

Please write ***Your name:*** _____

You may leave your answer in terms of sums, products, factorials or binomial coefficients, and fractions. There is NO need to simplify. NO calculators are needed.

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(1) Suppose that we are to assign 12 police officers to 5 patrols, 4 in station, 3 in schools. How many different assignments can we organize?

(2) Suppose that we are to assign 12 police officers to 4 patrols, 3 in station, 2 in schools, and remaining to traffic control. How many different assignments can we organize in this case?

(3) Expand $(2ab + 3)^4$ using the binomial theorem.

(4) A password can be made up of 2 digits and 2 letters.

(a) How many different passwords are possible?

(b) How many are possible if all the digits are odd?

(c) How many can be made in which digits are different and letters are different?