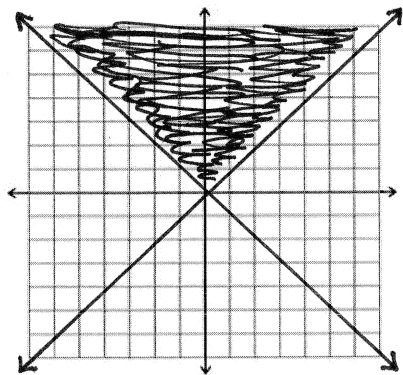


# Review Lessons 3.3 & 3.4 Worksheet

Name: Key

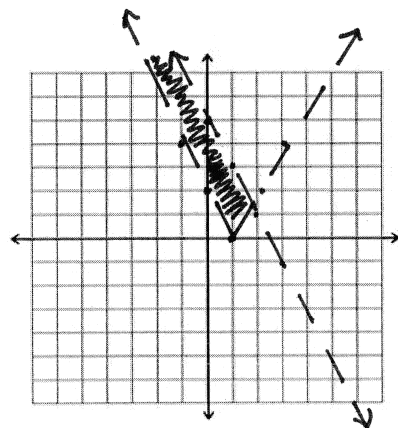
Graph the system of inequalities.

1.)  $x + y \geq 0$   
 $-x + y \geq 0$   
 "y = -x"  
 "y = x"



Test (0, 1)  
 $1 \geq 0 \checkmark$   
Test (0, 1)  
 $1 \geq 0 \checkmark$

2.)  $2x + y < 5$   
 $y > 2|x - 1|$

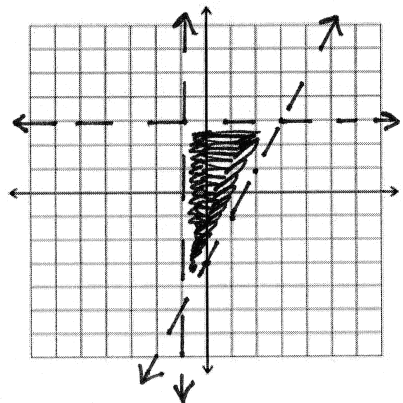


"y = -2x + 5"  
Test (0, 0)  
 $0 < 5 \checkmark$   
 vertex: (1, 0)  
 opens: up

x	-1	0	1	2	3
y	4	2	0	2	4

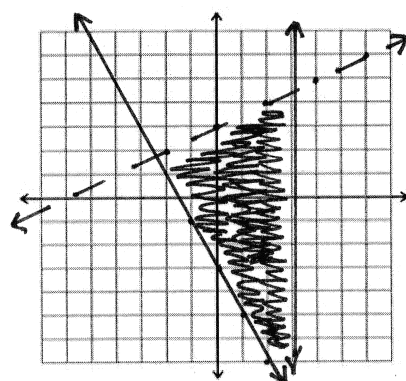
Test (0, 0)  
 $0 > 2 \times$

3.)  $y > 2x - 3$   
 $x > -1$   
 $y < 3$



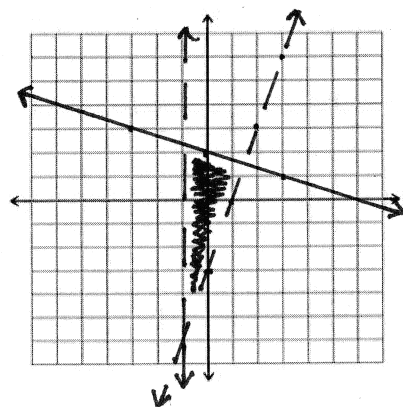
Test (0, 0)  
 $0 > -3 \checkmark$

4.)  $y < \frac{1}{2}x + 3$   
 $y \geq -2x - 3$   
 $x \leq 3$



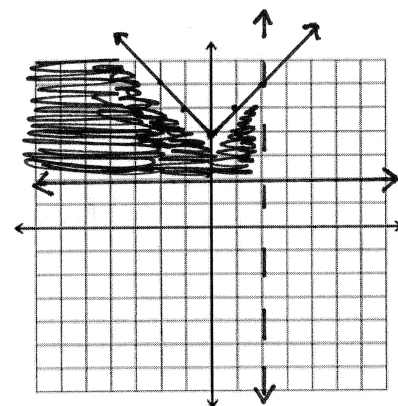
Test (0, 0)  
 $0 < 3$   
Test (0, 0)  
 $0 \geq -3 \checkmark$

5.)  $y \leq -\frac{1}{3}x + 2$   
 $y > 3x - 3$   
 $x > -1$



Test (0, 0)  
 $0 \leq 2 \checkmark$   
Test (0, 0)  
 $0 > -3 \checkmark$

6.)  $y \leq |x| + 4$   
 $x < 2$   
 $y \geq 2$



vertex: (0, 4)  
 opens: up  

x	-2	-1	0	1	2
y	6	5	4	5	6

Test (0, 0)  
 $0 \leq 4 \checkmark$

Solve the system using any algebraic method.

$$7.) \quad x - 2y + 4z = -19 \quad \longrightarrow \quad x - 2y + 4z = -19$$

$$2x + y - 3z = 14 \quad \xrightarrow{x2} \quad 4x + 2y - 6z = 28$$

$$3x + y + 2z = 5$$

$$\boxed{5x - 2z = 9}$$

x-1

$$-2x - y + 3z = -14$$

$$3x + y + 2z = 5$$

$$\boxed{x + 5z = -9} \quad \xrightarrow{x-5}$$

$$5x - 2z = 9$$

$$-5x - 25z = 45$$

$$\hline -27z = 54$$

$$\boxed{z = -2}$$

$$x + 5(-2) = -9$$

$$x - 10 = -9$$

$$\boxed{x = 1}$$

$$3(1) + y + 2(-2) = 5$$

$$3 + y - 4 = 5$$

$$y - 1 = 5$$

$$\boxed{y = 6}$$

$$\text{solution: } \boxed{(1, 6, -2)}$$

$$8.) \quad x - 2y - 3z = -7 \quad \xrightarrow{x2} \quad 2x - 4y - 6z = -14$$

$$4x + 5y - 2z = -7$$

$$-2x + y + z = -7$$

$$-2x + y + z = -7$$

$$\boxed{-3y - 5z = -21}$$

x2

$$4x + 5y - 2z = -7$$

$$-4x + 2y + 2z = -14$$

$$\boxed{7y = -21}$$

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

$$-3(-3) - 5z = -21$$

$$9 - 5z = -21$$

$$-5z = -30$$

$$\boxed{z = 6}$$

$$x - 2(-3) - 3(6) = -7$$

$$x + 6 - 18 = -7$$

$$x - 12 = -7$$

$$\boxed{x = 5}$$

$$\text{solution: } \boxed{(5, -3, 6)}$$

$$9.) \quad x + 5y - 2z = -1 \quad \longrightarrow \quad x + 5y - 2z = -1$$

$$-x - 2y + z = 6 \quad \longrightarrow \quad -x - 2y + z = 6$$

$$-2x - 7y + 3z = 7$$

$$\boxed{3y - z = 5}$$

x2

$$2x + 10y - 4z = -2$$

$$-2x - 7y + 3z = 7$$

$$3y - z = 5$$

$$-3y + z = -5$$

$$\boxed{0 = 0}$$

solution: Ininitely many  
Solutions



13.) Mukwonago was the big winner at last year's Classic 8 Conference track meet with the help of 20 individual-event place winners earning a combined 68 team points (in other words, MHS had 20 people place either 1<sup>st</sup>, 2<sup>nd</sup>, or 3<sup>rd</sup> and scored a total of 68 total team points). A 1<sup>st</sup> place finish earns 5 team points, a 2<sup>nd</sup> place finish earns 3 team points, and a 3<sup>rd</sup> place finish earns 1 team point. MHS had a strong 2<sup>nd</sup> place showing, with as many 2<sup>nd</sup> place finishers as 1<sup>st</sup> and 3<sup>rd</sup> place finishers combined. Exactly how many athletes finished in 1<sup>st</sup> place? 2<sup>nd</sup> place? 3<sup>rd</sup> place?

x: # of 1<sup>st</sup> placers  
 y: # of 2<sup>nd</sup> placers  
 z: # of 3<sup>rd</sup> placers

$$\begin{aligned} x + y + z &= 20 \\ 5x + 3y + z &= 68 \\ y &= x + z \end{aligned}$$

7 1<sup>st</sup> Places  
 10 2<sup>nd</sup> Places  
 3 3<sup>rd</sup> Places

$$\begin{aligned} x + (x+z) + z &= 20 & 5x + 3(x+z) + z &= 68 \\ \boxed{2x + 2z} &= 20 & \underline{5x + 3x + 3z + z} &= 68 \\ & & \underline{8x + 4z} &= 68 \\ x-z & \left\{ \begin{aligned} 8x + 4z &= 68 \\ -4x - 4z &= -40 \\ \hline 4x &= 28 \\ \boxed{x} &= 7 \end{aligned} \right. & & \\ & & 2(7) + 2z &= 20 \\ & & 14 + 2z &= 20 \\ & & 2z &= 6 \quad \boxed{z=3} \\ & & & & y = 7 + 3 \\ & & & & \boxed{y=10} \end{aligned}$$

14.) You and two friends buy snacks for a field trip. You spend a total of \$8, Jeff spends \$9, and Curtis spends \$9. The table shows the amounts of mixed nuts, granola, and dried fruit that each person purchased.

What is the price per pound of each type of snack?

x: \$/lb of mixed nuts  
 y: \$/lb of granola  
 z: \$/lb of dried fruit

	Mixed nuts	Granola	Dried fruit
You	1 lb	0.5 lb	1 lb
Jeff	2 lb	0.5 lb	0.5 lb
Curtis	1 lb	2 lb	0.5 lb

$$\begin{aligned} \text{you: } & x + .5y + z = 8 \\ \text{Jeff: } & 2x + .5y + .5z = 9 \\ \text{Curtis: } & x + 2y + .5z = 9 \\ & \xrightarrow{x-y} \begin{aligned} -8x - 2y - 2z &= -36 \\ x + 2y + .5z &= 9 \end{aligned} \\ & \xrightarrow{x-y} \begin{aligned} -4x - 2y - 4z &= -32 \\ x + 2y + .5z &= 9 \end{aligned} \\ & \xrightarrow{x-y} \boxed{-3x - 3.5z = -23} \\ & \xrightarrow{x-4} \begin{aligned} -7x - 1.5z &= -27 \\ \times 14 & \rightarrow -98x - 21z = -378 \\ \times 6 & \rightarrow 18x + 21z = 138 \\ \hline -80x &= -240 \\ \boxed{x} &= 3 \end{aligned} \end{aligned}$$

• \$3/lb mixed nuts  
 • \$2/lb granola  
 • \$4/lb dried fruit

$$\begin{aligned} -3(3) - 3.5z &= -23 \\ -9 - 3.5z &= -23 \\ -3.5z &= -14 \\ \boxed{z} &= 4 \end{aligned}$$

$$\begin{aligned} 3 + .5y + 4 &= 8 \\ .5y + 7 &= 8 \\ .5y &= 1 \\ \boxed{y} &= 2 \end{aligned}$$