Game 3 – Salad Bar

A salad bar has a row of six different containers of salad dressing numbered 1 through 6, with 1 being on the left. Each container has exactly one type of salad dressing in it–French Dressing, Ranch Dressing, or Thousand Island Dressing. The following conditions apply:

No container has in it the same type of dressing as any adjacent container.

Container 1 does not contain Ranch Dressing.

Container 4 does not contain French Dressing.

If container 2 does not contain Thousand Island Dressing, then container 3 does.

There are at most two containers of each type of salad dressing.

1. Which pair of containers CANNOT contain the same type of salad dressing?

A. 1 and 6
B. 1 and 5
C. 2 and 3
D. 3 and 5
E. 4 and 6

2. If container 2 has the same type of salad dressing as container 4, then which container must contain French Dressing?

A. 1
B. 2
C. 3
D. 4
E. 5

3. If container 4 contains Thousand Island Dressing, then which one of the following could be true?

A. There is French Dressing in container 2.
B. There is Ranch Dressing in container 2.
C. There is French Dressing in container 3.
D. There is French Dressing in container 5.
E. There is Thousand Island Dressing in container 6.

4. If there is Thousand Island Dressing in container 6, there must be Ranch Dressing in containers

A. 1 and 3
B. 1 and 4
C. 2 and 4
D. 2 and 5
E. 3 and 5

5. If there is no Ranch Dressing in container 2 or 3, then there must be

A. either French Dressing or Ranch Dressing in container 3
B. either Thousand Island Dressing or French Dressing in container 4
C. either French Dressing or Thousand Island Dressing in container 5
D. either Thousand Island Dressing or Ranch Dressing in container 5
E. either French Dressing or Thousand Island Dressing in container 6

6. If there is Ranch Dressing in container 4, then how many different orders of salad dressing could there be at the salad bar?

A. one
B. two
C. three
D. four
E. five

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1. C
2. A
3. D
4. C
5. C
6. D

Question 1 is C because of the fourth rule–they can't both have Thousand Island. The second question is a little trickier. If 2 and 4 have the same type of dressing, it must be either Thousand Island or Ranch (rule 4), and containers 1 and 2 must contain something different than this. Since two of the remaining six containers are next to each other (5 and 6), they cannot contain the same type of dressing, and therefore, 1 and 3 cannot contain the same type of dressing. This means 1 and 3 must have Ranch dressing and French dressing, and since 1 cannot contain Ranch, it must contain French.

On Question 3, you can deduce based on the fourth rule that there must be Thousand Island in container 2, since there isn't any in container 3 (because 3 is next to four, which has Thousand Island in it). This means that there are two Ranch and two French in the other four spots, and you have the same deduction you made earlier–between 1 and 3, 1 is French and 3 is Ranch. This excludes four answers. Question 4 requires you to deduce that there must be no Thousand Island in 4 (because then you'd have three thousand Islands with the spot 2 and 3 rule), which means there is Ranch in 4 (no French under the rules), which means there must be Ranch in 2, since it can't be in 3, 5 or 1. Question 5 is the old inference you've probably already made–that the Ranch dressing needs to be split up. It can't go in 1, so if it's not in 2 or 3, it must be in 4 and 6–meaning Thousand Island or French is there.

Question 6 is simply a matter of inferring the four possible combinations you can have–three if the Thousand Island dressing is in spot 3 (two if Ranch is second, one if French is second), and one if French dressing is in spot 3.

This is a "multiple" game where the elements can go more than once. When there is, as here, a numerical limit on the times the elements can go, usually it's pretty important to the game.