Sign Wave

Problem code: SIGNWAVE

Read problems statements in Russian.

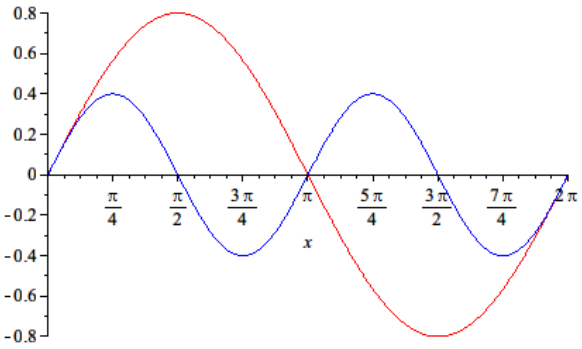
There are **S** sine functions and **C** cosine functions as following:

$a_i \sin(2^i x)$, $0 \le x \le 2\pi$, for $i = 0, 1, ..., S-1$,

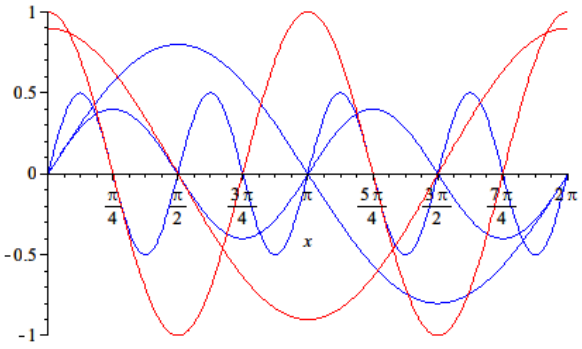
$b_j \cos(2^j x)$, $0 \le x \le 2\pi$, for $j = 0, 1, ..., C-1$,

where a_i, b_j are some positive constants (and note that the answer of this problem does not depend on a_i and b_j).

For example, the following figures show the case of **S = 2, C = 0** and the case of **S = 3, C = 2**.



This figure shows the case of **S = 2, C = 0**. There are two sine functions $a_1 \sin(x)$ denoted by the red line, and $a_2 \sin(2x)$ denoted by the blue line.



This figure shows the case of **S = 3, C = 2**. There are five functions $a_1 \sin(x)$, $a_2 \sin(2x)$, $a_3 \sin(4x)$, $b_1 \cos(x)$ and $b_2 \cos(2x)$. In the figure, three sine functions are denoted by blue lines, and two cosine functions are denoted by red lines.

Chef wants to find the number of the points on the **x**-axis such that at least **K** functions through the points.

Input

The first line of input contains an integer **T**, denoting the number of test cases. Then **T** test cases follow.

Each test case contains one line. The line contains three space-separated integers **S, C, K**.

Output

For each test case, print the number of the points on the **x**-axis such that at least **K** functions through the points.

SUCCESSFUL SUBMISSIONS

User	Score	Mem	Lang	Solution
shivamtyagi	100.000	2M	C	View
stanoje	100.000	2M	C	View
ag970221	100.000	2M	C	View
rishabh1132	100.000	2M	C	View
guruji	100.000	2M	C	View
ucinight	100.000	2.6M	C++ 4.3.2	View
aj5774	100.000	2.6M	C++ 4.3.2	View
coder_ankur	100.000	2.6M	C++ 4.3.2	View
nanaya	100.000	2.6M	C++ 4.3.2	View
knsn	100.000	2.6M	C++ 4.3.2	View
igcstar	100.000	2.6M	C++ 4.3.2	View
dip94_2013	100.000	2.6M	C++ 4.3.2	View

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Constraints and Subtasks

- **1 ≤ T ≤ 200**

Subtask 1: 15 points
- **0 ≤ S ≤ 12**
- **0 ≤ C ≤ 12**
- **1 ≤ K ≤ 25**

Subtask 2: 30 points
- **0 ≤ S ≤ 50**
- **C = 0**
- **1 ≤ K ≤ 50**

Subtask 3: 25 points
- **0 ≤ S ≤ 50**
- **0 ≤ C ≤ 50**
- **K = 1**

Subtask 4: 30 points
- **0 ≤ S ≤ 50**
- **0 ≤ C ≤ 50**
- **1 ≤ K ≤ 100**

Example

Input:
4
2 0 1
2 0 2
3 2 1
3 2 3

Output:
5
3
9
5

Explanation

Example 1. This is the case of **S = 2, C = 0**. So the situation is the same as the first figure in the statement. There are **5** points on the **x**-axis such that at least **1** function through the points. That is, **x = 0, π/2, π, 3π/2, 2π**.

Example 2. This is also the case of **S = 2, C = 0**. So the situation is the same as the first figure in the statement. There are **3** points on the **x**-axis such that at least **2** functions through the points. That is, **x = 0, π, 2π**.

Example 3. This is the case of **S = 3, C = 2**. So the situation is the same as the second figure in the statement. There are **9** points on the **x**-axis such that at least **1** function through the points. That is, **x = 0, π/4, π/2, 3π/4, π, 5π/4, 3π/2, 7π/4, 2π**.

Example 4. This is the case of **S = 3, C = 2**. So the situation is the same as the second figure in the statement. There are **5** points on the **x**-axis such that at least **3** functions through the points. That is, **x = 0, π/2, π, 3π/2, 2π**. For example, three sine function through the point **x = 0**, and two sine functions and one cosine function through the point **x = π/2**.

Author:	chandubaba
Tester:	laycurse
Date Added:	6-01-2015
Time Limit:	1 sec
Source Limit:	50000 Bytes
Languages:	ADA, ASM, BASH, BF, C, C99 strict, CAML, CLOJ, CLPS, CPP 4.3.2, CPP 4.9.2, CPP14, CS2, D, ERL, FORT, FS, GO, HASK, ICK, ICON, JAVA, JS, LISP clisp, LISP sbcl, LUA, NEM, NICE, NODEJS, PAS fpc, PAS gpc, PERL, PERL6, PHP, PIKE, PRLG, PYTH, PYTH 3.1.2, RUBY, SCALA, SCM guile, SCM qobi, ST, TCL, TEXT, WSPC

SUBMIT

Comments

h1ashdr@gon *@ 6 Mar 2015 03:59 PM*

Image isn't loading.

dpraveen *@ 6 Mar 2015 04:18 PM*

@h1ashdr@gon: Please check now.

kyuridenamida *@ 6 Mar 2015 06:47 PM*

it seems that a situation where a_i = 0 or b_i = 0 is unconsidered.

laycurse *@ 6 Mar 2015 08:25 PM*

@kyuridenamida The statement says a_i and b_j are positive

laycurse *@ 6 Mar 2015 09:11 PM*

@svishal Of course, you should print the number of the points on the x-axis such that at least K functions through the points, as said in the statement

arpanb8 *@ 6 Mar 2015 11:04 PM*

No. of points on X-axis includes values beyond 2(pi)???

laycurse *@ 7 Mar 2015 03:52 AM*

@arpanb8 There is no functions where x < 0 or x > 2*pi.

Need help? Post a comment. But before that please spare a moment to read the guidelines.

Your name:
shubhmsng

Comment: *

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