4 thought

Problem ID: 4thought

Write a program which, given an integer n as input, will produce a mathematical expression whose solution is n. The solution is restricted to using exactly four 4's and exactly three of the binary operations selected from the set $\{*, +, -, /\}$. The number 4 is the ONLY number you can use. You are not allowed to concatenate fours to generate other numbers, such as 44 or 444.

For example given $n = 0$, a solution is $4 * 4 - 4 * 4 = 0$. Given $n = 7$, a solution is $4 + 4 - 4 \ / \ 4 = 7$. Division is considered truncating integer division, so that 1/4 is 0 (instead of 0.25). Assume the usual precedence of operations so that $4 + 4 * 4 = 20$, not 32. Not all integer inputs have solutions using four 4's with the aforementioned restrictions (consider $n = 11$).

Hint: Using your forehead and some forethought should make an answer forthcoming. When in doubt use the fourth.

Input

Input begins with an integer $1 \leq m \leq 1000$, indicating the number of test cases that follow. Each of the next m lines contain exactly one integer value for n in the range $-1000000 \leq n \leq 1000000$.

Output

For each test case print one line of output containing either an equation using four 4's to reach the target number or the phrase `no solution`. Print the equation following the format of the sample output; use spaces to separate the numbers and symbols printed. If there is more than one such equation which evaluates to the target integer, print any one of them.

Sample Input 1	Sample Output 1
5 9 0 7 11 24	4 + 4 + 4 / 4 = 9 4 * 4 - 4 * 4 = 0 4 + 4 - 4 / 4 = 7 no solution 4 * 4 + 4 + 4 = 24