

MAT Problems F - Counting (1 page; 19/9/17)

[Note: These are all included in the STEP Problems]

(1) A 4-digit password is made up of numbers from 0 to 4, where the numbers can be repeated, but have to be ordered from largest to smallest. Show that there are 70 possible passwords.

(2) Given 6 pairs of twins, in how many ways can they be placed in 3 teams of 4, such that no team contains any pair of twins?

(3) Five poorly-behaved pupils are required to sit in the front five places in a classroom. Angus insists on sitting next to Bruce, Chantal refuses to sit next to Deborah, and Emily is happy to sit anywhere. In how many different ways can they take their seats?

A 24 B 12 C 30 D 20 E 6