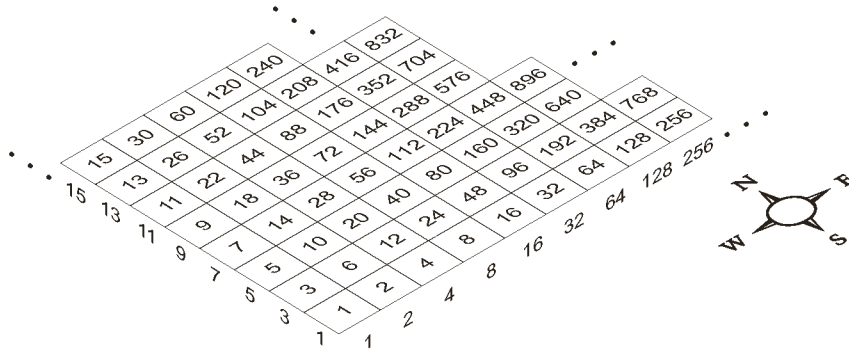


[C] City of Flatland

Program:	flatland.(c cpp java)
Input:	flatland.in
Output:	flatland.out

Description

In recognition to the number of famous mathematicians of its residents, the City of Flatland has decided to rename all its streets as numbers (positive integers to be more precise.) The streets of Flatland are organized as a grid. The city decided to number all its North-South streets using powers of two (1, 2, 4, 8, ...) and all its East-West streets using odd numbers (1, 3, 5, ...). The city also decided to re-number all its buildings so that the number of each building is the result of multiplying the numbers of the two streets the building is on. For example, building #40 is at the intersection of streets 5 and 8.



The problem with this numbering scheme is that it is not easy for the residents to determine the distance between buildings. The distance between any two buildings is the number of buildings one needs to cross to go from one building to another. One can only move parallel to the streets (no diagonals or any other shortcuts.) For example, to go from building #6 to building #40, one has to travel one building north and two buildings east, so the distance is 3. Similarly, the distance from building #80 to building #88 is 4.

Help the residents of Flatland by writing a program that calculates the distance between any two given buildings.

Input Format

The input is made of one or more pairs of building numbers. Each pair $\langle S, T \rangle$ appears on a single line with a single space between the two numbers. Note that $S, T < 1,000,000,000$. The end of the input is identified by the pair $\langle 0, 0 \rangle$ (which is not part of the test cases.)

Output Format

For each input pair $\langle S, T \rangle$, the output file should include a line of the form:

The distance between **S** and **T** is **D**.

The output file should be in the same order as the input file.

Sample Input/Output

flatland.in

```
12 14  
20 30  
40 50  
0 0
```

flatland.out

```
The distance between 12 and 14 is 3.  
The distance between 20 and 30 is 6.  
The distance between 40 and 50 is 12.
```