

Chapel Hill Math Circle
Intermediate Group (6-7)
February 13, 2016

1. A farmer and a cow are on the same side of a straight-line river. The farmer has to walk to the river, get water in a bucket, and take it to the cow. What's his shortest path?
2. "Ready to see this you are not," said Master Yoda to his 33 Jedis. "Close your eyes you must," he commanded. All the boys and one third of the girls closed their right eyes; all the girls and one third of the boys closed their left eyes. How many Jedis were able to get a peek, despite Master Yoda's demand?
3. A very special island is inhabited only by knights and knaves. Knights always tell the truth and knaves always lie. You meet four inhabitants and they make certain statements. Can you determine what they are?

Homer: Mel and Ted are not the same.

Mel: It's false that Alice is a knave.

Ted: Alice is a knight and Mel is a knave.

Alice: Only a knave would say that Ted is a knave.

4. Fred has a collection of coins from the Civil War era. He knows that he has fewer than 100 and more than 30. If he places them in rows of 7, one coin remains alone; if he places them in rows of 10, then 2 remain. How many coins does Fred have?
5. A logician and a mathematician were arguing. The logician tells the mathematician: "I lied to you yesterday." The mathematician replies, "I also lied to you yesterday." One of them lies only on Mondays, Tuesday, and Wednesdays, whereas the other lies only on Thursdays, Fridays and Saturdays. When did they talk?