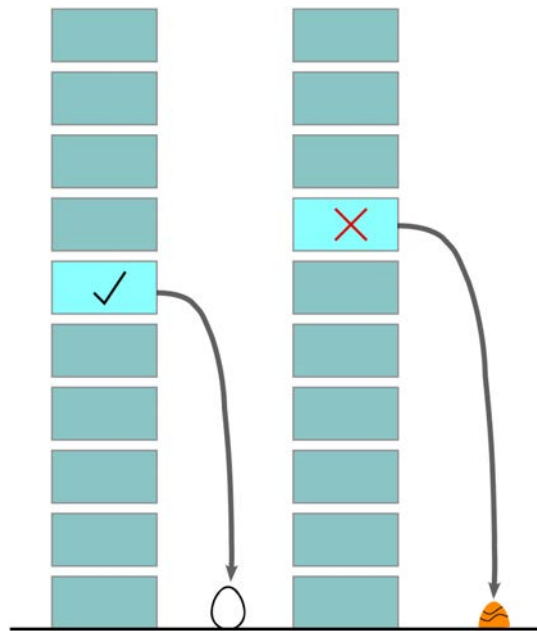


Puzzle of the Week

Egg Drop to 10

There is a new type of single-egg container to test. You are given a container, two eggs, and access to a ten-story building. You want to see how high up you can drop an egg in one of these containers and not have the egg break.

You could simply drop an egg from each floor, starting with the first floor, and see where the egg breaks for the first time. However, if the containers are really good, that would mean ten egg drops. How can you find out how good the container is with fewer drops?



THE CHALLENGE: Find a method that uses the fewest total number of drops, no matter how good or bad this new container is, to discover the highest floor in this ten-story building you can safely drop an egg from.

EXPLORATION: How would your strategy change if you had three eggs to work with?

Puzzle of the Week

Egg Drop to 10 – Notes

THE CHALLENGE & EXPLORATION: The first possible solution is to split the problem in half and drop the first egg from the fifth floor. In the worst case, when the container works all the way up to the tenth floor, there would only be six drops.

An improvement to that solution is to split it into multiple first steps - say the 3rd and 6th floor. However, that still creates a worst case of 6 drops. Using 4th and 8th floors improves it to five drops.

Five drops is as good as it gets with two eggs.

With three eggs, we could first do drops at the 4th and 8th floors. Then, as appropriate, next drops at 2nd and 6th floors. That would reduce the total number of drops to four drops in the worst case.