Moving Day

go figure

Leslie Armstrong runs a sporting goods store. Business has been good and the store needs to move to a larger space to accommodate all its customers. Leslie has hire five moving trucks – we can call them Trucks 1 through 5 – to transport all the supplies, and she is now deciding what trucks will carry what supplies.

She has 9 identical basketballs in stock on moving day, as well as 61 volleyballs, 88 baseballs, and 323 golf balls. She can assign any of the trucks any number of each type of ball, as long as every ball ends up on one of the trucks. For example, Leslie might make the following assignment:

Truck	Basketballs	Volleyballs	Baseballs	Golf balls
1	4	27	4	1
2	2	3	0	4
3	0	7	4	16
4	3	1	80	64
5	0	23	0	238

Or she might give all 9 basketballs to Truck 3, all 61 volleyballs and 88 baseballs to Truck 4, and all 323 golf balls to Truck 1, and then fill up Trucks 2 and 5 with other things (catcher's mitts, whitewater rafts, the snack bars that sit near the checkout counter, etc.).

How many ways can Leslie assign all the basketballs, volleyballs, baseballs, and golf balls to the five trucks? (Hint: start with just the basketballs.)