Arithmetic or Geometric ?

Given a sequence of three real numbers, write a program that determine whether the sequence is part of an arithmetic progression or a geometric progression or neither of them.

Recall that an arithmetic progression of n terms with common difference “d” can be written in the form: a, a+d, a+2d, a+3d, ..., a+(n-1)d

and that a geometric progression of n terms with common ratio “r” can be written in the form: a, ar, ar^2, ar^3, ..., ar^{n-1}

Input

The first line of the input contains an integer **T** denoting the number of test cases. The description of **T** test cases follows. Each test case is described in a single line containing three space-separated **double precision real numbers**.

Output

For each test case, output a single line containing either:

- “Arithmetic”: if the numbers form an arithmetic progression.
- “Geometric”: if the numbers form a geometric progression.
- “None”: if the numbers do not form any of them.
- “Both”: if the numbers form both of them.

Example

Input:
6
4 10 16
-4 2 -1
1 4 10
0.5 -0.25 0.125
-1.5 -0.5 0.5
2.18 2.18 2.18

Output:
Arithmetic
Geometric
None
Geometric
Arithmetic
Both