

Word Problems for Systems of Equations NOTES

Name NOTES

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, and then to solve your system. Check your answers to be sure they make sense.

EX 1: I went to the store to buy rice & yogurt for my puppy who got sick & needed something mild to eat. I bought 3 1-pound bags 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. How much did each item cost?

$x = \text{cost of rice}$
 $y = \text{cost of yogurt}$

$$\begin{aligned} (3x + 2y = 8)(-4) &\rightarrow -12x - 8y = -32 \\ (4x + 3y = 11.50)3 &\rightarrow 12x + 9y = 34.50 \\ \hline &1y = 2.50 \\ &y = 2.50 \end{aligned}$$

\$1 per bag of rice
 \$2.50 per quart of yogurt

Check:

$$\begin{aligned} 4(1) + 3(2.50) &= 11.50 \\ 4 + 7.50 &= 11.50 \\ \checkmark 11.50 &= 11.50 \end{aligned}$$

$$\begin{aligned} 3x + 2(2.50) &= 8 \\ 3x + 5 &= 8 \\ -5 &-5 \\ \hline 3x &= 3 \\ \frac{3x}{3} &= \frac{3}{3} \\ x &= 1 \end{aligned}$$

EX 2: 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. How many miles did I drive my car each month? How many times did I pay for bus fare?

$x = \# \text{ miles driven}$
 $y = \# \text{ bus fares paid}$

$$\begin{aligned} (3.09x + 1.75y = 225.76)(-2.25) \\ (3.12x + 2.25y = 235.68)(1.75) \end{aligned}$$

64 miles driven
 16 bus fares pd

$$\begin{aligned} -6.9525x - 3.9375y &= -507.96 \\ 5.46x + 3.9375y &= 412.44 \\ \hline -1.4925x &= -95.52 \\ -1.4925 & \quad \quad \quad -1.4925 \end{aligned} \quad X = 64$$

$$\begin{aligned} 3.09(64) + 1.75y &= 225.76 \\ 197.76 + 1.75y &= 225.76 \\ -197.76 & \quad \quad \quad -197.76 \\ \hline 1.75y &= 28 \\ \frac{1.75y}{1.75} &= \frac{28}{1.75} \\ y &= 16 \end{aligned}$$

Word Problems for Systems of Equations Practice

Name _____

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, and then to solve your system. Check your answers to be sure they make sense.

1. 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. How much does the website charge to download a song? How about an entire album?

2. 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. How many pounds of chicken did I get each time I went to the store? How many pounds of potatoes did my recipe call for?

3.

x	1	2	4	5	5	8	8	9
y	15	14	10	7	9	6	3	0

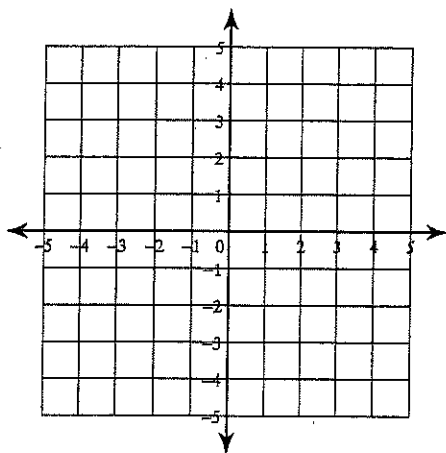
For the given data:

a. Write an equation for the line of best fit.

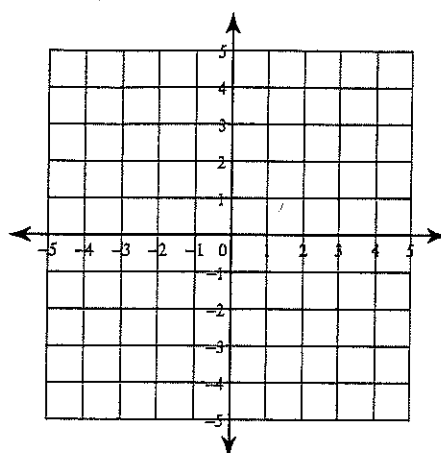
b. Identify the correlation coefficient.

c. Explain what the correlation coefficient means.

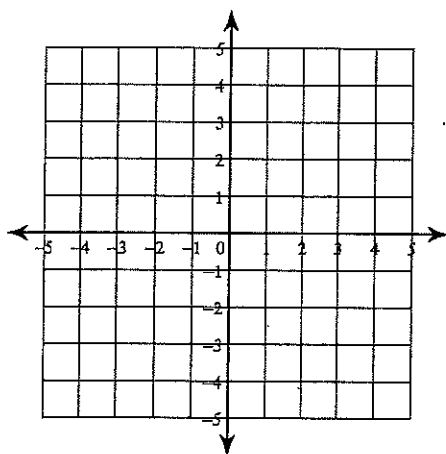
5) $x \leq -3$
 $5x + 3y \geq -9$



6) $4x - 3y < 9$
 $x + 3y > 6$



7) $x + y > 2$
 $2x - y > 1$



8) $x + y \geq 2$
 $4x + y \geq -1$

