

LOGIC

QUIZ #2

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Recall, from the last lecture, in the Island of Knights and Knaves, those called *knights* always tell the truth and *knaves* always lie. Furthermore, each inhabitant is either a knight or a knave.

Q1. [5] An anthropologist met just two inhabitants, *A* and *B*. *A* made the following statements: "Both of us are knaves." What is *A* and what is *B*?

Soln1. *Let's use a truth-table.*

<i>A</i>	<i>B</i>	statement
knight	knight	F
knight	knave	F
knave	knight	T
knave	knave	F

A is a knave and B is a knight.

Q2. [5] According to another version of the story, *A* did not say "Both of us are knaves." All he said was "At least one of us is a knave." What is *A* and what is *B*?

Soln2. *Again, let's use a truth-table.*

<i>A</i>	<i>B</i>	statement
knight	knight	F
knight	knave	T
knave	knight	F
knave	knave	F

A is a knight and B is a knave.

Q3. [5] According to yet another version of the story, *A* actually said "Both of us are of the same type — either both knights or both knaves." What is *A* and what is *B*?

Soln3. *Once again, use a truth-table.*

<i>A</i>	<i>B</i>	statement
knight	knight	T
knight	knave	F
knave	knight	T
knave	knave	F

B is a knight. But it is not possible to tell A's type as he can be either knight or a knave. Another way to see this is to reason that, if B were a knave, then A's saying that he is of the same type as B would be invoking "liar's paradox."