

Name KEY!

CHAPTER 5 TEST REVIEW (#2)

1) A person can drive at the age of 16.

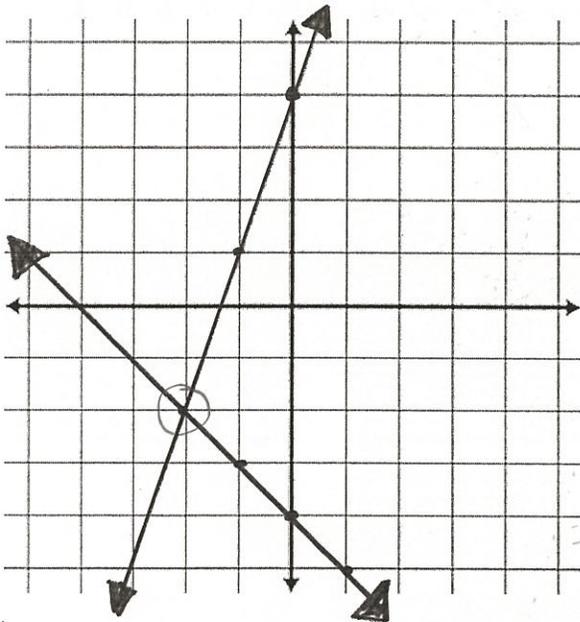
a. Write an inequality to describe the age a person can drive.

$P \geq 16$

b. Graph the solution set to the inequality.

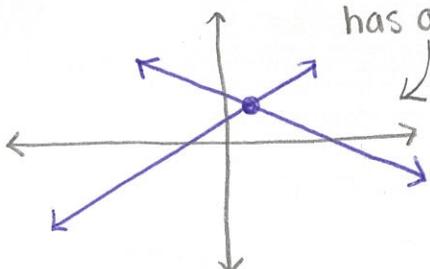


2) A graph of the system $\begin{cases} y = 3x + 4 \\ y = -x - 4 \end{cases}$ is shown below. Using the graph, estimate the solution.

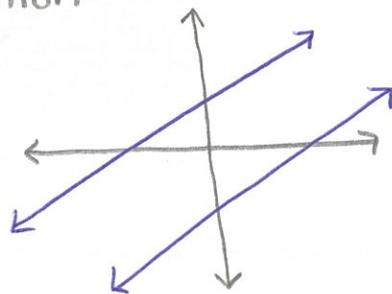


$(-2, 2)$

3) Sketch an example of a consistent and an inconsistent system.



has a solution



no solution

4) Solve the following system.

$$\begin{aligned} 5(14x - 11y) &= -349 \rightarrow 70x - 55y = -1745 \\ 14(5x + 19y) &= -10 \rightarrow 70x + 266y = -140 \\ \hline -321y &= -1605 \\ -321 & \quad -321 \\ \hline y &= 5 \end{aligned}$$

$(-21, 5)$

Bottom: $5x + 19y = -10$
 $5x + 19(5) = -10$
 $5x + 95 = -10$
 $5x = -105$
 $x = -21$

5) Solve the following system.

$$\begin{cases} 6x + 3y = z \\ y = 4x - 14 \\ z = -4x - 2 \end{cases}$$

$$6x + 3(4x - 14) = (-4x - 2)$$

$$6x + 12x - 42 = -4x - 2$$

$$18x - 42 = -4x - 2$$

$$+4x \quad +4x$$

$$22x - 42 = -2$$

$$+42 \quad +42$$

$$22x = 40$$

$$x = \frac{20}{11}$$

$$y = 4 \cdot \frac{20}{11} - 14$$

$$y = -\frac{74}{11}$$

$$z = -4 \cdot \frac{20}{11} - 2$$

$$z = -\frac{102}{11}$$

x	y	z
$\frac{20}{11}$	$-\frac{74}{11}$	$-\frac{102}{11}$

6) Solve the inequality and graph the solution set on a number line.

$$-2(x + 8) > -6$$

$$-2x - 16 > -6$$

$$+16 \quad +16$$

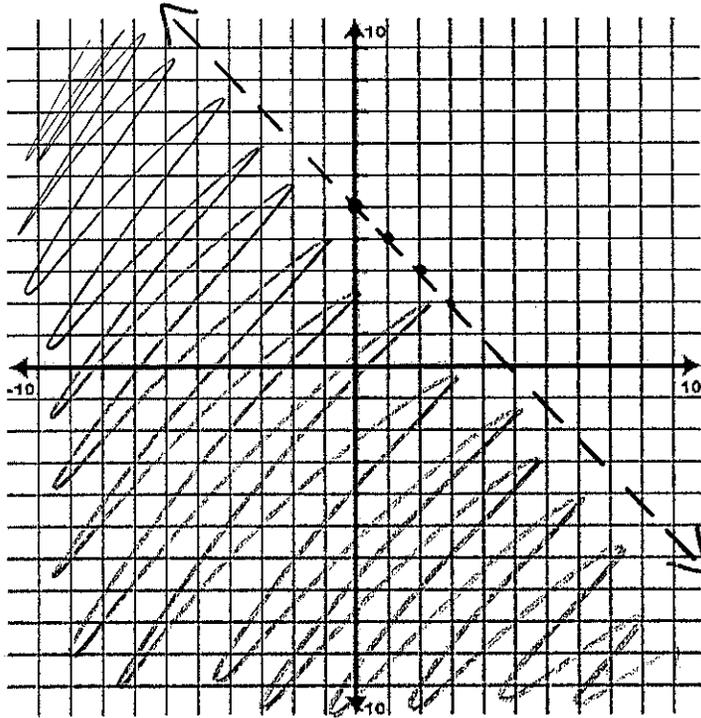
$$-2x > -10$$

$$* \frac{-2x}{-2} > \frac{-10}{-2} *$$

$$x < -5$$

$$x < -5$$

7) Graph the inequality $y < -x + 5$ on the grid below.



Identify two points that satisfy the inequality.

$$\frac{(0, 0)}{(1, 1)}$$

8) Solve the following system.

$$\begin{cases} x - 5y = 22 \\ 2x + 10y = -44 \end{cases} \rightarrow \begin{array}{r} 2x - 10y = 44 \\ + 2x + 10y = -44 \\ \hline 4x = 0 \\ x = 0 \end{array}$$

(0, -4.4)

TOP:

$$\begin{array}{r} -5y = 22 \\ -5y = 22 \\ \hline y = -4.4 \end{array}$$

9) Solve the following system.

$$\begin{cases} x = -11y + 254 \\ 17x + 2y = 248 \end{cases}$$

$$\begin{array}{r} 17(-11y + 254) + 2y = 248 \\ -187y + 4318 + 2y = 248 \\ -185y + 4318 = 248 \end{array}$$

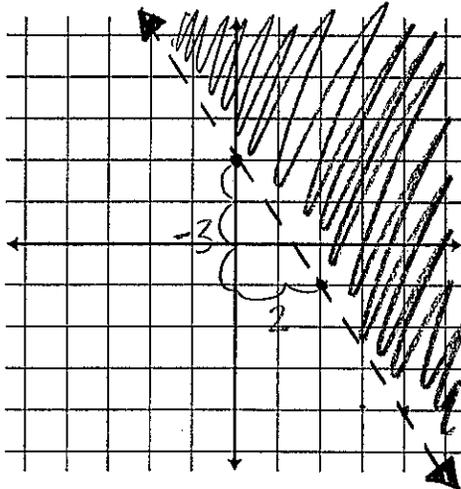
$$\begin{array}{r} -185y + 4318 = 248 \\ -4318 \quad -4318 \\ \hline -185y = -4070 \\ \hline y = 22 \end{array}$$

(12, 22)

y = 22

TOP: $x = -11 \cdot 22 + 254$
x = 12

10) Write an inequality that represents the shaded region below.



$y > -\frac{3}{2}x + 2$

11) Tickets for a concert cost \$20 for a single ticket or \$35 for a couple's ticket. Ticket sales totaled \$2280, and 128 people attended.

a. Define the variables in this situation.

S = single

C = couple

b. Write a system of equations to represent this situation.

$$\begin{cases} 20 \cdot S + 35 \cdot C = 2280 \\ S + 2C = 128 \end{cases}$$

c. Solve the system to determine the number of single and couple tickets sold.

$$\begin{array}{r} 20S + 35C = 2280 \rightarrow 20S + 35C = 2280 \\ 20(S + 2C = 128) \rightarrow 20S + 40C = 2560 \\ \hline -5C = -280 \\ \hline C = 56 \end{array}$$

BOTTOM:
 $1S + 2 \cdot 56 = 128$
 $1S + 112 = 128$
 $-112 \quad -112$
S = 16

12) An auto mechanic charges a flat service fee for each vehicle he repairs and an hourly rate for labor. A three hour job costs \$215. A one hour job costs \$135.

a. Define the variables in this situation.

F = flat rate

H = hourly rate

b. Write a system of equations to represent this situation.

$$\begin{cases} 3H + F = 215 \\ 1H + F = 135 \end{cases}$$

c. Solve the system to determine the mechanic's flat rate and his labor charge per hour.

$$\begin{array}{r} 3H + F = 215 \\ -1H + F = 135 \\ \hline 2H = 80 \end{array}$$

$$\frac{2H}{2} = \frac{80}{2} \quad H = \$40$$

Bottom

$$40 + F = 135$$

-40

$$F = \$95$$

13) Solve the following system.

$$\begin{cases} 10x + 9y = -174 \\ y = -54 - 2x \end{cases}$$

$$10x + 9(-54 - 2x) = -174$$

$$10x - 486 - 18x = -174$$

$$\begin{array}{r} -8x - 486 = -174 \\ +486 \quad +486 \end{array}$$

$$(-39, 24)$$

$$\frac{-8x}{-8} = \frac{312}{-8}$$

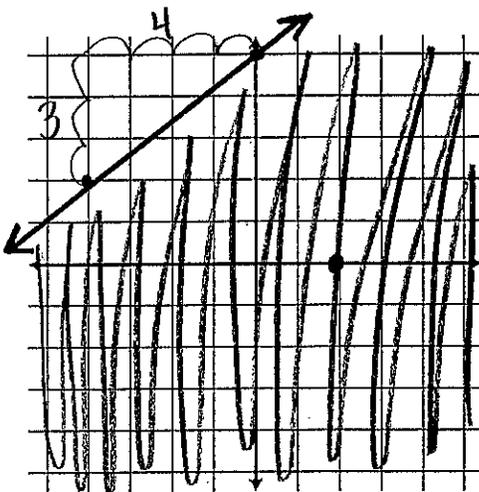
$$x = -39$$

Bottom:

$$y = -54 - 2 \cdot -39$$

$$y = 24$$

14) Write an inequality that represents the shaded region below.



$$y \leq \frac{3}{4}x + 5$$

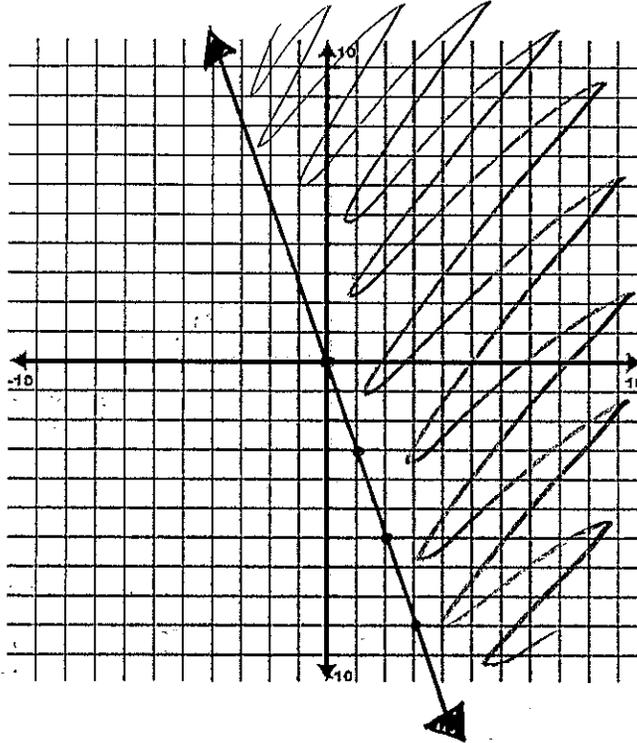
Does the coordinate (2, 0) satisfy the inequality?
Justify your answer.

Yes

its in the shaded area of the graph

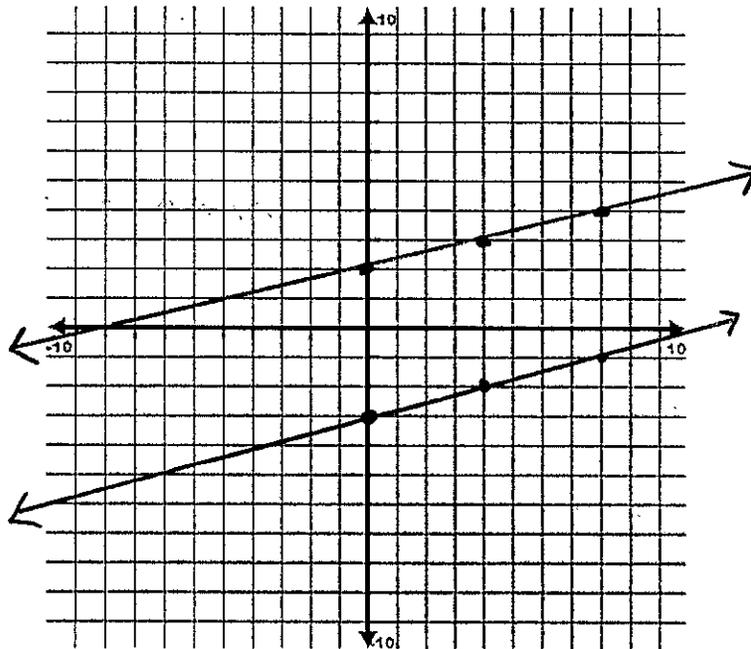
15) Graph the inequality $y \geq -3x + 0$

← slope
← start



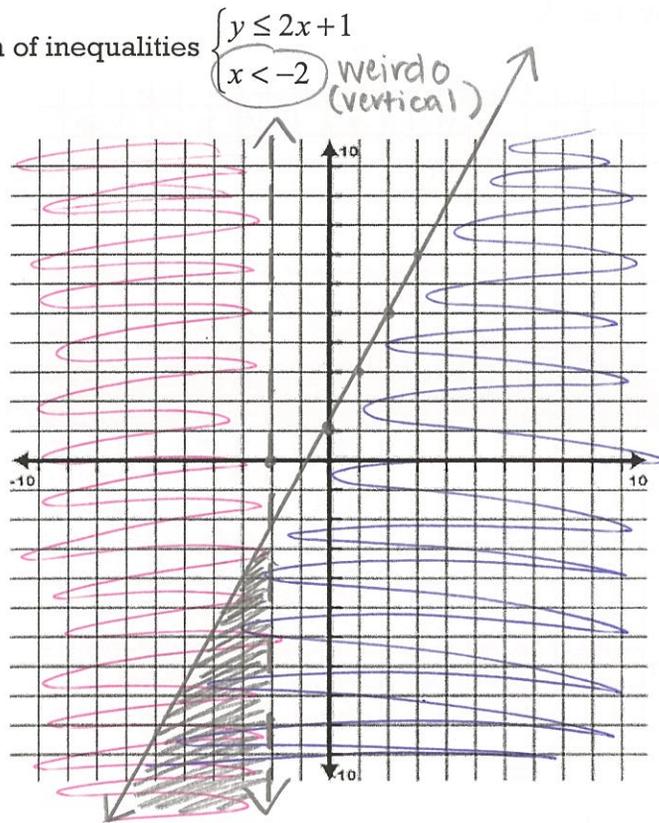
16) Graph the system $\begin{cases} y = \frac{1}{4}x + 2 \\ y = -3 + \frac{1}{4}x \end{cases}$ and identify the solution.

$$\frac{x-4y=12}{2-4} = \frac{-x}{-4} \rightarrow y = -3 + \frac{1}{4}x$$



Solution: no solution

17) Graph the system of inequalities $\begin{cases} y \leq 2x + 1 \\ x < -2 \end{cases}$



18) Show the solution set on a number line.

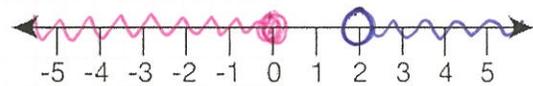
$$\{x : x > 2\} \cup \{x : x \leq 0\}$$

↑
all

19) Show the solution set on a number line.

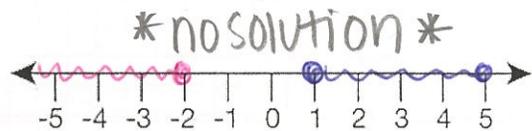
$$\{x : 1 \leq x \leq 5\} \cap \{x : x \leq -2\}$$

↑
shared



20) Solve the following system.

$$\begin{array}{r} 20x + 30y = 80 \rightarrow +20x + 30y = 80 \\ 2(-10x - 15y = -40) \rightarrow -20x - 30y = -80 \\ \hline 0 = 0 \end{array}$$



infinite solutions