APPLICATION PROBLEMS—SYSTEMS OF EQUATIONS   NAME_____

Provide the following for each application problem below:
   (a) Define your variables
   (b) Write a system of linear equations
   (c) From your system of linear equations, write a matrix equation
   (d) Use your calculator to solve your matrix equation
   (e) Answer the question asked in each problem <u>using a complete sentence</u>

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1. Greg is a star player on the basketball team. In one game, his field-goal total was 20 points, made up of 2-point and 3-point baskets. If Greg made a total of 9 baskets, how many of each type did he make?

2. A mail-order company charges for postage and handling according to the weight of the package. A package that weighs less than 3 pounds costs $2.00 for shipping and handling, and a package that weighs 3 pounds or more costs $3.00. An order of 12 packages had a total shipping and handling cost of $29.00. Find the number of packages that weighed less than 3 pounds and the number of packages that weighed 3 pounds or more.

3.   When Dale baby-sat for 8 hours and worked at a restaurant for 3 hours, he made a total of $58. When he baby-sat for 2 hours and worked at a restaurant for 5 hours, he made a total of $40. How much does Dale get paid for each type of work?

4.   Armando is comparing parking prices at a local concert. One option is a $7 entry fee plus $2 per hour. A second option is a $5 entry fee plus $3 per hour. What is the break-even point (intersection) for the two options? Which option do you think is better? Explain your answer.

5.   To conduct a scientific experiment, students need to mix 90 milliliters of a 3% acid solution. They have a 1% and a 10% solution available. How many milliliters of the 1% solution and of the 10% solution should be combined to produce 90 milliliters of the 3% solution?

6. Mr. George bought 7 drums of two different cleaning fluids for his dry cleaning business. One of the fluids cost $30 a drum and the other was $20 a drum. The total price of the supplies was $160. How much of each fluid did Mr. George buy?

7. The perimeter of a rectangular picture is 86 inches. Twice the width exceeds the length by 2 inches. What are the dimensions of the picture?

8. A limited edition of a book published by a historical society was offered for sale to its members. The cost was one book for $12 or two books for $20. The society sold 880 books and the total amount of money taken in was $9840. How many members ordered two books?

9. HomeMade Toys manufactures solid pine trucks and cars and usually sells four times as many trucks as cars. The net profit from each truck is $6 and the profit from each car is $5. If the company wants a total profit of $29,000, how many trucks and cars should they sell?

10. Mr. Griffin wants to plant soybeans and corn on 100 acres of land. Soybeans require 6 hours of labor per acre, and corn requires 8 hours of labor per acre. If Mr. Griffin has 660 hours available, how many acres of each crop should he plant?

ANSWERS
1. 2 three point, 7 two point baskets
2. 5 pkgs are greater than or equal to 3 lbs, 7 pkgs are less than 3 lbs
3. $6 @ restaurant, $5 @ babysitting
4. Break even point is (2, 11). Opt 1 is better for more than 2 hr., opt 2 is better for less than 2 hr.
5. 20 ml of 10%, 70 ml of 1%
6. 5 drums costing $20; 2 drums costing $30
7. width 15 in; length 28 in.
8. 180 members bought 2 books
9. 1000 cars; 4000 trucks
10. 30 acres of corn, 70 acres of soybeans