Problem D
Prove the Conjecture

Time limit: **3 seconds**
Memory limit: **1024 megabytes**

Problem Description

"Andrew" is a practical application that currently ranks first in the global app download charts. This app allows users to prove the truth or falsity of any statement and displays the entire reasoning process for users to examine, which has earned it widespread trust.

Chia-Wei Lee, a world-renowned professor in the Department of Computer Science, University of Taipei, and a well-known scholar in the field of algorithms, is also an avid user of this app. One day, Professor Lee decided to use "Andrew" to prove a famous unsolved mathematical problem called Goldbach's Conjecture.

In 1742, the German mathematician Christian Goldbach wrote to Leonhard Euler, proposing that "every number greater than 2 can be written as the sum of three prime numbers." Later, Euler reformulated the statement as: "Every even number greater than or equal to 4 can be expressed as the sum of two prime numbers." That's Goldbach's Conjecture.

However, when Professor Lee tried to launch the program, a window popped up saying: "Andrew.exe has stopped responding." No matter how many times he restarted it, the same issue occurred.

Frustrated, he turned to one of his students from the Java Programming course —a student coincidentally named Andrew —and said, "Since your name is Andrew, I'll leave proving Goldbach's Conjecture to you!"

Although the professor didn't explicitly threaten him, Andrew was afraid of failing the course if he couldn't complete the task. So, he came to you – his classmate in the same Java Programming course – for help.

Since you weren't quite familiar with the conjecture, you asked Andrew to explain it more clearly.

"Well," he said, "for example, 8 can be expressed as the sum of 3 and 5; 20 can be expressed as the sum of 3 and 17."

"I can also express 20 as the sum of 7 and 13, or 19 and 1, right?" you asked.

"Your first expression is correct, but the second one doesn't follow the statement of the conjecture," Andrew replied.

Now, please help Andrew prove Goldbach's Conjecture so he won't fail his Java Programming course!

Input Format

Your program is to read from standard input. The input file will contain one or more test cases. Each test case consists of one even integer n. Input will be terminated by a value of '`0`' for n.

Output Format

Your program is to write to standard output. For each test case, print one line of the form '`n = a + b`', where a and b are an integer pair that satisfy Goldbach's Conjecture. Numbers and operators should be separated by exactly one blank. If there is more than one pair of integers satisfying the conjecture, choose the pair where the difference $(b-a)$ is maximized. Note that (a, b) and (b, a) are different pairs. If there is no such pair, then a and b are both `0`. Please see the sample output.

Technical Specification

- $4 \leq n \leq 10,000$
- n is an even integer.

Sample Input 1

```
8
20
0
```

Sample Output 1

```
8 = 3 + 5
20 = 3 + 17
```