

Dear Students,

Welcome to Honors Geometry.

The following packet is **optional, but highly recommended**.

This packet resresetns the skills you will need to have for success in Honors Geometry this fall.

You can scan the QR codes for keys and video links as you do the packet.

If you are looking for additional practice beyond what has been provided, go to the following website:

<https://www.kutasoftware.com/free.html>. Additional videos on each topic can be found on Youtube by copy and pasting the title of the worksheet.

If you have any questions feel free to e-mail me: [DBadr@rcs-k12.us](mailto:DBadr@rcs-k12.us).

During the summer I do check my e-mail.

I look forward to seeing you in the fall,

Mrs. Badr

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

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

**Honors Geometry**  
**Maintaining Mathematical Proficiency**  
**Worksheet**  
Show ALL Work to earn full credit!

K  
E  
Y



1) Mental Math: Simplify each without using a calculator.

a)  $-5 + (-2)$

b)  $0 + (-13)$

c)  $-6 + 14$

d)  $19 - (-13)$

e)  $-1 - 6$

f)  $-5 - (-7)$

g)  $17 + 5$

h)  $8 + (-3)$

i)  $11 - 15$

j)  $14 - (-6)$

k)  $-3(8)$

l)  $-7 \cdot (-9)$

m)  $4 \cdot (-7)$

n)  $-24 \div (-6)$

o)  $\frac{-16}{2}$

p)  $12 \div (-3)$

q)  $6 \cdot 8$

r)  $36 \div 6$

s)  $-3(-4)$

p)  $\frac{-3}{-12}$

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2) Simplify each expression.

a)  $4m + 5 - 3m$

b)  $9 - 8b + 6b$

c)  $6t + 3(1 - 2t) - 5$

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3) Solve each equation for x. **No calculator.**

a)  $x + 20 = 180$

b)  $x + 10 = 90$

c)  $25 + x = 90$

d)  $110 + x = 180$

e)  $2x + 7x = 180$

f)  $(2x + 8) + (13x + 22) = 180$

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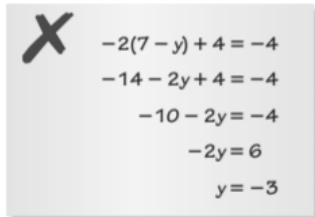
4) Solve each equation for x. **No calculator.**

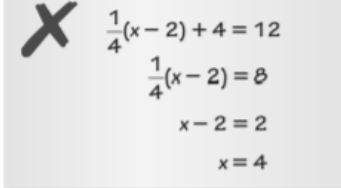
a)  $3(x + 5) + (x - 9) = 90$

b)  $(x - 20) + 2(12x + 5) = 90$

c)  $2(7x - 9) + (5x + 8) = 180$

5) Describe and correct the error in solving the equation.

a)   
$$\begin{aligned} -2(7 - y) + 4 &= -4 \\ -14 - 2y + 4 &= -4 \\ -10 - 2y &= -4 \\ -2y &= 6 \\ y &= -3 \end{aligned}$$

b)   
$$\begin{aligned} \frac{1}{4}(x - 2) + 4 &= 12 \\ \frac{1}{4}(x - 2) &= 8 \\ x - 2 &= 2 \\ x &= 4 \end{aligned}$$

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6) Solve each equation. **No Calculator.**

a)  $15 - 2x = 3x$

b)  $26 - 4s = 9s$

c)  $5p - 9 = 2p + 12$

d)  $8g + 10 = 35 + 3g$

e)  $5t + 16 = 6 - 5t$

f)  $-3r + 10 = 15r - 8$

g)  $7 + 3x - 12x = 3x + 1$

h)  $w - 2 + 2w = 6 + 5w$

i)  $10(g + 5) = 2(g + 9)$

j)  $-9(t - 2) = 4(t - 15)$

k)  $\frac{2}{3}(3x + 9) = -2(2x + 6)$

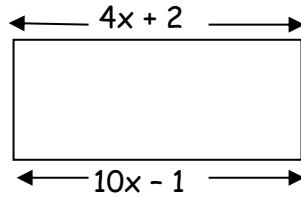
l)  $2(2t + 4) = \frac{1}{4}(24 - 8t)$

m)  $10(2y + 2) - y = 2(8y - 8)$

n)  $2(4x + 2) = 4x - 12(x - 1)$

## 7) Word Problems

- a) The area of this rectangle is  $10\text{cm}^2$ , find the value of  $x$  and use it to find the length and the width of the rectangle.



- b) If the length of a rectangle is three times its width and its perimeter is  $24\text{cm}$ , what is its length, width, and area? 5

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## 8) Factor each of the following completely.

a)  $x^2 + 9x + 8$

c)  $2x^2 - 16x + 30$

b)  $x^2 + 4x - 45$

d)  $x^2 - 8x - 48$

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## 9) Solve each equation.

a)  $x^2 + 14x + 49 = 0$

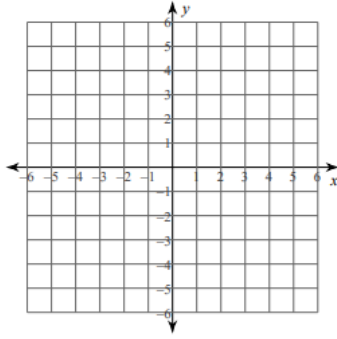
b)  $x^2 - 18x = -81$

c)  $-3x - 18 = -3x^2$

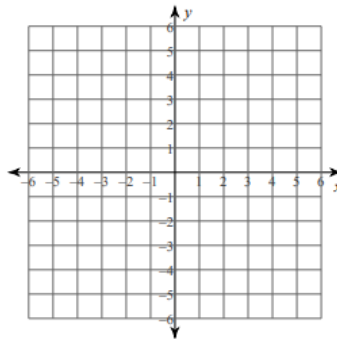
d)  $4x^2 - 40 = -12$

10) Graph the following by hand, then check your answers **using desmos**.

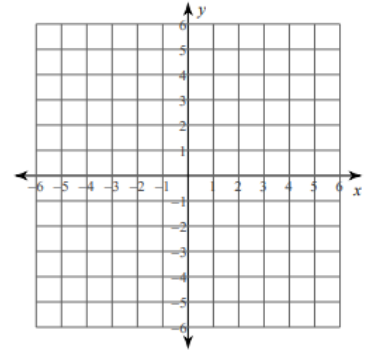
a)  $y = \frac{6}{5}x + 1$



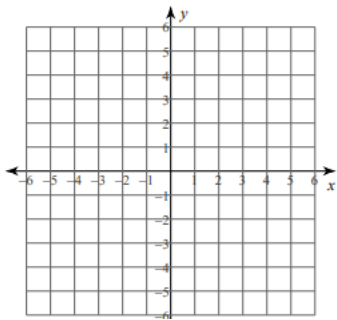
b)  $y = \frac{7}{2}x - 2$



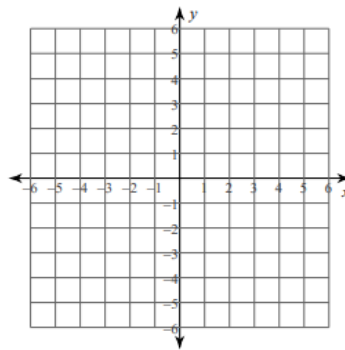
c)  $y = -6x + 3$



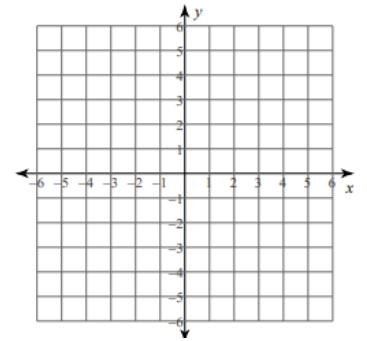
d)  $y = \frac{1}{5}x - 4$



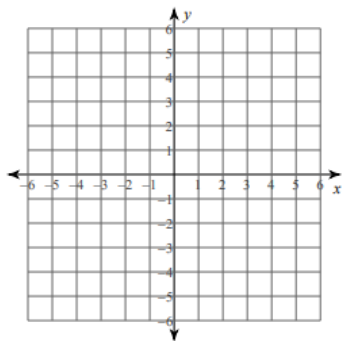
e)  $y = 2x + 5$



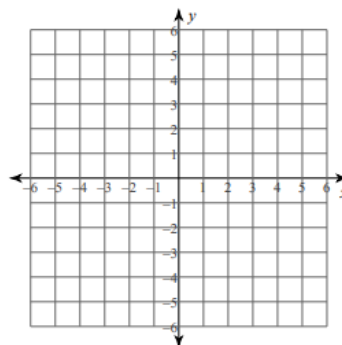
f)  $x = 5$



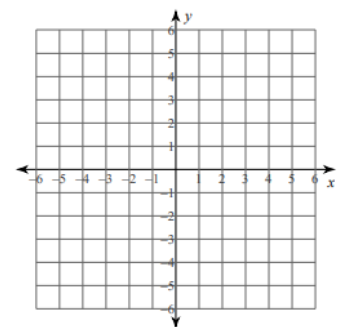
g)  $y = \frac{5}{3}x$



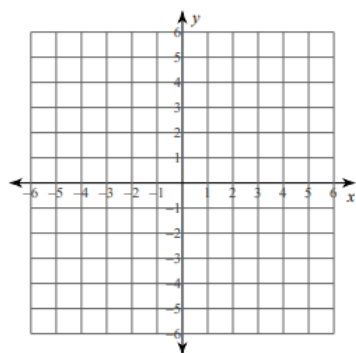
h)  $y = -5$



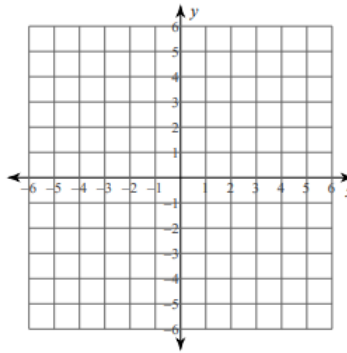
i)  $y = \frac{1}{2}x - 2$



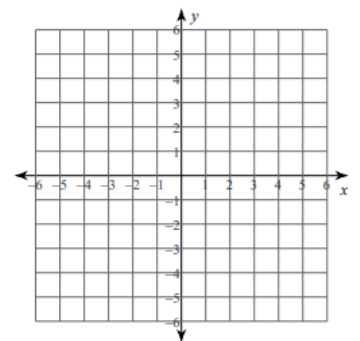
j)  $y = \frac{1}{4}x + 2$



k)  $x = 0$

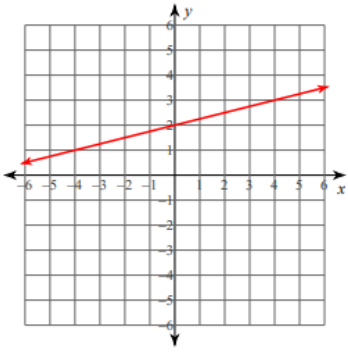


l)  $y = -\frac{1}{3}x + 3$



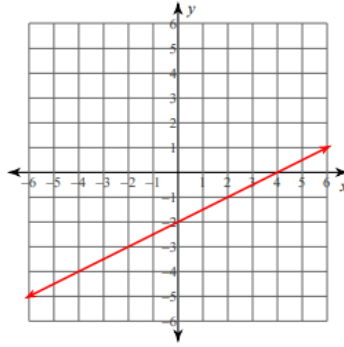
11) Identify the equation of the line from the given graphs in slope intercept form. ( $y = mx + b$ )

A)



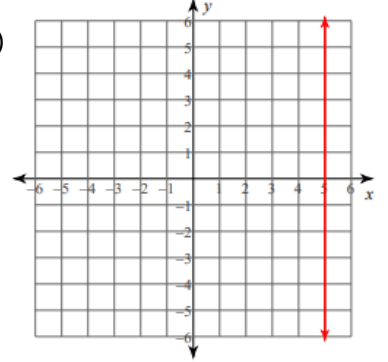
Equation: \_\_\_\_\_

B)



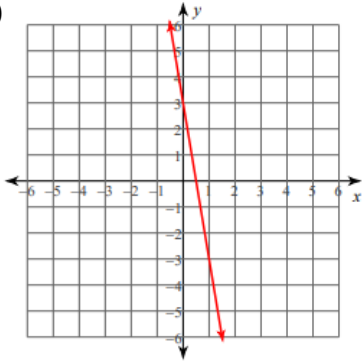
Equation: \_\_\_\_\_

C)



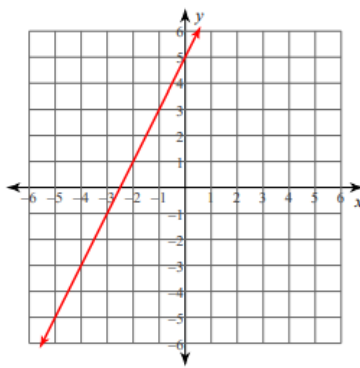
Equation: \_\_\_\_\_

D)



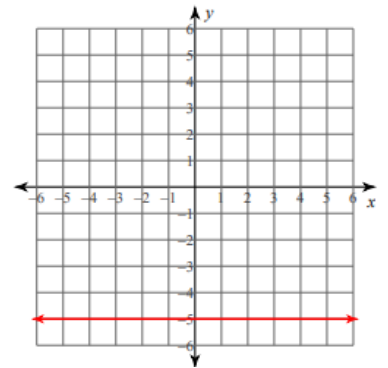
Equation: \_\_\_\_\_

E)



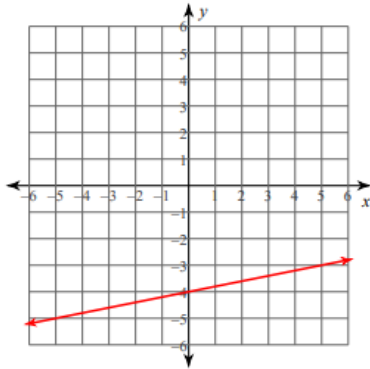
Equation: \_\_\_\_\_

F)



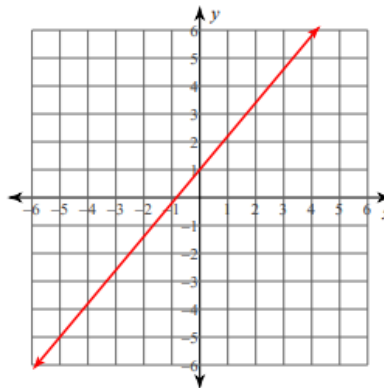
Equation: \_\_\_\_\_

G)



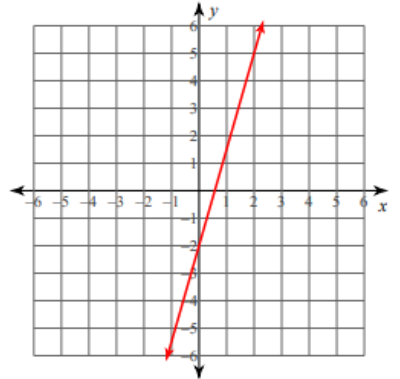
Equation: \_\_\_\_\_

H)



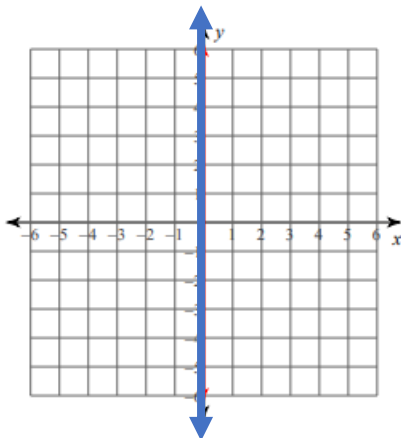
Equation: \_\_\_\_\_

I)



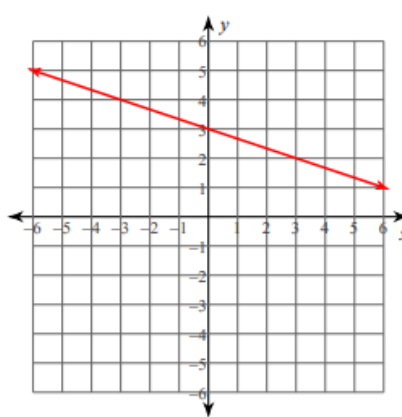
Equation: \_\_\_\_\_

J)



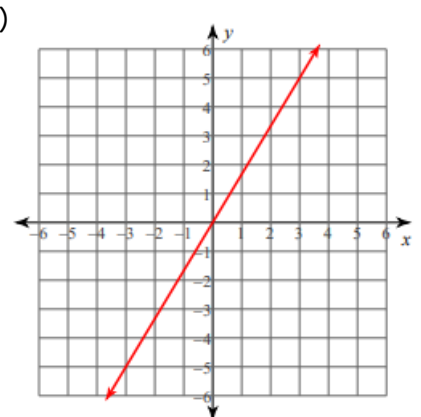
Equation: \_\_\_\_\_

K)



Equation: \_\_\_\_\_

L)



Equation: \_\_\_\_\_

12) Identify by matching the graphs and equations in problems #10 and #11 that are the same.

a) \_\_\_\_\_ b) \_\_\_\_\_ c) \_\_\_\_\_ d) \_\_\_\_\_ e) \_\_\_\_\_ f) \_\_\_\_\_ g) \_\_\_\_\_ h) \_\_\_\_\_ i) \_\_\_\_\_ j) \_\_\_\_\_ k) \_\_\_\_\_ l) \_\_\_\_\_



**Organize and show all work for credit. You should not need to use a calculator to solve these problems. Leave any fractional answers as improper, reduced fractions.**

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1) Find the **slope** of the line through each pair of points. Leave your answer as a fraction in simplest form (no mixed numbers).

a)  $(4, -1)$  and  $(-2, -8)$

b)  $(1, -2)$  and  $(-3, -7)$

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2) In each pair of equations, **give the slope** of each line, then determine whether the two lines are parallel, perpendicular, or neither parallel nor perpendicular.

a)  $2x + 5y = 4$  and  $4x + 10y = 1$

b)  $3x - 2y = 6$  and  $2x + 3y = 3$

c)  $5x - 3y = -2$  and  $3x - 5y = -8$

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3) Write the **slope-intercept** equation for the line with the given slope that contains the given point.

a) slope = 2 through  $(5, 7)$

b) slope =  $\frac{2}{3}$  through  $(6, 5)$

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4) Write the **slope-intercept** equation for the line containing the given pair of points.

a)  $(-3, 5)$  and  $(-1, -3)$

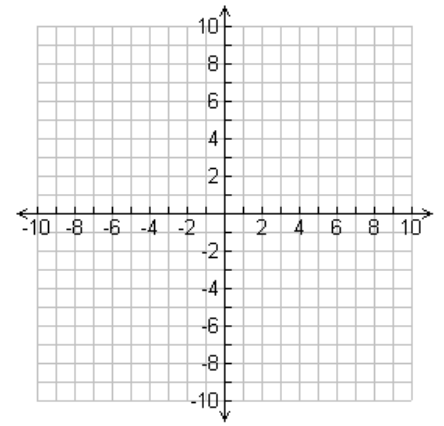
b)  $(-2, -4)$  and  $(2, -1)$



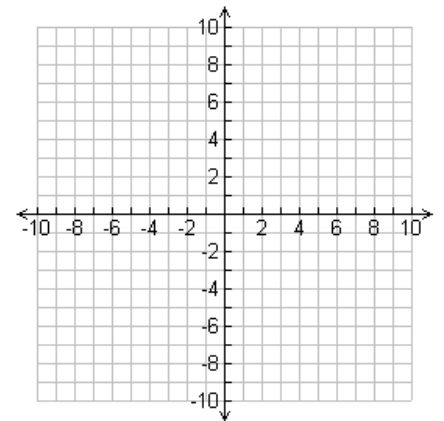
For problems 5-7, write the slope-intercept equation of the lines that contains the following:

**Graph both lines.**

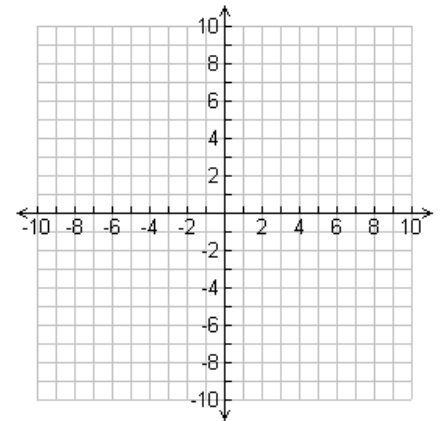
- 5) **A point  $(-1, 5)$  and is parallel** to the line passing through the points  $(2, 7)$  and  $(-1, -3)$ .



- 6) **A point  $(5, -1)$  and has the same y-intercept** as the line  $x - 3y = 6$ .



- 7) **The point  $(2, 10)$  and is perpendicular** to the line passing through the points  $(1, 5)$  and  $(3, 9)$ .

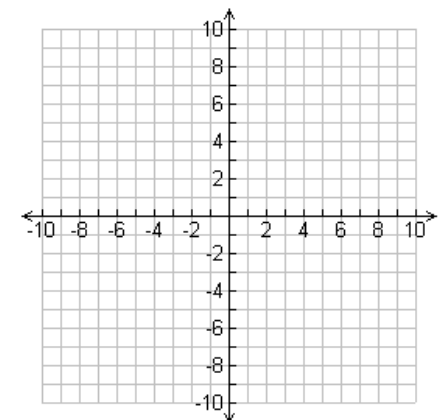


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- 8) a) Write the equation of the **vertical line** through the point  $(5, -8)$ .

- b) Write the equation of the **horizontal line** through the point  $(5, -8)$ .

- 9) a) Write the equation of the line with **slope zero** passing through the point  $(-4, -9)$ .

- b) Write the equation of the line an **undefined slope** passing through the point  $(-4, -9)$ .





10) Factor each of the following completely.

a)  $x^2 + 9x + 8$

b)  $x^2 + 4x - 45$

c)  $x^2 - 8x + 15$

d)  $x^2 - 8x - 48$

e)  $3x^2 + 10x + 7$

f)  $12x^2 + 11x - 5$

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11) Use the Quadratic Formula to solve. Write all radicals in simplest form. (Do not use a calculator)

a)  $9x^2 + 6x = -1$

b)  $2x^2 = 5 + 3x$



c)  $3x^2 - 2x + 5 = 10x + 1$

d)  $6x^2 - 6x + 1 = 0$



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12) Solve the linear system of equations by the substitution method.

a) 
$$\begin{cases} 3x + 5y = 14 \\ x - 2y = -10 \end{cases}$$

b) 
$$\begin{cases} 7x + 4y = 13 \\ x + y = 1 \end{cases}$$



13) Solve the linear system of equations by the **elimination** method.

a) 
$$\begin{cases} 2x - y = -5 \\ x + y = 2 \end{cases}$$



b) 
$$\begin{cases} 4x - 3y = -19 \\ 2x + y = 13 \end{cases}$$



c) 
$$\begin{cases} y - \frac{1}{4}x = -2 \\ x - 2y = 8 \end{cases}$$



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14) Simplify without a calculator.

a)  $\sqrt{20}$

b)  $\sqrt{150}$

c)  $\sqrt{45}$

d)  $\sqrt{2} \cdot \sqrt{6}$

e)  $\frac{\sqrt{80}}{\sqrt{20}}$

