Find the solution of the linear system _graphically_. Write your solution in the blank provided.

$(1,2)$ 1. $y = -x + 3$
$y = x + 1$
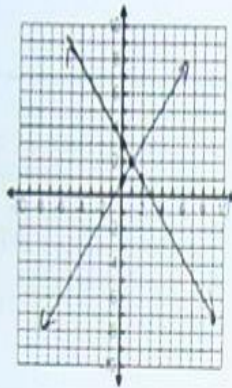
$(2,2)$ 2. $y = -2x + 7$
$-3x + 6y = 12$

$6y = 3x + 12$
$x = -2, y = 2$ $y = \frac{1}{2}x + 2$
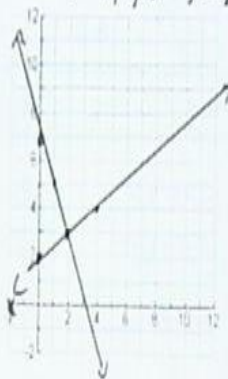
Use _substitution_ to solve the linear system. SHOW ALL WORK.

$(2, 2)$ 3. $y = 2x - 2$
$6x + 2y = 16$

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

$6x + 4x - 4 = 16$ $y = 2$

$10x - 4 = 16$

$10x = 20$

$x = 2$

$(-2, -2)$ 4. $4x - y = -6$
$y = 2x + 2$

a) $(-4/3, -2/4)$
b) $(-2, -2)$
c) $(-2/3, 10/3)$
d) $(2, -2)$

$y = 2(-2) + 2$
$y = -4 + 2$
$y = -2$

$4x - (2x + 2) = -6$
$4x - 2x - 2 = -6$
$2x - 2 = -6$
$2x = -4$ $x = -2$

Use _elimination_ to solve the linear system. SHOW ALL WORK.

$(2, 1)$ 5. $5x - 3y = 7$
$x + 3y = 5$

$6x = 12$
$x = 2$

$2 + 3y = 5$
$3y = 3$
$y = 1$

$(1, -2)$ 6. $2(-3x + 3y = -9)$
$6x + 2y = 2$

a) $(1, -2)$
b) $(2, -1)$
c) $(1, 2)$
d) $(-2, 1)$

$-6x + 6y = -18$
$6x + 2y = 2$

$8y = -16$
$y = -2$

$6x + 2(-2) = 2$
$6x - 4 = 2$
$6x = 6$
$x = 1$

store sold 32 pairs of jeans for a total of $1050. Brand A sold for $30 per pair and Brand B sold for $5 per pair. How many of Brand A were sold? Write a system of linear equations.

$x:$ Brand A
$y:$ B and B

$-35(x+y=32)$
$30x+35y=1050$

$-35x-35y=-1120$
$30x+35y=1050$
$-5x=-70$
$x=14$

a) 12   b) 16   c) 14   d) 18

8. You are selling tickets for a basketball game. Student tickets cost $3 and general admission tickets cost $5. You sell 350 tickets and collect $1450. How many of each type of ticket did you sell? Write a system of linear equations.

$x=$ student
$y=$ general

$3x+5y=1450$
$-3(x+y=350)$

$x+y=350$
$x+200=350$
$x=150$ students

$3x+5y=1450$
$-3x-3y=-1050$
$2y=400$
$y=200$ general.)

9. You are looking to buy a bouquet of flowers for your favorite math teacher. Lilies cost $3.00 each and roses cost $4.00 each. You have budgeted _no more than_ $28 to spend on flowers. Graph a linear inequality to illustrate how many of each type of flower you can purchase.
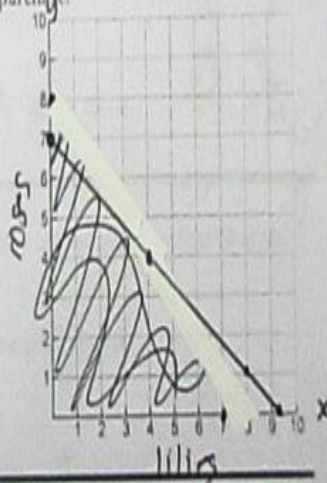
$x=$ lilies
$y=$ roses $3x+4y \le 28$

$4y \le -3x+28$
$y \le \frac{-3}{4}x+7$

$x=9.3$

$y=7$

roses

lilies

10. Solve the equation and write the reason for each step in solving the equation.

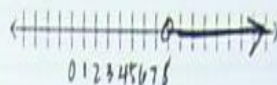| Equation	Steps
$2(4x+30)=76$	Original Equation
$8x+60=76$	Distributive Property
$8x=16$	Subtraction
$x=2$	Division

11. Create and solve the inequality. Then, graph the solution on the given number line.

"5 more than 2 times a number is greater than 21"

$$2x + 5 > 21$$
$$2x > 16$$
$$x > 8$$

+++++++++++O++++➔
0 1 2 3 4 5 6 7 8

Solve the literal equation for the indicated variable

12. $\frac{2}{5}x - y = z$, for x

Do	Undo
x	
$\cdot \frac{2}{5}$	$\div \frac{2}{5}$
$-y$	$+y$
$= z$	$= z$

$$x = \frac{z + y}{\frac{2}{5}} \quad p$$

13. $\frac{4a + b}{3} = c$, for a

$$a = \frac{3c - b}{4}$$

Do	Undo
a	
$\cdot 4$	$\div 4$
$+b$	$-b$
$= c$	$\div 3 \, c$

a) $a = \frac{12 - c}{4}$ b) $a = \frac{4c + b}{3}$ ⓒ $a = \frac{3c - b}{4}$ d) $a = 3b - c$

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14. You have $20 to spend. You need to buy chips and salsa for your friends. Chips cost $1 per bag and salsa costs $2 per jar.

a. Write the standard form equation. *Let x represent chips and y represent salsa.*
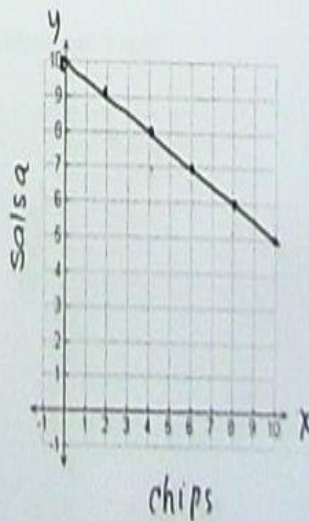
$$x + 2y = 20$$

b. Rewrite your equation in slope-intercept form and graph.

$$2y = -x + 20$$
$$y = -\frac{1}{2}x + 10$$

c. If I buy 6 bags of chips how many jars of salsa can I buy?

7 jars of salsa

salsa vs chips graph

Given the equation $2x + 3y = 12$, identify the slope once the equation is put into slope-intercept form.

$$3y = 2x + 12$$
$$y = -2/3x + 4$$

(a) $-\frac{2}{3}$ b) $\frac{2}{3}$ c) $-\frac{3}{2}$ d) 4

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16. Which property appropriately justifies the missing step?

Equation	Steps
$3k - 5 = 7$	Original Equation
$3k = 12$	Addition
$k = 4$	Division Property of Equality

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17. Write a linear equation to model the situation: *A cell phone plan costs $50 and $0.50 per minute.*

$$y = 0.50x + 50$$

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18. What is the solution to the inequality $5x - 15 \geq 2x + 6$?

$$3x \geq 21$$
$$x \geq 7$$

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19. The formula $d = rt$ tells the distance traveled at a given rate and time. *Solve the equation for t. A car drove 100 miles at a rate of 20 miles per hour. For how many hours was the car driving?*

$$t = \frac{d}{r}$$ $$\frac{100}{20} = 5 hrs$$

Do	Undo
t	
$\cdot r$	$\div r$
$= d$	$= d$

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20. Explain the ways you can determine if a system of equations will have (by graphing *and* solving algebraically):

a) Infinitely many solutions $2 = 2$

b) No solution

$2 = 3$