

Title: MegaPixels Equal ‘Mega-Puzzles’

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Sideword: Technology

Notes:

Whenever I am asked for advice on which digital camera to buy, the question of how many megapixels (MPs) is the one most frequently asked, and is in fact often the first one asked. What usually follows is “I saw this 7 megapixel camera on sale for \$50 less than a 5 megapixel one. It must be a good deal—right?” While more MPs can be of benefit in certain situations, it is not necessarily a measure of a better camera nor does it assure better-quality photographs. Why is this, and what should one look for in a digital camera?

The vast majority of digital cameras are purchased for family and vacation photos to capture those special and precious moments. Typically, they will be printed either at a local outlet or at home in sizes similar to conventional film cameras: 4 by 6 inches, 5 by 7 inches, and occasionally 8 by 10 inches. It may surprise you to learn that even a humble 3 or 4 MP camera is more than up to this task.

A megapixel is a measure of the number of photocells, or sites on the sensor of the camera. MPs are calculated by multiplying the width by the height. Thus, a sensor 2,816 by 2,112 yields 5,947,392 total pixels or, rounded off, 6 megapixels. An MP is, in fact, an area measurement, like a square foot. As the total area increases, it seems as if you have a lot more, but in terms of usable dimensions it’s not that significant. Think of comparing two rooms, the first 150 square feet and the second 204 square feet. Although 204 sounds like a lot more and is over 30 percent bigger than the first room, we are actually comparing a 15 by 10 square foot space against one that is 17 by 12. That means only an extra foot all round the room; while it is bigger, it’s not really substantially more usable space.

Bringing us back to our photographs, let’s see how prints change with MPs. Most high-quality prints need 300PPI (pixels per inch). For home use, it is perfectly possible to get acceptable prints using only 200PPI. Most home printing software and all professional lab equipment use a technique called *interpolation* to fill in the missing pixels when lower than 300PPI images are used. The following table shows a range from 4 to 10 megapixels and the print sizes at 200 and 300PPI.

Mega Pixels	Pixels			Maxium Print Size (Inches)			
	Width	Height	W x H	300PPI		200PPI	
4	2272	1704	3871488	7.57	5.68	11.36	8.52
5	2592	1944	5038848	8.64	6.48	12.96	9.72
6	2816	2112	5947392	9.39	7.04	14.08	10.56
8	3264	2468	8055552	10.88	8.23	16.32	12.34
10	3872	2592	10036224	12.91	8.64	19.36	12.96

We can see from this table that 4 MPs will easily yield a high quality 5 by 7, and at 200PPI, an 8 by 10. It also shows how small increases in MP density, much

like our “larger room” example, don’t buy you much in terms of greater print size. If you are looking for an upgrade only for extra MPs, then you need to jump by at least 3MP to gain any reasonable return in terms of increased print size.

There are a couple of primary situations in which more MPs are desirable. The first relates back to our discussion on print sizes. If you intend to create a large number of high-quality poster-size prints, then you’ll want more pixels—the more you have, the larger you can blow up your photographs without sacrificing quality through “pixilation.” The second advantage is when you want to crop your photos—cutting out a smaller section of a full image. If you start with a 10MP image, you could crop out 50 percent of the area and still be left with 5MPs, plenty for a good 5 by 7 print.

As we have seen, megapixels are important, but are not the overriding attribute of a digital camera when it comes to shooting better photographs. There are a number of key factors to take into account when deciding on which camera is best for you, not least of which is making sure you get the best value for your money, or all the features you need or want at a price that makes sense to you. When making your decision, you should consider at least the following factors as they relate to your personal needs.

- **Size** Small enough to fit in your pocket, or large enough to fill a backpack
- **Features** Advanced shooting modes, battery life, movie modes
- **Lens** Quality glass, optical zoom, wider apertures, ability to use filters
- **ISO range** Noise, low light capabilities
- **Sensor** Type, sensitivity, physical size
- **Image Stabilization** great for long zoom and indoor/low-light shots

We don’t have time to go into each of these items this month, but watch out for future articles or the Ask the Techno-file column. Until next time, I wish you good shooting and the hope that megapixels are no longer mega-puzzles to you.