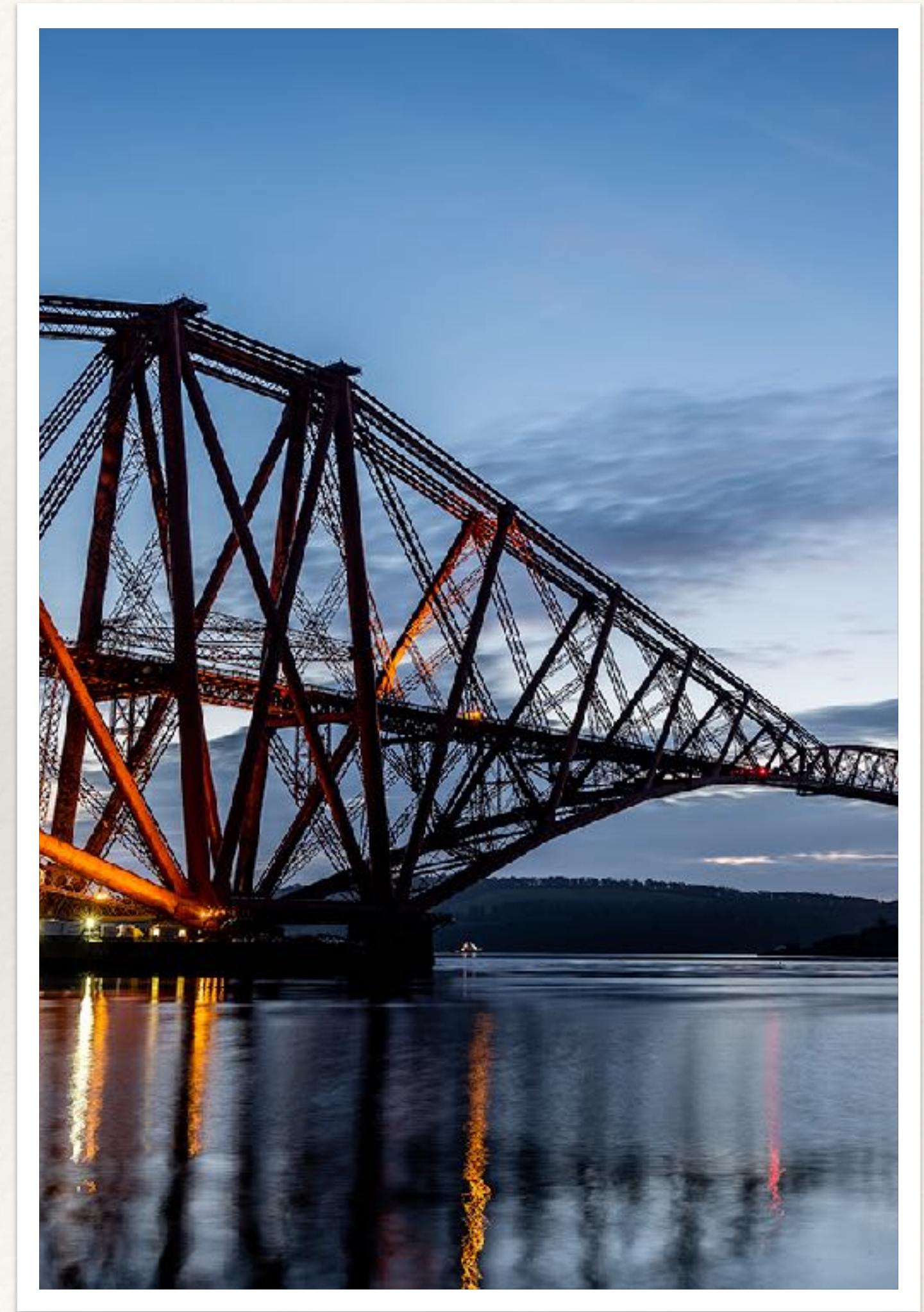

Printing

Steps to prepare image for printing

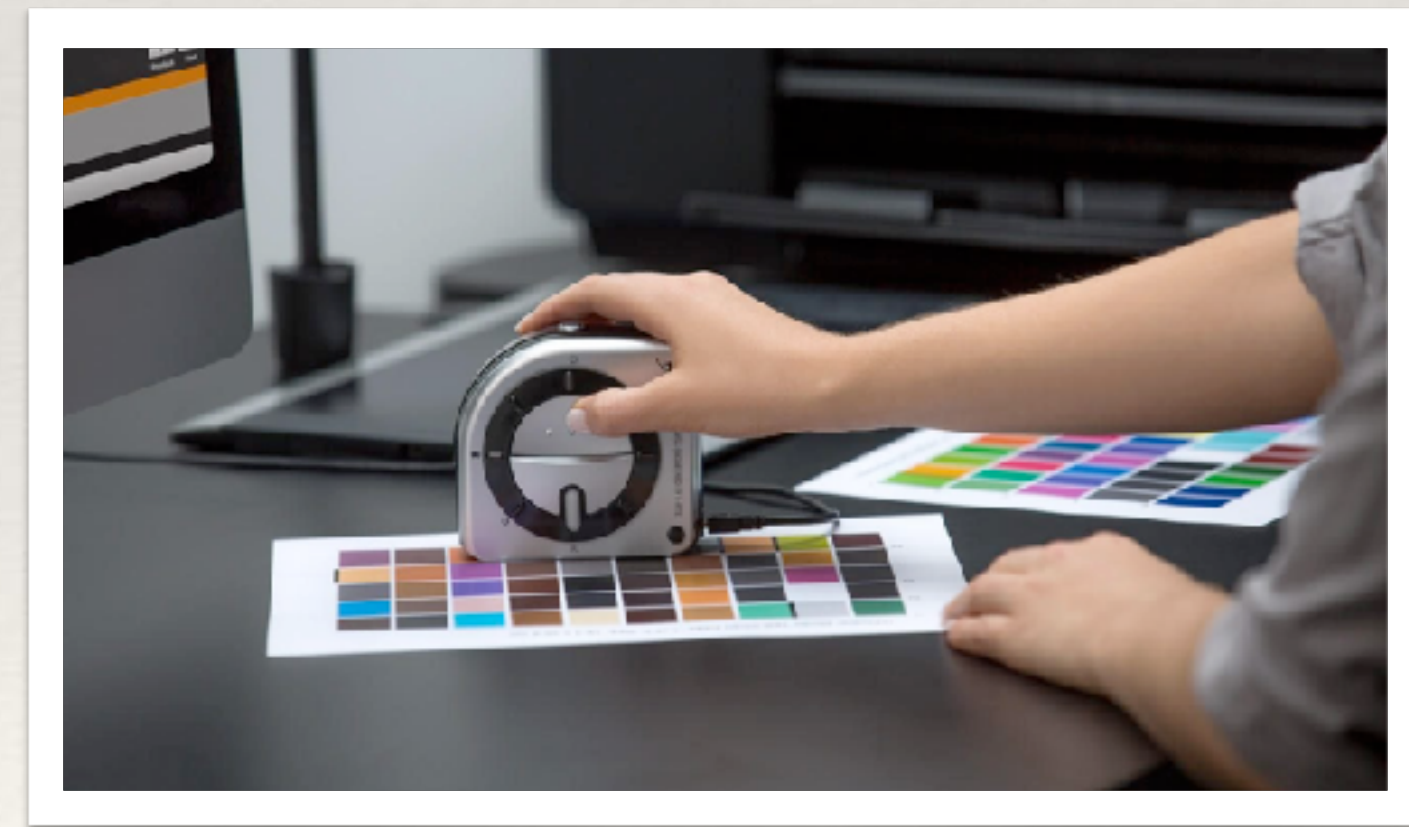
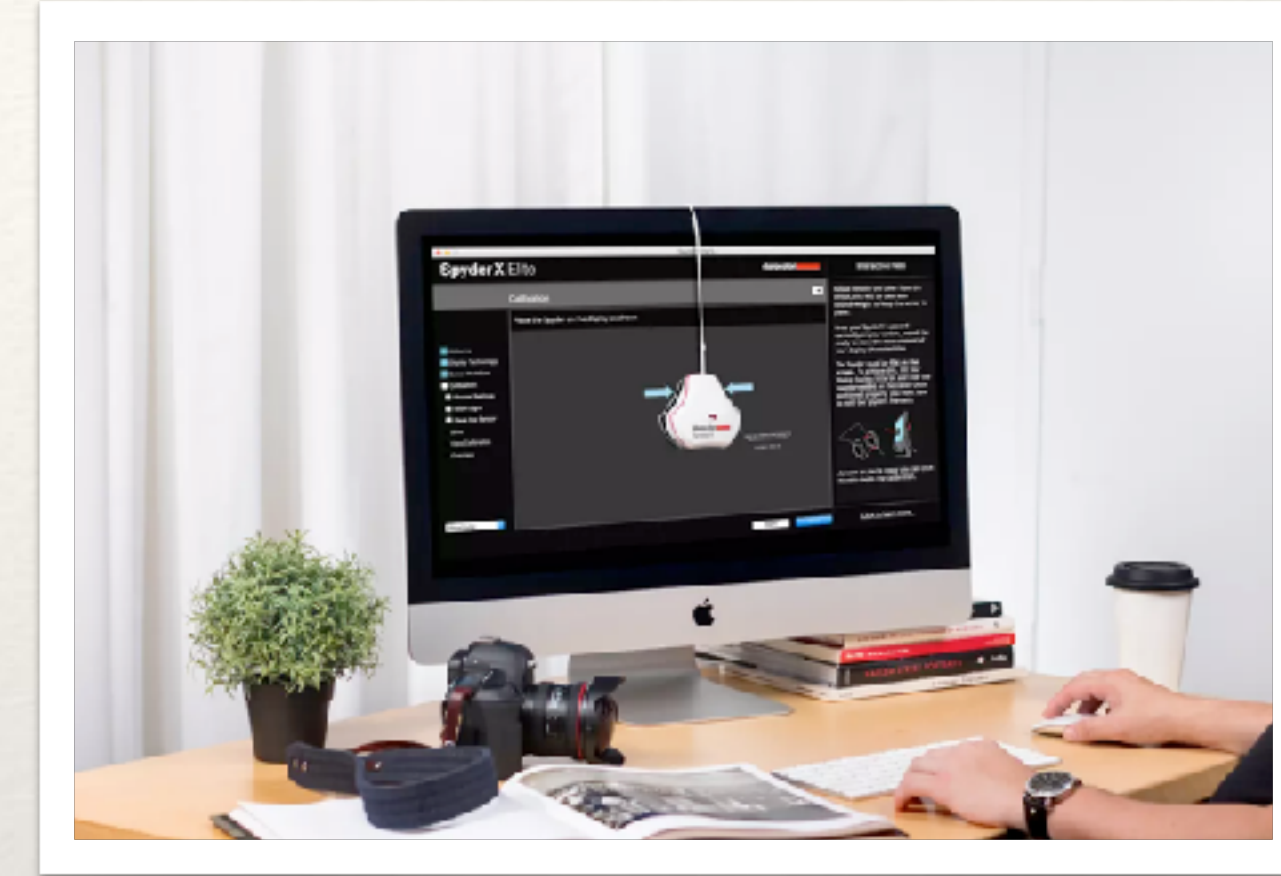
- 1 Calibrate the monitor and printer
- 2 Save your print file in sRGB or Adobe RGB
- 3 Save images as 8-bit
- 4 Choose the correct dpi
- 5 Crop the image
- 6 Sharpen the image
- 7 Soft proofing



1 Calibrate the monitor and printer

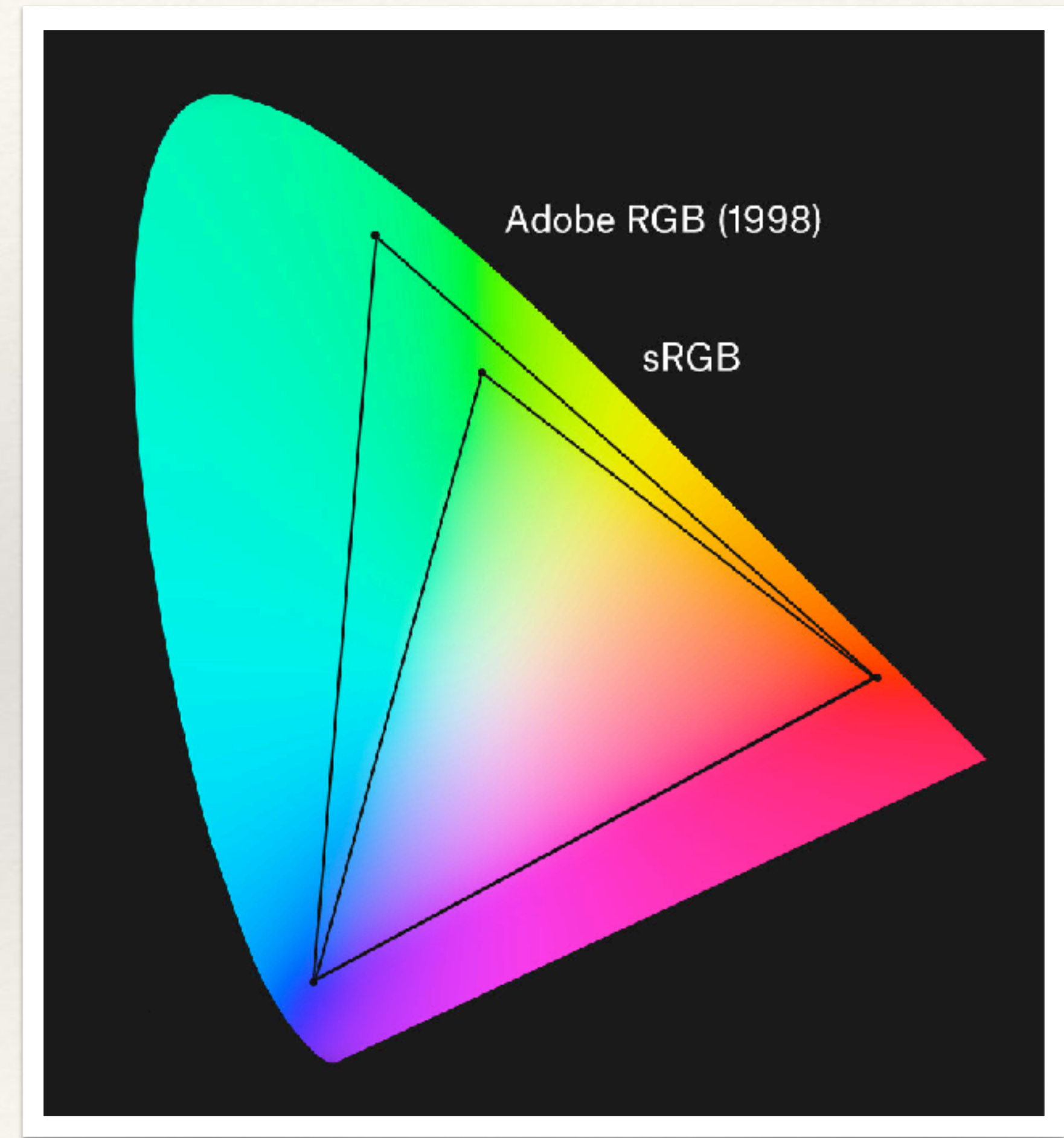
Having a **correctly calibrated monitor and printer** is the **most important factor** when you want to prepare images for printing. Without a calibrated monitor you won't know what the image *actually* looks like.

Calibrating the monitor means balancing and correcting its colours, typically done by using a spectrometer and calibration software. This is something everyone should do even if they don't plan on printing an image. If the colours of your monitor are off, it means that all your images look different on other devices.



2 Save your print file in sRGB or Adobe RGB

Printing an image that's saved in a larger colour space than the printer can handle can lead to dull-looking images as the printer is out of gamut (meaning the colours aren't able to be reproduced on the printer).



3 Save images as 8-bit

A bit is the number of tones available to each colour; an 8-bit image holds 16,000,000 colours compared to a 16-bit image that holds 28,000,000,000 colours.

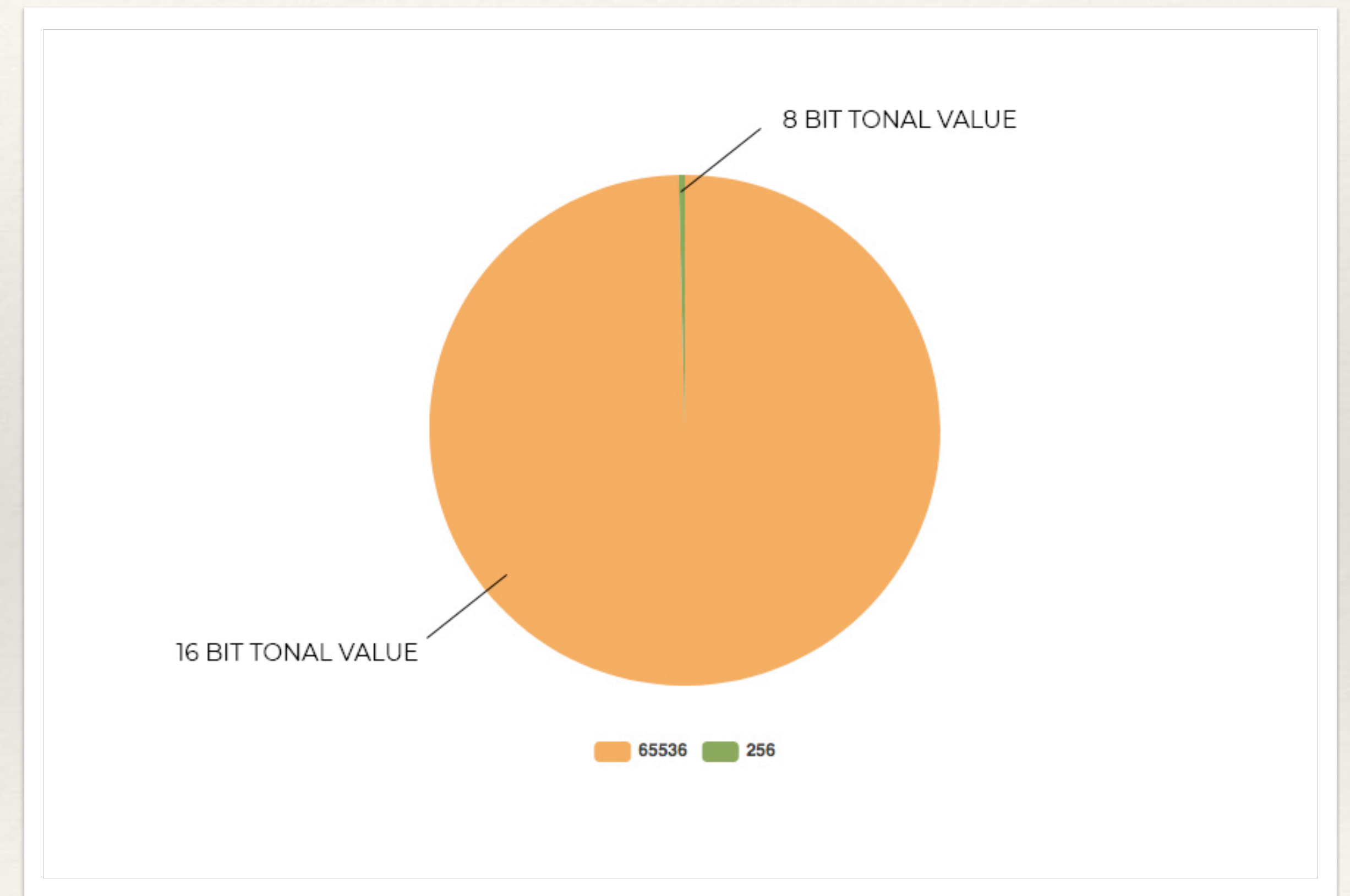
RAW files are 16-Bit files and contain a vast range of colours – especially when compared to 8-Bit files.

Where an 8-Bit file contains 16.7 million colours, a 16-Bit file contains 281 trillion colours. A typical digital camera captures between 12 and 14-Bit colour converted to 16-Bit as a RAW file.

Is 16-Bit good for printing?

16-Bit is not ideal for printing as the printer cannot read all the available colours accurately.

8-Bit JPEG works just fine for most printing applications. 16-Bit is the best format for editing photos in software without losing image detail and colour depth.



4 Choose the correct dpi (Resolution)

Resolution rules:

1. Images should be 300 dpi (dots per inch) at the final size in the layout.
2. Images which include text should be 400 dpi at the final size in the layout.
3. Resolution and image size are inversely proportional to each other. Enlarge an image, the resolution decreases; reduce an image, the resolution increases. Example: a 2 x 2" image at 300 dpi (acceptable) enlarged to 4 x 4" has a new resolution of 150 dpi (unacceptable).
4. Low resolution images print fuzzy, jagged and blurry.
5. The settings used during the original "capture" of an image (ie: scanning, digital camera, etc) determine its base resolution. Resolution can only be improved by decreasing the image size, or by recapturing the image at a higher quality setting.
6. Recommended minimum resolution for printing is 300 dpi; computer monitors generally have a display setting of 72 dpi or 96 dpi. If we indicate that some of your images have low resolution, they may not look bad on your monitor but will likely print blurry or jagged.

PROFESSIONAL PHOTOGRAPHIC – Image Resolution Calculator						
For photographic inkjet printing with genuine camera sensor pixels						
Print Size	6" x 4"	7" x 5"	10" x 8"	A4	A3	A2
12mp	720	600	420	360	300	180
16mp	820	600	480	420	300	240
24mp	1000	720	600	480	360	300
36mp	1200	720	720	600	420	300
50mp	1440	1200	820	720	480	360

Instructions:
<https://www.marrutt.com/resolution>

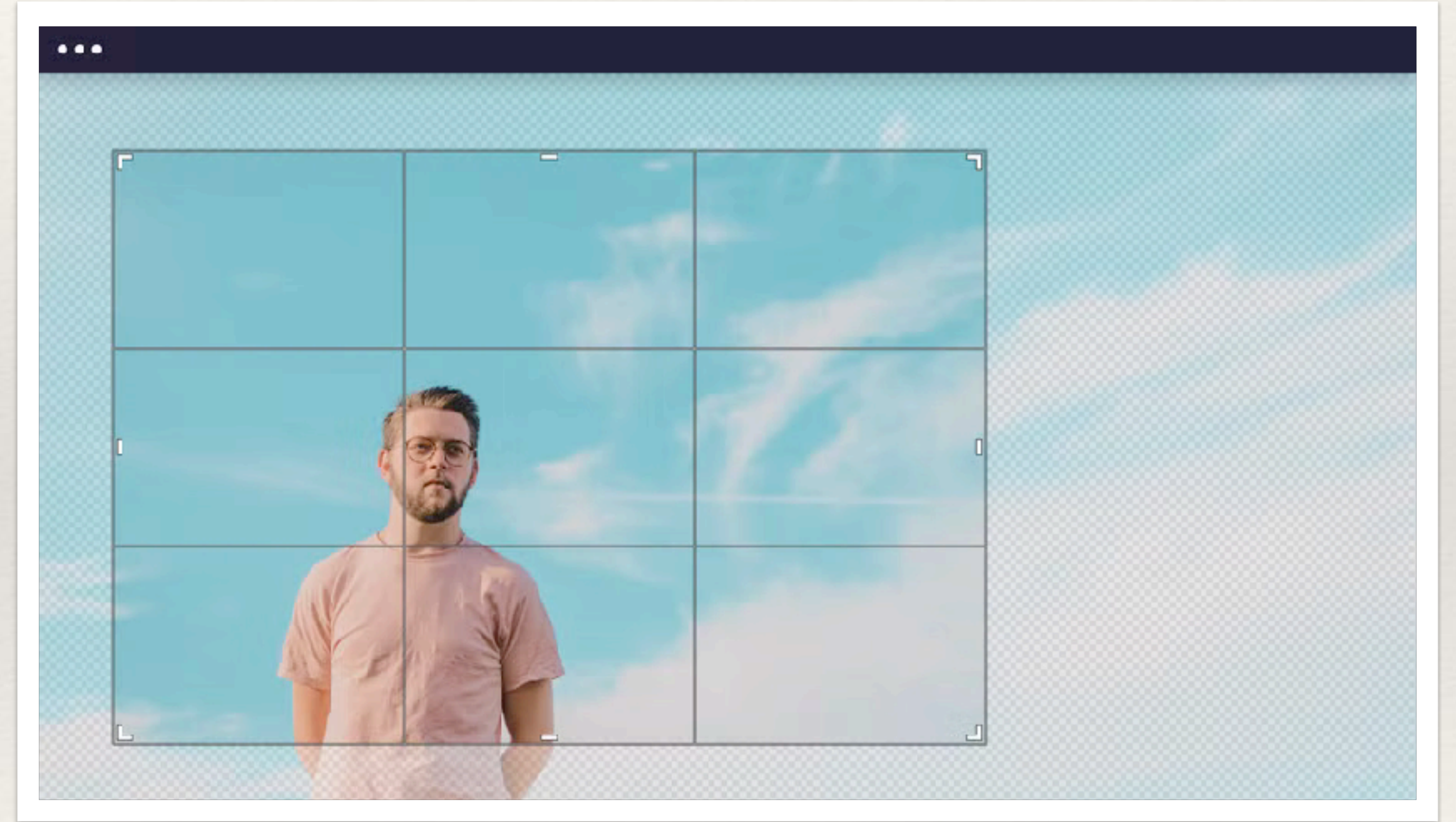
Use the above document resolutions (*shown in ppi*) to ensure that you print genuine pixels captured from your digital camera sensor.

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5 Crop the image

When using a full-frame camera or an [ASP-C sensor](#) (cropped sensor) you have an aspect ratio of 3:2. This is a perfect ratio for a 4×6 or 8×12 print but the aspect ratio changes when printing other standard sizes such as 5×7 (7:5) or 8×10 (5:4).

Keep in mind when you're cropping images for print that you may lose some of it due to the aspect ratio. You should always crop the image to the correct aspect ratio before sending it to the printer since a lot of print labs automatically crop without taking the image and composition into consideration.



6 Sharpen the image

The reason we need to sharpen our photos for printing is that printing softens them. When the ink from the printer hits the surface of the paper it's absorbed. This causes areas to blur or bleed into each other, creating a softer print. How much blurring occurs depends on several variables including the resolution of the printer and the paper surface.

Sharpening Process Cheat Sheet

3-step sharpening logic

1. PRE-SHARPENING

- Remove softness from image
- Keep it subtle

2. CREATIVE SHARPENING

- Sharpen details - not large areas of same color or gradients (Don't sharpen skies, and large bodies of water or out of focus areas)
- Sharpen to enhance subject or other elements

3. OUTPUT SHARPENING

SHARPENING FOR WEB

- Resize to 1.6 x final output size.
- Add UnSharp Mask Filter
- Merge Visible
- Resize to final output size
- Add New Unsharp Mask Filter
- Adjust brightness
- Add a little saturation back to the image
- Check sharpening
- Export to jpg/png

SHARPENING FOR PRINT

- The the viewing distance, the greater sharpening needed
- Matte paper requires more sharpening
- The lower the printer resolution, the greater sharpening needed

7 Soft proofing

Soft Proofing is a simple method used to visualise what the printed image will look like. You can do this in both [Adobe Lightroom and Photoshop](#) as well as in other photography-related software.

When Soft Proofing, you're able to choose between different colour spaces and different printers (plus make your own presets). With the correct printer and colour space selected, you can continue making adjustments to the saturation, colour balance and sharpness until the image resembles the original version.

