**Systems of Equations: Word Problems Project!!!**

Your task:

1. Use one of the word problems from the bank attached.
2. Write a system of equations to model your word problem. This must be done and checked by Ms. Cowie no later than ________________.
3. Graph your system of equations using the desmos program.
4. Solve your system of equations using elimination.
5. Solve you system of equations using substitution
6. Check your solution algebraically
7. Analyze how to solve a system of equation (“the big picture”) and come up with key facts to help other students.
8. FINAL PRODUCT IS DUE NO LATER THAN: ________________.

How you will present it:

**You will make a 6-page presentation. Your job is to do the following:**

1. Make a cover with a creative title and illustrations/clip art that refer to your problem. On this cover you will include your names (first and last) and period.
2. The first slide will have the complete problem written out. You will define your variables (say what your two variables stand for) and write your two equations.
3. The second slide will have the graph. You will graph your system of equations. Clearly label the solution to your system on your graph. Explain what your solution means in a sentence.
4. The third slide will have the system solved algebraically using elimination and substitution. Solve your system using these methods. Show each step neatly. Double and triple-check your work to make sure you didn't make any mistakes. Clearly mark your solution. Explain what your solution means in a sentence. **Hint:** Do all your work on a scratch piece of paper first and then neatly type the work into your slides.
5. The fourth slide will show your solution checked neatly into both original equations. Show your work step by step.
6. The last slide will be a list neatly written by you. In this list you will write at least FOUR KEY FACTS that an Algebra I student must know if they are going to write, graph, solve, and check a system of equations.

**How you will be graded:**

<table>
<thead>
<tr>
<th>Points</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>Presentation made, put together neatly and nicely</td>
</tr>
<tr>
<td>5</td>
<td>Cover page with creative title and illustrations pertaining to the problem</td>
</tr>
<tr>
<td>10</td>
<td>Problem written out neatly, variables defined, system of equations written and correct</td>
</tr>
<tr>
<td>10</td>
<td>System graphed correctly. Neatly done. Clear solution. Solution explained in a sentence</td>
</tr>
<tr>
<td>10</td>
<td>Systems solved algebraically correctly. Neatly done. Every step shown. Solution explained in a sentence</td>
</tr>
<tr>
<td>5</td>
<td>Solution to system checked into both original equations. Neatly shown. Every step shown</td>
</tr>
<tr>
<td>5</td>
<td>FOUR KEY FACTS. Neatly written. Thoughtful. Complete. Accurate</td>
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</tbody>
</table>

**Name: ______________________  Score: __________**
1. Kendra owns a restaurant. She charges $1.50 for 2 eggs and one piece of toast, and $.90 for one egg and one piece of toast. Write and graph a system of equations to determine how much she charges for each egg and each piece of toast. Let x represent the number of eggs and y the number of pieces of toast.

2. The length of a rectangle is 3 centimeters more than 3 times the width. If the perimeter of the rectangle is 46 centimeters, find the dimensions of the rectangle.

3. The length of a rectangle is 2 cm more than four times the width. If the perimeter of the rectangle is 84 cm, what are its dimensions?

4. The sum of two numbers is 82. Their difference is 24. Write a system of equations that describes this situation. Solve by elimination to find the two numbers.

5. Sharon has some one-dollar bills and some five-dollar bills. She has 14 bills. The value of the bills is $30. Solve a system of equations using elimination to find how many of each kind of bill she has.

6. A jar containing only nickels and dimes contains a total of 60 coins. The value of all the coins in the jar is $4.45. Solve by elimination to find the number of nickels and dimes that are in the jar.

7. An ice skating arena charges an admission fee for each child plus a rental fee for each pair of ice skates. John paid the admission fees for his six nephews and rented five pairs of ice skates. He was charged $32.00. Juanita paid the admission fees for her seven grandchildren and rented five pairs of ice skates. She was charged $35.25. What is the admission fee? What is the rental fee for a pair of skates?

8. Mrs. Huang operates a soybean farm. She buys many supplies in bulk. Often the bulk products need to be custom mixed before Mrs. Huang can use them. To apply herbicide to a large field she must mix a solution of 67% herbicide with a solution of 46% herbicide to form 42 liters of a 55% solution. How much of the 67% solution must she use?

9. You decide to market your own custom computer software. You must invest $3,255 for computer hardware, and spend $2.90 to buy and package each disk. If each program sells for $13.75, how many copies must you sell to break even?

10. A motorboat can go 8 miles downstream on a river in 20 minutes. It takes 30 minutes for the boat to go upstream the same 8 miles. Find the speed of the current.

11. Mike and Kim invest $14,000 in equipment to print yearbooks for schools. Each yearbook costs $7 to print and sells for $35. How many yearbooks must they sell before their business breaks even?

12. A movie theater sells tickets for $9.00 each. Senior citizens receive a discount of $3.00. One evening the theater sold 636 tickets and took in $4974 in revenue. How many tickets were sold to senior citizens? How many were sold to “moviegoers” who were not senior citizens?

13. At a high school championship basketball game 1200 tickets were sold. Student tickets cost $1.50 each and adult tickets cost $5.00 each. The total revenue collected for the game was $3200. How many student tickets were sold? How many adult tickets were sold?

14. The treasurer of the student body at a college reported that the receipts from a recent concert totaled $916. Furthermore, he announced that 560 people had attended the concert. Students were charged $1.25 each for admission to the concert, and adults were charged $2.25 each. How many adults attended the concert?
15. Five hundred tickets were sold for a Saturday evening performance of a play. The tickets cost $7.50 for adults and $4.00 for children. A total of $3312.50 was received for all the tickets sold that Saturday evening. How many adults attended the play?

16. A landscaping company placed two orders with a nursery. The first order was for 13 bushes and 4 trees, and totaled $487. The second order was for 6 bushes and 2 trees, and totalled $232. The bills do not list the per-item price. What were the costs of one bush and of one tree?

17. A test has twenty questions worth 100 points. The test consists of True/False questions worth 3 points each and multiple choice questions worth 11 points each. How many multiple choice questions are on the test?

18. Margie is responsible for buying a week’s supply of food and medication for the dogs and cats at a local shelter. The food and medication for the dogs costs twice as much as those supplies for the cats. She needs to feed 164 cats and 24 dogs. Her budget is $4240. How much can Margie spend on each dog for food and medication?

19. Kristen spent $121 on shirts. Fancy shirts cost $28 and plain shirts cost $15. If she bought a total of 7 shirts, then how many of each kind did she buy?

20. A class of 195 students went on a field trip. They took 7 vehicles, some cars and some buses. Find the number of cars and buses taken if each car holds 5 students and each bus holds 45 students.

21. All 231 students in the Math Club went on a field trip. Some students rode in vans, which hold 7 students each, and some students rode in buses, which hold 25 students each. How many of each type of vehicle did they use if there were 15 vehicles total?

22. At Elisa’s Printing Company LLC there are two kinds of printing presses: Model A, which can print 70 books per day, and Model B, which can print 55 books per day. The company owns 14 total printing presses and this allows them to print 905 books per day. How many of each type of press do they have?