Arrangements and Groups

1. How many ways can you arrange 4 people in a line?

2. If I have 3 different pairs of pants, 3 different shirts, and 3 different hats, how many outfits can I make?

3. How many different four-digit numbers are there? (An example of a four-digit number is 3429.)

4. How many different three-digit numbers are there that do NOT contain the number 7?

5. How many groups of 3 can you make out of a group of 6?

Answers: 1) 24 (4 x 3 x 2 x 1) 2) 27 (3 x 3 x 3) 3) 9000 (the first digit can be 1 through 9; each remaining digit can be 0-9): 9×10×10×10 4) 648 (8 possibilities for the first digit; 9 possibilities for 2nd and 3rd digit; 8x9x9 = 648)
5) 20 (6×5×4×3×2×1)÷(3×2×1)×(3×2×1)