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Question: Find the sum of all five digit numbers that can be formed by using the digits $1, 2, 3, 4, 5$ (no repetition)

Solution: We can form 5! five digit numbers. Out of these 120 numbers, each digit will repeat for 24 times in each digit place(i.e. unit place, 10th place, 100th place, 1000th place, 10000th place).

For each digit place the total is $(1 + 2 + 3 + 4 + 5) * 24 = 360$.

Required answer $= 360 * 10^4 + 360 * 10^3 + 360 * 10^2 + 360 * 10^1 + 360 * 10^0$

$=360(10^4 + 10^3 + 10^2 + 10 + 1) = 360 * 11111 = 3999960$