9.3-1

9.3-4.

The median of the median of 7-sized group will be at least less than $3\lfloor \frac{1}{2}\lfloor \frac{n}{7} \rfloor \rfloor = \frac{3}{14}n$ elements still, it's greater than $\frac{3}{14}n$ of elements, so we never call it $\frac{10}{14}n$ elements

$T(n) \leq T(\frac{n}{7}) + T(\frac{10}{14}n + 1) + O(n)$

Use substitution method, we have (guess $T(n) < cn$,

$T(n) \leq T(n/7) + T((10/14)n + 1) + O(n) \quad k, n \geq k$

$\leq cn(\frac{1}{7} + \frac{10}{14}) + O(n)$, then it's $O(n)$

$= O(n)$

Use size 3 instead, we have

$T(n) = T(\lceil n/3 \rceil) + T(4n/6) + O(n) \geq T(n/3) + T(2n/3) + O(n)$

It's greater than $cn \lg n$. $cn \lg n$, so it's no longer linear.

9.3-9

① If n is odd, we can be like in figure 9.1.

then y coordinate can be chosen by the median of all medians. which means of the y-coordinate of the wall

② However, n is even, order ste