Math 104Q

Group Project on Rational Expressions: Calculate Your Lottery Winnings

Last month the Connecticut Lottery Jackpot was $1,000,000. You bought a ticket and won. So did a number of other people, and you all came forward to claim your equal share of the jackpot. Before the jackpot was divided, three more winning ticket holders showed up. As a result each person's share was reduced by $75,000. Everyone showed up with family and friends, and you could not figure out how many people you have to share the jackpot with. More important, you want know how much you won.

To find out, follow the steps below which will guide you to first find the number of people you need to share the jackpot with, and then help you calculate your share of the jackpot.

1. UNDERSTAND the problem thoroughly.
Read: Read and reread the problem.

Trial and Error: Check if a few arbitrary values for the number of people in the original winners group (including you) give you a solution. For example, check if 2 is a solution. That is: If you and one other person were the original group of winners, and 3 other winners showed up later, is the final share of each person $75,000 less then the original share would have been? Try other choices for the size of the original group of winners. Reflect on your answers. You may organize your work in the following table:

Number of winners in original group	**$ Winning per person, originally**	**Number of winners in final group**	**$ Winning per person, finally**	**Is the number of winners in original group a solution?**
2				

Can you make a guess of what the solution will be?

2. TRANSLATE the problem into an equation
Let x = Number of winners in original group
Write a rational expression using your variable x, for the winning per person, originally:

Write a rational expression using your variable x for the winning per person, finally:

Write the equation expressing the relation between the original and final winnings:

3. SOLVE the equation for x.
Start by multiplying both sides of the equation by the LCD of all the rational expressions in the equation.

4. INTERPRET.
How many people were in the original group of winners?
With how many people do you need to share the jackpot?
What is your final share of the jackpot?