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1.

a. 2 ^ 36

b. 2^23

c. 2^36

d. 2^43

2.

The multi-level page table saves memory because most of the pages are inactive at any given time. The unused data would just be taking up space in the memory that could be used for something else. This idea is associated with temporal locality of reference.

3.

The dirty bit signifies that the data about to be removed from memory has been changed and has not be saved to storage yet. So, if the dirty bit is not set, or just read from the system, it doesn’t have to go through the process of saving the data back when the memory block is being replaced.

4.

a. 200 words

b. 600 words

c. 1000 words

d. 700 words

5.



6 Page faults

6.



7 Page Faults

7.

a. False, the system that we create make differences nonzero with an offset. However we could always design a system that uses the same virtual address as a corresponding physical address. Most of the time we have more virtual addresses than physical addresses, so this could be implemented.

b. True, but it wouldn’t be practical. The addresses would point to secondary storage.

c. False, if the page is too big, it takes up too much space in memory. A good balance is important, so that memory can still hold data.