

Checkmate!**X11119_en**

Desè Concurs de Programació de la UPC - Semifinal (2012-06-??)

Please compute the minimum number of movements to checkmate the black king of a given (simplified) chess position, with the following properties:

- It is white's turn.
- White has no king: only queens, rooks and bishops.
- Black only has a king.

Input

Input consists of several cases. Each case begins with the position of the black king, followed by a number n between 2 and 4, followed by the position of n white pieces. Every given position is legal (except for the missing white king). It is always possible to checkmate the black king in at most 4 movements.

Output

For every position, print the minimum number of movements to checkmate the black king.

Sample input

```
Ka4 2 Rb7 Rg1
Kh1 2 Qf8 Qe7
Ka8 3 Ba7 Bb8 Bf1
Ke3 3 Qd5 Rd4 Be5
Kf1 3 Rd2 Be3 Re8
Kd4 4 Ra5 Rh5 Bc8 Bf8
```

Sample output

1
2
1
3
2
4

Problem information

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