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Stocking the Shelves

Your Uncle Bob, who owns a toy store, has offered you a weekend job restocking his shelves. On your first day he asks you to reorganize the truck and car aisle. Uncle Bob gives you the following packing slip from the shipping department:

	YELLOW	RED	BLUE	WHITE
Dump Trucks	27	12		
Bulldozers	4		10	10
Race Cars		3	25	12

You ask Uncle Bob how he wants them arranged on the shelf, and he says "You can put them anyway you want; after all, there can't be that many ways to arrange them."

1. You decide to arrange them in section by color. You have some magnetic signs to use on the shelves, which look like this:

YELLOW	RED	BLUE	WHITE

How many different ways could you arrange the sections, if all the

vehicles of the same color count as one choice? (For example, YRBW is one way.)

Explain your answer with either a diagram or a verbal explanation.

2. Uncle Bob comes back and tells you that you must keep all of the vehicles that are of the same type together on the shelf. Using the signs below, now how many ways can you arrange the sections?

DUMP TRUCKS	BULLDOZERS	RACE CARS

Extension:

3. A new shipment comes in, which includes purple and green vehicles as well as the original colors. Now how many ways are there to arrange the vehicles by color? Explain your answer.