How to resize, rotate, and crop images

You will frequently want to resize and crop an image after opening it in Photoshop. *Cropping* means cutting some parts of the image away so only the parts you want remains (**Figure 1**). Download the assets used in this tutorial here.
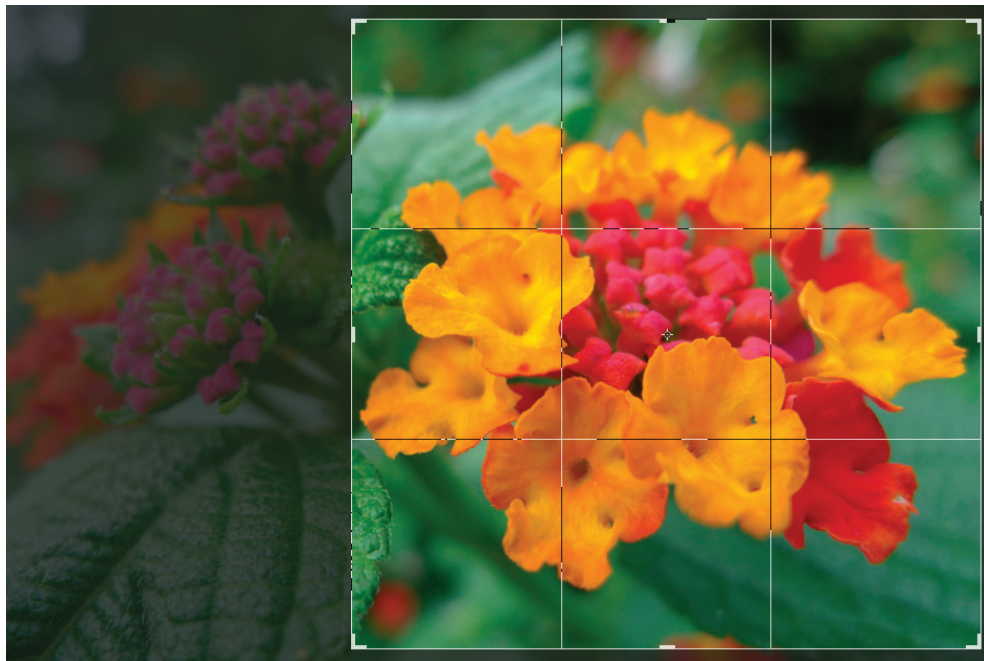

Figure 1 *Cropping an image to a 1:1 (square) ratio in Photoshop*

Backing up your original

Before making any changes to an image, you should always save the image with a new filename. You will have the most flexibility if you save it as a PSD—Photoshop's native format. You can generate TIFFs (for print) and JPEGs (for the web) from a single PSD file. For example, PSD files preserve layers, so the layers are available when you reopen the file.

Resizing images

When working in Photoshop, it is generally best to leave your image at as high a resolution as possible to allow for greater flexibility when generating images.

About pixel dimensions and resolution

The *pixel dimensions* (image size or height and width) of a bitmap image is a measure of the number of pixels along an image's width and height. *Resolution* is the fineness of detail in a bitmap image and is measured in pixels per inch (ppi). The more pixels per inch, the greater the resolution. Generally, an image with a higher resolution produces a better printed image quality.

- For images to print well, they generally should have a resolution of 300 ppi.
- For most web pages, you can safely save images at 72 ppi. Because most monitors do not display resolutions higher than this, you can reduce file size by reducing resolution.

Note: Monitor technology and Internet connection speeds are continually evolving. However, the 72-ppi standard continues to be widely used, and for the most part, you can't go wrong with it.

The combination of pixel dimension and resolution determines the amount of image data. Unless an image is resampled, the amount of image data remains the same as you change either the pixel dimension or resolution. If you change the resolution of a file, its width and height change accordingly to maintain the same amount of image data. And, vice versa.

You can see the relationship between image size and resolution in the Image Size dialog box (**Figure 2**).
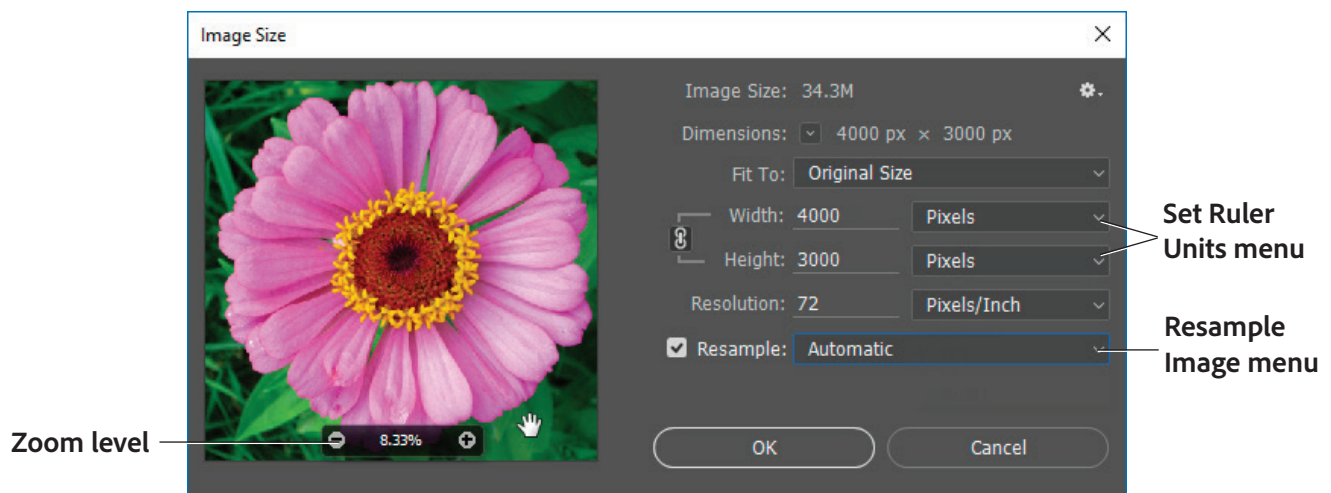

Figure 2 Image Size dialog box

To change resolution of an image:

Changing an image's resolution affects not only its on-screen size but also its image quality and its printed characteristics.

1. Open an image in Photoshop.

2. Save the image with a new name.

   This step preserves the original image in case you want to revert to it. You should always make a copy of the original before making changes.

3. Choose **Image > Image Size**.

   The **Image Size** dialog box opens (**Figure 2**).

   Notice that the dialog box lists two major categories of information about the size of the image.

- **Dimensions** refers to the actual number of pixels contained in the image. The number of pixels represents the amount of data in the image. Unless you select the **Resample** image option, number of pixels remains the same as you resize and change the resolution of the image.

- **Document Size** refers to how the document appears when printed. Document size is also a starting point for how the document will appear in another document, such as an InDesign file. In later projects, you will place Photoshop images in InDesign files.

Note: A window displays the preview image from the resizing parameters. Resizing the dialog box resizes the preview window. Mousing over the preview window reveals an image zoom level control.

4. Make sure the **Resample** image option is not selected.

   The Resample option changes the amount of data or information in the image as you resize. For now, it's best to leave this option deselected.

   Note: You can use resampling to make enlargements. However, because resampling can only estimate pixels, it is best to use a picture with a larger resolution in the first place.

5. Change the **Resolution** value.

   Observe that the other two numbers for width and height change accordingly. For example, the example image set at 180 ppi measures approximately 21.5 by 14 inches. The same image when set to 72 ppi measures approximately 53.7 by 36 inches (**Figure 3**).

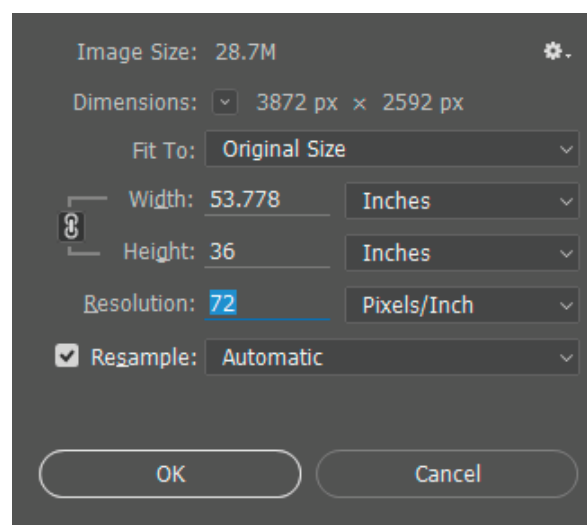6. Click **OK** to close the Image Size dialog box.

Figure 3 Image Size dialog box with resolution changed to 72 ppi

Reducing an image's size (pixel dimensions)

Although you will often want to keep pixel information, sometimes you need to reduce the total (pixel) size of an image. This step removes pixels and reduces file size. You will usually do this when preparing the image for the web or other electronic medium; for print, you will generally want to simply change the document's size. (Of course, you may want to reduce file size for other reasons, such as to preserve hard disk space or to speed up image rendering.)

To reduce an image's pixel dimensions:

1. Choose **Image** > **Image Size**.

   The **Image Size** dialog box opens.

   In the previous steps you attended only to the resolution, or document size of the image. This time you will ignore that area and focus on the pixel dimensions.

2. Select **Pixels** for the unit of measurement by clicking on the triangle next to **Dimensions** and choose from the menu (**Figure 4**).

3. Confirm the **Resample** image option near the bottom of the dialog box is selected.

   When selected, observe that the Pixel Dimensions menus and the Constrain Proportions option are active.

   This option automatically changes the width as you change the height, and vice versa. For example, if you start with an image of 2000-pixel width and 1000-pixel height (a 2:1 width/height ratio) and change the width to 1000 pixels, the height automatically changes to 500 pixels when Constrain Proportions is checked. Generally, selecting this option is a good idea.

4. Choose **Bicubic Sharper** from the **Resample** image menu (**Figure 5**).

   This option is best for reductions because it maintains the detail in a resampled image.

5. In the **Width** box, enter the desired width in pixels.

6. Click **OK** to reduce the image's pixel dimensions.

7. (Optional) After the size reduction, you should apply the **Unsharp Mask** filter to the image by choosing **Filter > Sharpen > Unsharp Mask** (**Figure 6**). This will clear up any blurriness that results from the reduction.
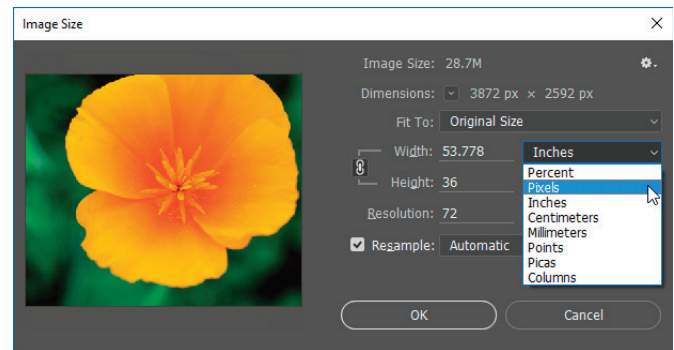
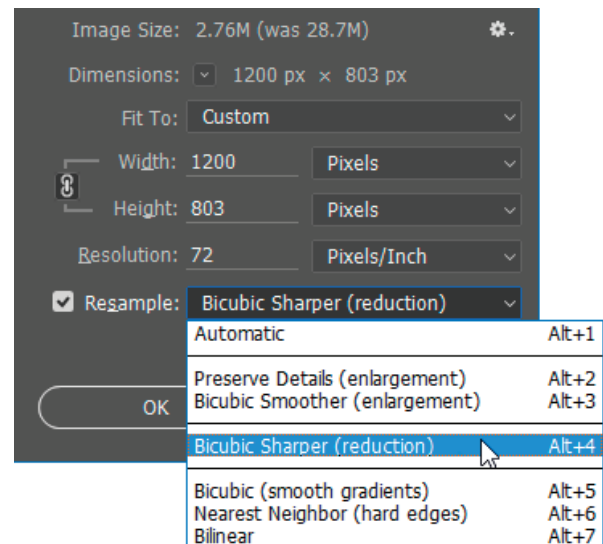*Figure 4* Image Size dialog box, Set Ruler Units menu

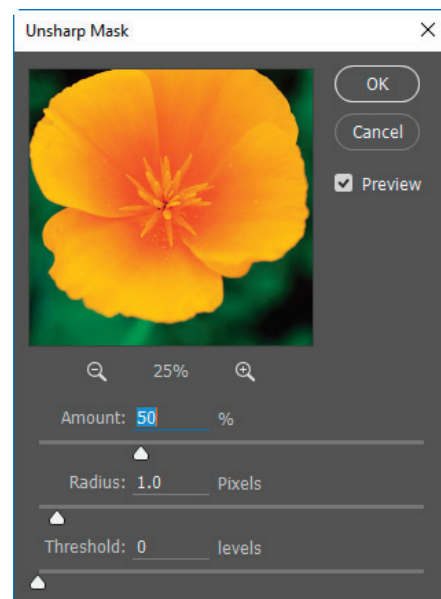*Figure 5* Image Size dialog box, Resample Image menu

Figure 6 Unsharp Mask dialog box

Increasing an image's size

Sometimes you need to upsample a picture: take a smaller image and make it larger, or take a small area of a larger image and scale it up (**Figure 7**). This can be problematic because when making an image bigger, it tends to get blurry. The Preserve Details option in the Image Size dialog box helps maintain sharpness when enlarging images.

Figure 7 Original uncropped image (left) and sharp resized image with details preserved (right)

To expand an image's pixel dimensions:

1. Choose **Image** > **Image Size**.

   The **Image Size** dialog box opens.

2. Select **Percent** for the unit of measurement by clicking on the triangle next to **Dimensions** and choose from the menu (**Figure 4**).

   The **Width** and **Height** changes to 100%. Using **Percent** as a unit of measurement makes it easier to scale up image.

3. Confirm the **Resample** image option near the bottom of the dialog box is selected.

   When selected, observe that the pixel **Dimensions** menus and the Constrain Proportions option are active.

4. Choose **Preserve Details** from the **Resample** image menu (**Figure 5**).

   The **Reduce Noise** slider becomes active (**Figure 8**). The noise reduction slider is used for smoothing out visual noise that has been introduced as you upscale the image.
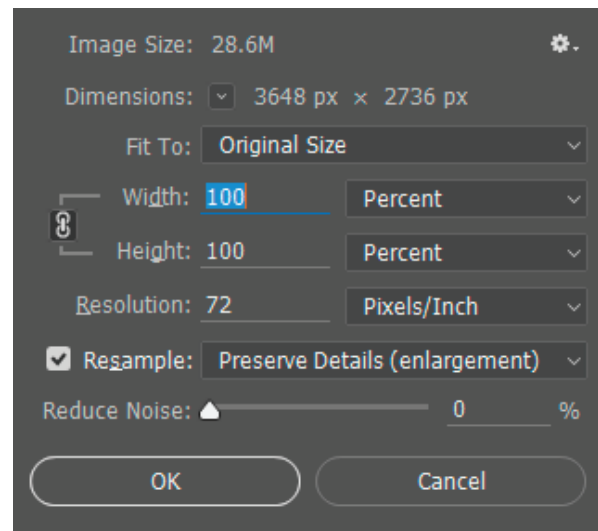

Figure 8 Image Size dialog box with Preserve Details option selected and Reduce Noise slider

5. In the **Width** box, enter the desired width in percent to increase the image size. For example, you might enter **300** into the percent box to make the image 3x larger.

6. Drag the **Reduce Noise** slider to find the ideal degree of image sharpness.

7. Click **OK** to increase the image's pixel dimensions.

Rotating images

There may be times when you open an image in Photoshop to find that it is not in its proper orientation. Alternatively, a photograph that you have taken is just a little bit crooked. There are easy ways to fix this by rotating an image by a quarter turn (**Figure 9**), a half turn, or by specificifying an exact angle.

Figure 9 *Original unrotated (left) and rotated image (right)*

To rotate an image:

The Image Rotation commands let you rotate or flip an entire image. The commands do not work on individual layers or parts of layers, paths, or selection borders. If you want to rotate a selection or layer, use the Transform or Free Transform commands.

1. Choose **Image > Image Rotation** (**Figure 10**), and choose one of the following commands from the submenu:

    • **180°** Rotates the image by a half-turn.

    • **90° CW** Rotates the image clockwise by a quarter-turn.

    • **90° CCW** Rotates the image counterclockwise by a quarter-turn.

    • **Arbitrary** Rotates the image by the angle you specify. If you choose this option, enter an angle between 0 and 359.99 in the Angle text box. Select °CW or °CCW to rotate clockwise or counterclockwise. Then click OK.

Figure 10 *The Image Rotation submenu*

2. Choose **File > Save** to save the rotated image.
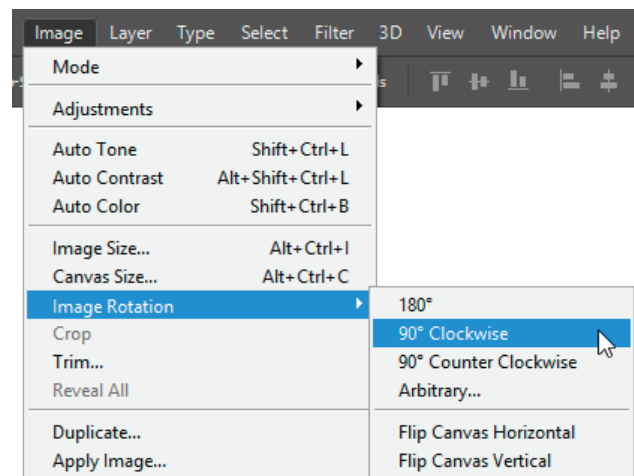
Cropping Images

You'll often take pictures that are larger than you need, or you'll want to reframe or straighten an image to remove unnecessary parts (**Figure 11**). Taking pictures that are larger than you need, at as high a resolution as possible, gives you flexibility in selecting parts of an image to crop. Cropping is the process of removing portions of an image to create focus or strengthen the composition.

Figure 11 Original image (left) and straightened and cropped image (right)

You can crop an image in Photoshop by selecting an area with one of the selection tools and using the Image > Crop command. The Crop tool in the Tools panel provides additional options for cropping images. You can use the Crop tool to straighten a crooked image without losing details at the edges, select an area to crop, or set the Crop tool to trim an image to a specified aspect ratio. This guide covers how to use the Crop tool.

Grid overlays

A variety of grids for overlaying an image you are cropping are available from the View menu in the Options bar. The Rule of Thirds grid, for example, illustrates a general rule of thumb in the visual arts. This grid consists of two equally spaced horizontal and vertical lines. Visual interest and a strengthened composition are created when objects are placed along (or at the intersection of) these horizontal and vertical lines.

To straighten and crop an image by using the Crop tool:

1. Click the **Crop Tool** in the Tools panel (**Figure 12**).

    The pointer changes to the Crop tool and cropping marquee appears around the edges of the image.
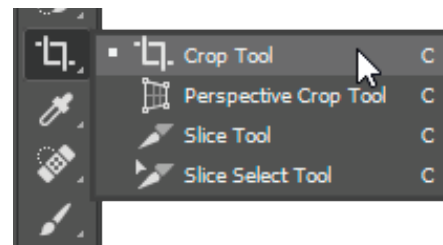

Figure 12 Crop tool

2. Choose the **Rule of Thirds** option from the Crop Tool overlay grid options in the Options bar (**Figure 13**).

   A Rule of Thirds Grid overlays the image.

3. Select the **Content-Aware** checkbox in the Crop Tool options Bar.

   Content-Aware fill is a seamless method to repair blank spaces that result from a cropping action.

4. Adjust the cropping marquee using one of the following methods:

   • To move the selection to another position, place the pointer inside the bounding box and drag.

   • To scale the selection, drag a handle in any of the corners (**Figure 14**). To constrain the proportions, hold down Shift as you drag a corner handle.

5. Alternatively, you can choose a crop option from the list of menu of preset aspect ratios in the Options bar (**Figure 15**).

   For example, you may choose **Ratio**, which allows you to crop an image to dimensions that you specify. Another option is to select from a series of preset aspect ratios, such as **Original Ratio** or other common ratios, such as **16:9**, also known as widescreen. If you are processing several images and want to maintain a specific crop size, you can save your customized setting by using the **Save Preset** option.

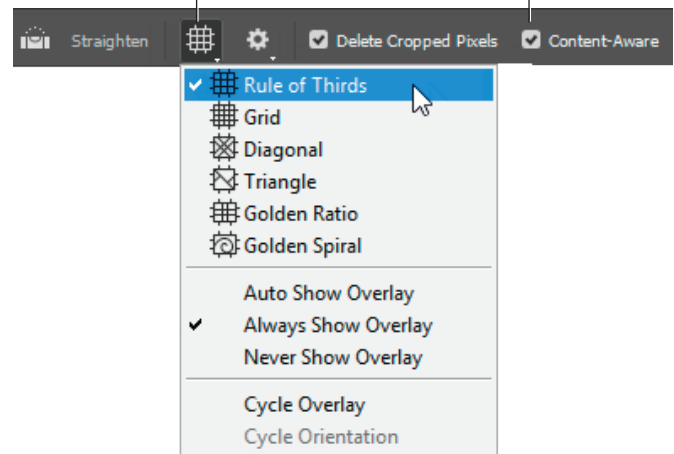**Crop Tool overlay grid options**   **Content Aware**
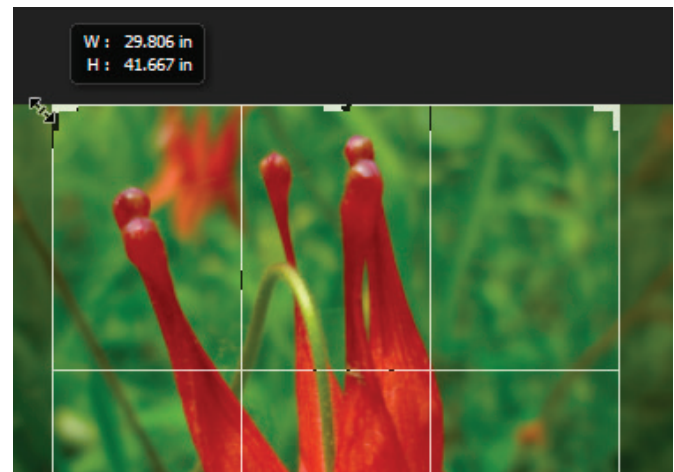

Figure 13 Crop Tool overlay options
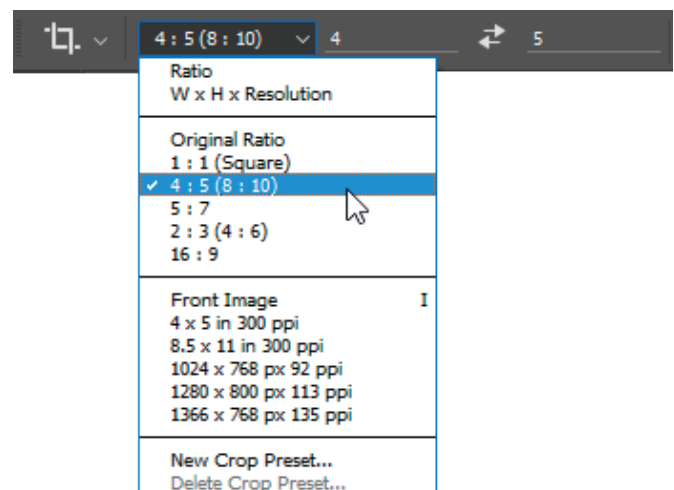

Figure 14 Drag handle to scale a crop area

Figure 15 Menu of preset aspect ratios

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6. If your image needs a slight rotation to straighten it, move your cursor outside of a corner of the crop boundary. When the cursor changes to a double-pointed, curved arrow, drag to rotate and straighten the photo. The crop grid appears to help as a straightening guide (**Figure 16**).

Sometimes when you rotate an image, you can lose some detail at the corners. The Content-Aware option automatically fills these missing areas outside the original image with matching content.

7. To commit the crop, click the checkmark in the Options bar or press **Enter** (Windows) or **Return** (Mac OS) on your keyboard.

The image is trimmed to the selected region and the missing background areas are filled in (**Figure 17**).
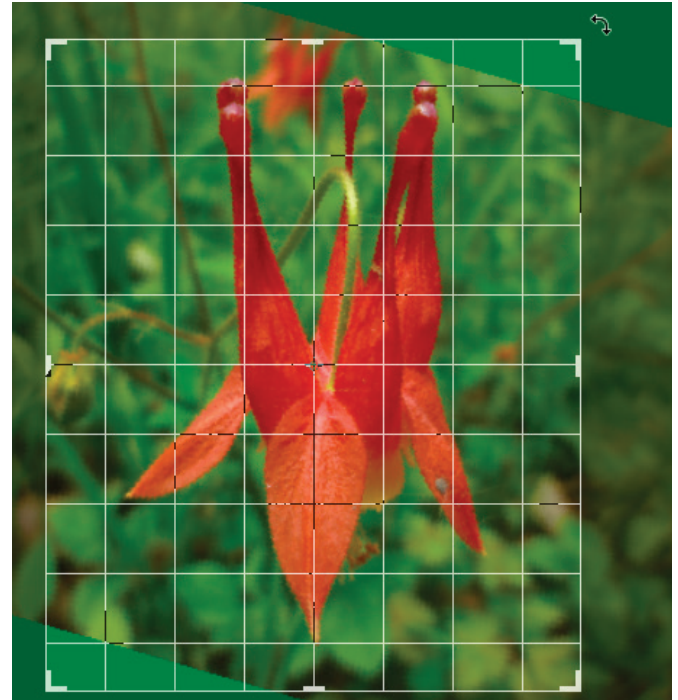

Figure 16 Crop area

Figure 17 Crop applied

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