6-5 Applying Systems of Linear Equations

Open your books to page 367, we are going to start in the homework immediately!

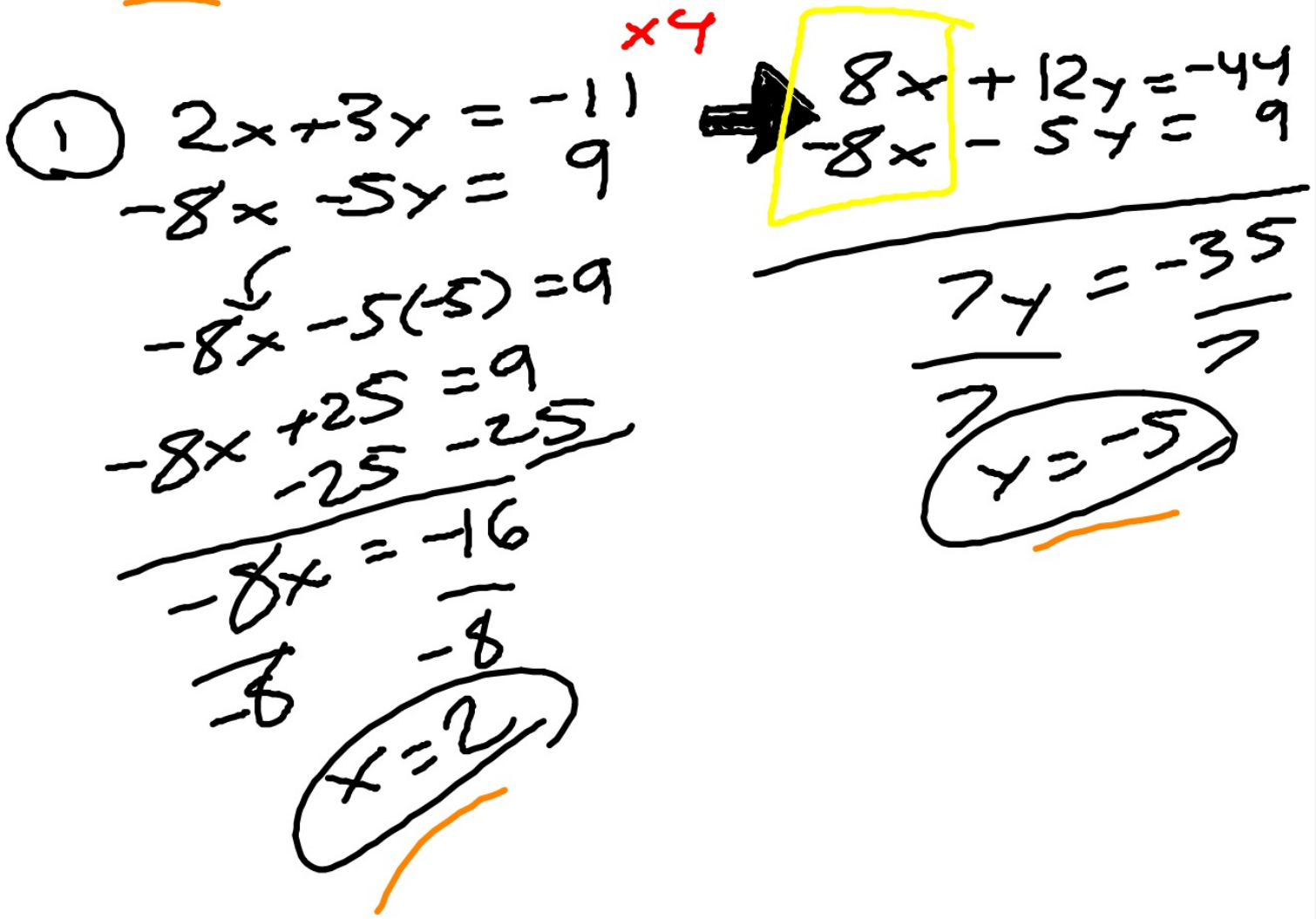
Example 1 **Determine the best method to solve each system of equations. Then solve the system.**

1. $2x + 3y = -11$
$-8x - 5y = 9$
[redacted]; (2, −5)

2. $3x + 4y = 11$
$2x + y = -1$
subst.; (−3, 5)

3. $3x - 4y = -5$
$-3x + 2y = 3$
[redacted]; $(-\frac{1}{2}, 1)$

4. $3x + 7y = 4$
$5x - 7y = -12$
[redacted]; (−1, 1)



Example 2

5. SHOPPING At a sale, Salazar bought 4 T-shirts and 3 pairs of jeans for $181. At the same store, Jenna bought 1 T-shirt and 2 pairs of jeans for $94. The T-shirts were all the same price, and the jeans were all the same price.

a. Write a system of equations that can be used to represent this situation. **See margin.**

b. Determine the best method to solve the system of equations. **substitution**

c. Solve the system. **Each T-shirt cost $16 and each pair of jeans cost $39.**

cost

$x =$ # of T-shirts.

$y =$ # of pairs of jeans.

$\rightarrow 4x + 3y = 181$

$\rightarrow x + 2y = 94$

... then solve

Example 1 **Determine the best method to solve each system of equations. Then solve the system.** **6–11. See margin.**

6. $-3x + y = -3$
$4x + 2y = 14$

7. $2x + 6y = -8$
$x - 3y = 8$

8. $3x - 4y = -5$
$-3x - 6y = -5$

9. $5x + 8y = 1$
$-2x + 8y = -6$

10. $y + 4x = 3$
$y = -4x - 1$

11 $-5x + 4y = 7$
$-5x - 3y = -14$

Additional Answers

5a. $4t + 3j = 181$; $t + 2j = 94$

6. subst.; (2, 3)

7. subst.; (2, −2)

8. elim (+); $\left(-\frac{1}{3}, 1\right)$

9. elim (−); $\left(1, -\frac{1}{2}\right)$

10. subst.; no solution

11. elim (−); (1, 3)

14. Horseshoe Lake = 1.25 mi, Crystal Palace = 2 mi

15. 880 books; If they sell this number, then their income and expenses both equal $35,200.

12. FINANCIAL LITERACY For a Future Teachers of America fundraiser, Denzell sold food as shown in the table. He sold 11 more subs than pizzas and earned a total of $233. Write and solve a system of equations to represent this situation. Then describe what the solution means.

Item	Selling Price
pizza	$5.00
sub	$3.00

12.
Sample answer: $3s + 5p = 233$ and $s = p + 11$; (25, 36); Denzell sold 25 pizzas and 36 subs.

13. DVDs Manuela has a total of 40 DVDs of movies and television shows. The number of movies is 4 less than 3 times the number of television shows. Write and solve a system of equations to find the numbers of movies and television shows that she has on DVD. **$m + t = 40$ and $m = 3t - 4$; 29 movies, 11 television shows**

14. CAVES The Caverns of Sonora have two different tours: the Crystal Palace tour and the Horseshoe Lake tour. The total length of both tours is 3.25 miles. The Crystal Palace tour is a half-mile less than twice the distance of the Horseshoe Lake tour. Determine the length of each tour. **See margin.**

15. CCSS MODELING The *break-even point* is the point at which income equals expenses. Ridgemont High School is paying $13,200 for the writing and research of their yearbook plus a printing fee of $25 per book. If they sell the books for $40 each, how many will they have to sell to break even? Explain. **See margin.**