

**Kinawa – Chippewa Mathematical Circle  
Problem Solving Session 1  
Problems are from the book  
“Invitation to Mathematics Festival”**

**Warm-up:**

**Problem 1.** 96-6-1

**Fractions:**

**Problems 2 - 4.** 11-6-1, 07-6-3, 06-7-1

**Logic**

**Problems 5 - 7.** 11-6-4, 11-7-5, 05-6-5

**Geometry**

**Problems 8 - 10.** 09-6-2, 09-7-5, 10-6-5

and



and



Knights and liars live on an island, which is also visited by tourists. Knights always tell the truth, liars always lie and tourists can choose to tell the truth or to lie.

Question 1. A boy tells me he is a liar, is he an islander?

Question 2. Sam and Bob introduce themselves. Sam says: “at least one of us is a liar”, can you figure out who is what?

Question 3. I asked a knight the same question twice and he gave me two different answers. How could this be?

Question 4. You meet Tom, George, and Betty and ask “How many knights are in the group?”. Tom replies “none”, George says “one”. What is Betty?

Question 5. You meet three islanders, Sam, Bob, and Tom. You ask Sam, “Are you a knight or a liar?”. Sam answers but you could not hear what he said. So you ask Bob, “what did Sam say?” and Bob replies: “He said he is a liar”. Then Tom says: “Don’t trust Bob”. Who is what?