

Name: \_\_\_\_\_

KEY

Hour: \_\_\_\_\_

Algebra 2

**Practice Quiz (3.1 - 3.3)****Show all your work!**

1. Is
- $(5, -2)$
- a solution of the system? Explain/show evidence.

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

$$x + 2y = 1$$

$$2(5) + 6(-2) = -2$$

$$10 + (-12) = -2$$

$$5 + 2(-2) = 1$$

$$5 + (-4) = 1$$

Check  $(5, -2)$  in  
each equation.

✓

Yes

✓

Solve the linear system algebraically.

2.  $3x + y = 17$

$-4x - y = -21$

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$-x = -4$

$x = 4$

$\rightarrow 3(4) + y = 17$

$12 + y = 17$

$y = 5$

$(4, 5)$

3.  $4x + y = 4$

$y = -x - 5$

Substitute

$4x + (-x - 5) = 4$

$4x - x - 5 = 4$

$3x = 9$

$x = 3$

$y = -x - 5$

$y = -3 - 5$

$y = -8$

$(3, -8)$

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

$-4(2x + y = 8)$

$\rightarrow 3x + 4y = -3$

$\rightarrow -8x - 4y = -32$

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$x = 7$

$2x + y = 8$

$2(7) + y = 8$

$14 + y = 8$

$y = -6$

5.  $3x + 2y = 11$

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

$\rightarrow 3x + 2y = 11$

$\rightarrow -8x - 2y = 4$

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$x = -3$

$3(-3) + 2y = 11$

$-9 + 2y = 11$

$2y = 20$

$y = 10$

$(-3, 10)$

6.  $2(4x - 5y = 13)$

$5(6x + 2y = 48)$

$\rightarrow 8x - 10y = 26$

$\rightarrow 30x + 10y = 240$

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$x = 7$

$4x - 5y = 13$

$4(7) - 5y = 13$

$28 - 5y = 13$

$-5y = -15$

$y = 3$

$(7, 3)$

Show all work for all problems !

7. Company A charges \$12 per day plus 14 cents per mile to rent a certain car. Company B charges \$15 per day plus 9 cents per mile to rent the same car.

Let  $x$  = # miles driven and  $y$  = total cost

Write and solve a system of two equations to determine how many miles per day will have to be driven for the costs to be the same for each company. (Be careful... write the cents as dollars/decimals.)

$$\begin{aligned} \text{A: } y &= 12 + 0.14x \\ \text{B: } y &= 15 + 0.09x \end{aligned} \Rightarrow \begin{aligned} 12 + 0.14x &= 15 + 0.09x \\ 0.14x &= 3 + 0.09x \\ 0.05x &= 3 \\ x &= 60 \text{ miles} \end{aligned}$$

8. Tickets to a local movie were sold at \$6.00 for adults and \$4.50 for students. If 114 tickets were sold for a total of \$663.00, how many adult tickets were sold?

Write and solve a system of two equations to answer the above questions.

Let  $a$  = # adult tickets and  $c$  = # children's tickets

$$\begin{aligned} 6a + 4.50c &= 663 \\ a + c &= 114 \rightarrow a = 114 - c \end{aligned}$$
$$\begin{aligned} 6(114 - c) + 4.50c &= 663 \\ 684 - 6c + 4.50c &= 663 \end{aligned}$$
$$\begin{aligned} 684 - 1.50c &= 663 \\ 21 &= 1.50c \\ 14 &= c \\ a = 114 - c &= 100 \text{ adult tickets} \end{aligned}$$

9. In one week, a music store sold 13 guitars for a total of \$4957. Acoustic guitars cost \$349 and electric guitars cost \$489. How many of each type of guitar were sold?

$a$  = # acoustic guitars  
 $e$  = # electric guitars

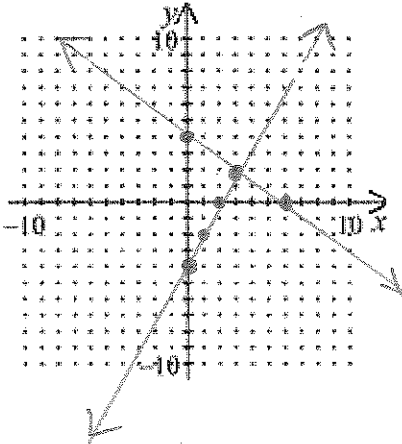
$$\begin{aligned} 349a + 489e &= 4957 \\ a + e &= 13 \\ a &= 13 - e \end{aligned}$$
$$\begin{aligned} 349(13 - e) + 489e &= 4957 \\ 4537 - 349e + 489e &= 4957 \\ 4537 + 140e &= 4957 \\ 140e &= 420 \\ e &= 3 \text{ electric guitars} \\ a &= 10 \text{ acoustic guitars} \end{aligned}$$

Show all work for all problems !

Solve the system by graphing.

10.  $2x + 3y = 12$   
 $y = 2x - 4$

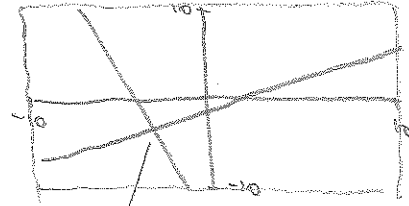
$$\begin{array}{r|l} x & x \\ \hline 0 & 4 \\ 6 & 0 \end{array}$$



Intersection point (3, 2)

11. Solve graphically, using the intersect feature of you calculator. Sketch your graph.

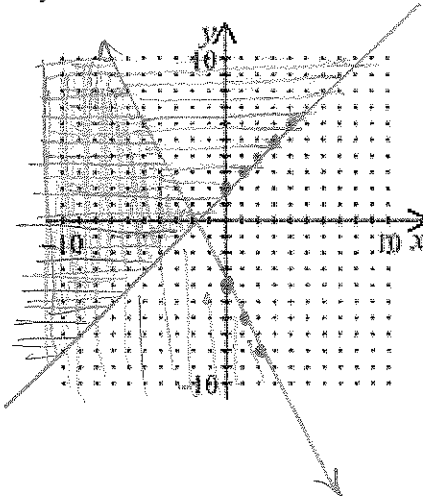
$y = -3x - 13$   
 $x - 4y = 5 \rightarrow -4y = 5 - x \rightarrow \frac{-4y}{-4} = \frac{5-x}{-4}$   
 $y = -\frac{5}{4} + \frac{x}{4}$



Intersection Point (-3.6, -2.15)

Graph the system of inequalities.

12.  $y \leq -2x - 4$   
 $y \geq x + 2$



13. Solve the system using tables on your graphing calculator.

$y = 2x + 3$   
 $y = -3x + 38$

x	y <sub>1</sub>	y <sub>2</sub>
6	15	20
7	17	17
8	19	14

(7, 17)