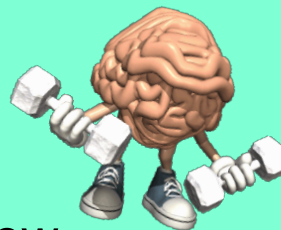




Dec. 18, 2019

Warm Up



open book Quiz Tomorrow

Do the following on your own loose leaf

Solve each system by substitution.

3) $3x + 6y = 3$

$x - 4y = -23$

$x = 4y - 23$

4) $x - 7y = -1$

$2x - 2y = -2$

Solve each system by elimination.

5) $-3x - y = -17$

$3x + 7y = -25$

6) $2x - 6y = -16$

$2x - 7y = -18$

$$3) \quad \begin{aligned} 3x + 6y &= 3 \\ x &= -23 + 4y \end{aligned}$$

$$3x + 6y = 3$$

$$3(-23 + 4y) + 6y = 3$$

$$-69 + 12y + 6y = 3$$

$$-69 + 18y = 3 + 69$$

$$\frac{18y}{18} = \frac{72}{18}$$

$$y = 4$$

↓ sub

$$x = 4y - 23$$

$$= 4(4) - 23$$

$$= 16 - 23$$

$$x = -7$$

$$(-7, 4)$$

$$\begin{aligned}3x + 6y &= 3 \\x - 4y &= -23 \\ &(-7, 4)\end{aligned}$$

$$\begin{aligned} \text{q) } x - 7y &= -1 & \Rightarrow & x = 7y - 1 \\ 2x - 2y &= -2 & \swarrow & \\ & & \searrow & \\ & & 2(x) - 2y &= -2 \\ & & 2(7y - 1) - 2y &= -2 \\ & & 14y - 2 - 2y &= -2 \end{aligned}$$

$(-1, 0)$

$$-3x - y = -17$$

$$3x + 7y = -25$$

$$(8, -7)$$

$$2x - 6y = -16$$

$$2x - 7y = -18$$

$$(-2, 2)$$

Math 10 (Numbers Relations & Functions)

Name _____

Elimination **Same sheet as Yesterday**

Date _____

Solve each system by elimination.

1) $2x + 8y = 8$
 $-3x - 8y = -4$


2) $-x + 4y = 7$
 $x + 4y = 25$


3) $-9x + 8y = 15$
 $-9x + 6y = 27$


4) $-x - 5y = -3$
 $-x + 3y = 13$


5) $-5x + 2y = 9$
 $6x - 2y = -8$


6) $5x + 5y = 30$
 $5x + 2y = 12$


 7) $-10x + 8y = -28$
 $9x + 4y = 14$


 8) $-6x + y = -15$
 $-12x - 3y = -15$


 9) $-5x + 10y = -10$
 $-7x - 5y = -14$

 10) $-5x + 10y = 5$
 $10x - 4y = 6$

 11) $7x - 2y = 24$
 $3x + 9y = 30$

 12) $-3x - 2y = 2$
 $-5x - 3y = 6$

 13) $3x - 6y = 30$
 $-10x - 9y = -13$

 14) $7x - 10y = 0$
 $-9x - 4y = 0$

15) $-10x + 7y = 12$
 $-3x + 6y = -12$

16) $-3x + 4y = 2$
 $-5x + 3y = 29$

17) $-10x - 6y = -14$
 $8x + 5y = 11$

18) $-3x - 2y = 8$
 $-8x - 7y = 18$

HW Solutions

$$\begin{aligned} 7) \quad & -10x + 8y = -28 \\ & 9x + 4y = 14 \\ & \quad (2, -1) \end{aligned}$$

$$\begin{aligned} 8) \quad & -6x + y = -15 \\ & -12x - 3y = -15 \\ & \quad (2, -3) \end{aligned}$$

$$\begin{array}{l} 9) \quad -5x + 10y = -10 \\ \quad -7x - 5y = -14 \\ \quad \quad (2, 0) \end{array}$$

$$\begin{array}{l} 10) \quad -5x + 10y = 5 \\ \quad 10x - 4y = 6 \\ \quad \quad (1, 1) \end{array}$$

$$\begin{aligned} 11) \quad & 7x - 2y = 24 \\ & 3x + 9y = 30 \\ & (4, 2) \end{aligned}$$

$$\begin{aligned} 12) \quad & -3x - 2y = 2 \\ & -5x - 3y = 6 \\ & (-6, 8) \end{aligned}$$

$$\begin{array}{l} 13) \quad 3x - 6y = 30 \\ \quad -10x - 9y = -13 \\ \quad (4, -3) \end{array}$$

$$\begin{array}{l} 14) \quad 7x - 10y = 0 \\ \quad -9x - 4y = 0 \\ \quad (0, 0) \end{array}$$

$$\begin{array}{l} 15) \quad -10x + 7y = 12 \\ \quad \quad -3x + 6y = -12 \\ \quad \quad \quad (-4, -4) \end{array}$$

$$\begin{array}{l} 16) \quad -3x + 4y = 2 \\ \quad \quad -5x + 3y = 29 \\ \quad \quad \quad (-10, -7) \end{array}$$

$$\begin{aligned} 17) \quad & -10x - 6y = -14 \\ & 8x + 5y = 11 \\ & (2, -1) \end{aligned}$$

$$\begin{aligned} 18) \quad & -3x - 2y = 8 \\ & -8x - 7y = 18 \\ & (-4, 2) \end{aligned}$$

Math 10 (Numbers Relations & Functions)

Name _____

Elimination

Did Dec . 21 & 22

Date _____

Solve each system by elimination.

1) $2x + 8y = 8$
 $-3x - 8y = -4$

2) $-x + 4y = 7$
 $x + 4y = 25$

3) $-9x + 8y = 15$
 $-9x + 6y = 27$

4) $-x - 5y = -3$
 $-x + 3y = 13$

5) $-5x + 2y = 9$
 $6x - 2y = -8$

6) $5x + 5y = 30$
 $5x + 2y = 12$

7) $-10x + 8y = -28$
 $9x + 4y = 14$

8) $-6x + y = -15$
 $-12x - 3y = -15$

9) $-5x + 10y = -10$
 $-7x - 5y = -14$

10) $-5x + 10y = 5$
 $10x - 4y = 6$

$$\begin{array}{l} 1) \quad 2x + 8y = 8 \\ \quad -3x - 8y = -4 \\ \quad \quad (-4, 2) \end{array}$$

$$\begin{array}{l} 2) \quad -x + 4y = 7 \\ \quad x + 4y = 25 \\ \quad \quad (9, 4) \end{array}$$

$$\begin{array}{l} 3) \quad -9x + 8y = 15 \\ \quad -9x + 6y = 27 \\ \quad \quad (-7, -6) \end{array}$$

$$\begin{array}{l} 4) \quad -x - 5y = -3 \\ \quad -x + 3y = 13 \\ \quad \quad (-7, 2) \end{array}$$

$$\begin{array}{l} 5) \quad -5x + 2y = 9 \\ \quad \quad 6x - 2y = -8 \\ \quad \quad \quad (1, 7) \end{array}$$

$$\begin{array}{l} 6) \quad 5x + 5y = 30 \\ \quad \quad 5x + 2y = 12 \\ \quad \quad \quad (0, 6) \end{array}$$

Recall

Elimination using Multiplication

Consider the system

$$\begin{array}{l} x + 2y = 6 \\ 3x + 3y = -6 \end{array}$$

How are they related?

What could we do to equation 1 to make the "x" equal?

answer



Recall Elimination using Multiplication

Consider the system

$$\begin{array}{l} x + 2y = 6 \\ 3x + 3y = -6 \end{array}$$

How are they related?

What could we do to equation 1 to make the "x" equal?

multiply equation 1 by 3



Recall Elimination using Multiplication

Consider the system

$$\begin{array}{l} 3x + 6y = 18 \\ 3x + 3y = -6 \end{array}$$

Now subtract the equations



Recall Elimination using Multiplication

Consider the system

$$3x + 6y = 18$$

$$\underline{-3x - 3y = +6}$$

Now subtract the equations

Answer



Recall Elimination using Multiplication

Consider the system

$$3x + 6y = 18$$

$$-3x - 3y = +6$$

$$3y = 24$$

$$y = 8$$

Now subtract the equations

Sub into equation 1 (original) or the above

$$x + 2y = 6$$

$$x + 2(8) = 6$$

$$x + 16 = 6$$

$$x = 6 - 16$$

$$x = -10$$

$$(-10, 6)$$

Elimination using Division

$$x + 2y = 6$$

$$3x + 3y = -6 \xrightarrow{\text{all divisible by}}$$

Answer:

You try

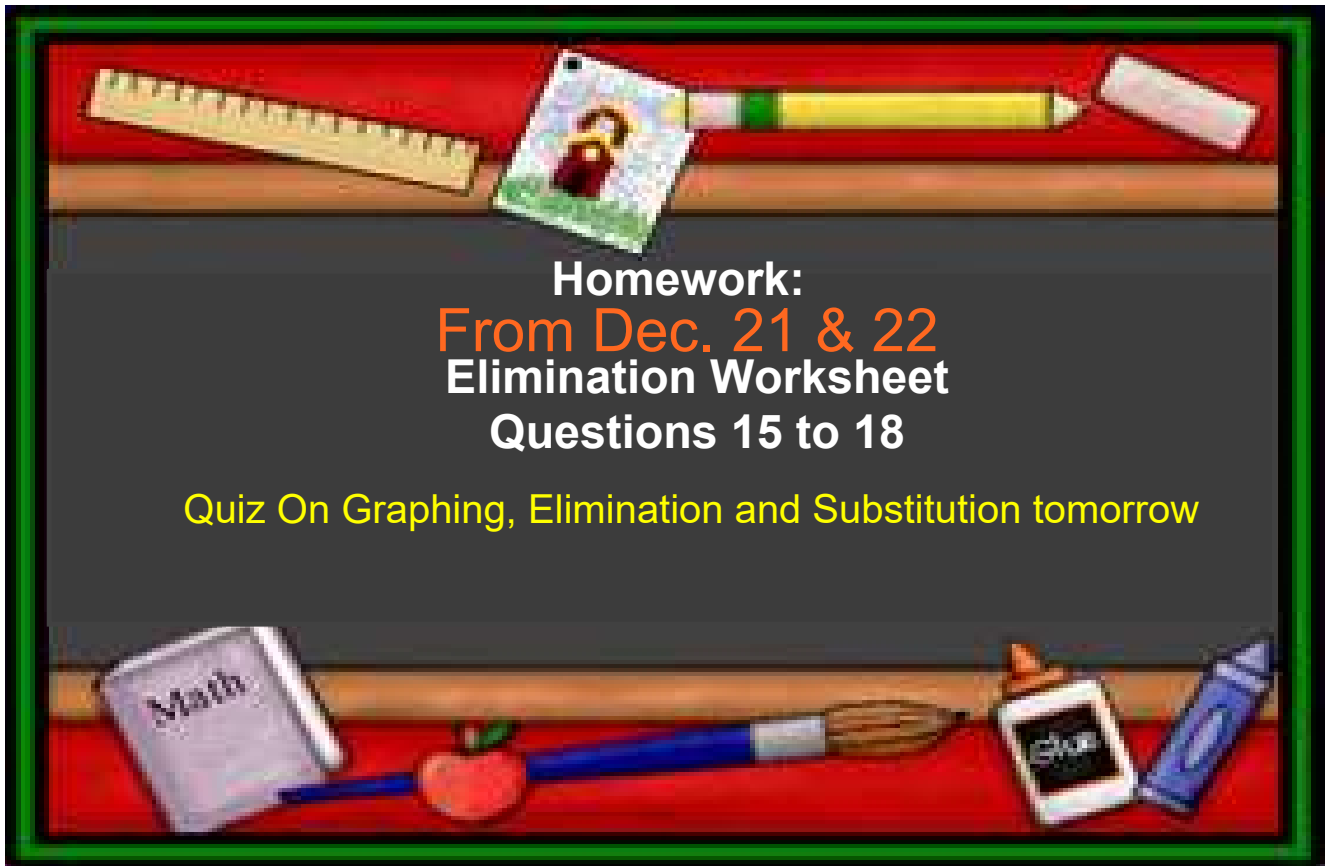
$$x + 2y = 5$$

$$2x + 6y = 12$$

You try either way

$$\begin{aligned} 11) \quad & 7x - 2y = 24 \\ & 3x + 9y = 30 \\ & (4, 2) \end{aligned}$$

$$\begin{aligned} 12) \quad & -3x - 2y = 2 \\ & -5x - 3y = 6 \\ & (-6, 8) \end{aligned}$$



Homework:
From Dec. 21 & 22
Elimination Worksheet
Questions 15 to 18

Quiz On Graphing, Elimination and Substitution tomorrow

Elimination

Date _____

Solve each system by elimination.

1)
$$\begin{aligned} 2x + 8y &= 8 \\ -3x - 8y &= -4 \end{aligned}$$

2)
$$\begin{aligned} -x + 4y &= 7 \\ x + 4y &= 25 \end{aligned}$$

3)
$$\begin{aligned} -9x + 8y &= 15 \\ -9x + 6y &= 27 \end{aligned}$$

4)
$$\begin{aligned} -x - 5y &= -3 \\ -x + 3y &= 13 \end{aligned}$$

5)
$$\begin{aligned} -5x + 2y &= 9 \\ 6x - 2y &= -8 \end{aligned}$$

6)
$$\begin{aligned} 5x + 5y &= 30 \\ 5x + 2y &= 12 \end{aligned}$$

9)
$$\begin{aligned} -5x + 10y &= -10 \\ -7x - 5y &= -14 \end{aligned}$$

10)
$$\begin{aligned} -5x + 10y &= 5 \\ 10x - 4y &= 6 \end{aligned}$$

11)
$$\begin{aligned} 7x - 2y &= 24 \\ 3x + 9y &= 30 \end{aligned}$$

12)
$$\begin{aligned} -3x - 2y &= 2 \\ -5x - 3y &= 6 \end{aligned}$$

13)
$$\begin{aligned} 3x - 6y &= 30 \\ -10x - 9y &= -13 \end{aligned}$$

14)
$$\begin{aligned} 7x - 10y &= 0 \\ -9x - 4y &= 0 \end{aligned}$$

15)
$$\begin{aligned} -10x + 7y &= 12 \\ -3x + 6y &= -12 \end{aligned}$$

16)
$$\begin{aligned} -3x + 4y &= 2 \\ -5x + 3y &= 29 \end{aligned}$$

17)
$$\begin{aligned} -10x - 6y &= -14 \\ 8x + 5y &= 11 \end{aligned}$$

18)
$$\begin{aligned} -3x - 2y &= 8 \\ -8x - 7y &= 18 \end{aligned}$$

$$\begin{aligned} 7) \quad & -10x + 8y = -28 \\ & 9x + 4y = 14 \\ & \quad (2, -1) \end{aligned}$$

$$\begin{aligned} 8) \quad & -6x + y = -15 \\ & -12x - 3y = -15 \\ & \quad (2, -3) \end{aligned}$$

$$\begin{array}{l} 9) \quad -5x + 10y = -10 \\ \quad -7x - 5y = -14 \\ \quad (2, 0) \end{array}$$

$$\begin{array}{l} 10) \quad -5x + 10y = 5 \\ \quad 10x - 4y = 6 \\ \quad (1, 1) \end{array}$$

$$\begin{aligned} 11) \quad & 7x - 2y = 24 \\ & 3x + 9y = 30 \\ & (4, 2) \end{aligned}$$

$$\begin{aligned} 12) \quad & -3x - 2y = 2 \\ & -5x - 3y = 6 \\ & (-6, 8) \end{aligned}$$

$$1) \begin{cases} 7x - 2y = 24 & \textcircled{1} \\ 3x + 9y = 30 & \textcircled{2} \end{cases}$$

$$(4, 2)$$

$$\textcircled{1} \times 3$$

$$3(7x - 2y = 24)$$

$$\text{New } \textcircled{1} \quad \boxed{21x - 6y = 72}$$

$$12) \begin{cases} -3x - 2y = 12 \\ -5x - 3y = 10 \end{cases}$$

$$(-6, 8)$$

$$\textcircled{2} \times 7$$

$$7(-3x - 2y = 12)$$

$$\text{New } \textcircled{2} \quad \boxed{21x + 63y = 210}$$

$$\begin{array}{r} 21x - 6y = 72 \\ - (21x + 63y = 210) \\ \hline -69y = -138 \end{array}$$

$$y = \frac{-138}{-69}$$

$$\boxed{y = 2}$$

$$7x - 2y = 24$$

$$7x - 2(2) = 24$$

$$7x - 4 = 24$$

$$7x = 28$$

$$\boxed{x = 4}$$

$$13) \begin{array}{l} \textcircled{1} 3x - 6y = 30 \\ \textcircled{2} -10x - 9y = -13 \end{array}$$

$$(4, -3)$$

$$14) \begin{array}{l} 7x \\ -9 \\ (0, \end{array}$$

$$\textcircled{1} \times 3$$

$$3(3x - 6y = 30)$$

New $\textcircled{1}$

$$\boxed{9x - 18y = 90}$$

$$\textcircled{2} \times -2$$

$$-2(-10x - 9y = -13)$$

$$\boxed{20x + 18y = 26}$$

New $\textcircled{2}$

$$\begin{array}{r} 9x - 18y = 90 \\ + (20x + 18y = 26) \\ \hline 29x = 116 \end{array}$$

$$x = \frac{116}{29}$$

$$\boxed{x = 4}$$

$$3x - 6y = 30$$

$$3(4) - 6y = 30$$

$$12 - 6y = 30$$

$$-6y = 18$$

$$\boxed{y = -3}$$

$$\begin{array}{l} 15) \quad -10x + 7y = 12 \\ \quad \quad -3x + 6y = -12 \\ \quad \quad \quad (-4, -4) \end{array}$$

$$\begin{array}{l} 16) \quad -3x + 4y = 2 \\ \quad \quad -5x + 3y = 29 \\ \quad \quad \quad (-10, -7) \end{array}$$

17) $-10x - 6y = -14$

$8x + 5y = 11$

$(2, -1)$

18) $-3x - 2y = 8$

$-8x - 7y = 18$

$(-4, 2)$