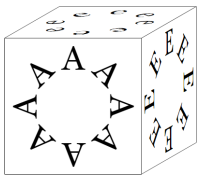
Cubes

Input file:	`standard input`
Output file:	`standard output`
Time limit:	2 seconds
Memory limit:	256 megabytes

Gennadiy, who worked all his life at the Kazan Slot Machine Plant, went to Las Vegas and at the first casino discovered a slot machine of his own production. The slot machine contains N cubes with Latin letters written in a special way on each face.



At the beginning of the game, the slot machine puts the cubes on each other so that a player sees only letters on one side of the tower. Then the screen displays the word of N letters, which the player must draw on the visible side of the tower, by turning the cubes around the vertical axis. The word should be read from top to bottom.

Gennadiy has a huge advantage – he remembers all cubes produced at his plant and can distinguish them from each other in the slot machine. However, he cannot know the exact orientation of the cube in the tower as he sees just one cube face. Help Gennadiy calculate the probability of that the task set by the slot machine is executable.

Input

The first two lines contain words with a length of N characters – the initial and target words on the visible side of the cube tower ($1 \le N \le 10$). The next N lines contain six characters each describing the letters on the cube faces in the following order: front, top, right, bottom, left and rear ones. Cubes are listed in order from top to bottom. Capital and lowercase letters are considered to be different.

Output

Output the requested probability. The answer is considered to be correct if the absolute or relative error doesn't exceed 10^{-6}.

Examples

standard input	standard output
HALLW HELLO XABCDH XAECDe AbcdeL AbcdeL ABOWCD	0.25

Note

We see the face with the 'A' letter on the second cube, and we need to rotate the cube so that we see the face with the 'E' letter. Depending on the rotation of the face with the 'A' letter, the face with the 'E' letter may be 'on the side' or 'on the top/bottom' towards Gennadiy. In the first case, we can rotate the cube as required, but in the second and third cases — we cannot. The probability of finding 'E' 'on the side' is equal to the probability of finding it 'on the top/bottom' and amounts to 1/2. Therefore, the probability to rotate the cube the right way is 1/2. The 'W' and 'O' letters are in a similar manner, so the overall probability is 1/4.