Origami is the art of paper folding, where the goal is to transform a flat sheet into some kind of “object” or “sculpture”. Some sculpture designs are particularly fancy, and require a large number of folds. One issue is the feasibility of the design: a piece of paper can be folded only a certain number of times before such operation becomes impossible. For example, if you try to fold a regular letter-size piece of paper in half multiple times, you will see that you cannot do this more than 6 or 7 times (depending on how thick your paper is).

For our problem here, you will have to determine the maximum number of times that a given sheet of paper can be folded in half, based on its original dimensions and its thickness. We will assume here that the total thickness of the folded paper should be no more than a third of each of the dimensions. Here is an example, for a regular letter-size paper:

|  |  |  |
| --- | --- | --- |
|  | Dimensions | Thickness |
| Original Dimensions | 216mm x 280mm | 0.1mm |
| After 1st fold | 216mm x 140mm | 0.2mm |
| After 2nd fold | 108mm x 140mm | 0.4mm |
| After 3rd fold | 108mm x 70mm | 0.8mm |
| After 4th fold | 54mm x 70mm | 1.6mm |
| After 5th fold | 54mm x 35mm | 3.2mm |
| After 6th fold | 27mm x 35mm | 6.4mm |
| After 7th fold | 27mm x 17.5mm | 12.8mm |

From this calculation, one can see that folding 6 times is possible: when multiplying the thickness by 3 (6.4x3), we get 19.2, which is smaller than both dimensions (27 and 35). However, folding 7 times is not possible: multiplying the thickness by 3 gives us 38.4, which is larger than at least one of the dimensions (actually, larger than both 27 and 17.5 here).

You should write a program that returns the maximum number of times that a sheet can be folded in two, given the original dimensions and thickness of the sheet. More specifically, the input contains 2 lines. The first one contains two positive integers, separated by a space, representing the dimensions of the sheet. The first of these two numbers will always be smaller or equal to the second number. On the second line, there is one positive real number that represents the thickness of the sheet. The output should contain only one positive integer, representing the maximum number of folds. The example below is the input and output for the example calculated in the table above.

EXAMPLE INPUT:

216 280

0.1

EXAMPLE OUTPUT:

6

If you have gone to a Chinese restaurant, you have most likely seen a message such as “if you are a horse, you would get along best with a dog or a tiger, but you should avoid the rat”.

In the Chinese Zodiac, each year is associated with one of 12 animals, and you determine your type of personality by getting the animal associated with your year of birth. Here is a list of these animals and some of their matching years:

* Rat: 1984, 1996, 2008
* Ox: 1985, 1997, 2009
* Tiger: 1986, 1998, 2010
* Rabbit: 1987, 1999, 2011
* Dragon: 1988, 2000, 2012
* Snake: 1989, 2001, 2013
* Horse: 1990, 2002, 2014
* Goat: 1991, 2003, 2015
* Monkey: 1992, 2004, 2016
* Rooster: 1993, 2005, 2017
* Dog: 1982, 1994, 2006
* Pig: 1983, 1995, 2007

The compatibility between people follows a simple rule: one animal is compatible with the other animals that are 4 “steps” apart, while the opposite animal (i.e., 6 “steps” apart) is the incompatible one. The compatibility with other animals than those is not determined. So for example, someone born in 1998 (Tiger) will get along very well with someone born in 1994 (Dog) or born in 2014 (Horse), but will not be compatible with someone born in 2004 (Monkey).

You should write a program that identifies the animal associated with two people, and indicate their compatibility. This should be done for 4 pairs of people. More specifically, the input contains one line per pair of people (so 4 lines in total). Each line contains 2 years from the lists above (i.e., two numbers between 1982 and 2017 inclusively), separated by a space. The output should have 2 lines per pair of people (i.e., 2 lines for each of the lines in input, for a total of 8 lines). The first of these 2 lines should contain the animal corresponding to each of these two years, in the same order, and separated by a space. Make sure that you capitalize only the first letter of the animal name. The second line should contain one of the 3 possible compatibility outcomes, according to the rule described above: “compatible”, “not compatible” or “not determined”(all lower case, and without the double quotes).

EXAMPLE INPUT: EXAMPLE OUTPUT: CONTINUED:

1998 2004 Tiger Monkey Dog Horse

1984 2009 not compatible compatible

2006 2002 Rat Ox Rooster Rooster

2017 2017 not determined not determined