MDM 4U

PERMUTATIONS with SOME IDENTICAL ITEMS

$$\frac{n!}{a!\ b!\ c!}$$

n = total number of objects,

a, b, c = different items, "a" items of one type, "b" items of another type, and "c" items of another type.

①   How many arrangements of numbers are possible using 1, 1, 1, 2, 2, 3, 3, 3?

②   How many arrangements of 8 poetry books, 10 Hamlet books and 15 cookbooks are possible?

③   How many arrangements of letters are possible in the word "MISSISSAUGA"?