

Pop Your Balloon

Problem-of-the-Week

The Problem

The Fantasy Travel Agency is offering 25% off the admission fee to an amusement park to people who can win this contest against another player. The object is to pop the last of 21 balloons that are tied together for the contest.

The rules are:

1. There are 21 balloons in a bunch.
2. Two players must take turns popping exactly 1 or 2 balloons on each of their turns.
3. The player who pops the last balloon is the winner of the contest and gets the prize.

Can you figure out how to win the prize each time you take part in the contest?

Strategies and Hints

1. Can you make this an easier problem? Could you start with fewer than 21 balloons?
2. Are there some “good” numbers of balloons you want to use?
3. Are there some “bad” numbers of balloons you don’t want your opponent to use?
4. What number is a “good” number for you just before you get to 10? What would be a number that could help you get to that number?
5. Do “good” numbers have a property that you can describe?

Extensions

1. How would you win if there were 15 balloons and each of you could pop exactly 1, 2, or 3 balloons?
2. How would your strategy change if the player who pops the last balloon loses?

