

1. Consider a logical address space of 64 pages of 1024 words each, mapped onto a physical memory of 32 frames.
 - a. How many bits are there in the logical address?
 - b. How many bits are there in the physical address?

2. Assuming a 1-KB page size, what are the page numbers and offsets for the following address references (provided as decimal numbers):
 - a. 3085
 - b. 42095
 - c. 215201
 - d. 650000
 - e. 2000001

3. Consider a computer system with a 32-bit logical address and 4-KB page size. The system supports up to 512 MB of physical memory. How many entries are there in each of the following?

4. Consider a paging system with the page table stored in memory.
 - a. If a memory reference takes 50 nanoseconds, how long does a paged memory reference take?
 - b. If we add TLBs, and 75 percent of all page-table references are found in the TLBs, what is the effective memory reference time?
(Assume that finding a page-table entry in the TLBs takes 2 nanoseconds, if the entry is present.)

5. Consider the following segment table:

Segment	Base	Length
0	219	600
1	2300	14
2	90	100
3	1327	580
4	1952	96

What are the physical addresses for the following logical addresses?

- a. 0,430
- b. 1,10
- c. 2,500
- d. 3,400
- e. 4,112