

QUANTITY OF INFORMATION

- How many bits can be stored on a **CD** of 700 MB?
 $1 \text{ MB} \dots\dots\dots 1000 * 1000 \text{ byte}$
 $700 \text{ MB} \dots\dots\dots 700 * 1000 * 1000 * 8 \text{ bit} = 5600000000 \text{ bit}$
- How many KiB can be stored on a CD of 800 MiB?
 $1 \text{ MB} \dots\dots\dots 1000 \text{ kB}$
 $800 \text{ MB} \dots\dots\dots 800 * 1000 \text{ kB} = 800000 \text{ kB}$
- A book has on average 2500 characters per page. We know that a character is stored in a byte. **How many book pages fit on a floppy disk 1440 kB? But on a 700 MB CD? But on a 4 GB DVD?**
 $1 \text{ character} \dots\dots\dots 1 \text{ b}$
 $2500 \text{ characters} \dots\dots\dots 2500 \text{ b (one page)}$
 $1 \text{ kB} \dots\dots\dots 1000 \text{ B}$
 $1440 \text{ kB} \dots\dots\dots 1440 * 1000 \text{ B} = 1440000 \text{ B}$
 $144000 \text{ b} / 2500 \text{ b} = 576 \text{ pages}$

Similar for CD and DVD!

- If a book of 220 pages is on average 2000 characters per page and a character is stored in a byte, what size should be the device needed to store 350 books?
 $\text{b per one book} = 220 * 2000 = 440000$
 $\text{b per 350 books} = 440000 * 350 = 154000000 \text{ b} = 154000 \text{ kB} = 154 \text{ MB}$
- How many characters per page has a book of 500 pages stored on a file of 1MB (we know that one character is stored on 8 bytes)?
 $1 \text{ MB} = 1000000 \text{ b}$
 $1000000 / 500 = 2000 \text{ b per page}$
 $1 \text{ character} = 1 \text{ b} \rightarrow 2000 \text{ words per page}$
- How many books of 512 pages (2560 characters per page, a character is stored in a bite) can be stored on a CD of 700 MB? But on 4 GB DVD?
 $512 \text{ pages} * 2560 \text{ b} = 1310720 \text{ b} = 1311 \text{ kB} = 1.31 \text{ MB (one book)}$
 $700 \text{ (MB)} : 1.31 \text{ (MB)} = 534 \text{ (books)}$

Similar for DVD!

- How many medical images with the average size of 150 kB can be stored on a CD of 700 MB? But on an 800 MB CD? But on a 4 GB DVD?
 $150 \text{ kB} = 0.15 \text{ MB}$
 $700 \text{ (MB)} : 0.15 \text{ (MB)} = 4667 \text{ (images)}$

Similar for 800 MB CD & 4 GB DVD!

- Find the solution for the following operations:
 $120 \text{ kB} + 120 \text{ kB} = 240 \text{ kB} = 240 * 1024 \text{ (bytes)} = 245760 \text{ bytes}$
 $200 \text{ kB} + 1024 \text{ B} = 200 \text{ kB} + 1 \text{ kB} = 201 \text{ kB}$
 $100 \text{ MB} + 1000 \text{ kB} + 1 \text{ GB} = 100 * 1024 + 1000 + 1 * 1024 * 1024 = 1151976 \text{ kB}$
 $128 \text{ B} + 1020 \text{ o} = 128 \text{ B} + 1020 \text{ B} = 1148 \text{ B} = 1.12 \text{ kB}$