SOME CONNECTIONS BETWEEN SEQUENCES AND SETS OF OBJECTS: PART I

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Write the first 6-8 terms of the following sequences. Assume that the sequences start at $n = 0$, write a formula for a_n if possible. The OLEIS sequence number can be found by going to the web site 'The On-Line Encyclopedia of Integer Sequences' and entering the first terms which you calculated. It is possible that not all of the sequences below will be found the OLEIS (in which case just answer "not found" for the sequence number but try to get a formula anyway) and the ones that depend on k cannot be entered in the OLEIS (in which case just try to come up with a formula). Also note that for some of the sequences $a_n = 0$ for large n. :

(1) The number of solutions to the equation $x_1+x_2 = n$ with $x_i \geq 0$: _____
Formula? $a_n =$ _____ OLEIS sequence number _____

(2) The number of solutions to the equation $x_1+x_2+x_3 = n$ with $x_i \geq 0$: _____
Formula? $a_n =$ _____ OLEIS sequence number _____

(3) The number of solutions to the equation $x_1 + x_2 + x_3 + \cdots + x_k = n$ (k is fixed) with $x_i \geq 0$: _____
Formula? $a_n =$ _____ OLEIS sequence number _____

(4) The number of solutions to the equation $x_1 = n$ with $i \geq x_i \geq 0$: _____
Formula? $a_n =$ _____ OLEIS sequence number _____

(5) The number of solutions to the equation $x_1+x_2 = n$ with $i \geq x_i \geq 0$: _____
Formula? $a_n =$ _____ OLEIS sequence number _____

(6) The number of solutions to the equation $x_1+x_2+x_3 = n$ with $i \geq x_i \geq 0$: _____
Formula? $a_n =$ _____ OLEIS sequence number _____

(7) The number of solutions to the equation $x_1+x_2+\cdots+x_k = n$ with $i \geq x_i \geq 0$: _____
Formula? $a_n =$ _____ OLEIS sequence number _____

(8) The number of solutions to $x_1 + x_2 + x_3 + x_4 = n$ with $i \geq x_i \geq 0$ with x_4 odd and x_3 even. _____
Formula? $a_n =$ _____ OLEIS sequence number _____

(9) The number of solutions to $x_1 + x_2 + x_3 + x_4 = n$ with $i \geq x_i \geq 0$ with x_4 even and x_3 even. _____
Formula? $a_n =$ _____ OLEIS sequence number _____

(10) The number of solutions to $x_1 + x_2 + x_3 + x_4 = n$ with $i \geq x_i \geq 0$ with x_4 odd and x_3 odd. _____
Formula? $a_n =$ _____ OLEIS sequence number _____

(11) The number of solutions to $x_1 + x_2 + x_3 + x_4 = n$ with $i \geq x_i \geq 0$ with x_4 even and x_3 odd. _____
Formula? $a_n =$ _____ OLEIS sequence number _____

(12) The number of words of length n created with the letters a, b, c with at least half of the letters are a's. _____
Formula? $a_n =$ _____ OLEIS sequence number _____

(13) The number of words of length n created with the letters a, b, c with no consecutive letters being equal. _____
Formula? $a_n =$ _____ OLEIS sequence number _____

(14) The number of words of length n created with the letters a, b, c with all c's appearing after all of the b's. _____
Formula? $a_n =$ _____ OLEIS sequence number _____

(15) The number of words of length n created with the letters a, b, c with at least as many a's as b's and at least as many b's as c's. _____
Formula? $a_n =$ _____ OLEIS sequence number _____

(16) The number of ways of placing 2 numbered balls in n boxes _____
Formula? $a_n =$ _____ OLEIS sequence number _____

(17) The number of ways of placing n numbered balls in 2 numbered boxes. _____
Formula? $a_n =$ _____ OLEIS sequence number _____

(18) The number of ways of placing n numbered balls in 2 indistinguishable boxes. _____
_____
Formula? $a_n =$ _____ OLEIS sequence number _____

(19) The number of ways of placing n indistinguishable balls in 2 indistinguishable boxes. _____
_____
Formula? $a_n =$ _____ OLEIS sequence number _____