

Game Show

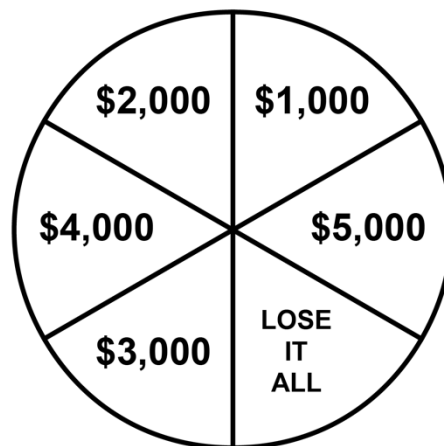
Level E

“Hi, I’m Pat Saywhat, and this is Banana. Welcome to

WHEEL OF MONEY!

Today we have several contestants who will try their luck and risk their earnings to become today’s Big Wheel winner.” (Crowd roars.)

“The rules of the game are quite simple. We have several contestants backstage in soundproof booths. One by one, we will invite a contestant to come out and try his or her luck at the Big Wheel. As you can see, our Big Wheel has six equal sectors (pie-shaped regions). In each of the sectors is a dollar amount except for one that is labeled ‘LOSE IT ALL.’”



“Contestants may spin the wheel as many times as they would like until either they decide to stop and keep the money or the Big Wheel lands on ‘LOSE IT ALL.’ If that happens, the contestant loses the game, but we have some very nice consolation prizes. The outcome of each player’s turn is unknown to the other contestants, so they must use the best strategy since they are not aware of what has transpired prior to their turn. After the last contestant has completed a turn at the Big Wheel, the player with the most money wins the game and keeps all the money.” (Crowd roars.)

Banana, I sure hope these contestants have come up with a sound mathematical strategy!”

Use your knowledge of mathematics to determine the optimum strategy for playing the game. Describe your strategy. Please explain the steps to follow in playing the game and at what point to stop and keep the cash. Explain the reasoning behind your game strategy. What mathematics did you use to arrive at your game strategy? Why do you believe that it is the best possible strategy?

