Chapel Hill Math Circle
Elementary Group (4-5)
January 23, 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?

   a. Abe: Bob is a knave.
      Bob: Abe and I are knights.

   b. Abe: Bob and I are not the same.
      Bob: Between Abe and me, exactly one is a knight.

2. Last week we met the tetrominoes and found how many different ones there are. Can you cover a 4x5 board with all them, provided each square in each tetromino covers exactly one square from the board? What about a 10x2 board? A 20x1? For each of these cases, show a way to cover the board or explain why it cannot be done.

3. Ribbit the Frog goes from his house to a lake 20 feet away. His leaps are always 1 foot long. Ribbit takes two leaps forward, followed by one leap back, followed by two leaps forward and one back, and so on. How many leaps does Ribbit take to reach the lake?