APGP Tutorial

Arithematic Progression is the series in which every next term is at common difference from the previous term, eg:1 2 3 4, where the common difference is 1.

Geometric Progression is one in which every next term of the series is obtained by multiplying the previous term with a constant, eg 1 2 4 8, where the common ratio is 2.

Your task is to find the series and print its next term..

Input

The input will contain three numbers($0<=a,b,c<=10^{15}$) denoting the three consecutive terms of the series.
Input is terminated when all the three numbers are 0.

Output

Output for each testcase will contain the name of the series ie. AP or GP and the value of the next term of the series.

Example

Input:
10 15 20
5 10 20
0 0 0

Output:
AP 25
GP 40