$$\frac{b[0] - a[0]}{b - a}$$

arr →

	0	1	2	3	4 — Name
	3	1	5	0	4 — Score

2	4	0	1	3
5	4	3	1	0

0		3
1		1
2		5
3		0
		4

ans →

	0	1	2	3	4
	B	4	G	5	S	→ Rank

Jatin	3	6	S
Jyoti	1	4	B
Suman	5	4	G
Sunam	0	2	4

i

score[i]

Suman	5	G
Jatin	3	S
Jyoti	1	B
Sunanda	0	4

→ Sorting

```java
public static String[] ranks(int scores[], int n){

    String[] result = new String[n];

    PriorityQueue<int[]> max = new PriorityQueue<>((a,b) -> b[0] - a[0]);

    for(int i = 0; i < n; i++){
        max.add(new int[]{scores[i], i});
    }

    // assign rank

    for(int i = 0; i < n; i++){
        int score[] = max.poll();

        int index = score[1];
        if(i == 0){
            result[index] = "Gold Medal";
        }
        else if(i == 1){
            result[index] = "Silver Medal";
        }
        else if(i == 2){
            result[index] = "Bronze Medal";
        }
        else{
            result[index] = String.valueOf(i + 1);
        }
    }
    return result;
}
```

```java
Scanner s = new Scanner(System.in);
int n = s.nextInt();
int scores[] = new int[n];

for(int i = 0; i < n; i++){
    scores[i] = s.nextInt();
}

String ranks[] = ranks(scores,n);

for(String rank : ranks){
    System.out.print(rank + " ");
}
}
```
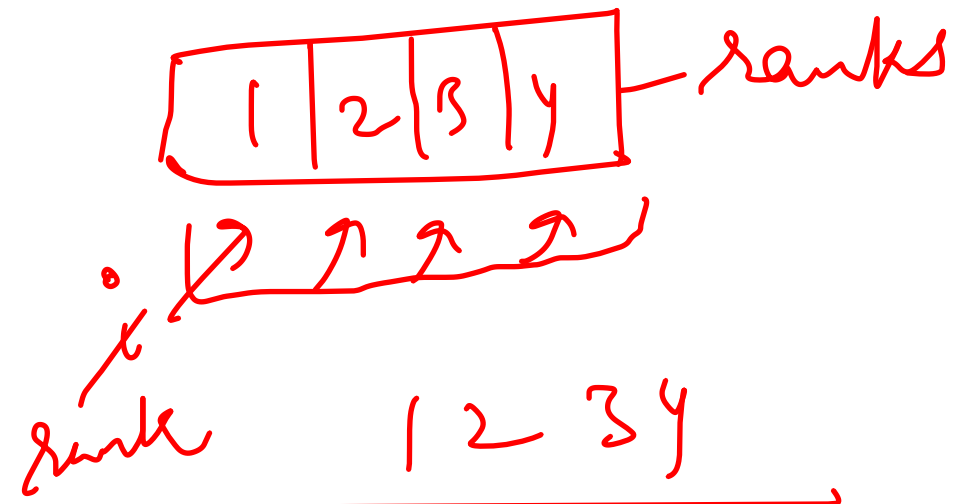
$$TC \Rightarrow O(n \log n)$$

$$SC \Rightarrow O(n)$$

| 1 | 2 | 3 | 4 | ← ranks

```
for(int i = 0; i < ranks.length; i++)
    ranks[i] + " ")
```

rank   1 2 3 4

$\underline{k=3}$

2	1	<u>7</u>	4	2

2	1	3	<u>4</u>	2	— ①

| 2 | 1 | <u>3</u> | 2 | 2 | — ② |

| 2 | 1 | 1 | 2 2 | — ③ |

$$7 + 4 + 3 \Rightarrow \boxed{14}$$

$$TC \Rightarrow O(n \log n)$$

$$SC \Rightarrow O(1)$$

```
Scanner s = new Scanner(System.in);
int n = s.nextInt();
int k = s.nextInt();

PriorityQueue<Integer> pq = new PriorityQueue<>((a,b) -> b-a);

for(int i = 0; i < n; i++){
    int dia = s.nextInt();
    pq.add(dia);
}
int total = 0;

for(int i = 0; i < k && !pq.isEmpty(); i++){
    int max = pq.poll();

    total += max;

    int newDia = (int) (max)/2;

    if(newDia > 0){
        pq.add(newDia);
    }
}
System.out.println(total);
}
```