

Episode 12

Combinatorics

European section, season 01

The rules

- 10 questions.
- 3 minutes per question.
- At the end of the quizz, group papers are marked by the teacher.

Question 1

For every meal, a student has to choose between 6 starters, two main courses, two sides, 5 cheeses or yoghurt and 3 desserts. What is the number of possible meals ?

Question 2

A man wears only black and white. Every morning he picks randomly one pair of shoes (black or white), one pair of trousers (black or white), one shirt (black or white) and one overcoat (black or white). What is the number of possible outfits ?

Question 3

In horse racing terminology, a trifecta is a parimutuel bet in which the bettor must predict which horses will finish first, second, and third in exact order. If there are 12 horses in the race, how many different choices are there ?

Question 4

Every morning, a man living in London picks randomly an umbrella before going out in the rain. He can choose between three different ones : one green, one red and one black. What is the number of possible choices for one week ?

Question 5

Mario Kart Wii is a famous racing game developed by Nintendo. In this game, the player must choose between 4 modes, 24 Nintendo characters, 8 vehicules for each character, 8 cups and 4 races per cup. What is the number of possible races ?

Question 6

A group of 120 people have to elect a board made of a Chairman, a vice-Chairman and a secretary. How many possible boards are there ? Anyone can be elected, but a different person must be elected for each post.

Question 7

Every week, a teacher picks randomly a pupil in a class of 36 to wipe away the board after each lesson. What is the number of possible choices for 5 weeks ?

Question 8

Ten people have to be arranged in a line and handed out numbers from 1 to 10. What is the number of possible arrangements ?

How many distinct car licence plates are there consisting of seven characters, the first two and last two being letters and the middle ones digits ?

Question 10

*As I was going to St Ives
I met a man with seven wives
Each wife had seven sacks
Each sack had seven cats
Each cat had seven kits
Kits, cats, sacks, wives
How many were going to St Ives?*