File Storage Capacity by Bits and Bytes					
	bit	**byte**	**Kilobyte**	**Megabyte**	**Gigabyte**
bit	1	8	8,192	8,388,608	8,589,934,592
byte	8	1	1,024	1,048,576	1,073,741,824
Kilobyte	8,192	1,024	1	1,024	1,048,576
Megabyte	8,388,608	1,048,576	1,024	1	1,024
Gigabyte	8,589,934,592	1,073,741,824	1,048,576	1,024	1
Terabyte	8,796,093,022,208	1,099,511,627,776	1,073,741,824	1,048,576	1,024
Petabyte	9,007,199,254,740,990	1,125,899,906,842,620	1,099,511,627,776	1,073,741,824	1,048,576
Exabyte	9,223,372,036,854,780,000	1,152,921,504,606,850,000	1,125,899,906,842,620	1,099,511,627,776	1,073,741,824
Zettabyte	9,444,732,965,739,290,000,000	1,180,591,620,717,410,000,000	1,152,921,504,606,850,000	1,125,899,906,842,620	1,099,511,627,776

File Storage Capacity by Powers of Two (Base 2)										
	bit	**byte**	**Kilobyte**	**Megabyte**	**Gigabyte**	**Terabyte**	**Petabyte**	**Exabyte**	**Zettabyte**	**Yottabyte**
bit	2^0	2^3	2^13	2^23	2^33	2^43	2^53	2^63	2^73	2^83
byte	2^3	2^0	2^10	2^20	2^30	2^40	2^50	2^60	2^70	2^80
Kilobyte	2^13	2^10	2^0	2^10	2^20	2^30	2^40	2^50	2^60	2^70
Megabyte	2^23	2^20	2^10	2^0	2^10	2^20	2^30	2^40	2^50	2^60
Gigabyte	2^33	2^30	2^20	2^10	2^0	2^10	2^20	2^30	2^40	2^50
Terabyte	2^43	2^40	2^30	2^20	2^10	2^0	2^10	2^20	2^30	2^40
Petabyte	2^53	2^50	2^40	2^30	2^20	2^10	2^0	2^10	2^20	2^30
Exabyte	2^63	2^60	2^50	2^40	2^30	2^20	2^10	2^0	2^10	2^20
Zettabyte	2^73	2^70	2^60	2^50	2^40	2^30	2^20	2^10	2^0	2^10
Yottabyte	2^83	2^80	2^70	2^60	2^50	2^40	2^30	2^20	2^10	2^0

New IEC Standard		
bit	bit	0 or 1
byte	B	8 bits
kibibit	Kibit	1024 bits
kilobit	kbit	1000 bits
kibibyte (binary)	KiB	1024 bytes
kilobyte (decimal)	kB	1000 bytes
megabit	Mbit	1000 kilobits
mebibyte (binary)	MiB	1024 kibibytes
megabyte (decimal)	MB	1000 kilobytes
gigabit	Gbit	1000 megabits
gibibyte (binary)	GiB	1024 mebibytes
gigabyte (decimal)	GB	1000 megabytes
terabit	Tbit	1000 gigabits
tebibyte (binary)	TiB	1024 gibibytes
terabyte (decimal)	TB	1000 gigabytes
petabit	Pbit	1000 terabits
pebibyte (binary)	PiB	1024 tebibytes
petabyte (decimal)	PB	1000 terabytes
exabit	Ebit	1000 petabits
exbibyte (binary)	EiB	1024 pebibytes
exabyte (decimal)	EB	1000 petabytes

The basic unit used in computer data storage is called a *bit* (**b**inary dig**it**). Computers use these little *bits*, which are composed of ones and zeros, to do things and talk to other computers. All your files, for instance, are kept in the computer as binary files and translated into words and pictures by the software (which is also ones and zeros). This two number system, is called a "binary number system" since it has only two numbers in it. The decimal number system in contrast has ten unique digits, zero through nine.

But although computer data and file size is normally measured in binary code using the binary number system (counted by factors of two 1, 2, 4, 8, 16, 32, 64, *etc)*, the prefixes for the multiples are based on the metric system! The nearest binary number to 1,000 is 2^10 or 1,024; thus 1,024 bytes was named a Kilobyte. So, although a metric "kilo" equals 1,000 (e.g. one kilogram = 1,000 grams), a binary "Kilo" equals 1,024 (e.g. one Kilobyte = 1,024 bytes). Not surprisingly, this has led to a great deal of confusion.

In December 1998, the International Electrotechnical Commission (IEC) approved a new IEC International Standard. Instead of using the metric prefixes for multiples in binary code, the new IEC standard invented specific prefixes for binary multiples made up of only the first two letters of the metric prefixes and adding the first two letters of the word "binary". Thus, for instance, instead of Kilobyte (KB) or Gigabyte (GB), the new terms would be kibibyte (KiB) or gibibyte (GiB). The new IEC International Standards, which are not commonly used yet, are included below.

Here's a few more details to consider: Although data storage capacity is generally expressed in binary code, many hard drive manufacturers (and some newer BIOSs) use a decimal system to express capacity.

For example, a 30 gigabyte drive is usually 30,000,000,000 bytes (decimal) not the 32,212,254,720 binary bytes you would expect.

- Another trivial point is that in the metric system the "k" or "kilo" prefix is always lowercase (*i.e.* kilogram = kg *not Kg*) but since these binary uses for data storage capacity are not properly metric, it has become standard to use an uppercase "K" for the binary form.
- When used to describe Data Transfer Rate, bits/bytes are calculated as in the metric system
    - Kilobits per second is usually shortened to kbps or Kbps. Although technically speaking, the term kilobit should have a lowercase initial letter, it has become common to capitalize it in abbreviation (e.g. "56 Kbps" or "56K"). The simple "K" might seem ambiguous but, in the context of data transfer, it can be assumed that the measurement is in bits rather than bytes unless indicated otherwise.