Mathletes Problem of the Week #4

Gossiping

This week's Mathletes problem is related to this week's regular Problem of the Week, but it's a little different! Imagine that each person in a group knows something that nobody else knows, but everybody wants to know all the gossip! When two people have a conversation, they gossip, exchanging all the pieces of information they have acquired. How many conversations (with only two people at a time) are necessary in order for everyone to have heard all of the gossip?

a) If there was only one person, no conversations would need to take place. And if there were two people one conversation would be enough. What is the fewest number of conversations that would have to take place if there were three people?
b) What is the fewest number of conversations that would have to take place between four people?
c) What about five people? Six people? Make sure you are finding the fewest number of conversations possible!
d) Can you describe a general rule to find the fewest number of conversations that are needed to spread all the gossip to everyone in any sized group?

(Source: Julia Robinson Mathematics Festival)

Solutions & Explanations: (Try one or try them all! Record your solutions and explanations below and on the back.)

Name _____ **Class** _____

(First and last name, please!) **Solutions due: November 1st**