5 Lights On!

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Challenge

In the Christmas village of Santa Claus, the elves take decorating very seriously. Every year, the Christmas village is decorated with red and green lights. To be precise, each house should be decorated with exactly two lights: *either* two red lights *or* two green lights. Decorating a house with a green light and a red light is not allowed.

Little elf Alfie is going to decorate his own house and decides to choose two red lights. He found a box in his house with 4 green and 4 red lights. Alfie knows that exactly half of the lights in the box are red and the other half are green, but there is one problem: he is color blind and cannot see the difference between the red and the green lights. Since this is not the first time Alfie encounters this problem, he is prepared and uses his Red Color Testing Machine (RCTM). The RCTM has two containers: when Alfie puts a light in each of the containers, the device makes a sound if and only if both lights are red.

Alfie tests pairs of lights in the RCTM until he hears a sound. If Alfie happens to pick two red lights in his first attempt, he hears a sound after the first test and is done. But in the worst-case scenario, more tests are needed before the RCTM makes a sound.

What is the minimum number of tests that Alfie needs to perform in order to *guarantee* that the RCTM makes a sound?

Possible answers:

1. 4
2. 5
3. 6
4. 7
5. 8
6. 9
7. 10
8. 14
9. 16
10. 28