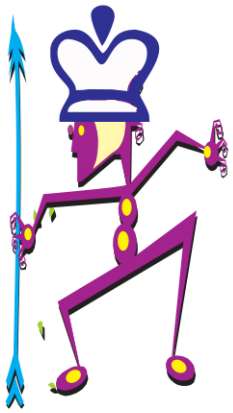
KWANTLEN POLYTECHNIC UNIVERSITY

Mathematics Problem of the Week

Problem Number 290 Solution

Hypnotherapist

An island is inhabited only by knights and knaves. Knights always tell the truth, and knaves always lie. You meet two inhabitants: Zed and Alice. Zed tells you, "I am a knight or Alice is a knave." Alice tells you, "One of Zed and I, exactly one is a knight." Can you determine who is a knight and who is a knave?



Solution: If Alice is a knave, then her statement would be a lie. Therefore, Zed can not be a knight. (Otherwise Alice's statement would be true.). Hence Zed must be a knave as well! This means Zed's statement should be false. However, "Alice is a knave" means Zed's statement is true. So there is a contradiction. Hence Alice can't be a knave.

Then Alice must be a knight which means her statement is true. This means Zed must be knave. Zed being a knave means his statement is false. Hence: Zed is not a knight and Alice is not a Knave. This agrees with the argument.

Correct answers: Navdeep Singh and Enguang Shen (Kirby) and Steven Yang submitted correct answers!

Winner: The winner of the week is Navdeep Singh! Congratulations Navdeep!