Chapel Hill Math Circle

In the Land of Logic, Part 1
September 10, 2016

1. *Warmup problem:* A man wants to cross a river and take with him a wolf, a sheep, and a box of cabbages. Since his boat is small, he can only take one of them at a time. However, if the wolf stays alone with the sheep, the wolf will eat the sheep. If the sheep stays alone with the cabbage, the sheep will eat the cabbage. Nevertheless, the sheep and the wolf behave nicely in the man's presence. Can the man accomplish his goal? Explain your answer.

2. A male parrot and a female parrot are talking. The one with a yellow tail says, "I'm a boy." The one with a blue tail says, "I'm a girl." If at least one of them is lying, who is who? Explain your answer.

3. Half a dozen children on the waiting list of the Chapel Hill Math Circle are eager for a space to open up for them. If one-third of half of these children are in first grade, how many are not in first grade? Explain your answer.

THE WAITING LIST

4. Three Ogs and 1 Ig weigh the same as 2 Ogs and 4 Igs. How do their weights compare? Explain your answer.