**A manufacturer wishes to design a hard disk with a capacity of 30 GB or more (using the standard definition of 1 GB = 2^30 bytes). If the technology used to manufacture the disks allow 1024-byte sectors, 2048 sectors/track, and 4096 tracks/platter, how many platters are required? (Assume a fixed number of sectors per track)**

30 GB = 30 \* 2^30 bytes

1 patter = 2^10 \* 2^11 \* 2^12 = 2^33 bytes

30 GB / 1 patter = 30 / 2^3 = 3.75 ≈ 4 patters

**Researchers have been investigating systems in which the operating system deliberately places the most-frequently-used files on the outer tracks of a system’s hard disk to improve performance.**

**a) Why would this improve performance?**

When head is reading file on disk, head can read more on the outer tracks than inner tracks in the same time, which means read faster.