Week 3 Quiz

Q1.

Consider the following complete tree:

26	12	32	24	18	28	47	10	9

What's the parent of the 9 node?

    A. 26

    B. 24

    C. 18

    D. 10

Q2.

Say we have the following list, which is in the middle of being sorted by heapsort:

`[49, 25, 31, 10, 6, *52*, *55*]`

The heap has five elements; the last two elements in the list represent numbers that have already been put into order by heapsort.

After the next iteration of heapsort, what will the list look like?

    A. `[31, 25, 6, 10, 49, 52, 55]`

    B. `[31, 25, 10, 6, 49, 52, 55]`

    C. `[31, 10, 25, 6, 49, 52, 55]`

    D. `[6, 10, 25, 31, 49, 52, 55]`

Q3.

Typically, the heapsort algorithm runs in time `O(nlogn)`, as it must both (1) convert an arbitrary list to a heap, and then (2) repeatedly remove items from the heap to sort the list.

Say we could write a modified version of heapsort that can assume that its input is *already* a heap, and so it can skip step (1) of the algorithm. What would the running time of this modified version of heapsort be?

    A. `O(1)`

B. O(logn)

C. O(n)

D. O(nlogn)