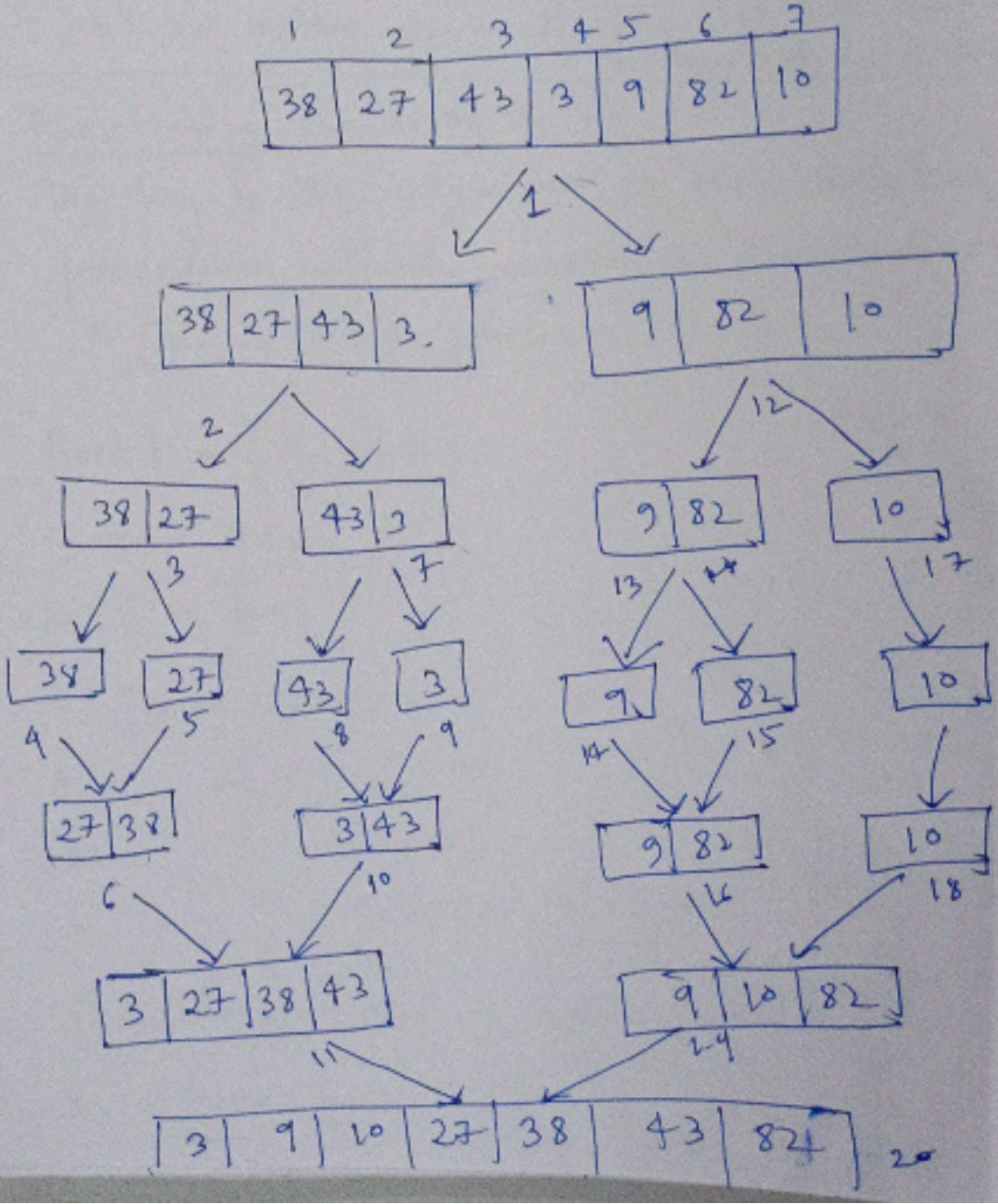
□ Merge-Sort(A, p, r)

```
1  if p<r
2      q = ⌊(p+r)/2⌋
3      Merge-Sort(A, p, q)
4      Merge-Sort(A, q+1, r)
5      Merge(A, p, q, r)
```

we make the initial call

Merge-Sort(A, 1, A.length)



Merge (A, p, q, r)

1 $n_1 = q - p + 1$

2 $n_2 = r - q$

3 let $L[1 \ldots n_1+1]$ and $R[1 \ldots n_2+1]$ be new arrays

4. for $i = 1$ to n_1

5 $\quad L[i] = A[p+i-1]$

6 for $j = 1$ to n_2

7 $\quad R[j] = A[q+j]$

8 $L[n_1+1] = \infty$

9 $R[n_2+1] = \infty$

10 $i = 1$

11 $j = 1$

12 for $k = p$ to r

13 $\quad$ if $L[i] \leq R[j]$

14 $\quad\quad A[k] = L[i]$

15 $\quad\quad i = i+1$

16 $\quad$ else $A[k] = R[j]$

$\quad\quad j = j+1$