

Information found on the Lightroom Killer Tips website:

I see so much confusion about resolution and how to set it in Lightroom, that I thought it was time for a post on it.

Our photos are made up of pixels – squares of solid color that our camera sensor captures. For example, a photo from a 24 megapixel (MP) camera has 24 million pixels — 6,000 wide x 4,000 high:

When we export, we specify how large our copies should be made – reduced for online sharing, possibly increased for large prints, or left at the same size as our master photos. Lightroom is very intelligent in how it removes or adds pixels, to preserve the appearance of our photos. (On enlarging, this does have its limits – read my article, [“How Large Can I Print My Photo?”](#))

Exporting for Printing

When we export to send something out to print, we are accustomed to specifying size *in inches or centimeters* rather than in pixels. Lightroom allows us to specify size this way, but for it to figure out how many *pixels* to output, we have to tell it how many *pixels per inch* (PPI) to include – this is called *resolution*.

$$\text{Inches} \times \text{Pixels per Inch} = \text{Pixels}$$

$$\text{Equivalently, Inches} \times \text{Resolution (PPI)} = \text{Pixels}$$

In this scenario, in the **Resolution** box in the **Export** dialog, we specify for resolution *whatever resolution / PPI our printer (or printing service) prints at*. Most printers print at 300; Epson printers print at 360 – but check your printer manual or your printing service’s website. This gives your printer the exact number of pixels it needs to print at its best:

Lightroom will calculate and output size in pixels: 8”x 10” print at 300 PPI = 2,400 x 3,000 pixels.

If you are printing large and are afraid that you will be upsizing too much and the quality will be poor, don’t make the mistake of reducing resolution! The printer will still print at 300/360, and since you haven’t given it enough pixels, it will do the upsizing. Let Lightroom do it – it will do a better job. There are simply limits to how large you can print.

Printing in the Print Module

Similarly, when printing in the Print module, specify the resolution your printer prints at (i.e. its *native resolution*):

For more on the topic of resolution in printing, do read my article, [“How Large Can I Print My Photo?”](#)

Exporting for Screen-Based Viewing

When we export photos to post online or to send by email for on-screen viewing, we customarily specify size in pixels, since monitor sizes are specified in pixels. For example, for Facebook, I export with the long edge at 960 pixels (vertical photos will be 960 pixels high, horizontal photos, 960 pixels wide):

This is really all we need – when *specifying size in pixels, resolution doesn’t matter!* Nevertheless, Lightroom won’t let you leave it blank, so go ahead and leave it at its default of 72.

If you have previously thought that the higher the resolution number you enter, the higher quality photo you get, try an experiment – export a photo sized in pixels with a resolution of 1 PPI, and the same photo again at 999 PPI, and compare them – they will be exactly the same! (For techies out there, yes, your file gets tagged with the resolution you set, but printers and monitors ignore it anyway. It could be useful if you plan to export and then open and print from Photoshop – in this

case Photoshop will read and use this resolution, so you won't have to set it there.)

Note that how large *in inches* your photo displays on someone's monitor depends on what the monitor's native resolution is – 72 and 96 PPI are common.

While resolution doesn't matter when sizing in pixels, nevertheless, if you are submitting photos to an organization that gives you exact requirements – for example, “1024 x 768 pixels at a resolution of 72 PPI”, then *give them exactly what they ask for*. Either they don't understand that resolution doesn't matter here, or they don't want to waste time explaining that any number will do. The last thing I want is for your photos to be disqualified because of something I wrote.

Exporting without Resizing

Even when you export without resizing, the Resolution box is still active. In this case it won't affect the size or quality of your file at all. Nonetheless, if you are exporting to send to a printing service, go ahead and put 300 (or what they print at), to avoid any possible confusion at your printer's. If you are meeting anyone else's specifications, go ahead and put what they say. Otherwise I ignore this setting.

PPI versus DPI

These terms are often confused. **DPI** refers to how many *dots of ink* your printer prints per inch. For example, in my printer driver software, if I set Quality to its highest setting, my printer will print 2880×1440 **DPI**, so at 360 **PPI**, it will lay down $2880/360 \times 1440/360 = 8 \times 4 = 32$ dots of ink for every pixel it prints. This is the only context in which DPI is relevant.