

$\text{data } l_i < \text{data } r_i$
 $\text{data } x_i < \text{data } s_i$

20	11	17	8	10	18	7	6	3	9	2	5	13
0	1	2	3	4	5	6	7	8	9	10	11	12



$$T = \frac{2^0}{2^1} + \frac{2^1}{2^2} + \frac{2^2}{2^3} + \dots + \frac{2^{n-1}}{2^n}$$

$p = 6$

$$T \leq N \sum x_i^2 \leq 2N$$

[illegible]

$$\frac{1}{2} = p$$

30 22 20 13 11 10 9 8 7 6 5 -2 -3 -4

$$N + \text{Klog}(n)$$

$$10^9 + 10^3 \log 10^9$$

$$10^9 + (10^3)(9) \neq 10^{12}$$

$$N \log(K)$$

$$2.10^9 \text{ kg}$$

```
public int remove() { // O(logn)
    int n = this.arr.size();
    int rv = this.arr.get(0);

    swap(0, n - 1);
    this.arr.remove(n - 1);

    downHeapify(0);
    return rv;
}
```