to the location you want to export your image, specify a file name and click **Save** to automatically save a copy of the image as a JPG with the settings you indicated. The original image is left unchanged. For working purposes, you may want to incorporate some of the settings into the filename, such as "banner_medium.jpg" for an image saved as a medium-quality JPEG.

    After you save, the original file stays open in Photoshop.

    Note: If the original image is also a JPG (many digital cameras use JPG as a format), you need to save the copy in a different location from the original (or give it a different name) to avoid confusion.

PNG

PNG uses lossless compression. *Lossless* means that quality does not degrade during the editing process. PNGs tend to have larger file size than both GIFs and JPEGs because they contain more data, and offer more flexibility by being able to produce background transparency without jagged edges.

To save a file as a PNG:

1. In Photoshop, open or create an image with layers or transparencies.

2. Select **File > Export > Export As** to export the current Photoshop document.
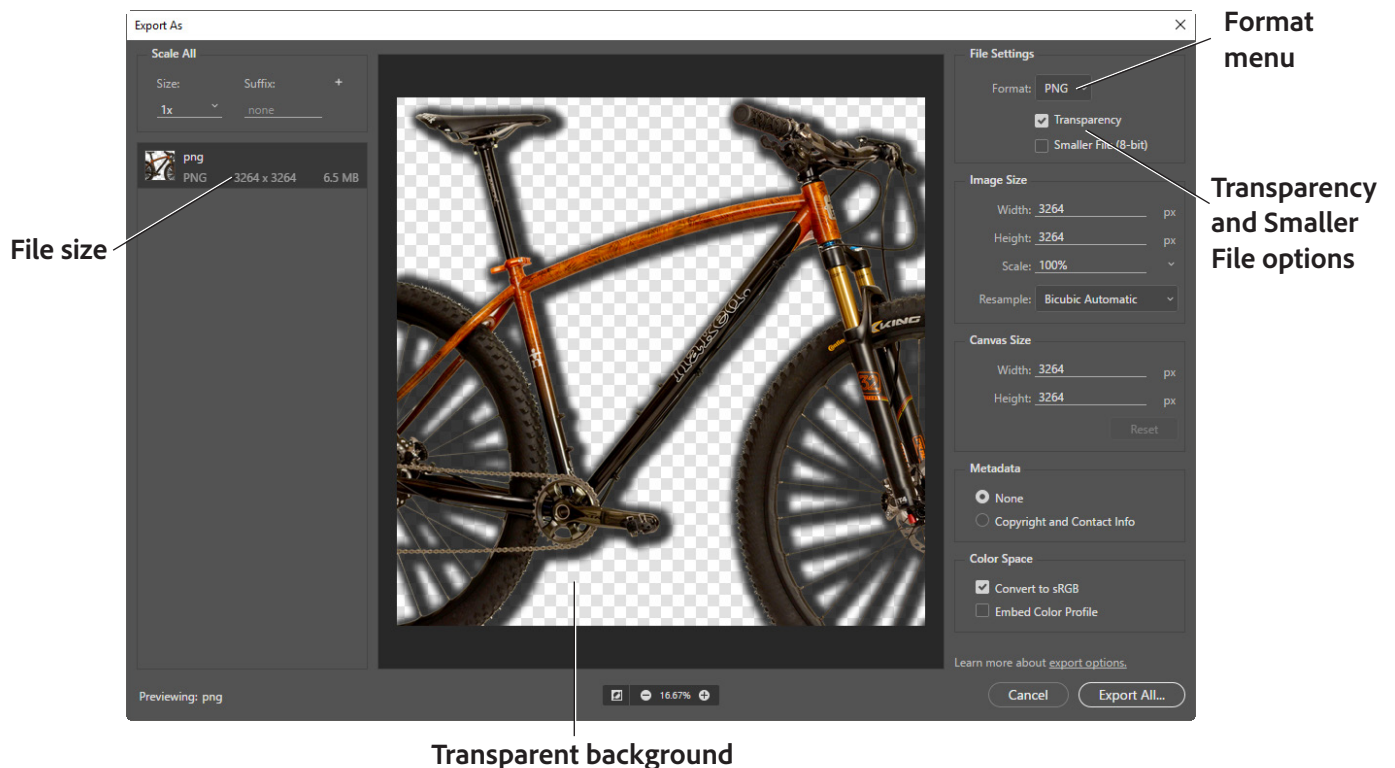
    The **Export As** dialog box opens (**Figure 4**).

Figure 4 Export As dialog box, PNG settings

3. Choose **PNG** from the Format menu.

4. Specify whether you want to export the image with **Transparency** enabled (32-bit) or **Smaller File** (8-bit).

   Note: *Bit* refers to the depth of color contained within an image, with higher bits generally meaning better quality but higher file size. While exporting PNG assets, remember the following:

   - Selecting **Transparency** generates a 32-bit PNG image. 32-bit is known as deep color. *Deep color* provides the highest level of color fidelity consisting of a billion or more colors. Use this option if you have a highly-detailed image with delicate gradients and fine details, and file size is less of a concern.

   - Selecting **Smaller File** generates an 8-bit PNG image. 8-bit color is a very limited but true direct color system. The maximum number of colors that can be displayed at any one time is 256. Select this option if small file size is most important, and exact color fidelity is not.

   - Leaving the above options deselected generates a 24-bit PNG image. 24-bit renders true color. *True color* displays a very large number of colors, shades, and hues, up to ten million. As the default option, this setting is often best for striking the right balance between image quality and filesize.

5. Set any of the other settings as needed.

7. When you are satisfied, click **Export All**.

   The **Export** dialog box opens.

8. Navigate to the location you want to export your image, specify a file name and click **Save**.

   After you save, the original file stays open in Photoshop.

Generating files for print

Generating files for print use is different from saving images for the web: you use an uncompressed file format and you must be sure the file is at a high enough resolution (preferably 300 ppi) before you save it. It is always good to import the image into Photoshop at the highest possible resolution to give more flexibility in the kinds of images you can generate.

Note: You can print to a printer directly from any computer running Photoshop. The options described here are for sending an image to a printer, to another computer to be printed, or to another application.

Generating files for print involves three steps:

1. Setting the image resolution to 300 ppi.

2. Converting the image to CMYK (if the image is going to an offset print vendor).

3. Generating a print-friendly (compression-free or lossless) format, such as TIFF.

Setting resolution to 300 ppi

Setting a higher resolution is important to maintain flexibility and quality.

To set resolution to 300 ppi:

1. Open an image in Photoshop.

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2. Choose **Image > Image Size**.

   The **Image Size** dialog box appears (**Figure 5**).

Resample option   Set Resolution

Figure 5 Image size dialog box

3. Deselect the **Resample** Image option if selected.

   When you leave this option unselected, you ensure that you're only changing the image's resolution, not removing or adding pixels.

4. Enter **300** in the **Resolution** text box.

   Make sure **Pixels/Inch** is selected as the units for Resolution.

5. Click **OK**.

   To preview an image at the size it will appear when printed, choose **View > Print Size**.

Converting images to CMYK

Computers use combinations of red, green, and blue (RGB) to display photos. Offset printing presses print full-color photos, using cyan (blue), magenta (red), yellow, and black. This is known as CMYK printing. If you are printing to an inkjet printer, you can leave the image in RGB mode, but if you are sending the image to an offset print vendor, you need to convert the image to CMYK.

To view how the image will appear in CMYK, choose View > Proof Setup > Working CMYK. (For some images, you may not observe any difference at all.) This preview is called a soft proof.

Note: Soft proofs are approximations. What you see onscreen depends on the quality and settings of your monitor as well as the lighting conditions of your work environment. You may observe different results when you actually print. Nevertheless, soft proofs can be useful.

Photoshop also enables you to preview how the image will appear on a range of different printers, including most Epson models and offset printing. To view these, choose View > Proof Setup > Custom.

To convert an image to CMYK:

1. Save a copy of the image.

2. Choose **Image** > **Mode** > **CMYK Color**.

3. If the image has layers, Photoshop asks whether you wish to flatten. Click **Flatten**. (Because you saved a copy of the file, you can open the saved copy to recover the layers.)

Generating TIFFs

After you convert the image to CMYK and make sure it is at the correct resolution, you can save it in a print-friendly format (a format with no compression, known as a lossless format). In this exercise, you will choose the TIFF format.

Note: Although TIFF is the most common lossless image format, you can also use EPS or an Adobe PDF.

To generate a TIFF:

1. Choose **File** > **Save As**.

   The **Save As** dialog box appears (**Figure 6**).
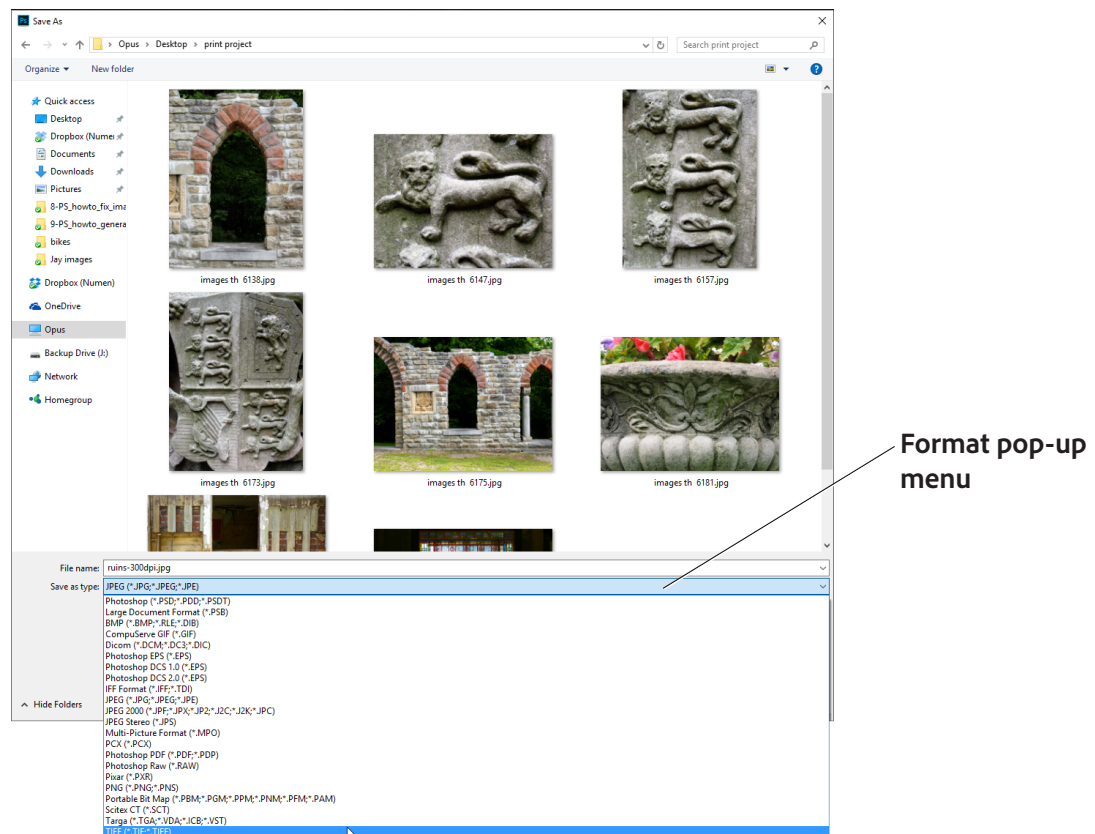
Format pop-up menu

Figure 6 Save As dialog box

2. In the **Save As Type** format pop-up menu, choose **TIFF** (*.TIF, *.TIFF) (Windows) or **TIFF** (Mac OS).

3. Click **Save**.

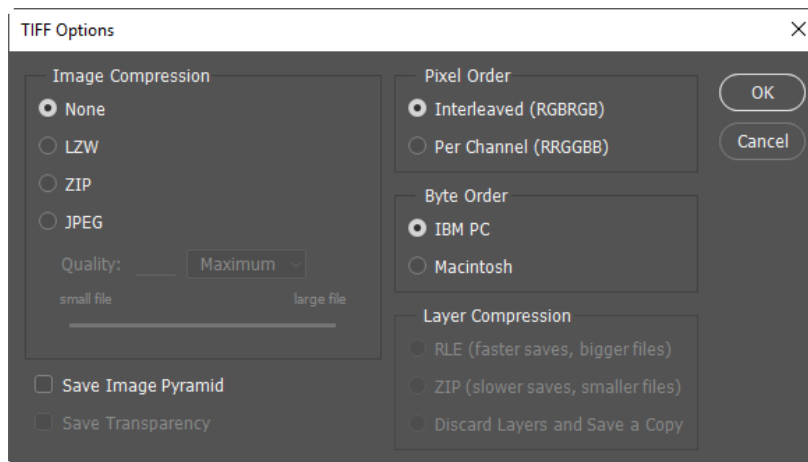   The **TIFF Options** dialog box appears (**Figure 7**).

Figure 7 TIFF Options dialog box

4. Because the image is going to a printer, you do not need to compress it. Leave **Image Compression** set to **None**. Leave **Pixel Order** set to **Interleaved**.

   Note: In practice, TIFF files are seldom compressed.

5. Set **Byte Order** to your operating system (Windows or Mac OS).

6. Because the image is going to a printer, you also don't need to save the layers. Make sure **Discard Layers And Save A Copy** is selected.

   This option flattens the layers in the image.

7. Click **OK**.

   Note: If the image has only the Background layer, the option Discard Layers And Save A Copy is not available.

Printing images and saving print dialog settings

There may be occasions where you want to print a copy of your image to a local printer. Photoshop provides many printing options, including the following printing commands:

- *Print* Displays the Print dialog box, where you can preview the print job and select the printer, number of copies, output options, and color management options.
- *Print One Copy* Prints one copy of a file without displaying a dialog box.

Once you have established a preferred combination of format and color management options, you can save the print dialog settings as a preset for use later.

To set Photoshop print options and print:

1. Choose **File > Print**.

   The **Print** dialog box appears (**Figure 8**).

Select printer

Paper orientation

Print preview

Color management

Position and size

Scale and print resolution
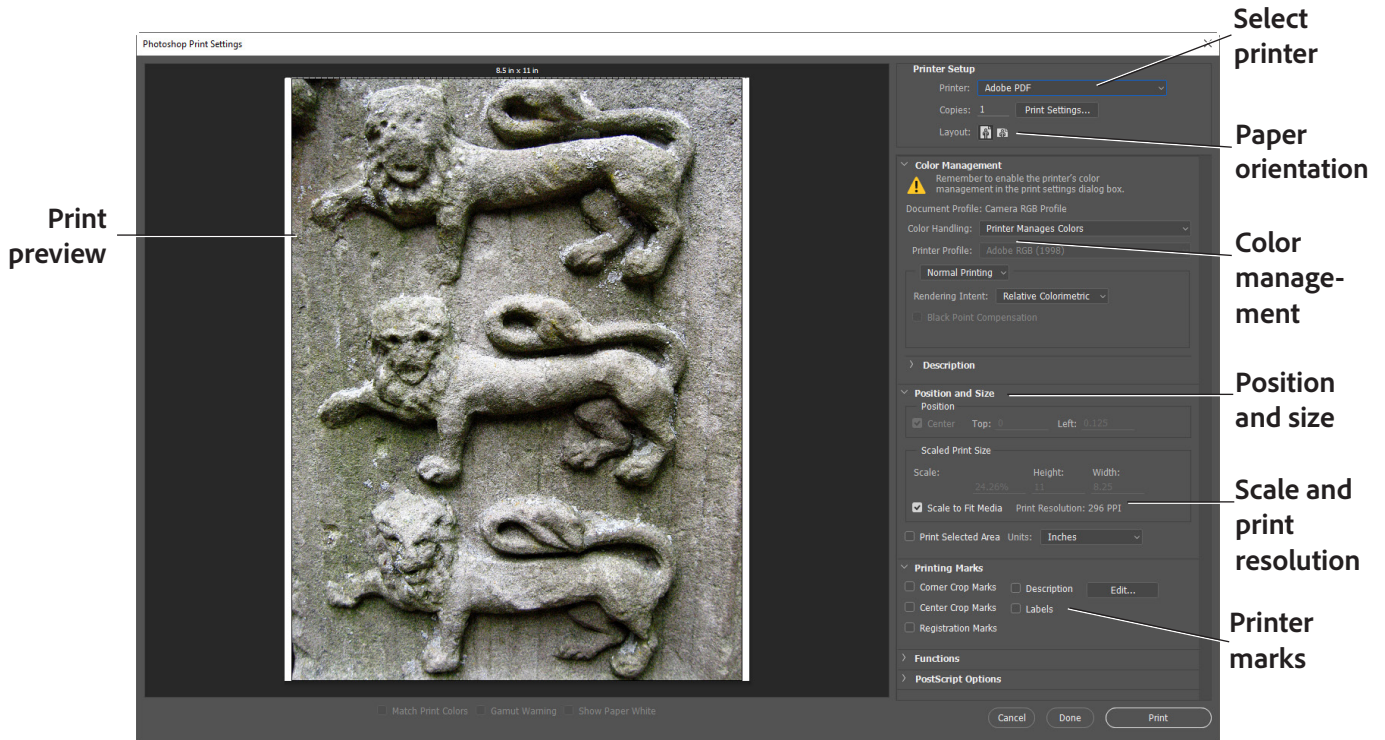
Printer marks

Figure 8 *Print dialog box*

2. Do one or more of the following:
   - Use the **Printer** menu to select a printer.
   - Select the number of **Copies** to print.
   - Set the paper orientation, or **Layout,** to portrait or landscape.
   - If needed, click the **Print Settings** button to set page setup options specific to your printer, printer drivers, and operating system, such as paper size and layout.
   - Set **Color Management** and proofing options
   - Adjust the position and scale of the image in relation to the selected paper size and orientation.
   - Set output options (**Printing Marks** and **Functions**)

3. Do one or more of the following:
   - To print the image, click **Print**.
   - To close the dialog box without changing the options, click **Cancel**.
   - To preserve the options and close the dialog box, click **Done**.

   Note: If you get a warning that your image is larger than the printable area of the paper, click **Cancel**, choose **File > Print**, and select the **Scale To Fit Media** option.

Creating images for video

Photoshop can create images of various aspect ratios so that they appear properly on devices such as video monitors. You can select a specific video option (using the New dialog box) to compensate for scaling when the final image is incorporated into video.

Safe zones

The Film & Video preset also creates a document with non-printing guides that delineate the action-safe and title-safe areas of the image (**Figure 9**). Using the options in the Size menu, you can produce images for specific video systems— NTSC, PAL, or HDTV.
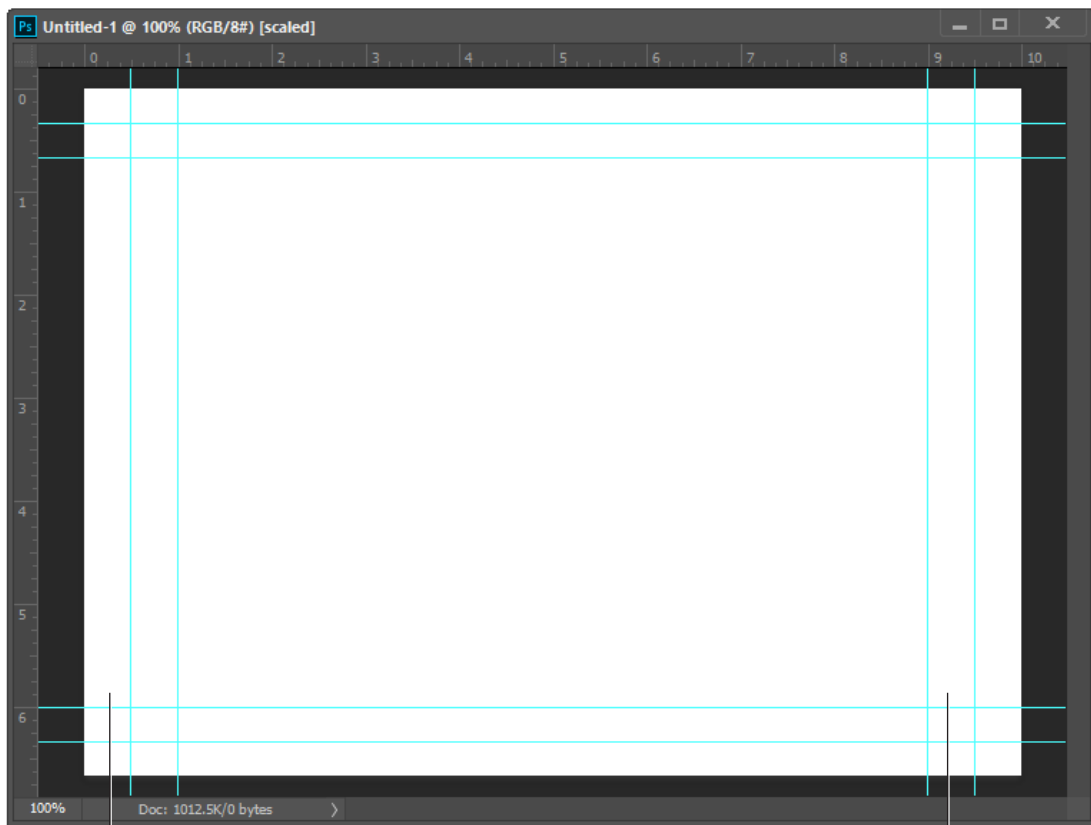
Action safe area (outer rectangle) **Title safe area (inner rectangle)**

Figure 9 *Video preset file size guides in a new document*

Safe zones are useful when you edit for broadcast and videotape. Most consumer TV sets use a process called overscan, which cuts off a portion of the outer edges of the picture, allowing the center of the picture to be enlarged. The amount of overscan is not consistent across TVs. To ensure that everything fits within the area that most TVs display, keep text within the title-safe margins, and all other important elements within the action-safe margins.

To create an image for use in video:

1. Create a new document.

   The **New** document dialog box appears (**Figure 10**).

2. From the **Document Type** menu in the **New** dialog box, choose the **Film & Video** preset.

3. Choose the size that is appropriate for the video system on which the image will be shown.

   In this case, the **NTSC DV** option is selected (**Figure 11**).

4. Click **Advanced** to specify a color profile and specific pixel aspect ratio.

   Important: By default, non-square pixel documents open with **Pixel Aspect Ratio Correction** enabled. This setting scales the image so it appears as it would on the non-square pixel output device (usually a video monitor). This setting does not apply to all of the **Film & Video** presets.

   Note: If you're doing a project that requires the same format for other uses, it is helpful to save your custom setting as a preset for future use. To save a new document as a custom setting, click the **Save Preset** button, give your preset a name, and click **OK** in the **New Document Preset** dialog box. (**Figure 12**).

5. Click **OK** to close the **New** document dialog box.

6. Click **OK** to close the message "Pixel aspect ratio correction is for preview purposes only. Turn it off for maximum image quality."

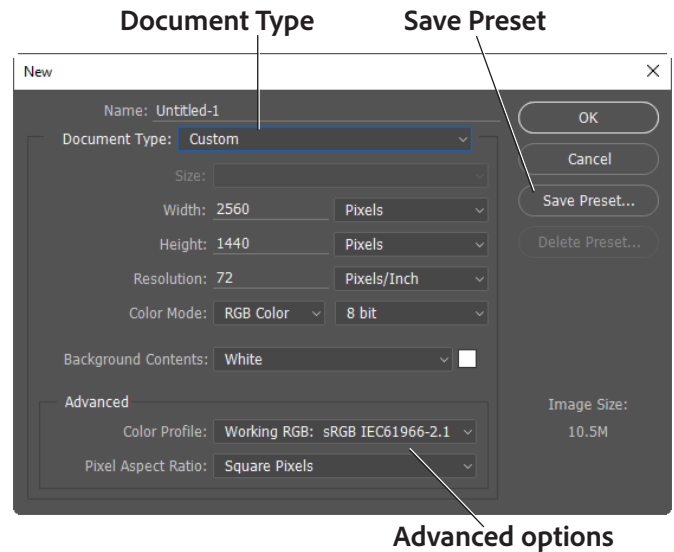   The new document opens (**Figure 9**).

Document Type   Save Preset

Advanced options

Figure 10 *New document dialog box*
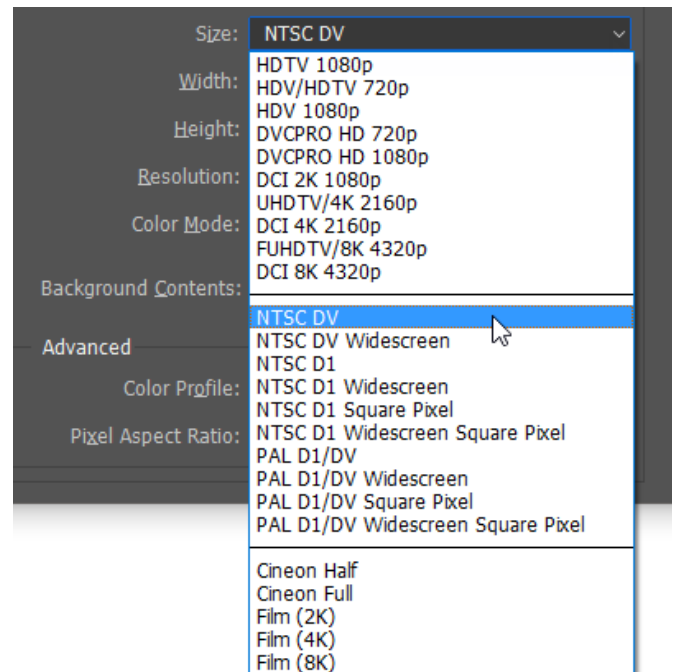

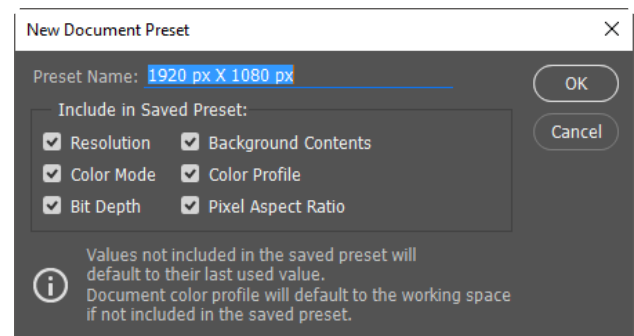**Figure 11** *Film and video size preset options*

Figure 12 *New Document Preset dialog box*

7. To view the image as it would appear on a computer monitor (square pixel), choose **View > Pixel Aspect Ratio Correction**.

    For example, in **Figure 13**, a circular image is shown displayed with **Pixel Aspect Ratio Correction** turned on and then turned off.

    Note: You can simultaneously view an image with the **Pixel Aspect Ratio Correction** turned on and off. With the non-square pixel image open and Pixel Aspect Ratio Correction enabled, choose **Window > Arrange > New Window For [name of document]**. With the new window active, choose **View > Pixel Aspect Ratio Correction** to turn off the correction.

8. If you have a display device, such as a video monitor, connected to your computer, you can preview the document on the device by choosing **File > Export > Render Video**.

    Note: When creating images for video, you can load a set of video actions (included with Photoshop) that automate certain tasks—such as scaling images to fit video pixel dimensions and setting the pixel aspect ratio.
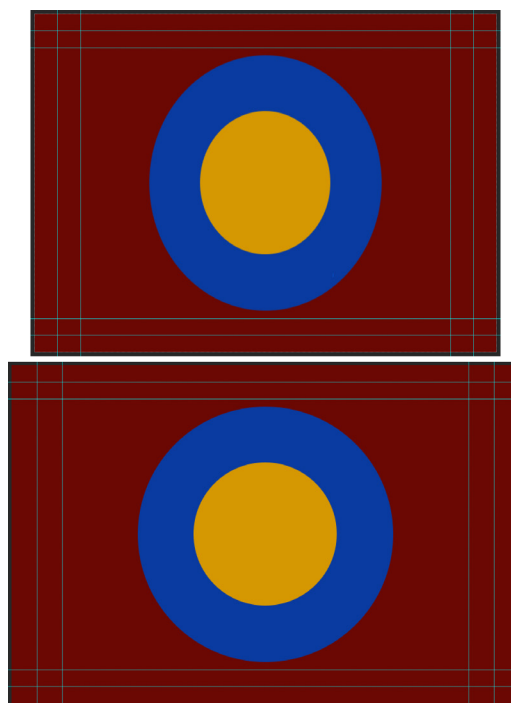

Figure 13 Circle in NTSC DV (720 x 480 pixels) document viewed on computer (square pixel) monitor with Pixel Aspect Ratio Correction turned on (top) and Pixel Aspect Ratio Correction turned off (bottom)

Quickly share your creations

You can now email or share your creations to several services directly from within Photoshop (**Figure 14**). When you share a document by email, Photoshop sends out the original document (.psd file). For certain services and social media channels, Photoshop automatically converts the document to the JPEG format before sharing.
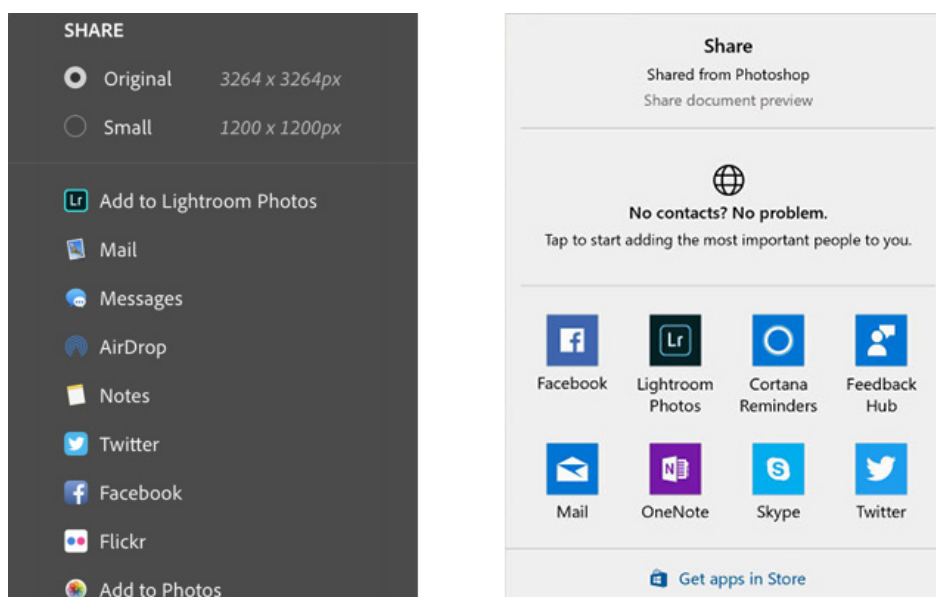

Figure 14 Quick share options on MacOS (left) and on Windows (right)

To share your creations from within Photoshop:

1. In Photoshop, select **File** > **Share**.

   The **Share** panel opens (**Figure 14**).

2. In the **Share** panel, choose whether you want to share the full-sized asset or a smaller version of it.

   If you choose to share the smaller version, Photoshop scales down the document such that its longer edge is 1200 px long. The other edge is scaled down proportionately.

3. Click the service where you want to share the asset. For example, click **Facebook**.

   For some services, you may be able to specify additional details. For example, while posting an image on Facebook, you're able to enter a "What's on your mind?" description for the image (**Figure 15**).
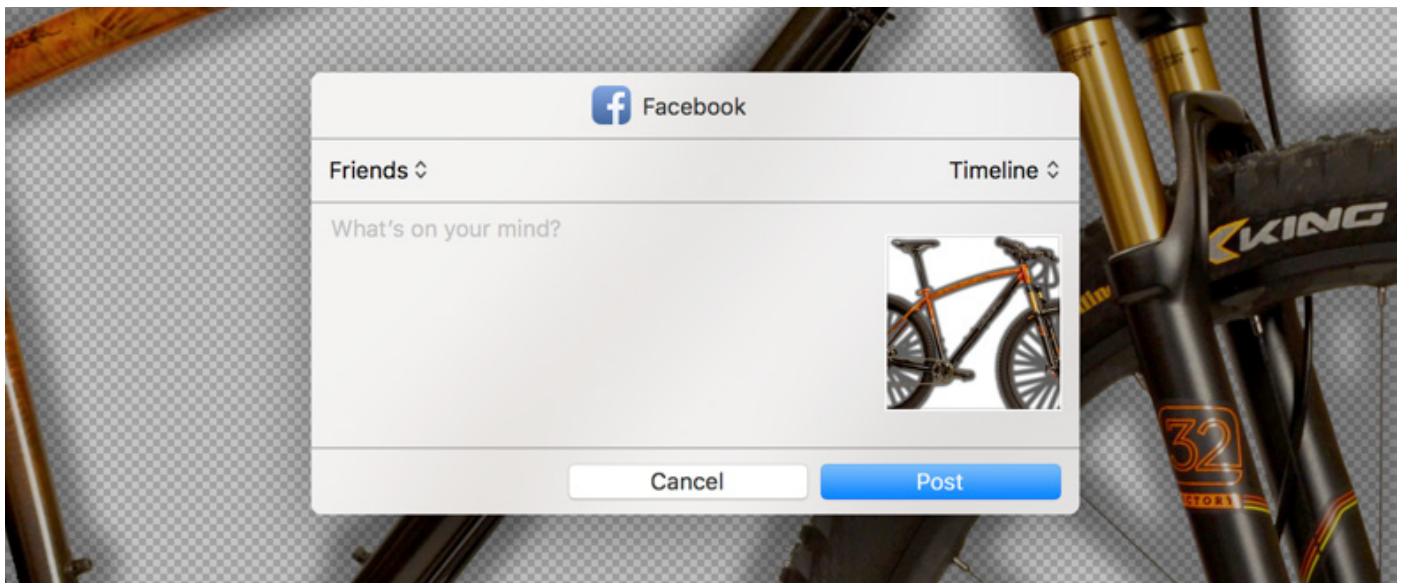

Figure 15 Facebook Share dialog box

4. Follow the onscreen instructions to share the asset.

For more information

Get instant access to free courses, workshops, & teaching materials and connect with the creative education community on the Adobe Education Exchange: https://edex.adobe.com/.