

Math Circle, Oct. 18, 2020 - Sherman
More puzzles

a) When I got home yesterday, my slippers had been hidden. I knew that my pets (Nyko, Magellan, and Lucy) were behind it – at least one of them was guilty.

I also knew the following.

- If Magellan was guilty and Lucy was innocent, then Nyko was guilty.
- Nyko never does anything by himself.
- Magellan never helps Nyko.

Can you figure out if any of the three were innocent or guilty?

b) Puzzle 2b, putting digits into the sentence to make it true, had a unique solution. Consider a simpler version:

In this sentence the number of occurrences of the digit 1 is __ and of 2 is __.

It's not too hard to see that this one has **no** solution!

How many solutions do these have?

In this sentence the number of occurrences of the digit 1 is __, of 2 is __, and of 3 is __.

In this sentence the number of occurrences of the digit 1 is __, of 2 is __, of 3 is __, and of 4 is __.

c) Draw five line segments through all twelve dots without taking your pencil off the paper, AND end up where you started. You can't go off the front of this page, draw curved segments, assume the dots have thickness, or do any other tricks.

