Knights, Knaves, and Spies

Your name: ________________________________

1. KNIGHTS AND KNAVES

Recall that on the island of knights and knaves, knights always tell the truth and knaves always lie. You pay a visit to this island and meet some inhabitants along the way. You attempt to determine which of the people you meet are knights and which of the people you meet are knaves. (Justify your answers, step by step. You may use the back of this page to record your answers and justifications.)

(1) The first people you meet are Paul and Ringo. Suppose Paul says, “I am a knave, but Ringo isn’t”. What are Paul and Ringo?

(2) The next person you meet is Pam. Pam says: “If I’m a knight, then two plus two equals four.” Is Pam a knight or a knave?

(3) Then you meet someone dressed up as an animal, but you can’t tell whether she is dressed up as a cat or a monkey. She says: “I am either a knave or I’m a monkey.” Is she a knight or a knave? Is she a cat or a monkey?

2. SPIES!

During your visit to the island, it is infiltrated by spies! Spies sometimes tell the truth and sometimes lie. Now try to determine which of the people you meet are knights, knaves, and spies. (Again, you may record and justify your answers on the back of this page.)

(1) You meet up with Janet, Tito, and Michael. One of them is a knight, one is a knave, and one is a spy. They make the following statements:
   Janet: I am a spy.
   Tito: That is true.
   Michael: I am not a spy.
What are Janet, Tito, and Michael?

(2) Two people, Jim and Dwight, each of whom is either a knight, or a knave, or a spy, make the following statements:
   Jim: “Dwight is a knight.”
   Dwight: “Jim is not a knight.”
Prove that at least one of them is a spy telling the truth.