SOLVING SYSTEMS OF EQUATIONS

EQ: How do we solve system of equations word problems?

Warm-Up: Solve the following system of equation using the substitution method. Show all of your work.

$x = y - 2$

$y = 10 - 3x$

$y = 10 - 3(y-2)$

$y = 10 - 3y + 6$

$y = 16 - 3y$

$+3y \quad +3y$

$\frac{4y}{4} = \frac{16}{4}$

$y = 4$

$x = 4 - 2$

$x = 2$

$(2, 4)$

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The Happy Faces Middle School Math Club sold gift wrap to earn money for a upcoming math competition. The total number of rolls sold was 480. The gift wrap in solid colors sold for $4.00 per roll, and the print gift wrap sold for $6.00 per roll. The total amount of money collected was $2340.

How many rolls of each kind of gift wrap were sold?

Let's do this!

1) What are the unknowns in the word problem?

Amount of each roll sold

2) Assign each unknown a variable

Let's make:

x: Solid roll ***y:*** print roll

3) Using **x** and **y**

Translate (make an equation): The total number of rolls sold was 480 $x + y = 480$

4) ***Translate (make an equation):*** The gift wrap in solid colors sold for $4.00 per roll, and the print gift wrap sold for $6.00 per roll. The total amount of money collected was $2340.

$4x + 6y = 2340$

5)Put both equations together and solve the system:

$x + y = 480 \rightarrow x + y = 480$

$-y \quad -y$

$x = 480 - y$

$4x + 6y = 2340$

$4(480 - y) + 6y = 2340$

$1920 - 4y + 6y = 2340$

$1920 + 2y = 2340$

$-1920 \quad -1920$

$\frac{2y}{2} = \frac{420}{2}$

$y = 210$ print

$x + 210 = 480$

$-210 \quad -210$

$x = 270$ solid

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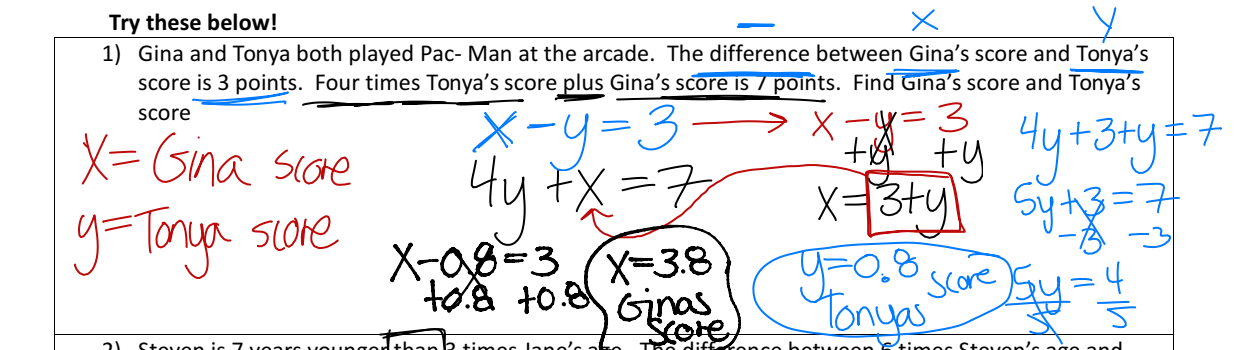
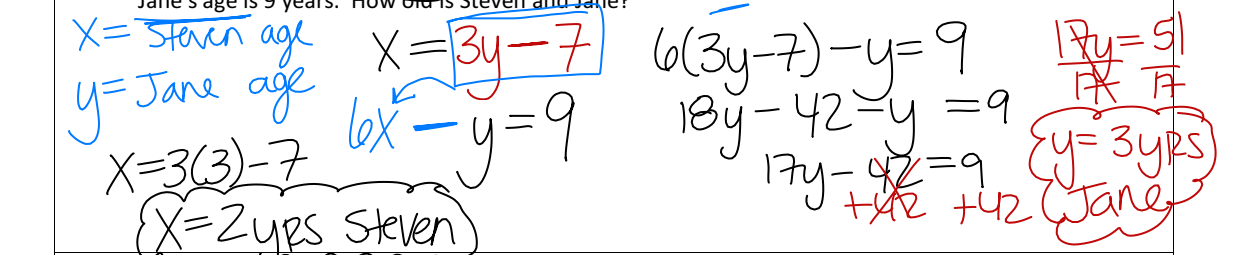
Try these below!

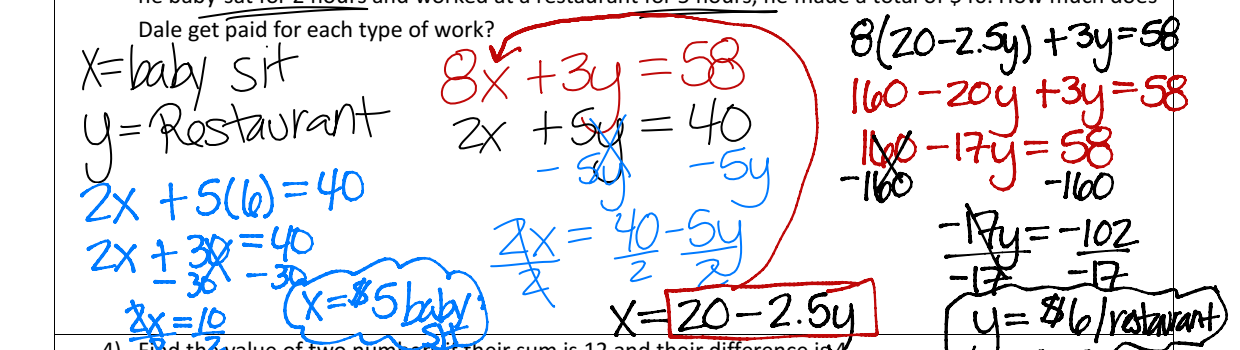
1) Gina and Tonya both played Pac- Man at the arcade. The difference between Gina's score and Tonya's score is 3 points. Four times Tonya's score plus Gina's score is 7 points. Find Gina's score and Tonya's score



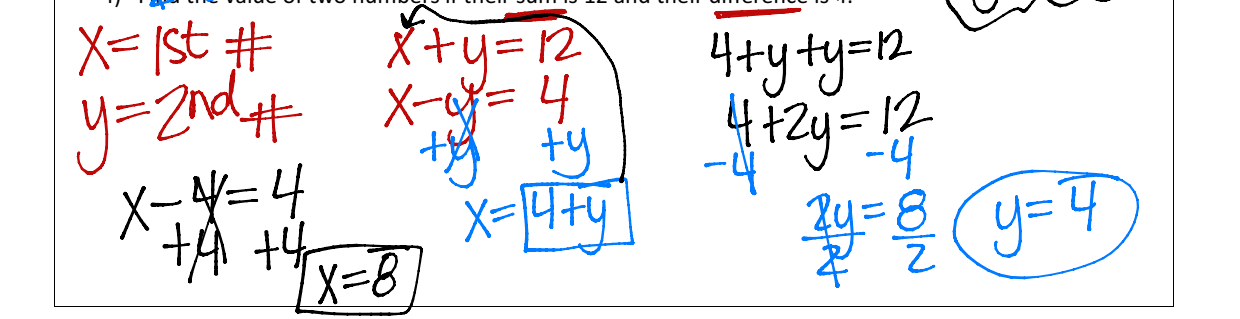
2) Steven is 7 years younger than 3 times Jane's age. The difference between 6 times Steven's age and Jane's age is 9 years. How old is Steven and Jane?



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) Find the value of two numbers if their sum is 12 and their difference is 4.



Systems of Equations Word Problems Homework

Directions: Solve and CHECK each problem below

1) The difference of two numbers is 3. Their sum is 13. Find the numbers	2) 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 3 bushes and 1 tree, and totaled $116. The bills do not list the per-item price. What were the costs of one bush and of one tree?
3) The senior classes at Hauppauge HS and Smithtown HS planned separate trips to NYC. Hauppauge HS rented 1 van and 6 buses for 372 students. Smithtown HS rented 4 vans and 12 buses for 780 students. How many students can a van carry? How many students can a bus carry?	4) Hauppauge Middle School is selling tickets to a spring musical. On the first day school sold 1 senior citizen ticket and 3 child tickets for a total of $25. The school earned $67 dollars on the second day by selling 8 senior citizen tickets and 5 child tickets. What was the price for one senior citizen ticket and one child ticket?
5) The difference of two numbers is 4. Their sum is 12. Find the numbers.	6) *Candy Mixtures.* A bulk wholesaler wishes to mix some candy worth $.45 per pound and some worth $.80 per pound to make 350 lb. of a mixture worth $.65 per pound. How much of each type of candy should be used?