Array S of n distinct numbers:

| 9 | 5 | 34 | 1 | 2 | 33 | 12 | 4 | 15 | 3 | 6 | 8 | 10 | 18 | 0 |

$n = 15$ here.

Choose a set R of size $n^{3/4}$ by drawing that many things uniformly at random, independently.

| 5 | 12 | 15 | 5 | 10 | 3 | 33 |

Sort R:

| 3 | 5 | 5 | 10 | 12 | 15 | 33 |

a $\sqrt{n}$ $median(R)$ $\sqrt{n}$ b

- We can see in time $O(n)$ that there are 5 things in S less than a, and 3 things in S larger than b.

Find all the things in S between a and b (time $O(n)$), to form a list T:

| 5 | 9 | 12 | 15 | 6 | 8 | 10 |

- The median is the 8'th smallest thing in S, which is the $8 - 5 = 3$'rd smallest thing in T.

If $|T| < 4n^{3/4}$, sort T:
(otherwise output FAIL)

| 5 | 6 | 8 | 9 | 10 | 12 | 15 |

- Return | 8 |

If this calculation shows that the median is not in T, output FAIL.