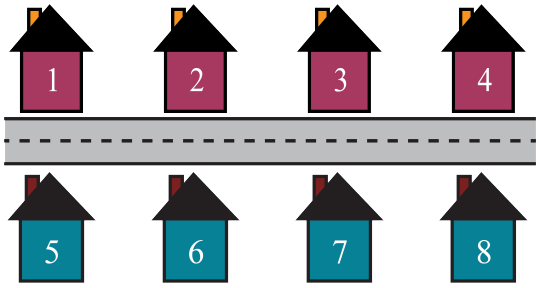
Problem of the Week
Problem C and Solution
Across the Lane

Problem

Lookover Lane divides two rows of houses. Each house on one side of the lane is directly opposite a house on the other side of the lane. The houses are numbered consecutively 1, 2, 3, and so on, along one side. Once the end of that side of the lane is reached, the consecutive numbering continues at the house on the other side of the street opposite the house numbered 1. The consecutive numbering then continues along this second side until the last house is numbered.

For example, if there were eight houses on the lane, then House 1 would be opposite House 5, House 2 would be opposite House 6, House 3 would be opposite House 7, and House 4 would be opposite the House 8.



However, on the actual lane, House 37 is opposite House 2026. How many houses are on Lookover Lane?

Solution

There are 36 houses before House 37 on the one side of the lane. Therefore, there must be 36 houses on the other side of the lane before House 2026.

So, the first house on the other side of the lane is House $2026 - 36 = 1990$. Therefore, the last house on the first side of the lane is House 1989. Each house on one side has a house directly across from it on the other side. Since there are 1989 houses on one side, there are 1989 houses on the other side. Thus, there are a total of $1989 \times 2 = 3978$ houses on Lookover Lane.