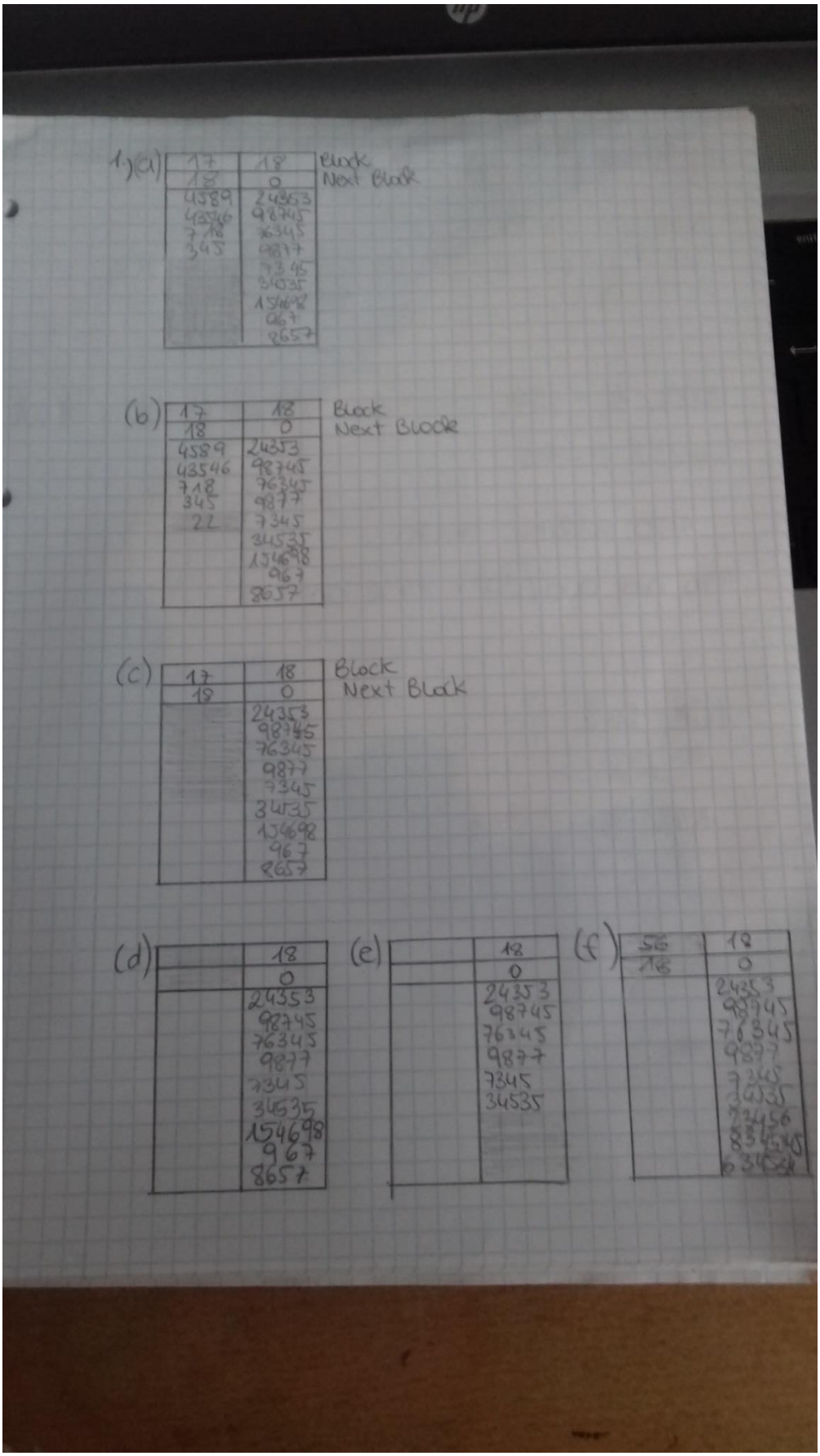
1.)


1.)(a)
17
18
Block
18
0
Next Block
4589
43546
718
345
24353
98745
76345
9877
7345
34535
154698
967
8657
(b)
17
18
Block
18
0
Next Block
4589
43546
718
345
22
24353
98745
76345
9877
7345
34535
154698
967
8657
(c)
17
18
Block
18
0
Next Block
24353
98745
76345
9877
7345
34535
154698
967
8657
(d)
18
0
24353
98745
76345
9877
7345
34535
154698
967
8657
(e)
18
0
24353
98745
76345
9877
7345
34535
(f)
56
18
0
24353
98745
76345
9877
7345
34535
23456

2.) Memory Footprint

1)

Block size: 2 KB

Size of block number 32 bit

2048/4=512→ 512 numbers of 32-bit size can be stored in 1 block

First entry holds pointer to next block of free blocks→ 511 free blocks can be stored in 1 block

1TB Disk has approx. 970 million blocks

970 000 000/511 = 1 898 238,75 → 1,8 million blocks required

2)

Block size: 1 KB

Size of block number 32 bit

1024/4=256→ 256 numbers of 32-bit size can be stored in 1 block

First entry holds pointer to next block of free blocks→ 255 free blocks can be stored in 1 block

1GB Disk has approx. 970 thousand blocks

970 000 /255 = 3 803,92 → 3,8 thousand blocks required