

## 20 / HISTOGRAM<sup>1</sup>

In this section we will learn about histograms and practice reading them. The histogram is a graph displaying the tonal range (dark to light) within an image. From left to right the histogram shows the number of pixels in the image moving from the darkest black (shadows) to the brightest white (highlights). The point in the very middle is 50% grey. From top to bottom it shows how many pixels within the image fall within a certain range. We can use the histogram as a reference for what might need adjustment to enhance an image.

### CLIPPING

Clipping occurs when the histogram graph shows a large number of values at either extreme of the graph meaning information is lost in the shadows or highlights. Once a digital image has clipped due to under or over exposure there is no way to recover that detail through adjustments.

### READING THE HISTOGRAM

In this exercise we will get practice reading a histogram

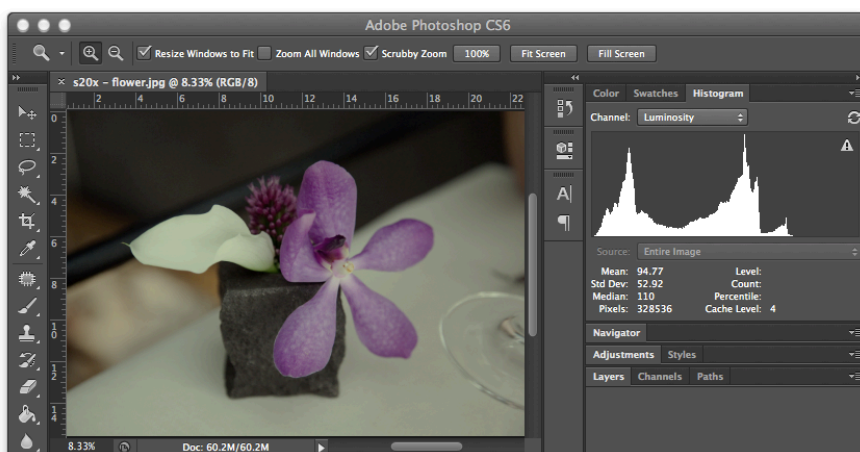
#### YOU WILL NEED:

- Mac running OS X 7 or later
- Photoshop CS 6
- Internet Access

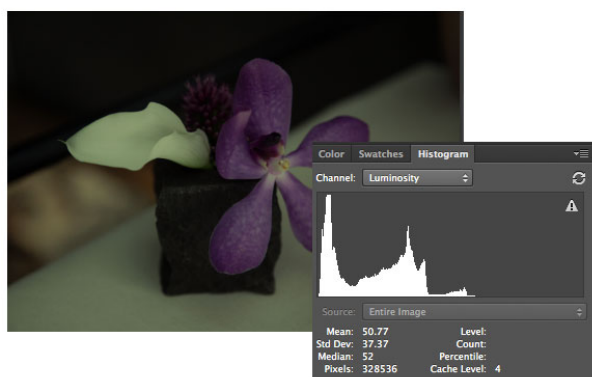
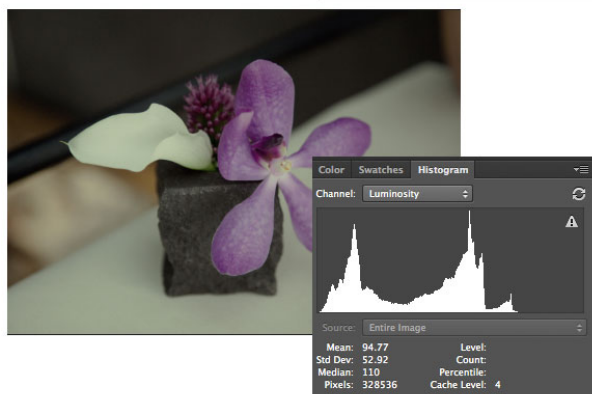
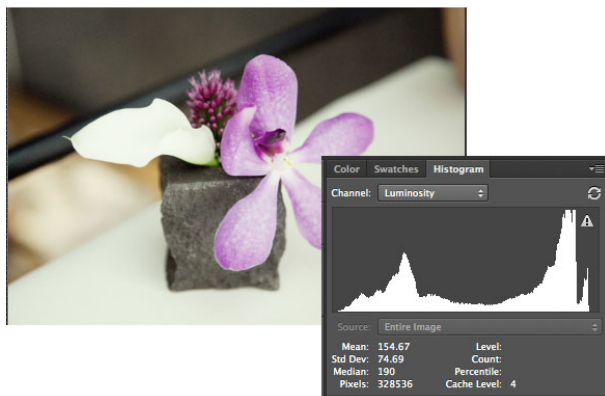
#### STEPS:

1. Open the flower image in this sections exercise folder using Photoshop.

2. Click on Image > Mode > Grayscale to convert the image from RGB color mode to Grayscale.
3. (Click OK through the "Discard Color Information" dialog box.)
4. Save the file as flower\_gray.psd.
5. Click Window > Histogram.
6. The next part of this exercise is to be observant about the value of the light and dark tones in your image.
7. We do this with the use of the Histogram palette.
8. This palette conveys information about the grayscale tones in the document.



<sup>1</sup> Adapted from *Digital Foundations* Chapter 08



- This is true regardless of whether the document is in color or grayscale, as color images are rendered digitally by compositing separate color channels (red, green, and blue, for example), each with corresponding grayscale values.
- So once again, the Histogram displays information about grayscale values, even if they correspond to color information.
- Take a look at histogram on the enclosed image. According to the graph is there more information in the shadows or highlights of this image. Notice how the tablecloth appears to be 50% grey. Because it takes up so much space in the image there is a spike close to the middle of our graph. If we were to adjust our image so the tablecloth were brighter how might the histogram change?
- Does the histogram have any gaps where information does not exist? This means that there is no image information in areas where gray values between black and white are expected. This is usually a result of over adjusting an image with tonal adjustments. Sometimes this is a reasonable result of increasing contrast in an image, especially when certain areas are particularly hot (bright or blown out highlights).

## UNDERSTANDING TONAL RANGE

The histogram itself can't tell us if an image is good, but it can give us a clear idea of what needs adjustment. By opening different images in Photoshop and viewing the histogram you will gain good practice in using the histogram as a tool for adjusting an image to represent a full tonal range.

Notice how the histogram varies in the three examples to the left.