

Memory Card Math

I'm often asked "How many pictures will fit on my card". The answer depends on several factors including the camera model, the number of mega pixels your camera has and the settings of your camera. These settings include image size and image quality.

The best way to answer this is to use a specific example with the following assumptions:

- Camera model – Panasonic Lumix TZ3
- File type is JPEG
- Mega Pixels are 7
- Image size set to maximum
- Quality set to highest

Under these assumptions, the average file or picture size is 2.85 mega pixels. The reason I say "average" is that the files are compressed and the amount of compression depend on the amount of details in the scene. Below is snap shot of 20 pictures on my memory card and their individual file sizes. The camera settings were the same for all pictures but the scenes were different. Notice that the sizes vary almost by a 2 to 1 ratio. The figure below shows the contents of my memory card after 20 pictures were taken.





















Name	Date taken	Size
 P1010879.JPG	3/4/2008 11:14 AM	1,871 KB
 P1010881.JPG	3/11/2008 10:11 AM	1,880 KB
 P1010868.JPG	2/27/2008 11:10 PM	1,902 KB
 P1010880.JPG	3/11/2008 10:11 AM	1,913 KB
 P1010884.JPG	3/16/2008 2:46 PM	2,055 KB
 P1010858.JPG	2/26/2008 11:25 AM	2,084 KB
 P1010809.JPG	2/17/2008 3:05 PM	2,715 KB
 P1010883.JPG	3/11/2008 10:12 AM	2,744 KB
 P1010746.JPG	11/28/2007 12:17 ...	2,757 KB
 P1010882.JPG	3/11/2008 10:12 AM	2,871 KB
 P1010805.JPG	2/17/2008 2:54 PM	2,994 KB
 P1010799.JPG	2/17/2008 2:50 PM	3,084 KB
 P1010807.JPG	2/17/2008 2:55 PM	3,222 KB
 P1010801.JPG	2/17/2008 2:52 PM	3,307 KB
 P1010800.JPG	2/17/2008 2:51 PM	3,357 KB
 P1010804.JPG	2/17/2008 2:54 PM	3,387 KB
 P1010803.JPG	2/17/2008 2:53 PM	3,399 KB
 P1010806.JPG	2/17/2008 2:54 PM	3,406 KB
 P1010808.JPG	2/17/2008 2:55 PM	3,428 KB
 P1010802.JPG	2/17/2008 2:52 PM	3,438 KB

Figure 1 Twenty images taken with the same camera settings, sorted by file size.

With an average file size of 2.85 mega pixels we can now calculate how many will fit on a 2 giga bit card. We simply divide 2 billion by 2.85 million and get approximately 700. When your camera estimates how many

pictures you have remaining, it uses a number close to the maximum or in the case of my camera, 3.5 mega pixels. This is a conservative estimate so that consumers don't feel cheated if their cards hold less than advertised.

This table below is only an estimate since your camera will vary somewhat.

Camera Rating in Mega Pixels	Memory Card Capacity (highest settings used for file size and quality)		
	1 giga byte card	2 giga byte card	4 giga byte card
10 mega pixels	250	500	1000
7 mega pixels	350	700	1400
5 mega pixels	500	1000	2000

Note:

With the Panasonic Lumix TZ3, if the image quality is changed to the lower quality (there are only 2 choices), the capacity of the memory card more than doubles.

Let's go a step further and calculate how many pictures will fit on a CD or DVD. If the average file size for my camera is 2.85 mega bytes and a CD holds 700 megabytes, than a CD will hold 700 divided by 2.85 or approximately 250 pictures. The table below shows these numbers for several camera sizes for CD's and DVD's. Remember, this is only an estimate.

Camera Rating in Mega Pixels	CD (700 mega bytes)	DVD (4.7 giga bytes)
	Capacity in pictures	
5 mega pixels	350	2380
7 mega pixels	250	1700
10 mega pixels	175	1190