

# A Lesson on Pixels

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When your camera captures a picture, it is capturing a **set number of pixels**. A 3.2 MB camera captures 3million2hundredthousand pixels, 5MB 5 million, etc. That is the **MAXIMUM number of pixels** it can capture. However, once it captures them, it has to store them on your card. This can take up a lot of space.

SO - it allows you to capture FEWER than the maximum, hence the lower settings.

MY CAMERA:

**5.0** megapixels

**Maximum capture: 2592pixels across, 1944 pixels down.**

**Second best: 2048 pixels across, 1536 pixels down.**

**Third best: 1600 pixels across, 1200 pixels down.**

**least best: 640 pixels across, 480 pixels down.**

## **DPI vs. PPI**

DPI is actually a printing term, referring to the number of dots the printer will put on an inch of paper to make the print.

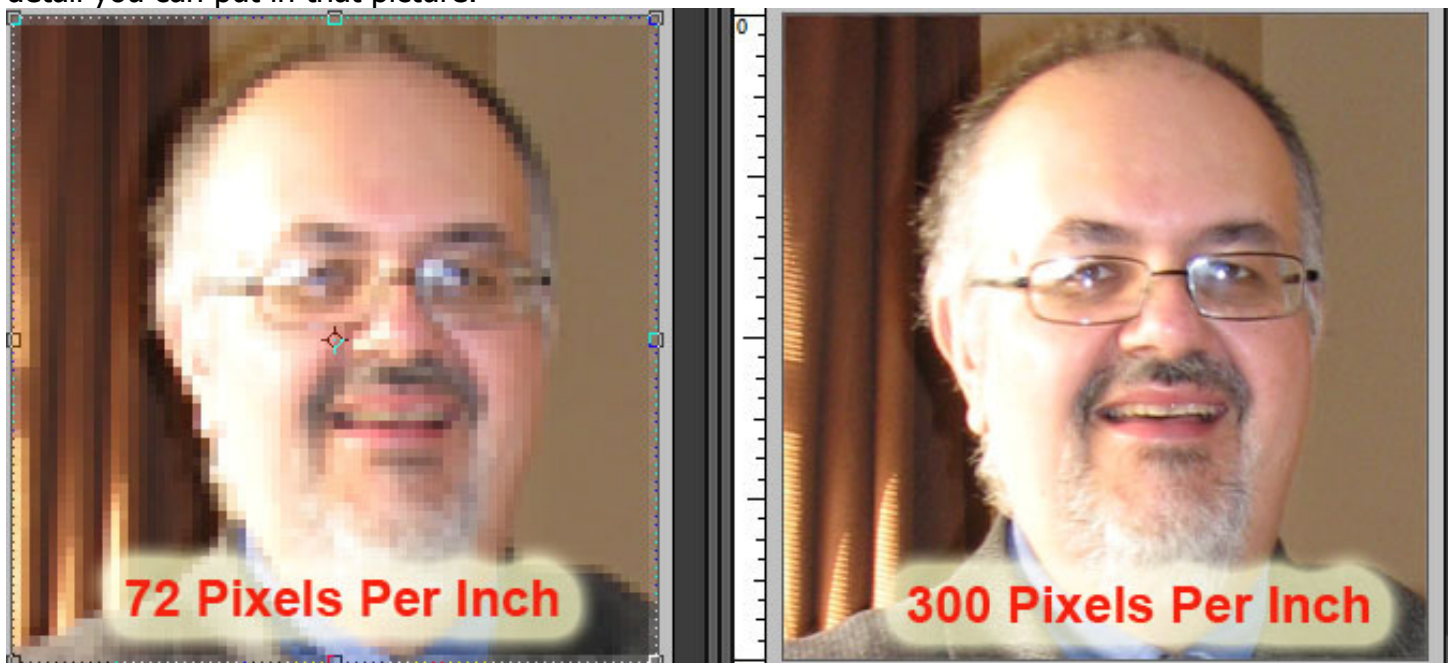
PPI is an imaging term, referring to the number of pixels displayed in an inch.

Dots and Pixels are interchangeable for our purposes, but since we are working with pixels not printers, we'll use ppi = Pixels Per Inch.

72ppi = 72 pixels across, 72 pixels down in each inch = total 5184 pixels per square inch.

300 ppi = 300 across, 300 down, total 90,000 pixels per square inch.

Now those of you who cross stitch, know that the more little squares make up your picture, the more detail you can put in that picture.



SO: say I take a picture at maximum capture with my camera - 2592 across, 1944 down.

IF I view it at **300 dpi**, you would divide 2592 by 300 = **8.64 inches across**  
divide 1944 by 300 = **6.48 inches down THIS IS THE MAXIMUM DIMENSION I can get at 300 ppi.**

IF I open it up at **72 dpi**, you would divide 2592 by 72 = **36 inches across**  
divide 1944 by 72 = **27 inches down. THIS IS THE SIZE this image would display on a screen or television.**

**\*\* This is why sometimes you get a photo via email, and it's so huge you have to scroll around to see it! The person sending it sent the FULL RESOLUTION image – all 2592 pixels across! So on your screen, those pixels take up 36 inches! Since your screen is most likely not more than 12" across, you have to scroll to see the rest of the image.**

SAME number of pixels, but at 72 dots per inch, you have spread them out widely. If you squish them together so you are looking at 300 of them in one inch, you have a much smaller photo. **When you are opening up a photo in image editing software (PS,PSE, whatever), it is choosing for you a dpi to view it at.** PSE will preset the Print Resolution at 300, Screen Resolution at 72ppi. Other versions of PS and PSE may not offer both settings as default, I would set yours to 300ppi if you only have one option.

***Why not capture fewer pixels?*** The more pixels you capture, the larger you can print that photo at a higher dpi. Obviously, more is better, for you have more options for output.

If you are ONLY going to use your photos on a screen (website, DVD slide show) then you can get away with capturing fewer pixels in the first place. But what if you change your mind and want a print? That 4" wide print at 72 pixels per inch will print at LESS THAN ONE INCH! Better to capture more pixels and reduce the size for publishing on the web.

***BUT - what about space on your card?*** Let's talk about JPEG (Joint Photographic Engineering Group). This is a group of engineers that got together at the dawn of digital photography when it became evident that one standard was needed so that all devices could read all compressed images. The standard method they agreed upon is called jpeg and is indicated with a file extension of .jpg.

JPEG compresses those pixels so you can get more on your card. Some cameras will allow you to change to a higher compression, so you can squeeze more photos on the card. That's kinda like stuffing clothes in your suitcase. If you fold them nicely, and don't pack them too tightly, they will come out with minimum wrinkles. If you insist on folding them really tiny, and smashing as many as you can get in there, they will come out all wrinkled up. SO, you don't want to squish those photos up any more than you have to.

So get out the manual, and look it up. If you have a DSLR, your camera allows you not only to set the resolution (number of pixels captured) but the compression settings. Be sure you are set on the least amount of compression your camera will allow to keep those images wrinkle-free!

***BUT AGAIN- what about space on your card?*** I have a 2 gigabyte card. It holds over 500 photos at highest resolution. It was less than \$20. We actually have 2 of them, for vacations, but I rarely use the second. 500 is the most I need to be shooting at one event (I did max out a card at the second grade show last year!) without dumping them to the computer. Your camera card is not meant to be

a long term storage device, you should be cleaning it off regularly. It is too vulnerable to being damaged, having your camera lost or stolen, to keep photos on there longer than necessary. So go get a nice big card, just large enough for one event, and clean it off in a timely manner!

**OUTPUT** - the dpi (dots per inch) or ppi (pixels per inch) is the number of those captured pixels you are squishing into one inch. The more per inch, the sharper your photo will look. The fewer per inch, the larger your print will be, (unless you crop it) and fuzzier it will look.

**Photographic prints are printed at 300 dpi** (usually). So are good press prints. **Your computer or TV can only show a MAXIMUM of 72 dpi**, so if you are NEVER going to print or enlarge or crop, working at 72 dpi is fine. I can never be sure when I will want to print a photo, so I just do everything at 300, and switch it down for uploading to the web.

**As a rule, it is a good idea to capture as MANY pixels as you can.** I leave my camera set on HIGH all the time. I'd rather have too much information, than not enough. That way, if I want to crop it to show the kid in the corner with a goofy look on his face, and enlarge that photo to 4x4 inches, it won't be all grainy. 'Cause you never know when you will need to crop the heck out of a photo!

**This is why print designers create at 300 dpi** - because if I make a tag to be 1"x2", and you want one that is 4"x8", when you enlarge it I want it to still look OK. If I made that tag at 72 dpi, then when you enlarged it, it would have only 18 pixels per inch, which you could clearly see each pixel.