



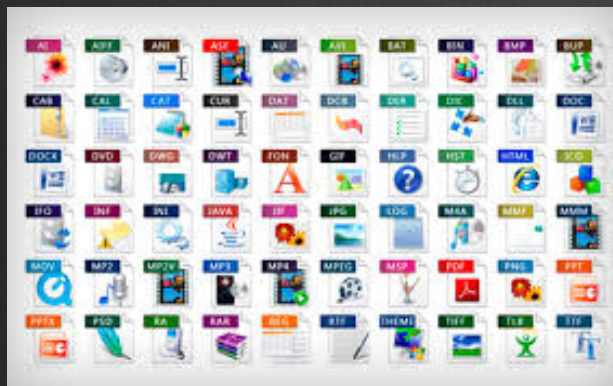
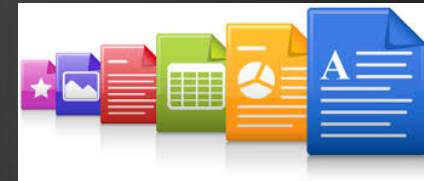
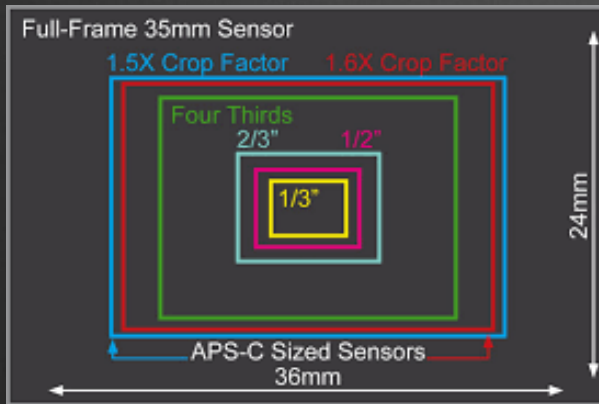
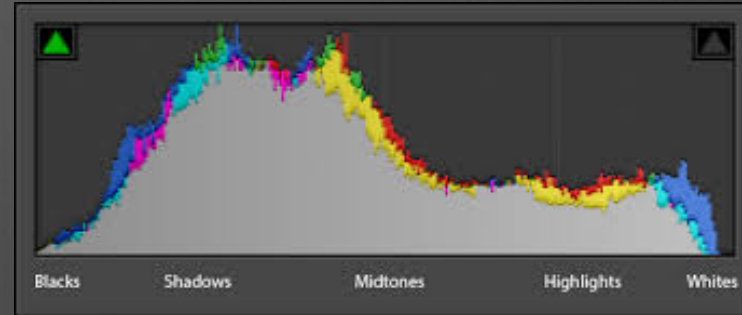
# Digital Photography

For beginners

Week 8

# In this session:

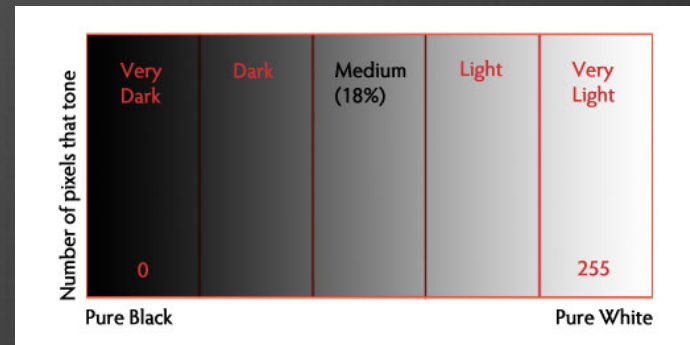
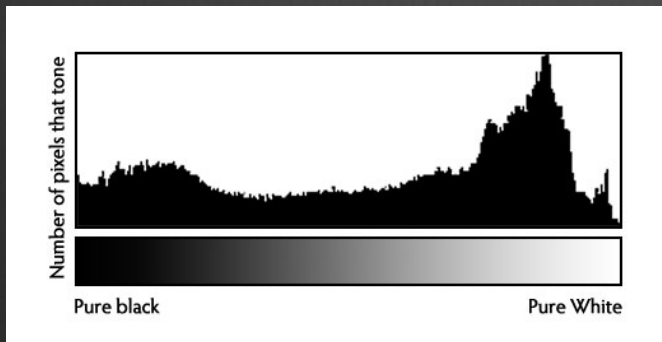
- ❖ Constructive Critique
- ❖ Histograms
- ❖ Sensor Sizes
- ❖ File Formats
- ❖ Assignment 8





# Histograms

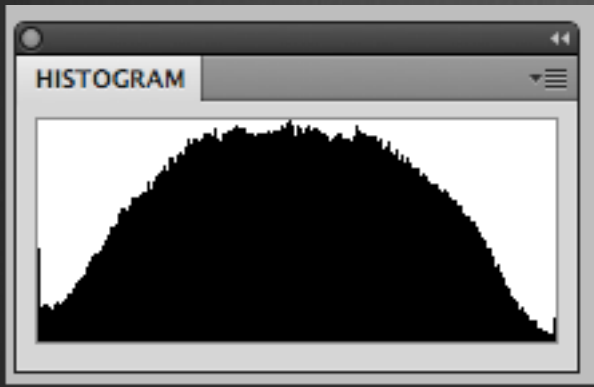
A **histogram** is a graphical representation of the pixels exposed in your image. The left side of the graph represents the blacks or shadows, the right side represents the highlights or bright areas and the middle section is mid-tones (middle or 18% grey). How high the peaks reach represent the number of pixels in that particular tone. Each tone from 0-255 (0 being black and 255 being white) is one pixel wide on the graph, so imagine the **histogram** as a bar graph all squished together with no spaces between each bar. Have a look at the diagrams below:



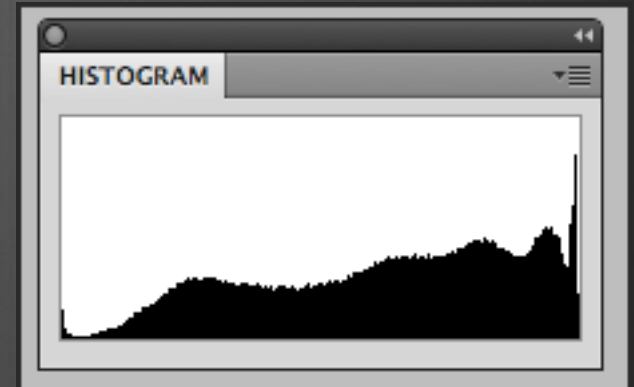
There are many things we can learn about an image just by looking at the **histogram**.

We can tell an image is well exposed if it reaches fully from edge to edge without a space on one side of the graph, and isn't heavily going up one side or the other. In an ideal world, it should just touch the left and right edges, and not spill up the sides, with a nice arch up in the centre. However that doesn't always apply in every situation, for every scene.

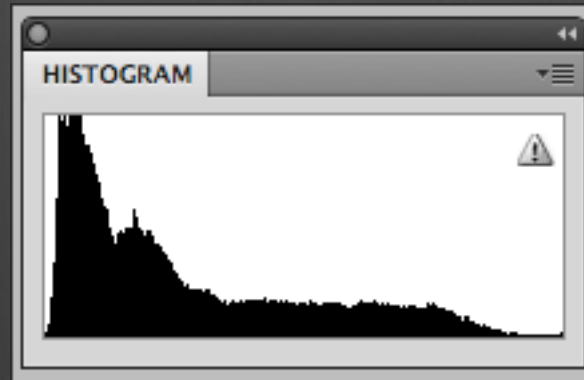
# Examples



This is how an ideal **histogram** might look, evenly distributed, edge to edge, not up the sides



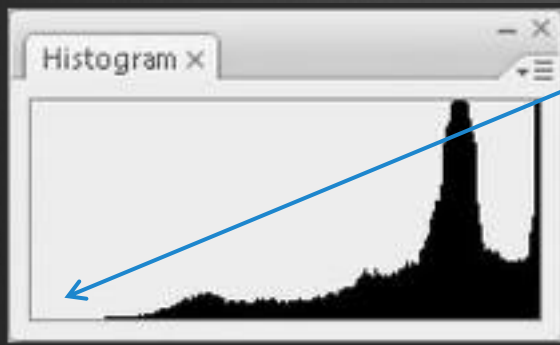
This is a **histogram** for a light subject (white cat) with mostly light tones in the scene and few dark areas. See how it is shifted to the right now versus the dark subject. This is correct. If you change your exposure on this to make it in the middle you will have grey cat and not a white one.



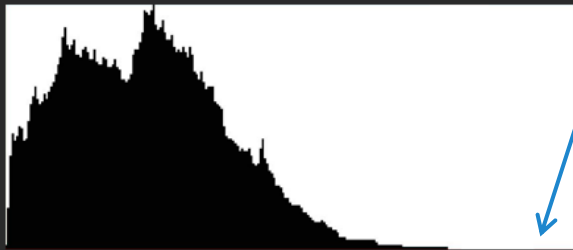
This is a **histogram** for a dark subject, it is not wrong it is just more shifted to the right to represent the tones of the subject. This might be a black cat on the dark pavement.

# Adjust your exposure

Gaps on either end indicate you are missing information and your exposure can be shifted safely without losing detail. When your graph is shifted too far in one direction or the other so that it does not even touch the other edge – that means you can safely shift your exposure to cover more of the range of tones. Let's look!



This graph shows an overexposed image, notice the gap on the left side indicating a lack of any blacks represented. It also means you will lose lots of detail in the white areas that may not be recoverable. In this case shift to give your image less exposure and shoot the scene again.

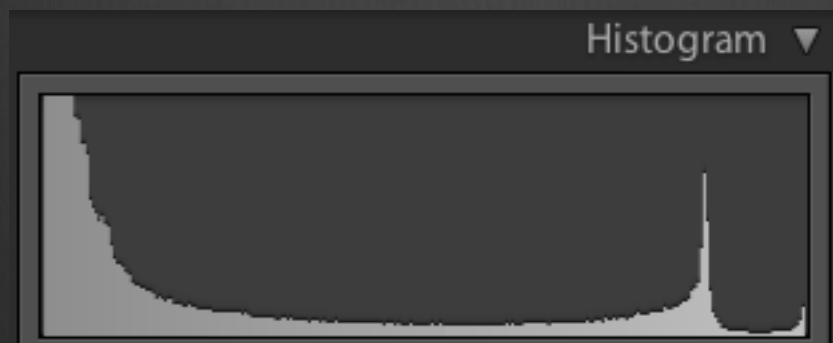


This one shows the opposite. Now we see a gap on the right side of the graph indicating there are no whites represented so the image will be dark, too dark. You can safely give the image more exposure until you see the graph just touch the right edge of the graph.

# Spikes

Spikes up the left or right edge indicate “clipping” of that tone and loss of detail in that area. **Clipped** areas are often unrecoverable, especially in the highlight area but it is generally advised to expose so your graph just touches the right edge and keep your highlight details. It is usually easier to recover some shadow detail and retain a decent image, than try and create highlight detail that isn't there on the file.

In some scenes, however, it may not be possible to keep the graph within an acceptable range. For example, if you are photographing a scene with extreme contrasts such as: a sunset; bright sunlight and deep shadows; or an inside a building where you show outside the windows as well. In all of those cases you will not be able to keep from clipping either your blacks, or whites, or even both.



This graph shows an image with extreme contrast, lots of blacks, a spike of white and not much in the middle.

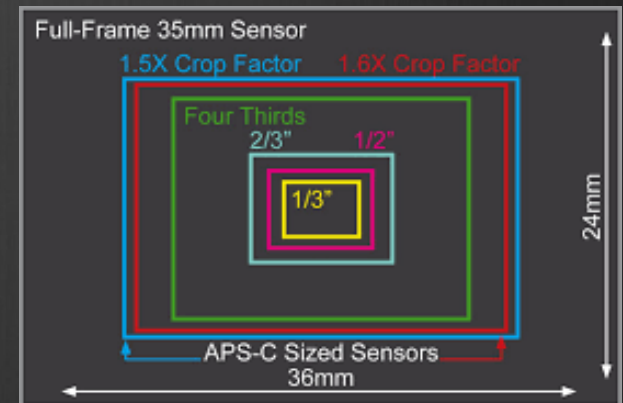
# Sensor Sizes

**Sensor size** is important in photography because it has an impact upon image quality. If you have two cameras with the same pixel count, but one has a physically larger **sensor** than the other, the one with the larger sensor will usually produce better quality images.

This is because the photo receptors, which are commonly called pixels, are larger on the bigger **sensor**.

The main purpose of a photo receptor is to receive light and generate an electrical signal that is converted into a digital image signal. The more light that the sensor receives, the stronger the image signal will be.

A strong signal requires less amplification and this means there's less opportunity for image noise to be introduced or enhanced.





A camera's **sensor** is usually its most expensive component and this means cameras with larger sensors tend to be significantly more expensive than cameras with smaller sensors.

The camera's body also usually needs to be made larger to house the bigger **sensor** and to accommodate the lenses that are required to produce the larger image circle.

To summarise, in general terms, cameras with larger **sensors** tend to be bigger and more expensive than those with smaller **sensors** and they produce better quality images.



## Bigger Sensor or Fewer Pixels

As already mentioned, having a larger camera **sensor** allows the pixels to be made bigger and this has positive implications for image quality with noise levels being reduced and dynamic range extended. A similar thing can be achieved by keeping the pixel count down on a smaller **sensor**.

However, high pixel counts are often seen as a good thing because images are larger and it enables more detail to be recorded.

The challenge for manufacturers is to keep noise levels down and maintain image quality at the higher sensitivity settings when light levels are low.

Some cameras like the Nikon D4S offer superior low light performance by having a relatively low pixel count (16-million in the case of the D4S) and a large (full-frame) **sensor**.

This makes them very versatile, but the images aren't especially large and those wanting to produce big images with lots of detail should opt for a high pixel count camera such as the Nikon D810, which has 36 million pixels on its full-frame **sensor**.

This camera is capable of resolving a huge amount of detail, but it's not the best choice for shooting in very low light

# File Formats for Photography

After importing the **RAW** files to your Computer and making a few edits in **Photoshop**, it is time to save your image. But, what file type do you select? With over twenty different file types to choose from, I will break down some of the most popular and tell you a bit about their strengths and weaknesses.

## JPEG

The well-known **JPEG** format is the standard for compatibility. No matter how you wish to share your photographs, whether on a social network or to a print shop, the **JPEG** is likely to be supported. **JPEG** is great for sharing photos because you know there won't be any trouble reading the format.

There are downsides to saving as a **JPEG**, though. For starters, the file format doesn't support transparency within images. Debatable compression quality also means you may not get the desired standards you are seeking when you hit the save button. Some users suggest that saving a **JPEG** with maximum quality will produce acceptable results, but others have yet to be convinced. **JPEG** files are known as Lossy files.

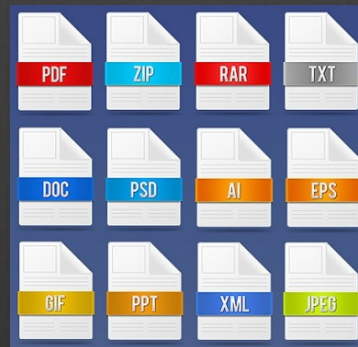
**Best For:** Sharing Images online with friends or family.

# PSD

The **Photoshop** format, also referred to by its 'PSD' file extension, is the default format for saving your work. It provides compatibility across a number of Adobe products including Illustrator, InDesign Premiere, and After Effects. It is one of the only formats that can save a file with all **Photoshop** features accounted for, such as layers and applied effects.

Despite being an excellent way to preserve every adjustment you have made in **Photoshop**, the PSD file is not generally accepted when sharing images since your client must be in the Adobe ecosystem in order to open it. PSD is useful for saving your work so you can easily return to the file to resume work. In most cases, PSD should be confined to your workspace.

**Best For:** Saving files on your workspace so you can return and edit later.





## PNG

The **PNG** format is a lossless file type, which means it can preserve your images without any loss in image quality. The format itself was based on the GIF file type, but allows for higher bit rate pictures and can preserve background transparency while minimizing jagged edges. **PNG** is an excellent format for displaying images on the web that require transparent elements.

Downsides to the **PNG** format typically include a large file size; this means that while **PNG** is excellent for the web, it should be used sparingly and only when needed for transparency purposes. Overusing **PNG** images on a web server could result in a slower experience for end users and increased bandwidth costs for the site owner.

**Best For:** Preserving transparency for images on the web.



## TIFF

The Tagged-Image File Format (**TIFF**) is an extremely flexible format that is one of the best for saving your prized images on your Mac or PC. **TIFF** is compatible with almost all image-editing and graphics applications currently available. In addition, **TIFF** supports a large number of colour standards including CMYK, RGB, Lab, Indexed Colour, and Grey-scale Images.

Similar to PNG, **TIFF** is also able to preserve transparency with the bonus of including alpha channels, which dictate the specific degree of transparency. **TIFF** files can also save **Photoshop** layers so they can be edited or rearranged at a later time. If you are saving an HDR image with immense dynamic range, **TIFF** can save images at a rate of up to 32-bits-per-channel.

**TIFF** files can pack a lot of information, but can also become quite large due to this fact. In addition, while **TIFF** is compatible with various image-editing programs, not every social networking site or device will be able to properly display the files. **TIFF** is best reserved for archiving images on your computer to preserve quality or for high-quality printing.

**Best For:** Archival purposes and retaining maximum quality.

# Assignment 8

## Close Up



There is often much confusion amongst new photographers over the terms macro, micro and close up photography and how they differ. For starters, macro and micro usually refers to the same thing, in that Nikon names their range of ‘macro lenses’ with the word ‘micro’. Canon on the other hand, calls them macro lenses.

What does macro and micro refer to when it comes to photography?

The word macro means big, whereas the word micro mean small. So how is it that these two terms related?

If the subject you are photographing is small and you want to make it look big, you end up with a “macro” view of a “micro” subject.

## What is macro (micro) photography?

Macro photography is that which is taken with a dedicated macro lens. A real macro lens has the capability of achieving in the least a 1:1 magnification. Just because a camera has the word macro written on it, doesn't make it a true macro lens. Both the Nikon and Canon lenses mentioned above, are considered real macro lenses. If you're not sure how to recognise a real macro lens, check with your local camera shop.

## What is close up photography?

**Close up** photography, is the act of photographing objects in close range so the subject you are photographing fills the frame. In other words, it's the act of photographing subjects close up. This is easily achievable with any lens, even a 300mm telephoto lens. The best description for a close up is '**part of a whole**'

Macro photography is in essence **close up** photography as well. However, **close up** photography is not always considered as true macro photography. For example, if you have a lens that is NOT considered a real macro lens, yet offers a macro setting (as many do nowadays), this is usually referred to as being **close up** photography, and not true macro.





Close Up

Macro

