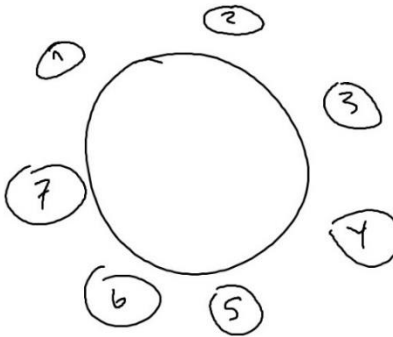


Chapel Hill Math Circle
Elementary Group (4-5)
January 16, 2016

1. Little Squirrel is having a party. Squirrel's six friends Owl, Deer, Rabbit, Lynx, Mouse, and Fox came to celebrate. The guests sat on mats around a low table so that:
 - Owl's neighbors were Fox and Lynx.
 - Squirrel took mat number 4 near Rabbit.
 - Mouse refused to sit next to any predator.
 - There were two guests seated between Owl and Squirrel.
 - Lynx chose chair number 2.

Where did Deer sit? Do you have enough information to know where every guest sat? If you do, show it; if you don't, explain why.



2. Zator always tells the truth on Mondays, Thursdays, and Saturdays, but lies on every other day. If he makes the statement, "I will tell the truth tomorrow," what day of the week is it?
3. Consider 3 squares of the same size. We want to create shapes with them so that each square is completely touching at least one other square along an entire edge. How many different shapes can you make?
4. Consider 4 squares of the same size. We want to create shapes with them so that each square is completely touching at least one other square along an entire edge. How many different shapes can you make? (These are the tetrominoes!)
5. IF TIME: Can you cover a 4x5 board with all the tetrominoes? A 10x2? A 20x1? For each of these cases, show a way to cover the board or explain why it cannot be done.