1. Assuming the page size of 4 KB and that the page table entry takes 4 bytes, how many levels of page tables would be required to map a 64-bit address space if each page table fits into a single page?

2. A computer with a 32-bit address uses a two-level page table. Virtual addresses are split into a 9-bit top-level page table field, an 11-bit second level page table field, and an offset. How large are the pages and how many are there in the address space?

3. Suppose that a 32-bit virtual address is broken up into four fields, a, b, c, and d. The first three are used for a three-level page table. The fourth field, d, is the offset. Does the number of pages depend on the sizes of all four fields? If not, which ones matter and which ones do not?