

# Mathematical Puzzles, Games and Other Diversions

Day 1

Derrick Chung

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## Knights and Knaves Problems

Knights and Knaves live on Smullyan island. Knights ALWAYS tell the truth and Knaves ALWAYS lie.

1. You see your first islander walking toward you. She says “I am a knight.” What does that tell you?
2. You see a pair of people walking down. Before you can say anything, one turns and says, “We are both Knaves!” What can you deduce from that?
3. Further down, another couple of islanders greet you. One says “Either I am a knave or she [pointing to his companion] is a knight.” What can you say about each of the islanders?

## More Knights and Knaves

Remember that Knights ALWAYS tell the truth and Knaves ALWAYS lie.

1. You encounter two islanders (A and B). A says "At least one of us is a knave." What are A and B?
2. You see three islanders (A, B, and C) come toward you. A says "None of us is a knight" while B says "Exactly one of us is a knight." What can we deduce?
3. Again you see another three islanders (A, B and C). This time A says "All three of us are knaves." and B says "Exactly one of us is a knave." What can you say about each of the islanders?