

Chapel Hill Math Circle
Elementary Group (4-5)
February 6, 2016

1. A very special island is inhabited only by knights and knaves. Knights always tell the truth and knaves always lie. You meet two inhabitants and they make certain statements. Can you determine what they are?

Homer: At least one of the following is true: I am a knight or Bozo is a knight.

Bozo: Homer could say that I am a knave.

2. I have four friends. The first friend visits me every day. The second friend visits me every other day. The third friend visits me every third day, and the fourth friend visits me every fifth day. Yesterday all my friends came to visit me. In how many days will they all come together again?

3. Zator has been asking his dad for money to take to school, but his dad always says no. During a leap year (what is that?), Zator comes up with a plan to convince his father to give him some money. He tells his dad to give him a penny on the first day of February. On the second day, his dad will give him two cents. On the third day, he will give him four cents, continuing to double the amount from the previous day until the end of the month. Then, Zator tells his dad that he won't ask for money again for the rest of his life! His father hastily agrees. If Zator's dad *can* keep his word, how much will he have to give to his son?