

Math Problems

A magician announces his next trick. "I have here, a piece of cardboard in the shape of a perfect circle. For my next act, I shall cut it into a number of pieces, so that all the pieces are absolutely identical to each other in shape and size. . . "

"So what", a restless audience member interjects, "anyone can do that, you've never seen a sliced pizza before?"

The magician keeps his composure. "Please, let me finish. When I'm done cutting, at least one of the final pieces would not have touched the centre of the original circle to begin with."

Some started to scratch their heads. "Surely that's impossible!"

Will the magician be able to back up his words?

A magician leaves the room while an audience member lays out eight coins in a row deciding which side is turned up according to their whim. She also think of a number between 1 and 8 inclusive. The magician's assistant then flips exactly one of the coins, before inviting the magician back in. The magician looks at the coins and guesses the number that the audience member thought of.

Nondango

Color exactly one circle black within each bolded region such that no 3 circles that are consecutive vertically, horizontally, or diagonally are the same color (black or white). Circles are not considered consecutive if there is an empty cell separating them.

