Linear Equation Challenge Problems Part 1

Name _____ Per __

For each of these problems, you must solve them symbolically using the algebraic method. That means you need to find equations that relate to the problem, you can't use guess and check. Answers should be done neatly on a separate sheet. Once you have found the equation and solved the problem, you must show that your solution works in the original problem. You may use a calculator. You can finish this sheet for bonus points (2 points each)

1. Moe and Curly decided to go to the movies. They asked their brother Shemp if he would like to go, and would drive them to the Lake Winnipesaukee theater.

"Yuk yuk yuk" said Shemp. "I'd love to go to the movies, but I only have $3.00, and a ticket costs $4.50. Will you help pay for the ticket?"

Moe and Curly discussed their finances. Said Moe to Curly "If you give me one dollar, we'll be even." Curly said "If you give ME one dollar, I will have twice as much money as you."

Write an equation that you can solve to find out how much money did Moe and Curly have, then solve and check the equation.

2. Mary had a little lamb, its fleece was white as snow. Then she bought more lambs, and then she diversified into homing pigeons. She asked her friend Simple Simon to count the number of lambs and pigeons she had. After Simple Simon counted, he said "Mary, I counted 36 heads and 80 feet!".

Mary said, "Simon, you fool, I wanted to know the number of lambs and pigeons!". "That's easy", replied Simon. "You just need to solve this equation!.".

What equation did Simon use? How many lambs and how many sheep does Mary have?

3. The Grand Old Duke of York had to march his 10,000 men up to the top of the hill. They marched up at an astounding speed of 50 mph! When they got to the top, he marched them right back down again, but this time they only went at a speed of 30 mph. The Duke noted that the total travel time up and down the hill was 48 minutes. The Duke, having just taking 7^{th}-grade math with the Prince Regent, wrote an equation to figure out how far is it from the bottom of the hill to the top. What did he write, and how far is it?