Name KEY!

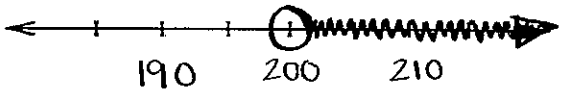
CHAPTER 5 TEST REVIEW (#1)

1) Boston is more than 200 miles away.

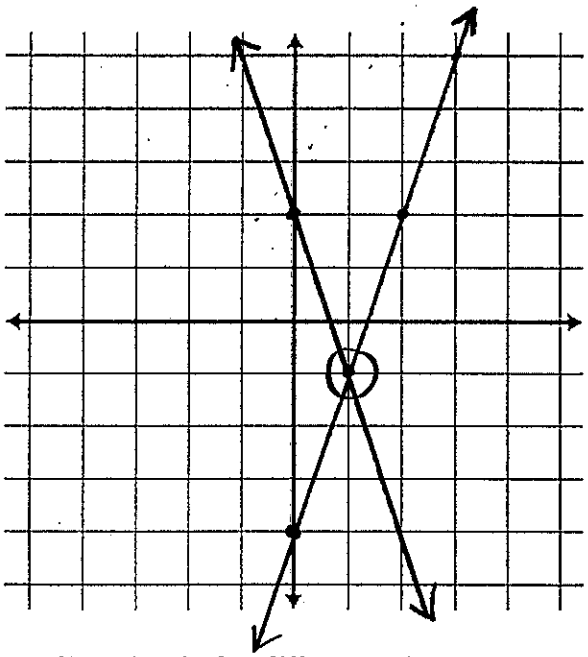
a. Write an inequality to describe the distance to Boston.

$B > 200$

b. Graph the solution set to the inequality.



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



(1, -1)

3) What is the difference between a 'consistent' system and an 'inconsistent' system?

consistent – has a solution

inconsistent – has no solution

4) Solve the following system.

$\begin{cases} x - 7y = 38 \\ x + 14y = -46 \end{cases}$

$-21y = 84$

$\frac{-21y}{-21} = \frac{84}{-21}$

$y = -4$

Top:

$x - 7 \cdot -4 = 38$

$x + 28 = 38$

$-28 \quad -28$

$x = 10$

(10, -4)

5) Solve the following system.

$$\begin{cases} 3x+2y+z=18 \\ z=3x \\ y=4x-5 \end{cases}$$

$3x+2(4x-5)+3x=18$

$3x+8x-10+3x=18$

$14x-10=18$

$+10 \quad +10$

$\frac{14x}{14}=\frac{28}{14}$

$x=2$

$z=3\cdot 2$

$z=6$

$y=4\cdot 2-5$

$y=3$

2, 3, 6

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

$6-(4+2x)>10$

$6-4-2x>10$

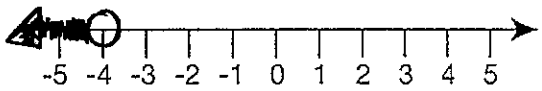
$2-2x>10$

$-2 \quad -2$

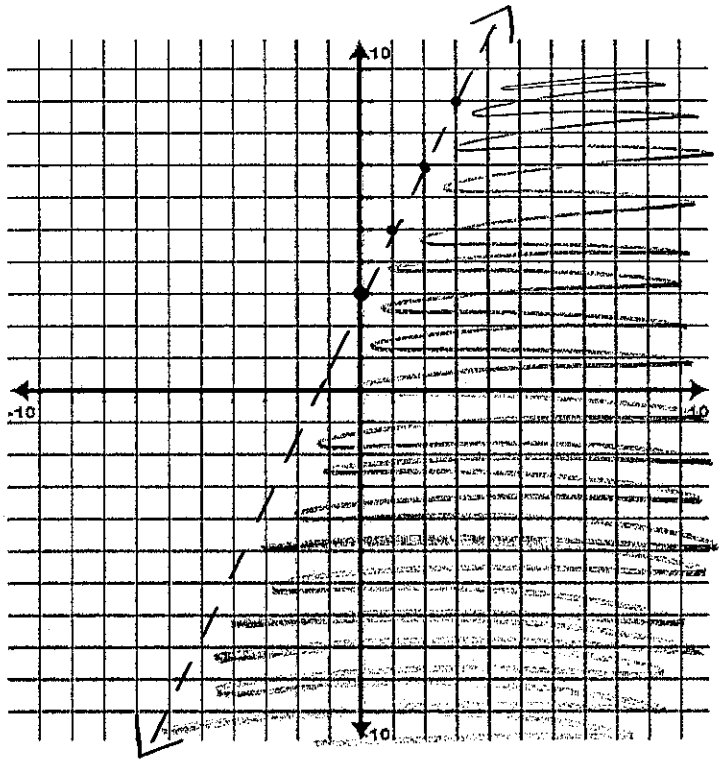
$\frac{-2x}{-2}>\frac{8}{-2}$

$x<-4$

$x<-4$



7) Graph the inequality $y<2x+3$ on the grid below.



Identify two points that satisfy the inequality.

(0,0)

(1,1)

8) Solve the following system.

$\begin{cases} x-6y=69 \\ 3x-4y=-45 \end{cases}$

$3(x-6y=69) \rightarrow 3x-18y=207$

$3x-4y=-45$

$-14y=252$

$\frac{-14y}{-14}=\frac{252}{-14}$

$y=-18$

Top: $x-6(-18)=69$

$x+108=69$

$-108 \quad -108$

$x=-39$

$(-39,-18)$

9) Solve the following system.

$\begin{cases} 4x=6y-4 \\ 8x+2y=48 \end{cases}$

$-6y \quad -6y$

$2(4x-6y=-4) \rightarrow 8x-12y=-8$

$8x+2y=48$

$-14y=-56$

$\frac{-14y}{-14}=\frac{-56}{-14}$

$y=4$

Top: $4x=6\cdot4-4$

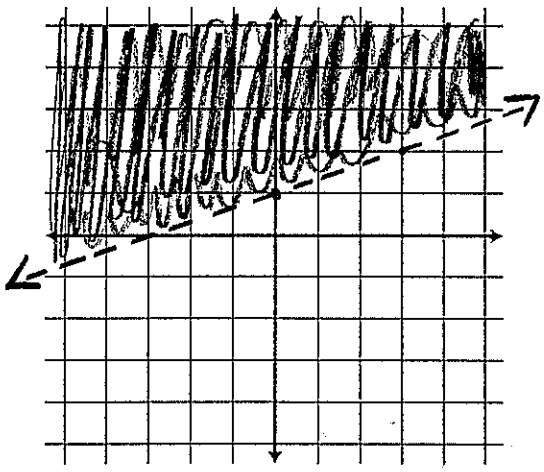
$4x=20$

$\frac{4x}{4}=\frac{20}{4}$

$x=5$

$(5,4)$

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



$y>\frac{1}{3}x+1$

11) The admission fee at a fair is \$1.50 for children and \$4.00 for adults. On a certain day, 2200 people enter the fair and \$5050 is collected.

a. Define the variables in this situation.

C = children

A = adults

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

$\begin{cases} 1.50\cdot C+4\cdot A=\$5050 \\ C+A=2200 \end{cases}$

4

c. Solve the system to determine the number of child and adult tickets sold.

$1.50C+4A=5050$

$4C+4A=8800$

$-2.5C=-3750$

$\frac{-2.5C}{-2.5}=\frac{-3750}{-2.5}$

$C=1500$

Bottom: $1500+A=2200$

$-1500 \quad -1500$

$A=700$

12) Jim and Elena are planning a wedding. Their reception hall charges a flat hall rental fee and an additional charge per person for catering. Elena wants to invite 185 people, and she determines this will cost them $9400. Jim wants to cut costs to $5000, and figures out that they could invite 75 people for this amount.

a. Define the variables in this situation.

F = flat fee

A = additional charge per person

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

$$\begin{cases} F + 185 \cdot A = 9400 \\ F + 75 \cdot A = 5000 \end{cases}$$

c. Solve the system to determine the reception hall's flat rate and the caterer's charge per person.

$F + 185A = 9400$

$-(F + 75A = 5000)$

$110A = 4400$

$\frac{110A}{110} = \frac{4400}{110}$

$A = 40$

Bottom:

$F + 75 \cdot 40 = 5000$

$F + 3000 = 5000$

$-3000 \quad -3000$

$F = 2000$

13) Solve the following system.

$\begin{cases} 2x + 3y = 5 \\ 4x + 6y = -4x + 10 \end{cases}$

$+4x \quad +4x$

$2 \cdot (2x + 3y = 5) \rightarrow 4x + 6y = 10$

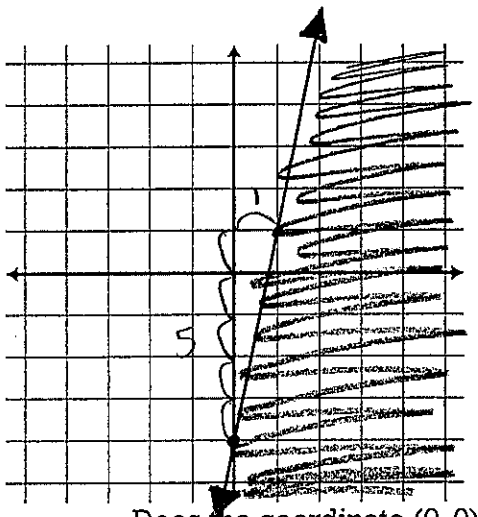
$4x + 6y = 10$

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

$0 = 0$

infinite solutions

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



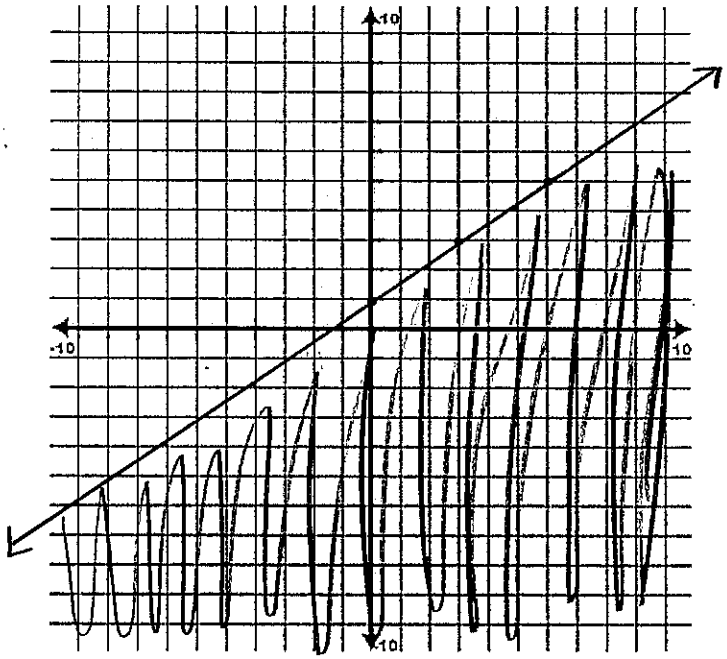
$y \leq 5x - 4$

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

no

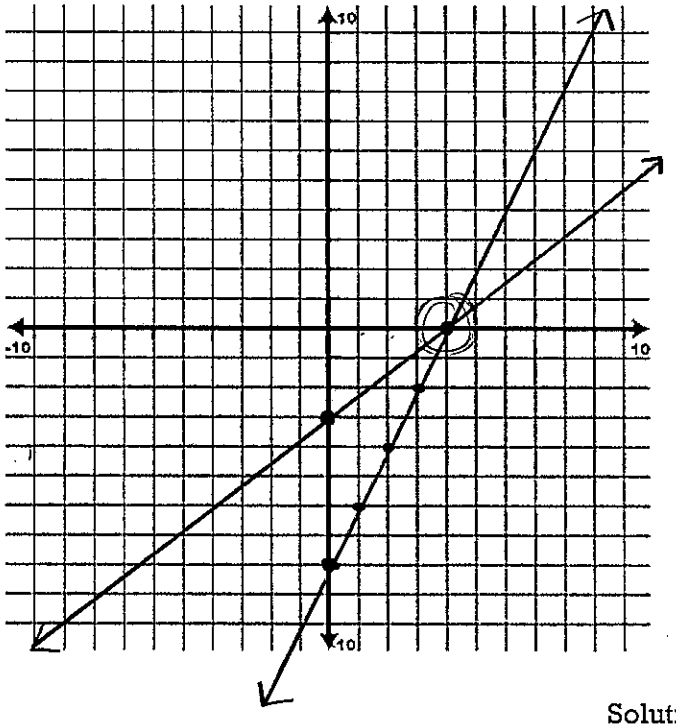
(0,0) is not in the shaded area of graph

15) Graph the inequality $y \leq \frac{2}{3}x + 1$.



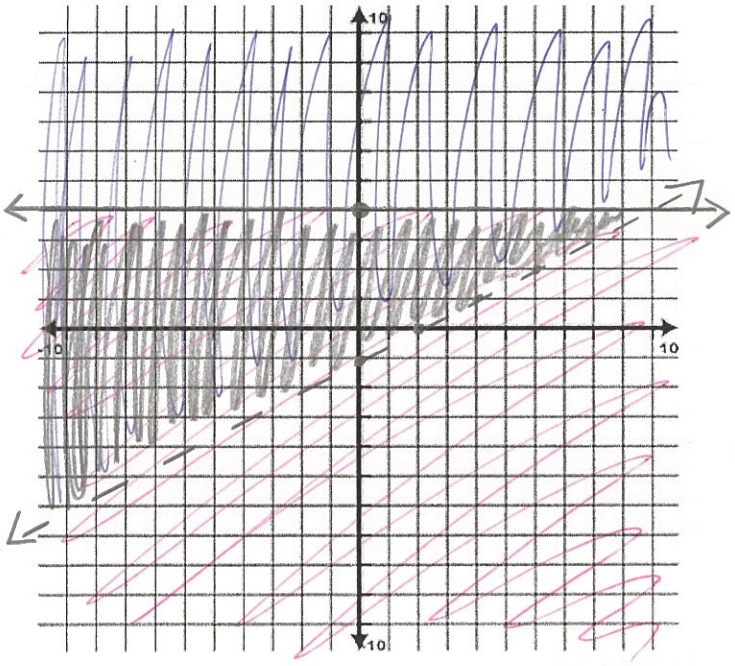
16) Graph the system $\begin{cases} y = 2x - 8 \\ -3x + 4y = -12 \end{cases}$ and identify the solution.

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



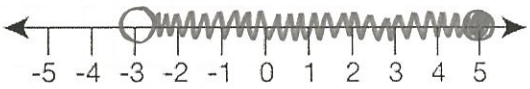
Solution: (4, 0)

17) Graph the system of inequalities $\begin{cases} y > \frac{1}{2}x - 1 \\ y \leq 4 \end{cases}$ weirdo (horizontal line)



18) Show the solution set on a number line.

$\{x : -3 < x \leq 5\}$



19) Show the solution set on a number line.

$\{x : -1 \leq x \leq 4\} \cap \{x : x > 0\}$

↑ shared

20) Solve the following system.

$\begin{cases} y = -3x + 136 \\ x - 5y = -40 \end{cases}$

$x - 5(-3x + 136) = -40$

$x + 15x - 680 = -40$

$16x - 680 = -40$

$+680 \quad +680$

$\frac{16x}{16} = \frac{640}{16}$

$x = 40$

Top:

$y = -3 \cdot 40 + 136$

$y = 16$

(40, 16)