Trap Game

Time Limit: 1 second

Alice and Bob are your students. One day, you told them to write down an integer between 1 and **k**. Alice wrote **a** and Bob wrote **b**. But they don't want to show their numbers. Instead, they want you to guess if the numbers have any common divisor greater than 1. If your answer is "YES", then what is the probability that you've answered correctly.

Input

Input starts with an integer **T (< 11)**, denoting the number of test cases. Each test case contains an integer **k (0 < k < 1001)**.

Output

For each case, print the expected answer. The answer will be considered correct if its absolute and relative error doesn't exceed 10^{-6}.

Sample Input	Sample Output
2 1 2	0.0000 0.2500