2559_2_Expression_Selection_Q4_Biorhythm

Biorhythm theory, proposed by a German scientist Wilhelm Fliess, said that the multiple aspects of the human abilities are fluctuating up and down in a constant period after they are born. The most popular ones are physical, emotional, and intellectual cycle. Which have 23, 28, and 33 days respectively. The equations are $\sin\left(\frac{2\pi t}{23}\right)$ for the physical cycle, $\sin\left(\frac{2\pi t}{28}\right)$ for the emotional cycle, and $\sin\left(\frac{2\pi t}{33}\right)$ for the intellectual cycle. All of which have a value between 1 and -1. t is the number of days since one's birth. (We won't explain the meaning of each biorhythm value here, so if you are interested, please look it up on the Internet)

To calculate the three biorhythm values, you need two inputs. The birth date, and the date you want to know the biorhythm value of.

First, the number of days from birth must be calculated, which can be done by combining the days of the three periods: (See the picture below) The red period is the number of days from the birthday to the end of the year of birth, the black period in-between, and the blue period is the number of days from the beginning of the year of interest to **the day before** the date of interest. (The date of interest is not counted). To make the calculation simpler and easier, we will define it as follows:
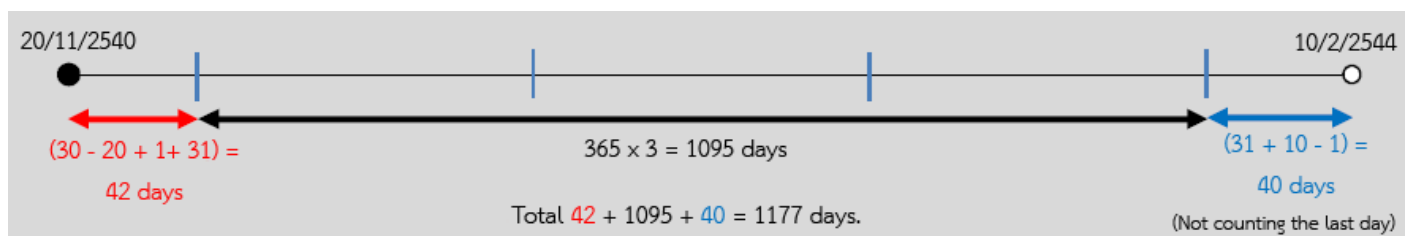
- You can calculate the black period by multiplying the year count with 365.

  E.g. 3 years = 365x3 = 1095

  For red and blue periods, you need to calculate **the exact** day amount. (Which involves many `if` conditionals. You also need to consider whether February has 28 or 29 days, too)

- It is guaranteed that the date of birth and the date of interest **are on a different year.**

  (So, there will always be red and blue period. **But the black period may be 0**)

20/11/2540 ... 10/2/2544

(30 – 20 + 1+ 31) =
42 days

365 x 3 = 1095 days

(31 + 10 – 1) =
40 days
(Not counting the last day)

Total 42 + 1095 + 40 = 1177 days.

Note: Using the black period calculation method above would produce the approximated value, which might be wrong for several days. However, you need to use it for this problem. (If you use something that might be more accurate, the result will not match the one in the grader.)

Input

6 integers represent day, month, year **(in BE)** of the birthday, then day, month, and year of the date of interest for biorhythm.

You can use the command `bd, bm, by, d, m, y = [int(e) for e in input().split()]` to get all 6 integers at once.

Note: Buddhist Era (BE) years can be converted to AD years by subtracting 534. For example: 2021 AD + 543 = 2564 BE, 2564 BE - 543 = 2021 AD

Output

The number of days since birth, then following with physical, emotional, and intellectual biorhythm values like in the example.

To display the real number **x** with 2 decimal digits, use the command `print( "{:.2f}".format(x) )`

To calculate the biorhythm value from the equation, use the functions `sin` and `pi` in `math`

Example

Input (from keyboard)	Output (on screen)
`1 1 2559 1 1 2560`	`366 -0.52 0.43 0.54`
`1 1 2560 1 1 2561`	`365 -0.73 0.22 0.37`
`20 11 2540 10 2 2544`	`1177 0.89 0.22 -0.87`
`10 8 2541 27 10 2559`	`6649 0.52 0.22 0.10`