Worksheet – Merge Sort

You are using the Merge Sort algorithm on the following array:

0	1	2	3	4	5	6	7
4	3	11	24	9	23	0	18

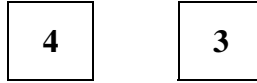| 0	1	2	3	4	5	6	7
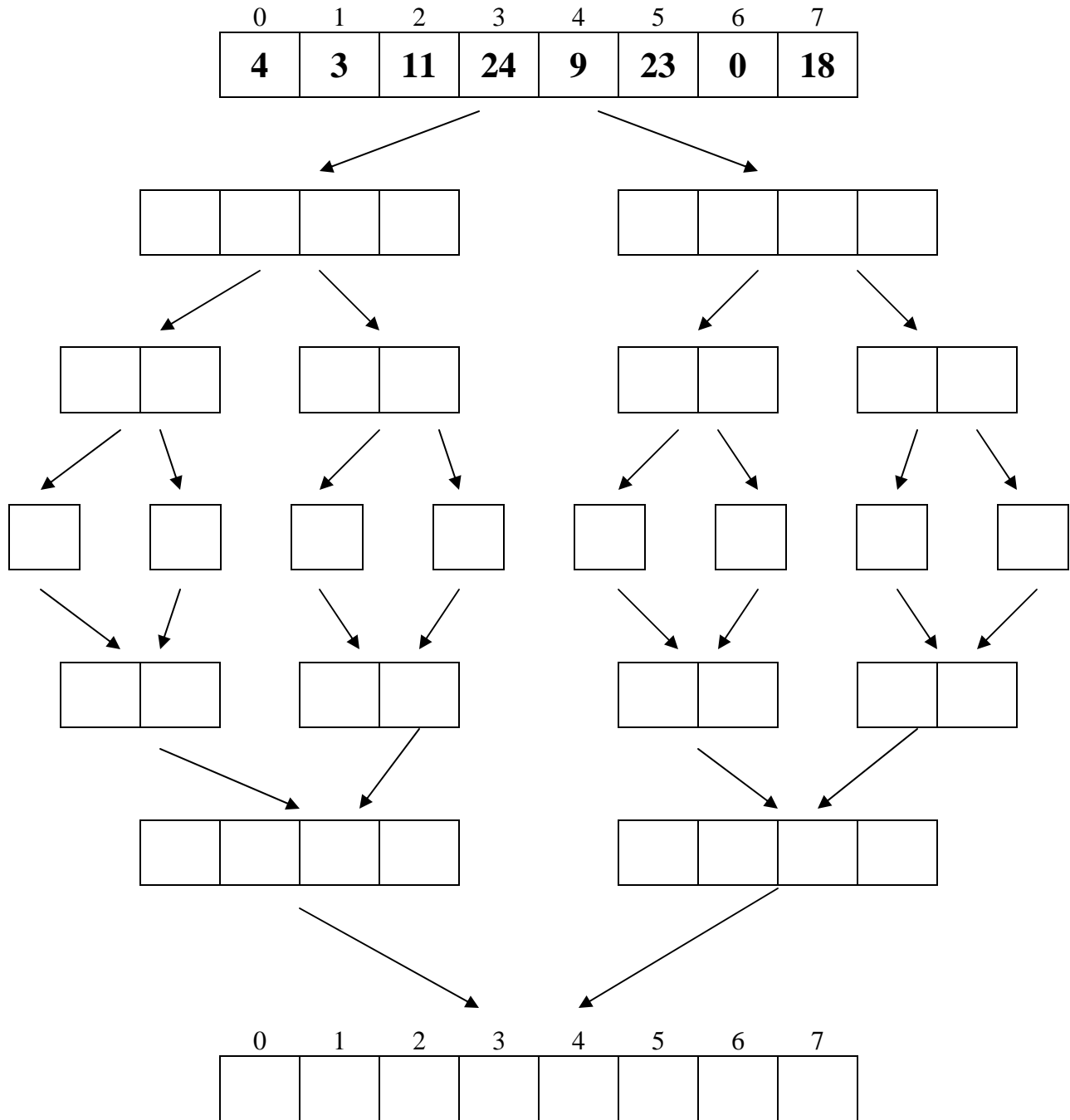
1) Label each of the arrows with a number (1-21) to indicate the order in which they happen. Merge arrows happen two at a time.

2) In regards to the array size, when do we split the array?

3) What must be true of the two arrays involved when we merge them back together?

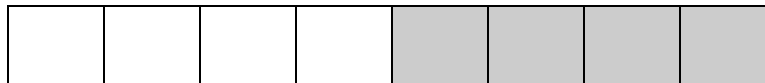4) Show how two arrays of size 1 are merged back together in order:

4		3

4 > 3, so 3 is merged in

	(grey)

5) Show each number being added one at a time (the first is given):

3	4	11	24		0	9	18	23

0 <= 3, so 0 is merged in

0	(grey)	(grey)	(grey)	(grey)	(grey)	(grey)	(grey)

		(grey)	(grey)	(grey)	(grey)	(grey)	(grey)

			(grey)	(grey)	(grey)	(grey)	(grey)

				(grey)	(grey)	(grey)	(grey)

					(grey)	(grey)	(grey)

						(grey)	(grey)

							(grey)

Include the reason each number is added to the left of the array (the first is given). Note that the grey spots are not yet filled.