

Cat and Mice

22 January 2025

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This is a classic puzzle from Boris Kordemsky's 1972 *Moscow Puzzles* ([1]).

“Purrer has decided to take a nap. He dreams he is encircled by 13 mice: 12 gray and 1 white. He hears his owner saying: “Purrer, you are to eat each thirteenth mouse, keeping the same direction. The last mouse you eat must be the white one.” Which mouse should he start from [eat first]?”

Solution

I had a rather pedestrian approach. Kordemsky's is much more elegant (slightly edited):

Start from position 13 in the diagram [Figure 1] and go clockwise through positions 1, 2, 3, ..., crossing out each thirteenth dot: 13, 1, 3, 6, 10, 5, 2, 4, 9, 11, 12, 7, and 8 [Figure 2 - Figure 4]. Call position 8 the white mouse, and Purrer starts clockwise from the fifth mouse clockwise from the white mouse (i.e., position 13 relative to position 8). Or he starts counterclockwise from the fifth mouse counterclockwise from the white mouse.

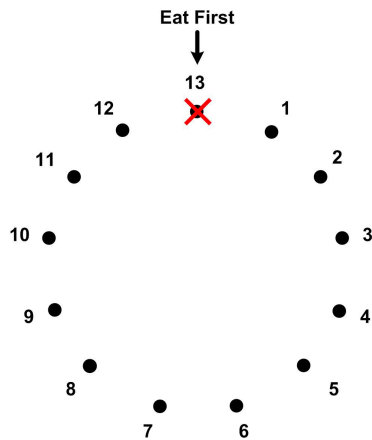


Figure 1

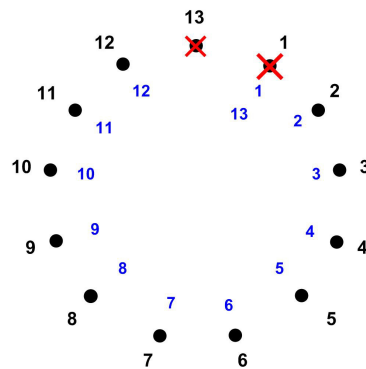


Figure 2

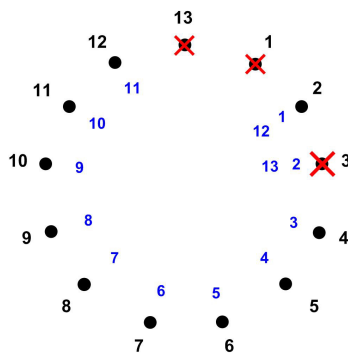


Figure 3

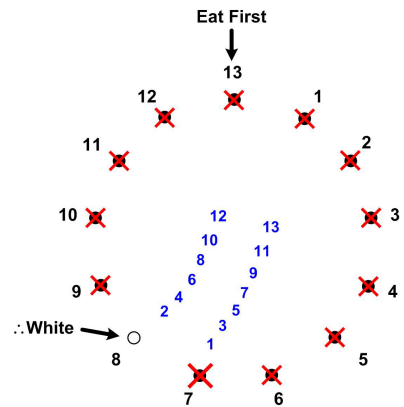


Figure 4

References

- [1] Kordemsky, Boris A., *The Moscow Puzzles, 359 Mathematical Recreations*, (1972) edited with introduction by Martin Gardner, trans. Albert Perry, Dover Publications, Garden City, New York, 1992. Problem 88.

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