Name: _____

Permutations

Exercise 1: Calculate P_n^n

Exercise 2: Evaluate:

1) P_6^{12}
2) P_5^6
3) P_1^7
4) P_5^9
5) P_4^8
6) P_{14}^{14}
7) P_2^4
8) P_{996}^{1000}

Exercise 3: In how many ways can the first and the second place be awarded to 10 people?

Exercise 4: Five different books are on a shelf. In how many different ways could you arrange them?

Exercise 5: What happens if we did have 10 pictures and wanted to choose our three most favourite to hang up? How many permutations would we have then?

Exercise 6: Express P_4^{10} in terms of factorials.

Exercise 7: Find the number of permutations of:

1) 9 elements of the same kind taken 3 at a time.
2) 10 elements of the same kind taken 4 at a time.
3) 9 elements of the same kind taken 4 at a time.
4) 7 elements of the same kind taken 3 at a time.
5) 6 elements of the same kind taken 3 at a time.