

Permutations and Combinations: Four Vehicles Problem

Given you have the following four vehicles

- 1 seat motorcycle
- 2 seat sidecar
- 3 seat golf cart
- 4 seat car

And you have 10 people, 5 of them are children and the other 5 are adults. Only an adult can be a driver of a vehicle.

Create a table of all possible permutations, assuming that seating order does not matter (it only matters what vehicle they are in).

Note, because we do not care about seating arrangements, we will need to account for reciprocals. For example, Child 1 and Child 2 are both passengers in the 3 seat golf cart below, but this should be considered 1 possibility as the seating arrangement does not matter.

Driver	Seat 1	Seat 2
Adult 1	Child 1	Child 2
Adult 1	Child 2	Child 1

So... what is the answer? 7,200

And we can arrive there by the following equation, which takes the number of driver permutations and multiplies it by the number of passenger permutations.

$$\text{Total Arrangements} = \frac{5!}{1!} * \frac{6!}{3! * 2! * 1! * 0!} = 7200$$

Here is a link to my solution. Note this links to my GitHub repository.

[GitHub – Four Vehicles Puzzle](#)

Happy coding!