

Chapel Hill Math Circle
Intermediate Group (6-7)
January 23, 2016

1. Warm-up: A frog goes from its house to a lake 20 feet away. Its leaps are always 1 foot long. The frog takes two leaps forward, followed by one leap back, followed by two leaps forward and one back, and so on. How many leaps does the frog take to reach the lake?

2. 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: Neither Abe nor I are knaves.

 - b. Abe: Between Bob and me, exactly one is a knight.
Bob: Only a knave would say that Abe is a knave.

 - c. What statement can neither knights nor knaves make?

3. In how many squares can you cut a square? Can you cut it into 11 squares? How about 13 or 10? Can you find a pattern?