# Units of Storage

*CLNandi (Dr)*

Learn this off by heart

# Units

**These units describe how much disk space, disk capacity or disk storage is used.**

| Name | Size | Example | Other information |
|---|---|---|---|
| Bit | A Single Binary Digit (1 or 0) | Each bit is represented either as a 1 or 0. | (1) Bit stands for Binary Digit.<br>(2) It is the smallest unit of data a computer can store. |
| Nibble | This is a group of 4 bits | 0001<br>0010<br>0011 | (1) Nibbles are handy when converting between binary and hexadecimal.<br>(2) A Nibble will only cover decimal numbers between 0 and 15. |
| Byte | A collection of 8 bits (2 Nibbles) | 1000 1000 | A byte can store 1 character such as ‘A’, or ‘e’ or ‘£’ |
| Kilobyte (kB) | 1000 bytes ($10^3$ bytes) | Text Files | Actually a kB is 1024 bytes, but in an exam to make calculations easier we say it is 1000 bytes. |
| Megabyte (MB) | 1000,000 bytes ( $10^6$ bytes, million bytes) | Storage space on a CD | |
| Gigabyte (GB) | 1000,000,000 ($10^9$ bytes) | Hard drive sizes | Typically hold over 3,000 books. |
| Terabyte (TB) | 1000,000,000,000 ($10^{12}$ bytes) | Ever increasingly so hard drives are expressed in TB. | Can store (1) Over 300 hours of video<br>(2) 1,000 copies of the Encylopedia Britannica. |
| Petabyte(PB) | 1000,000,000,000,000 ($10^{15}$ bytes) | This is a massive amount of storage. | It can hold (1) Over 2000 years worth of songs, back to back |

# Question 1

**(1) Convert 4,800 MB into GB**

# Question & Answer 1

**(1) Convert 4,800 MB into GB**

**Answer**

**First of all we can convert to Bytes**

$$1\ GB = 10^9\ Bytes$$

$$1\ MB = 10^6\ Bytes$$

$$1\ GB = 10^3 * 10^6\ Bytes$$

$$1\ GB = 10^3 *\ MB$$

$$1\ MB = 1/10^3\ \ GB$$

$$4{,}800\ MB = \ 4{,}800 / 10^3\ GB$$

$$= 4.8\ GB$$

# Question 2

**(2) Convert 800 TB into GB**

# Question & Answer 2

**(1) Convert the following:-**

**Convert 800 TB into GB**

**Answer**

**1 TB = $10^{12}$ Bytes**

**1 GB = $10^{9}$ Bytes**

**So 1 TB = $10^{3}$ * $10^{9}$ Bytes**

**1 TB = $10^{3}$ GB**

**400 TB = 400 * $10^{3}$ GB**

**400 TB = 4 * $10^{5}$ GB**

**400 TB = 40,000 GB**

# Question 3

**(3) Order the following units from largest to smallest.**

**GB, bit, PB, byte, nibble, MB**

# Question & Answer 3

**(3) Order the following units from largest to smallest.**

**GB, bit, PB, byte, nibble, MB**

**Answer**

**(i) PB** (1 PB is $10^{15}$ bytes)

**(ii) MB** (1 MB is $10^{6}$ bytes)

**(iii) GB** (1 GB is $10^{9}$ bytes)

**(iv) Byte** (1 Byte is 8 bits)

**(v) Nibble** (1 Nibble is 4 bits)

**(vi) Bit** (1 or 0)

# Question 4

**(4) Alex transfers some videos to a computer for editing,**

**(i) The computer has 1 GB of free storage.**

**Calculate the number of videos that can be stored on the computer if each video is  100 MB in size.**

**Please show your working.**

# Question & Answer 4

**(4) Alex transfers some videos to a computer for editing,**

**(i) The computer has 1 GB of free storage.**

**Calculate the number of videos that can be stored on the computer if each video is 100 MB in size.**

**Please show your working.**

**Answer**

**1 GB = $10^3$ MB**

**So if each video is 100 MB in size and the amount of storage free is $10^3$ MB**

**The number of videos which can be stored is: $10^3$ /100**

**= $10^3$ / $10^2$**

**= 10 videos**

# *That's all for now folks!*

***CLNandi (Dr)***