page 110 WARM UP: Copy below and then do #2.

Example 2: What if the terms aren't lined up?

Use algebra to rearrange the terms until they are all lined up!

1. $\begin{cases} 2y = -x + 7 \\ 3x - 2y = -3 \end{cases}$

$2y = -x + 7$
$+x \quad +x$
$x + 2y = 7$
$3x - 2y = -3$
$4x = 4$
$x = 1$

$2y = -x + 7$
$2y = -(1) + 7$
$2y = -1 + 7$
$2y = 6$
$y = 3$

$(1, 3)$

2. $\begin{cases} 3x + 7y = 48 \\ 5x = 7y - 32 \end{cases}$
$-7y \quad -7y$

$3x + 7y = 48$
$5x - 7y = -32$
$8x = 16$
$x = 2$

$3(2) + 7y = 48$
$7y = 42$
$y = 6$

$(2, 6)$

1. $\begin{cases} 2y = -x + 7 \\ 3x - 2y = -3 \end{cases}$

$2y = -x + 7$

$+x \quad +x$

$x + 2y = 7$

$3x - 2y = -3$

$4x = 4$

$x = 1$

$2y = -x + 7$

$2y = -(1) + 7$

$2y = -1 + 7$

$2y = 6$

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$3x + 7y = 48$

$3(2) + 7y = 48$

$6 + 7y = 48$

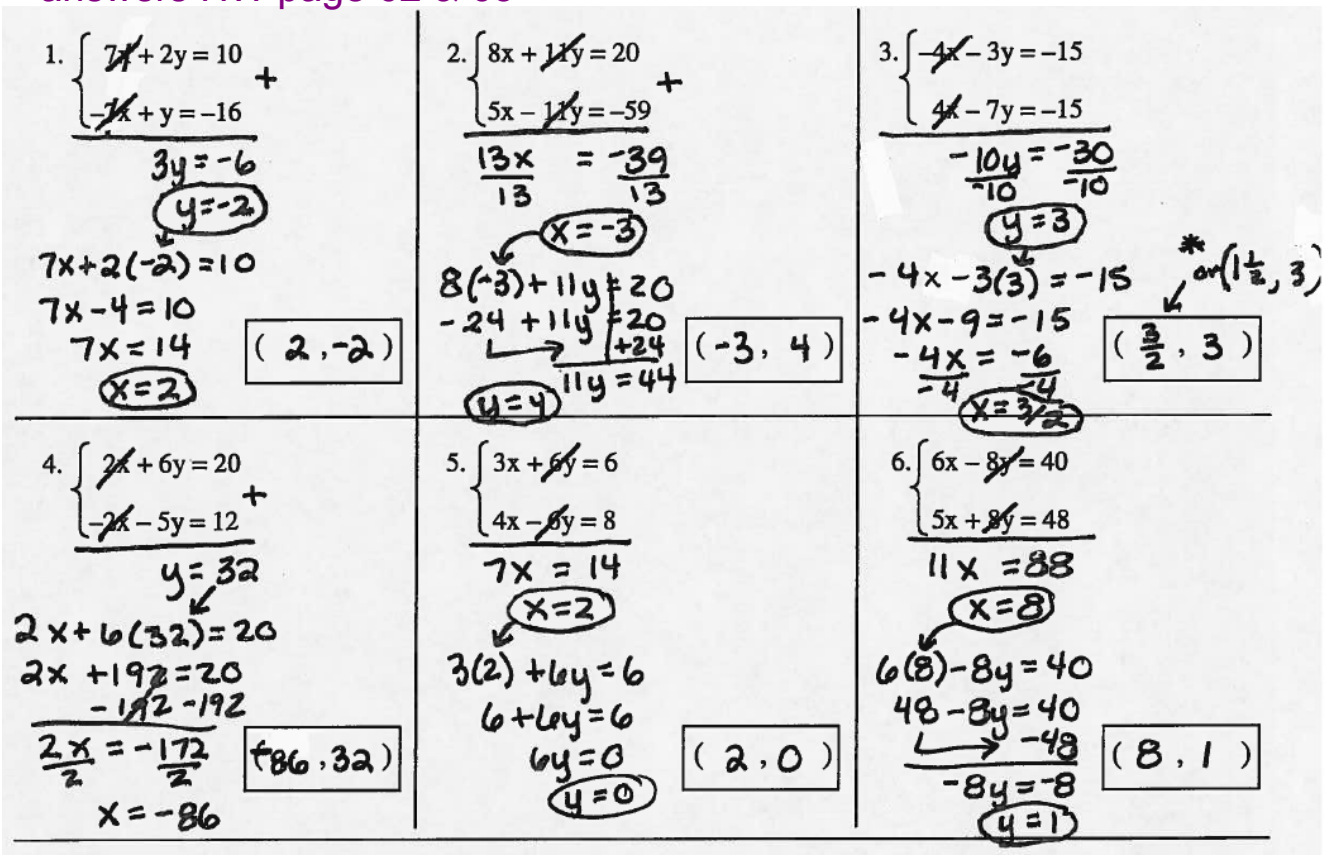
$7y = 42$

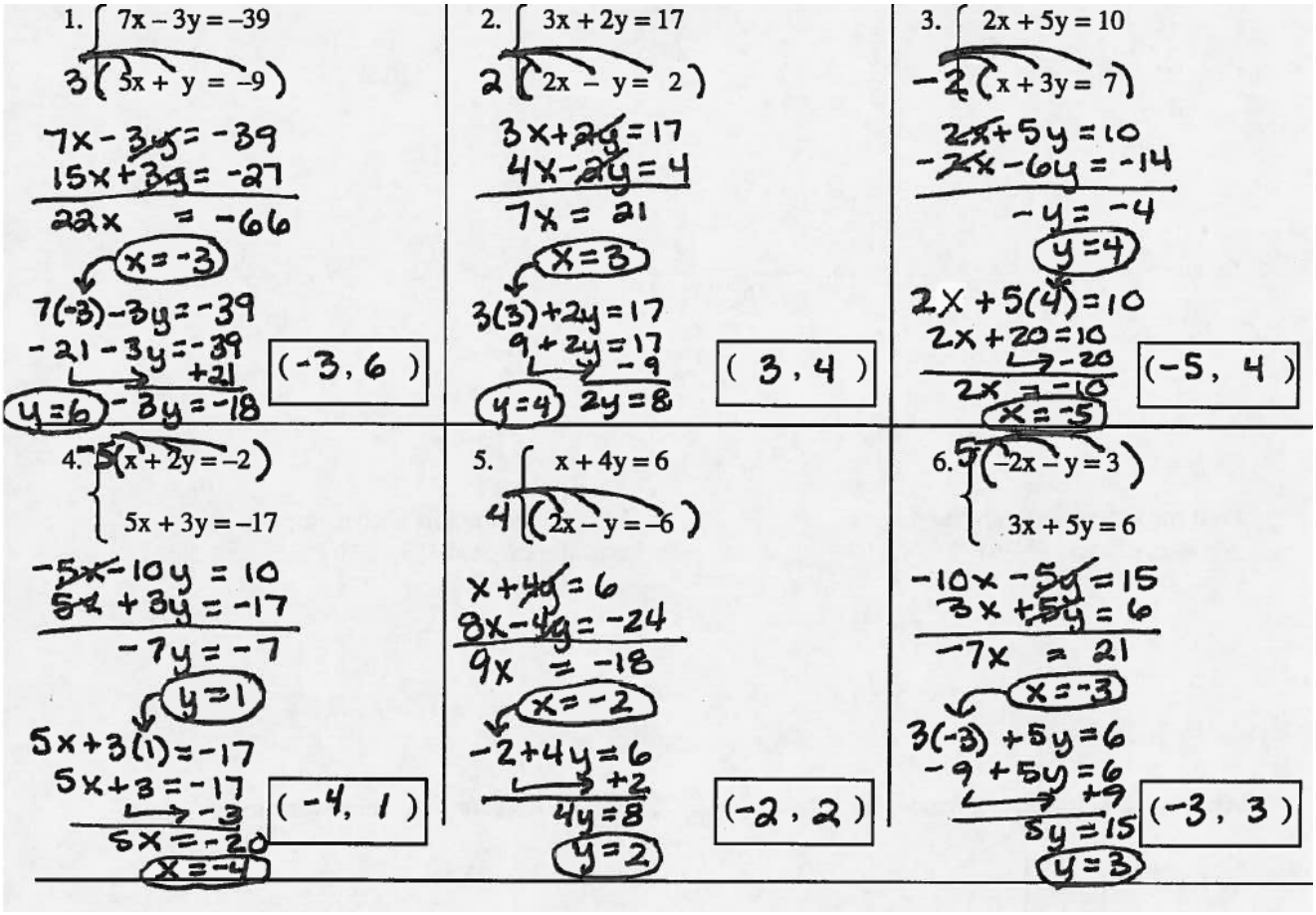
$y = 6$

$(2, 6)$

http://www.youtube.com/watch?feature=player_detailpage&v=1qHTmxlaZWQ

answers HW page 62 & 63




1. 7x − 3y = −39
3(5x + y = −9)
7x − 3y = −39
15x + 3y = −27
22x = −66
x = −3
7(−3) − 3y = −39
−21 − 3y = −39
+21
y = 6
−3y = −18
(−3, 6)
2. 3x + 2y = 17
2(2x − y = 2)
3x + 2y = 17
4x − 2y = 4
7x = 21
x = 3
3(3) + 2y = 17
9 + 2y = 17
−9
y = 4
2y = 8
(3, 4)
3. 2x + 5y = 10
−2(x + 3y = 7)
2x + 5y = 10
−2x − 6y = −14
−y = −4
y = 4
2x + 5(4) = 10
2x + 20 = 10
−20
2x = −10
x = −5
(−5, 4)
4. −5(x + 2y = −2)
5x + 3y = −17
−5x − 10y = 10
5x + 3y = −17
−7y = −7
y = 1
5x + 3(1) = −17
5x + 3 = −17
−3
5x = −20
x = −4
(−4, 1)
5. x + 4y = 6
4(2x − y = −6)
x + 4y = 6
8x − 4y = −24
9x = −18
x = −2
−2 + 4y = 6
+2
4y = 8
y = 2
(−2, 2)
6. 5(−2x − y = 3)
3x + 5y = 6
−10x − 5y = 15
3x + 5y = 6
−7x = 21
x = −3
3(−3) + 5y = 6
−9 + 5y = 6
+9
5y = 15
y = 3
(−3, 3)

Multiply **both** lines through by a factor that will force a variable to cancel when the lines are added:

7. $3(5x+4y=22)$
$4(3x-3y=-3)$

$15x+12y=66$
$12x-12y=-12$
$27x = 54$
$x=2$

$5(2)+4y=22$
$10+4y=22$
-10
$4y=12$
$y=3$

$(2, 3)$

8. $3(5x-2y=-12)$
$2(2x+3y=-1)$

$15x-6y=-36$
$4x+6y=-2$
$19x = -38$
$x=-2$

$5(-2)-2y=-12$
$-10-2y=-12$
$+10$
$-2y=-2$
$y=1$

$(-2, 1)$

9. $5(4x-2y=20)$
$-2(-3x-5y=-2)$

$20x-10y=100$
$6x+10y=4$
$26x = 104$
$x=4$

$4(4)-2y=20$
$16-2y=20$
-16
$-2y=4$
$y=-2$

$(4, -2)$

Example 3: What if the terms are lined up, and could cancel except that the signs aren't right?

Then you can _____ the lines instead.
Basically multiply the left and right side of o[illegible] o[illegible]e lines by _____.

1. $\begin{cases} 2x + 7y = 12 \\ 2x + 3y = 4 \end{cases}$ $\begin{cases} 6x - 8y = 40 \\ -5x - 8y = -48 \end{cases}$

SKIP

√ Understanding Check:

a. $\begin{cases} 10x - 4y = 6 \\ 10x + 3y = 13 \end{cases}$

b. $\begin{cases} -2x + 3y = -9 \\ x + 3y = 3 \end{cases}$

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Writing Equations in Ax + By = C to describe real situations:

Write an equation in Ax + By = C for each situation:

1. A company will charge $3 to ship a medium size box to China, and $4 to ship a large box to China. Write an equation to represent the amount of boxes the company could ship if their shipping budget is 132 dollars.

Define your variables:
Let x = # med boxes
Let y = # lg boxes

Equation: $3x + 4y = 132$

2. Jenny is making a scrapbook of her senior year. She needs to get some pictures printed. She finds an online company that will print and send her 3x5 pictures for 20¢ each and 4x6 pictures for 30¢ each. If she is only allowed to order $10.00 worth of pictures, write an equation to represent the amount of each size of picture she could order.

Define your variables:
Let S = # of 3x5 pics
Let L = # of 4x6 pics

Equation: $.20S + .30L = 10$

$20S + 30L = 1000$

3. Jeff is packing a care box to send to his brother who is a soldier. He wants to send him his favorite cookies which weigh 10 oz. each and winter socks which weigh 22 oz per pair. He has been told that his box can weigh 8 pounds. Write an equation to represent the number of boxes of cookies and pairs of socks Jeff could pack for his brother. (Careful! The units must match, 1 lb = 16 oz)

Define your variables:
Let C = # cookies
Let S = # pairs of socks

Equation: $10C + 22S = 128$

4. Julie is trying to lose weight. She decides to try to burn calories by walking or jogging. She finds out that walking burns an average of 5 calories per minute, and jogging burns an average of 7 calories per minute. Write and equation to show the amount of walking of jogging Julie would need to do to burn and extra 300 calories.

Define your variables:
Let W = time walked (min)
Let J = min jog

Equation: $5W + 7J = 300$

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6–4 More Applications of Linear Systems

Example 1: Standard Form System

A necklace with 6 large beads and 30 small beads weighs 78 grams. A bracelet with 3 large beads and 10 small beads weighs 29 grams. Write and solve a system to find out how much large beads weigh and how much small beads weigh.

Define the variables: Let L = weight of Lg beads
Let S = weight of Sm bead

Write an equation for the necklace: $6L + 30S = 78$
Write and equation for the bracelet: $3L + 10S = 29$ (×3)

Use the elimination method to solve the problem:

$6L + 30S = 78$
$-6L - 20S = -58$
$10S = 20$
$S = 2$

$6L + 30(2) = 78$
$6L = 18$
$L = 3$

The Sm beads weigh 2 oz and the Lg beads weigh 3 oz.

Example 2: Ticket Problem

Suppose your community center sells a total of 292 tickets for a basketball game. An adult ticket costs \$3. A student ticket costs \$1. The sponsors collect \$470 in ticket sales. Write and solve a system to find the number of each type of tickets sold?

Define the variables: Let A = # of adult tix sold
Let S = # of student tix sold

Write an equation for the total number of tickets: $A + S = 292$
Write and equation for the total amount of sales: $3A + S = 470$

Use the elimination method to solve the problem:

$-A - S = -292$
$3A + S = 470$

$2A = 178$
$A = 89$

$89 + S = 292$
$S = 203$

89 adult tix and 203 student tix were sold.

Example 3: Sales Problem page 115

Suppose your class sells gift wrap for $4 per package and greeting cards for $10 per package. Your class sells 205 packages in all and receives a total of $1084. Find the number of packages sold.

Define the variables: Let w = # gift wrap packages sold
Let c = # greeting card packages sold

Write an equation for the total number of packages: $w + c = 205$

Write and equation for the total amount of sales: $4w + 10c = 1084$

Use the elimination method to solve the problem:

$-10w - 10c = -2050$
$4w + 10c = 1084$

$-6w = -966$

$w = 161$

$161 + c = 205$

$c = 44$

We sold 161 packs of gift wrap and 44 packs of cards.

√ Understanding Check:

Suppose another class sells a different brand of gift wrap, which costs $2 per package, and cards, which cost $5 per package. The class sells 250 packages in all and earns a total of $695. Find the number of each type of package sold.

Define the variables: Let W = packs wrap
Let C = packs cards

total number of packages: W + C = 250
total amount of sales: 2W + 5C = 695

Use the elimination method to solve the problem:

√ Understanding Check: of gift wrap.

Suppose another class sells a different brand of gift wrap, which costs $2 per package, and cards, which cost $5 per package. The class sells 250 packages in all and earns a total of $695. Find the number of each type of package sold.

Define the variables: Let w = gift wrap
Let c = greeting cards

total number of packages: $w + c = 250$
total amount of sales: $2w + 5c = 695$

Use the elimination method to solve the problem:

$-2(w + c = 250)$
$2w + 5c = 695$

$-2w - 2c = -500$
$2w + 5c = 695$

$3c = 195$

$\frac{3c}{3} = \frac{195}{3}$

$c = 65$

$w + 65 = 250$
$-65 \quad -65$

$w = 185$

They sold 65 packages of cards and 185 packages of gift wrap.

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Example 4: Coin/Value Problems

You have 28 coins that are all nickels (n) and dimes (d). The value of the coins is $2.05. How many of each coin do you have?

Define the variables: Let n = # nickels
Let d = # dimes

Write an equation for the number of coins: $n + d = 28$
Write an equation for the value of the coins: $5n + 10d = 205$

Solve the system using the equations:

√ Understanding Check:

You have 15 coins in your pocket that are either quarters or nickels. They total $2.75. How many of each coin do you have?

Define the variables: Let _____= _____
Let _____= _____

Write an equation for the number of coins: _____
Write an equation for the value of the coins: _____

Solve the system using the equations:

You have 15 coins in your pocket that are either quarters or nickels. They total $2.75. How many of each coin do you have?

Define the variables: Let n = nickels
Let q = quarters

Write an equation for the number of coins: n + q = 15
Write an equation for the value of the coins: .05n + .25q = 2.75

Solve the system using the equations:

$-5(n + q = 15)$
$100(.05n + .25q = 2.75)$

$-5n - 5q = -75$
$5n + 25q = 275$
$20q = 200$
$q = 10$

$n + 10 = 15$
$n = 5$

There are 5 nickels and 10 quarters.

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