

WITHOUT WORDS

Mathematical Puzzles to Confound and Delight



WW 29: SOLUTION

In this game of solitaire one erases two dots and replaces them with a single dot. That single dot is white if the two dots erased were the same colour, black otherwise. As the count of dots decreases by one with each move, the game will end with a single dot remaining on the page.

One can see that each move either keeps the count of black dots the same or decreases that count by two. So if there are initially an odd number of black dots, there will forever be an odd number of black dots on the page. This means the game must end with a single black dot on the page, no matter how the game is played.

If there are initially an even number of black dots, then the count of black dots will forever be even throughout play of the game. It is impossible then to end with a single black dot and so the game will, for sure, end with a single white dot no matter how it is played.

Checking the count of black dots we see that each puzzle in the question can be solved (and it does not matter what choices you make) except the last one.

