MODELLING PROBLEMS USING LINEAR SYSTEMS

Given the information provided in the following problems, model each in mathematical form as a system of linear equations. You **DO NOT** need to solve the system to find a solution.

Modelling Method:
1. Declare your variables.
2. Create your equations.

1. The sum of two numbers is 24. The product of the same two numbers is 143. Find the two numbers.

Let _____ represent _____

Let _____ represent _____

Equation ① _____

Equation ② _____

2. SPSS Student Council held a raffle and sold 480 tickets. Students were charged $2 per ticket and teachers $5 per ticket. Total ticket sales were $1560. Determine the number of teachers and the number of students who bought tickets.

Let _____ represent _____

Let _____ represent _____

Equation ① _____

Equation ② _____

3. In a hockey arena, rink level seats cost three times as much as seats in the upper level. If five seats at rink level cost $112 more than eight seats in the upper level, find the cost of a seat at rink level.

Let _____ represent _____

Let _____ represent _____

Equation ① _____

Equation ② _____

4. Jared has $3.85 in dimes and quarters. There are 25 coins in all. How many of each type of coin does he have?

Let _____ represent _____

Let _____ represent _____

Equation ① _____

Equation ② _____

Read the following word problems carefully. For each problem, provide a mathematical model to represent the scenario by writing two 'Let' statements and a system of linear equations. **NOTE**: You **DO NOT** need to solve the problem.

1. The sum of two numbers is 13. The product of the same two numbers is 40. Find the two numbers.

2. The total cost of concert tickets for 2 adults and 4 students is $120. If student tickets are $15 each, determine the price of an adult ticket.

3. Yamir weighs 30 kilograms more than twice his younger brother's weight. If the sum of their weights is 120 kilograms, how much does each brother weigh?

4. There are twice as many quarters in a jar as there are nickels. The total value of the coins is $2.20. How many of each coin are in the jar?

5. Three times as many robins as cardinals visited a bird feeder. If a total of 20 robins and cardinals visited the feeder, how many robins were there?