

- P13. The other three solutions are found by combining the key presses of the given solution with the key presses of each of the quiet patterns. After deleting key presses that repeat, the remaining key presses represent a solution to the puzzle. The other three solutions for this puzzle are:

Solution #2: 2 3 4 5 6 10 11 12 14 15 18 22 24

Solution #3: 1 3 6 10 18 21 25

Solution #4: 1 2 4 8 11 12 14 15 16 20 21 22 23 24 25

- P14. The shortest solution is to press each of the five lights that are originally on.
- P15. Two other starting boards with this property begin with lights on in the positions indicated:

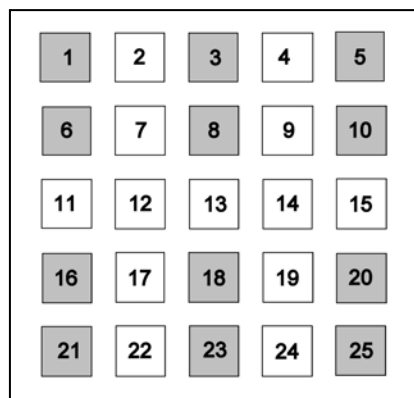
Starting Board #1: 5 9 13 17 21

Starting Board #2: 4 8 10 12 14 16 18 22

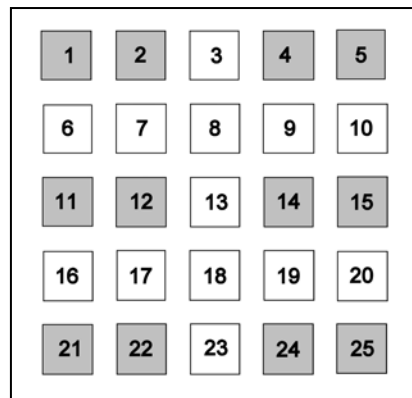
These starting boards are not unique. There are other starting boards with the same property.

- P16. Combine the key presses in quiet patterns #2 and #3, then delete those key presses that are repeated. The remaining key presses are those in quiet pattern #4.
- P17. A Lights Out starting board with a single light on in position 1 has no solution. This is only one of *many* starting boards that have no solution.
- P18. The two unique quiet patterns were discussed in the text. They are 1 3 5 6 8 10 16 18 20 21 23 25 and 1 2 4 5 11 12 14 15 21 22 24 25.

Here they are as illustrations:



Quiet Pattern A



Quiet Pattern B

Pressing all 12 lights in either quiet pattern has no effect on the board.

If you press any one of the 25 lights in either quiet pattern, you change an even number of lights that are already on.