

Senet is a popular 2 player game that is played on a 3*10 board.

```
XOXOXOXOXO
.....
.....
```

The positions are numbered from left to right. The top left position is numbered 1 and the top right is numbered 10. The second row is numbered 11 to 20 from **right to left**. And the third row is numbered from 21 to 30 left to right.

At the beginning of the game the five pawns per player alternate along the 10 first squares

4 two-sided sticks (one side painted) are thrown to determine movement.

```
When only one painted side is visible : 1 point.
With two : 2 points.
With three : 3 points.
With four : 4 points.
With none : 5 points.
```

If a player gets 5 points he gets an extra move.

The first player to get all his pawns out of the board wins!

It is compulsory for a player to make a move, if it exists. If no forward moves are possible the move is forfeited.

A player can choose any of his pawn and move exactly the number of points he scored.

Squares 26 and 27 have special meanings. All pieces must land on square 26, the House of Happiness (per nefer), before continuing to the last four squares.

A piece can reach a empty square or in case the square is already occupied by an opponent's piece, they have to exchange their positions unless the opponent's piece is protected by being adjacent on both sides opponent's piece along the path. In this case the opponenet's piece is said to be defended.

A player can move ahead while on squares 26-30 only by special moves. Squares 27, 28, 29, 30 cannot be defended.

If a player lands on square 26:

```
If the roll is 2 he can go to 28.
If the roll is 3 he can go to 29.
If the roll is 4 he can go to 30.
If the roll is 5 the pawn can exit the game.
```

Now if the piece reaches a square already occupied by an opponenet's piece, the opponenets piece is forced to move to square 27, the House of Water. In case the square 27 is already occupied, they exchange their places.

If a player lands on square 27, the House of Water, an exact throw of four is required to exit. If a player lands on square 28, the House of Three Truths, an exact throw of three is required to then exit the board. If a player lands on square 29, House of the Re-Atoum, an exact throw of two is required to then exit the board. If a player lands on square 30, exact throw of one is required to exit the board, All other moves are invalid.

Input Format

The first line contains the character **X** or **O** marking the first or the second player.
The second line contains the points earned by the player by rolling the dice.
3 lines follow, each line containing 10 characters, **X**, **O** or **.** indicating first/second players' piece or an empty position.

Output Format

Your code has to output the position of the pawn that needs to be moved.

Sample Input

```
X
1
XXXOOOXX.O
.....X
.....
```

Sample Output

```
7
```

Explanation

```
XXXOOOXX.O
.....X
.....
```

is the resultant board. X located at position 7 can exchange the position of O at position 8 as it is undefended.