Warm Up

ERROR ANALYSIS Describe and correct the error in solving the system of linear equations.

1)

$5x + 2y = 9$ Equation 1

$3x - 2y = -1$ Equation 2

$2x = 10$

$x = 5$

The solution is $(5, -8)$.

Algebra 1 ~ **Systems – Word Problems Notes/HW** Name_____

4-Step Method:

1. Define variables
2. Write the system of equations
3. Solve showing all steps
4. State your solution in sentence form

1. The sum of two numbers is 30. Their difference is 14. Find the two numbers.

$x+y=30$
$x-y=14$

$2x=44$
$x=22$

$22+y=30$
$y=8$

2. The difference of two numbers is 7. Their sum is 23. Find the two numbers.

$x-y=7$
$x+y=23$

$2x=30$
$x=15$

$15+y=23$
$y=8$

3. You sell tickets for admission to your school play and collect a total of $104. Admission prices are $6 for adults and $4 for children. You sold 21 tickets. How many adult tickets and how many children tickets did you sell?

Let a = # adult tickets
c = # child tickets

$-4(1a+1c=21)$
$6a+4c=104$

$-4a-4c=-84$
$6a+4c=104$
$2a=20$
$a=10$ adult tickets

$10+c=21$
$c=11$ child tickets

4. Your family goes to a restaurant for dinner. There are 6 people in your family. Some order the chicken dinner for $14.80 and some order the steak dinner for $17. If the total bill was $91, how many people ordered each type of dinner?

Let c = chicken
s = steak

$-17(c+s=6)$
$14.80c+17s=91$

$-17c-17s=-102$
$14.80c+17s=91$
$-2.20c=-11$
$c=5$ ordered chicken

$s=1$ ordered steak

$c+s=6$
$5+s=6$
$s=1$

5. Casey orders 3 pizzas and 2 orders of breadsticks for a total of $29.50. Rachel orders 2 pizzas and 3 orders of breadsticks for a total of $23. How much does a pizza cost?

Let p = pizza cost
b = breadstick cost

$-3(3p+2b=29.50)$
$2(2p+3b=23)$

$-9p-6b=-88.50$
$4p+6b=46$
$-5p=-42.50$
$p=\$8.50$ pizza

6. Rent-A-Car rents compact cars for a fixed amount per day plus a fixed amount for each mile driven. Benito rented a car for 6 days, drove it 550 miles, and spent $337. Lisa rented the same car for 3 days, drove it 350 miles, and spent $185. What is the charge per day and the charge per mile for the compact car?

Let d = charge per day
m = charge per meal

$6d+550m=337$
$-2(3d+350m=185)$

$6d+550m=337$
$-6d-700m=-370$
$-150m=-33$
$m=\$.22$ per mile

$6d+550(.22)=337$
$6d+121=337$
$6d=216$
$d=\$36$ per day

7. Beach Hotel in Cancun is offering two weekend specials. One includes a 2-night stay with 3 meals and cost $195. The other includes a 3-night stay with 5 meals and cost $300. What is the cost of a single meal?

Let n = cost of night stay
m = cost of 1 meal

$-3(2n+3m=195)$
$2(3n+5m=300)$

$-6n-9m=-585$
$6n+10m=600$
$m=\$15$ per meal

Regular: Checkpoint

Writing Equations Systems of Equations Name_____

- **Remember to define the variable if not already defined!**
- **You have two equations: Both should be in form Ax + By = C**

For each question, you will need to assess what is being asked of you to find, to define an appropriate pair of variables, to write a pair of equations for the scenario. **JUST WRITE THE SYSTEM OF EQUATIONS! DO NOT SOLVE!!!**

EX 1: I bought 3 small tapas dishes and 2 large ones on a visit to Café Lavista and spent $14. I went back another day and got 4 small dishes and one big one for $12. Write the system of equations to represent the situation.

Let x = the price of a small dish
Let y = the price of a big dish

EX 2: I went to the store to buy rice & yogurt for my puppy who got sick & needed something mild to eat. I bought 3 pounds of rice and 2 quarts of yogurt and spent $8. The next week, he needed more rice and more yogurt! This time, I bought 4 pounds of rice and 3 quarts of yogurt and spent $11.50. Write the system of equations to represent the situation.

Let x = the price of rice
Let y = the price of yogurt

1. On a weekly basis I drive to work three days out of the week and take public transportation for the remaining days of the week. There has been no change in my transportation schedule the past two months. Last month my transportation expense totaled to $225.76 where gas cost me $3.09 per mile and bus fare was $1.75. This month my transportation expense went up to $235.68 because the price of gas increased to $3.12 per mile and bus fare increased to $2.25. Write the system of equations to represent the situation.

Let x = the number of miles driven each month
Let y = the number of bus fares purchased

2. At an after-season sale on winter clothes, I found a bunch of really cute hats & scarves. I decided to buy 2 hats and 2 scarves for myself to have for next year and spent $60. When I told my friends about the sale, they asked me to go back & get something for them. I ended up spending $44 on 1 hat and 2 more scarves. Write the system of equations to represent the situation.

Let h = hat price
Let s = scarf price

3. A youth group & their leaders visited Mammoth Cave. Two adults & 5 students in one van paid $77 for the Grand Avenue Tour of the cave. Two adults & 7 students in another van paid $95 for the same tour. Find the adult price & the student price of the tour. Write the system of equations to represent the situation.

Let a = adult price
Let s = student price

4. Friends from the math department often pick up lunch for each other. When it was Mr. Euler's turn to make the food run, he bought 5 sandwiches and 3 bags of chips. He spent $29.50. When Mr. Williams went, he got 4 sandwiches and 4 bags of chips for $26. Write the system of equations to represent the situation.

Let s = cost of sandwiches
Let c = cost of bag of chips

5. A website allows users to download individual songs or an entire album. All individual songs cost the same to download, and all albums cost the same to download. Ryan pays $14.94 to download 5 individual songs and 1 album. Seth pays $22.95 to download 3 individual songs and 2 albums. Write the system of equations to represent the situation.

Let x = cost of individual song
Let y = cost of album

6. I was preparing a dinner party and bought a bunch of chicken and potatoes. Chicken cost $6.50 per pound and potatoes were $1 per pound. On my first trip to the store, I spent $24.50. When I realized that I didn't have enough food – everyone was bringing a date, so I'd need to shop again(!), I went back to the store for more, but the prices had change. On my second trip to the store, the chicken was up to $7 per pound and the potatoes were at $1.25 per pound. The total bill for the same amount of food was now $27.25. Write the system of equations to represent the situation.

Let x = pounds of chicken
Let y = pounds of potatoes

Honors: Once finished with the word problems, you will work on the graded assignment. Turn it in!