**PC Metrics**

1. The size of a windows batch file is 100 bytes. What is the file size in bits?

100\*8 = 800 bits

1. The size of a windows system file is 7200 bits. What is the file size in bytes?

7200/8 = 900 bytes

1. What is the file size - in bytes - of an image which is 1250 pixels by 1000 pixels, with the colour information encoded as 16 bits per pixel?

1250\*1000 \*16 = 20,000,000/8 to 2.5x106 = 2500000 bytes

1. What is the aspect ratio of a monitor capable of displaying an image of 2560 x 1440?

2560 / 1440 = 16:9

1. A monitor with an aspect ratio of 4:3 is capable of displaying 2048 pixels horizontally. How many lines does the monitor display?

¾ \* 2048 = 1536

1. A 2 TB hard drive has 5 platters, what is the storage capacity of each platter?

2,000,000,000 / 5 = 400 GB

1. For the following hard drives, what is the precise percentage of the cache to the disk capacity?
   1. 2 TB, 200 MB cache

0.01% (divided by each other)

* 1. 4 TB, 600 MB cache

0.015%

* 1. 8 TB, 1024 MB cache

0.0128%

1. Three hard drives spin at the following speeds. How long does it take for each of them to complete one revolution of their platters?
   1. 5400 RPM

**60/5400 (formula for resolution per second)**

0.01 s

* 1. 7200 RPM

60/7200

0.0083

* 1. 10,000 RPM

0.006

1. A hard drive with a spin speed of 7200 RPM, commences spinning at time = 0, at time = 1.326 ms what is the angle that the disk has rotated by relative to its start position?
   1. In degrees

Revolutions per second = 7200 / 60 = 120

T = 1 / 120 = 8.333 ms

|  |  |  |
| --- | --- | --- |
| θ | = | 1.326 x 10-3 |
| 360 | 8.333 x 10-3 |

θ = 57.280

* 1. In Radians

Degrees / 2PIE = 57.28/360 = 1 Radian

1. A computer's memory chip takes 166.6  ps to read/write data per cycle. What is the clock frequency of the memory?

Frequency = 1/166.6 x10-12

6 Ghz

1. Three single core microprocessors have the following clock speeds. For each of them, what is the duration of a one clock cycle?
   1. 1 MHz

1/T

0.000001 1ms

* 1. 4 GHz

0.0000000025 25ps

* 1. 2 THz

0.0000000000005 0.5ps

1. An optical storage disk can store 10 PB of data, the disk is 1 mm in thickness. For every moment since you have been born, a High Definition (HD) video (1,280×720 pixels with the colour information encoded as 24 bits per pixel and a frame rate of 24 fps of your life has been recorded. How high is the stack of optical storage disks used to store the video of your life to date?

1280\*720\*24\*599594400 = 1.326206878 X1016 / 10 x1015 = 1.3 MM

1. For a student who is exactly 20 years old, the age in seconds is 60 x 60 x 24 x 365.25 x 20 = 631152000 s

1 second of video data = 1280 x 720 x 24 x 24 = 530841600 b

20 years of data = (631152000 x 530841600) / 8 = 41.88 PB

Number of disks = 41.88 x 1015 / 10 x 1015 = 4.18 disks. Therefore 5 disks are required and the height of the disks = 5 mm

<http://staffweb.cms.gre.ac.uk/~sp02/PC/65977solutions.htm>