COCI 2009/2010 **Task COKOLADA**

7th round, 24. April 2010. 1 second / 32 MB / 50 points

A new type of chocolate arrived in the local shop. The chocolate comes in bars, each bar consisting of **N** squares. Bars are factory made and only come in sizes which are full powers of two. In other words a single bar has 1, 2, 4, 8, 16, ... squares.

To fully asses the quality of chocolate Mirko must sample at least **K** squares. His friend Slavko would also like to try some of the chocolate. Since Mirko is in a hurry to try the chocolate himself, he decides to break the bar he bought in pieces, such that he has **exactly K** squares, and leaves the rest (if any) to Slavko. The bars are a bit brittle, so Mirko can break them only on their exact center. In other words, from one bar with **D** squares, he can get two bars with **D**/2 squares.

Write a program that will determine the **minimal number of breaks** Mirko must perform in order to obtain exactly K **squares** (not necessarily in one piece). Also, determine the smallest bar size Mirko must buy in order to have at least **K** squares.

INPUT

The first and only line of input will contain one integer **K** ($1 \leq K \leq$ **1 000 000**) , number of squares Mirko must sample.

OUTPUT

The first and only line of output should contain two integers, separated by a single space. The first integer is the smallest bar size Mirko must buy. The second the smallest number of breaks.

SAMPLE TEST CASES

Input: 6	**Input:** 7	**Input:** 5
Output: 8 2	**Output:** 8 3	**Output:** 8 3