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a) Option 1 to increase the number of available memory blocks is more effective since an expanded memory allows you to sort a larger amount of R at a time in memory. The doubling of the available memory is more effective than just a 20% increase in I/O speed since the number of I/O's depend on a log with base M, where M represents the amount of available memory.

b) Option 2 is more effective since finding the entries where R.A > 100 requires many I/O's to scan through R since there is no index. The additional memory would not do anything since all you are checking is if a single condition is true, but the increased I/O speed reduces the time to transfer all the blocks.