Same Number!

A class of thirty students all secretly choose a number between 1 and 225.

Imagine the teacher asks students to read out their numbers one at a time. What is the probability that the first two students both read out different numbers?

If the first two students have both read out different numbers, what is the chance that the third student will read out another new number?

What is the probability that the first three students all read out different numbers?

If the first three students have all read out different numbers, what is the chance that the fourth student will read out another new number?

What is the probability that the first four students all read out different numbers?

What is the probability that the whole class of thirty students read out different numbers?

What is the probability that at least two students have written the same number?

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Extension:

There is a famous problem called The Birthday Problem:

How many people do you need in a room so that the chance that there will be two people with the same birthday is greater than 50%?

One way to solve this is to imagine that people enter the room one at a time, and that each new person doesn't share a birthday with anyone already there...

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