Calibration Questions

1) What is calibration?

Calibration, more correctly Colour Calibration, is the process used to Adjust the Colour Response of a device [input or output] to a known [generally Standard] state.
All devices we regularly use in capturing and processing Digital Photographs are Device Dependant when it comes to colour representation. As such no 2 will yield the same Colours from the same source unless they have been calibrated to the same standard. Indeed unless 2 cameras have been Calibrated to the same standard they will yield different colours. Our Cameras use a colour space to record information [Adobe RGB or sRGB] our Monitors have an ICC profile any Printers have profiles which may or may not be accurate because every Printer/Paper/Ink combination can yield different colours. So to be accurate every Printer paper and ink combination should be assigned an individual ICC Profile .

2) If I didn't worry about calibration when I brought my film into the store, why do I now have to with digital?

The Photographic industry based on Film, controlled itself and regulated the colours produced themselves. They controlled the film production the film processing and the Print production to achieve a standard level of acceptance. Colour Calibration was a part of that process. But of course we the consumers were never required to be aware of that or play any role in it.
In the world of Digital Photography we are quite often involved with and actually in control of the entire process; and so Calibration is something we should at least be aware of if not actively taking part in.

Ask 100 people to define a particular colour in detail and you will probably get 100 different answers; most of which will be meaningless to you.
There are 3 reasons for this
1/ As individuals, our eyes like every other portion of our bodies are different. Fingerprints for example are unique to the individual.
2/ Our brains and the part utilized to interpret vision are also different and will interpret things differently.
3/ That interpretation is influenced by our life experiences and Memories which are also quite unique.
It all adds up to seeing Colours differently.

Much like that when it comes to displaying colours the hardware we use is all different. While the exact colour in a Pixel is defined by a set of numbers,
On the monitor those numbers will often be much different so the displayed colour is different from the original. The Objective of Colour Calibration is to have

the Displayed numbers closely match the original numbers for a close if not exact colour match.

3) How can I be sure that my print will look just like the photo that I see on my Screen?

The easiest way to Match your Monitor to Prints is to print up a test page and then adjust your monitor colour controls to match the test print . That is effectively calibrating the 2 but it will only work for those 2 devices and will only be accurate with the same Printer/Paper/Ink combination. Change any 1 and your prints will be off. Even substituting a different printer of the same make and model will probably yield different colours. Also while colours may be acceptable on your monitor and printer they will probably look awful if you share them with somebody else.

A more proper set up would be to Colour Calibrate you monitor and the Printer/ Paper/ Ink you use to generate ICC profiles for both. That way your files will be edited on Colour Calibrated equipment and should look the same on your monitor as well as anybody else's computer with a calibrated monitor or on the Photo Club projector perhaps.

As a footnote photo applications offer a Softproof function for use in printing The idea is your monitor can be used to Emulate the colour response of your printer/Paper/ Ink to achieve the best possible match prior to printing without wasting ink. It does require accurate ICC Profiles of the print Media though.

4) Is my monitor the only thing that I have to calibrate?

Your Monitor is the only hardware you have to Calibrate as long as your use of your digital photographs is limited to electronic viewing. That would include sharing your photos with other users like friends and family via email or websites as well as showing them Via the Photo Club Projector.

5) If I don't change the colours during editing, do I still need to calibrate?

Maybe! It all depends what you do with or how you use your photographs.

6) Don't my normal camera settings ensure a proper colour balance? It has settings for the different types of light.

Camera settings address only part of the system, the Camera. They will provide a white Balance reference point as well as the Colour Space used at capture. The Colour Space and White Balance are Important for JPEGs totally optional for RAW as they can be changed at will.

In RAW the colour Space provides a starting point from which you can convert to whatever you choose as a working Colour Space in your Photo Editing software.

Correct settings in camera will not allow for incorrect Calibration in your Monitor or Printer.

7) What should I look for when setting up an editing area in my home?

Ideal is a room with consistent lighting and a position with no direct light on the monitor. A room on the north side of the house will minimize the extreme variations in Ambient light through the day as would a room in a basement. Some users actually shade their monitors to avoid outside influences.

8) Artificial light or natural light, which is better?

In an environment for editing Photographs Consistent Light is what one would hope to achieve. Natural light is not consistent one hour to the next one day to the next and one type of weather to the next. So artificial lighting is the preferred choice. Most important is to avoid glaring light from whatever source on your monitor, because what we see on the monitor changes in different lighting conditions.

9) What if the light in my editing area changes with the time of day?

As the light changes throughout the day what we see on a monitor will also change as the different ambient levels of light interfere with the Picture on the monitor. Some Calibrators, like the Latest few releases from Datacolor in the Spyder Series, have the Ability to monitor the Ambient light level and adjust the output from your monitor to compensate for these changes

10) Does file format matter when correcting colours ex. Raw vs jpeg?

Whether you shoot in Raw or JPEG or TIFF should make little difference in the colour Quality of your edited photos. All should look reasonably close to the same as long as they are using the same Colour Space when recorded.

11) Will my corrections give the same result at all photo finishing stores?

Are all photo finishing retailers the same?
Do they all use the same Printers?
Do they all have staff that calibrate the equipment according to schedule?
Do they all use inks and Papers from the equipment manufacturer or do some mix inks and papers?
Do they all provide accurate ICC Profiles for you to use when softproofing your images as the final step before sending them for printing?

Of course not! Look for an outfit that provides consistent results and is willing to provide relevant and helpful information and stick with them.

12) How often will I need to calibrate?

You will not need to calibrate very often at all. While Monitors do change as they age, that change is gradual. Calibrating once a month is probably more than adequate.

13) If I am happy with my colours, do I need to calibrate?
If you are happy with the results you do not have to calibrate
But are you happy with all the results? Are you happy with prints From outside retailers and the way your shots look on computers of friends and Family?
Are you happy with the way your shots look on the club Projector?
If no is your answer to any of these questions Calibration may be a solution.

14) Are there potential downsides to calibrating like work load?

There is very little additional work involved in Calibration.
Perhaps half an hour to load the software and learn how to use the system.
Perhaps 15 minutes to run an initial calibration and 5 to 10 minutes to recalibrate the same unit after that.

Having said that, if your current calibration is way off then after properly calibrating your Monitor your existing pictures will no longer look the same.
If you do not like the change you will have to Re-edit all those shots to correct them.

The good part of this is if you edit 1 representative Frame [preferably at highest possible resolution and minimum compression so not a small basic Jpeg] you can save those edits in many applications and use them in a batch process to convert all the others.

15) Are all calibrators created equal?
About as Equal as a Volks wagon Beatle is to a Mercedes Benz or a Fire truck.

They all have different features aimed at different user groups so they are all different. The most expensive would be units designed for industries where colour must be exact [scientific use perhaps] which is much more exact than we require

16) Ok, so how does Colour Calibration Work?

Colour Calibration involves 2 items, a Hardware unit known as the Calibrator, or Colorimeter, and the program that accompanies it.

Connected to a computer the Hardware unit is controlled by the Program and reads the colours the program sends to the monitor. These colours originate from an industry standard file inside the program.
The program sends color patches, red green and blue to the monitor at preset levels and the hardware reads the levels displayed.
Any difference is noted.

The differences are correlated into a Corrections curve which is generated by the program and stored in the Graphics or Video card. From that time forward every time your computer turns on the correction curve loads into the video card. The end result is when Royal Blue is generated by an Image the same Royal Blue is observed on the monitor instead of Navy Blue for instance.

It is all about Original numbers minus Measured numbers = Correction Factor.

Corrections curves are stored under the Color Management area of your Control panel as ICC Profiles associated with particular devices .
It is the modified ICC profile for a monitor that is loaded into your video card at start up.

17) Who Makes Calibration Equipment?

Pantone or X-Rite makes the colormunki system
Datacolor makes the Spyder system
Basic packages are available for as little as $100
Studio packages that calibrate everything will run from $500 to $1500

The Club Calibrator may be borrowed at anytime by any club member

Important steps

Before Calibration ensure your monitor is set to use it's Native Resolution

Any other settings can throw off the Calibration
And Native Resolution will yield the sharpest images.

Generally Native Resolution is the highest Resolution setting your monitor will support

Always allow half an hour or so for your Monitor to " Warm Up " before calibrating