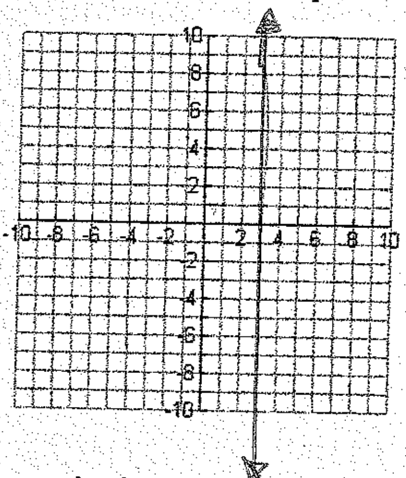
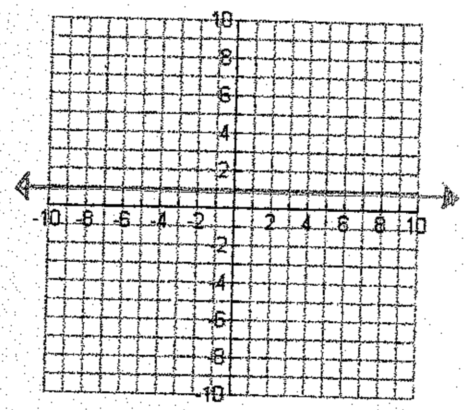
Name: Key **Block:** ______ **Honors Algebra 2 Linear Review**

Graph the equation. Give the slope of each, and explain why it is what it is.

1. $x = 3$



2. $y = 1$



Write an equation in slope-intercept form of the line passing through the given point with the given slope.

3. slope = 8; (-3, 6)

$y-6=8(x+3)$

Write an equation in slope-intercept form.

4. slope = 10; (0, 14)

$y=10x+14$

Find the slope.

5. (9, -2) and (6, 13)

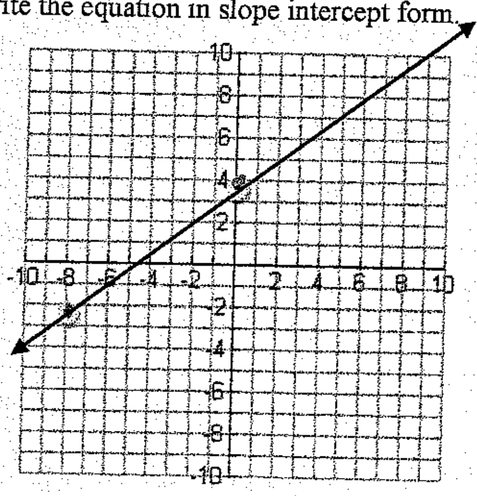
$m=-5$

Write an equation in standard form.

6. slope = 4; (3, 6)

$4x-y=6$

7. Write the equation in slope intercept form.



$y=\frac{3}{4}x+3.5$

Find the slope of the line.

8. $y = -\frac{8}{5}x + 10$

$m = -8/5$

9. $x + 6y = -6$

$m = -1/6$

10. Write the equation of the line in slope-intercept form that passes through (2, 5) and (4, 10).

$y = -5/2x + 0$

11. Write the Equation of the line vertical through the point (2, 4).

$x = 2$

12. Write the Equation of the line horizontal through the point (-5, -7).

$y = -7$

13. What is the slope intercept form of: $10x - 5y - 20 = 0$?

$y = 2x - 4$

14. Find the x- and y-intercept of the line $2x + 3y = -18$

~~yint~~ x int: (-9, 0) yint: (0, -6)

Linear Equations

15. A 4-mi cab ride costs $4.50. A 8-mi cab ride costs $7.30. Find a linear equation that models cost c as a function of distance d.

$y = .7x + 1.7$

x = #miles
y = cost

16. A balloon takes off from a location that is 152 ft above sea level. It rises 70 ft/min. Write an equation to model the balloon's elevation h as a function of time t.

t = #mins
h = dist (ft)

$h = 70t + 152$

17. A cannery processed 615 pounds of strawberries in 2.5 hours. The cannery processed 3405 pounds in 11.5 hours.
   a. Write a linear equation to model the weight of strawberries S processed in T hours.

   $S = 310T - 160$

   b. How many pounds of strawberries can be processed in 6 hours?

   1700 lbs.

18. The dance team is having a fundraiser. They are selling legwarmers for $12 per pair, and tank tops for $8. Their goal is to raise $244.

a. Write an equation to model this situation.

l = # legwarmers
t = # tank tops

$12l + 8t = 244$

b. Find the x- and y-intercepts.

x int: (l int) = $(\frac{61}{3}, 0)$
y int: (t int.) = $(0, \frac{61}{2})$

c. Explain what the x- and y-intercepts represent in this context.

X-int: ~~#~~ of legwarmers when you sell no tank tops
y int: # of tank tops must sell if you sell no leg warmers

19. A new candle is 8 inches tall and burns at a rate of 2 inches per hour.

a. Write an equation that models the height *h* after *t* hours.

$h = -2t + 8$

b. Sketch the graph of the equation.

20. Tell whether the lines are parallel, perpendicular or neither. Explain

a. y = 4x – 8 and y = 4x – 2

parallel

b. 5x – 3y = 0 and y = 5/3x + 2

parallel

c. y = -2x + 7 and x – 2y = 8

perpendicular

d. y = 3x + 8 and x + 3y = 8

perpendicular

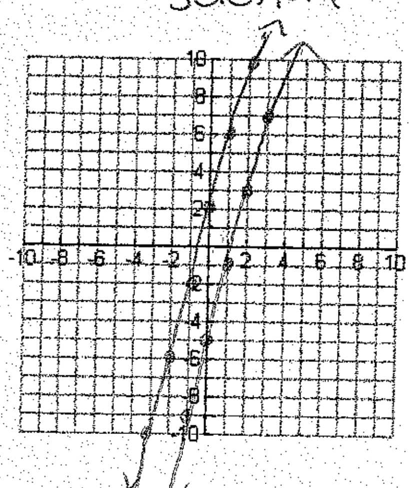
21. A triangle has vertices L(-5, 6), M (-2, -3) and N(4, 5). Write an equation for the line perpendicular to LM, that contains point N.

$y = \frac{1}{3}x + \frac{11}{3}$

Graph each system. Tell whether the system has *no solution*, *one solution*, or *infinitely many solutions.*

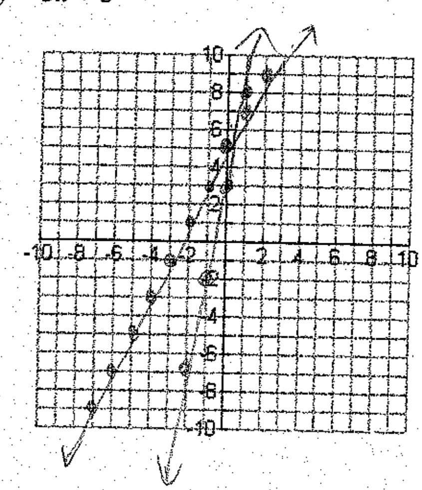
22. $y = 4x + 2$
$y = 4x - 5$

NO solution



23. $y = 2x + 5$
$y = 5x + 3$

one solution



Solve the system by your preferred method.

24.
$$\begin{cases} y = -x - 9 \\ 3x - y = -11 \end{cases}$$
(-5, -4)

25.
$$\begin{cases} 4x - 2y = 6 \\ 4x - 3y = 5 \end{cases}$$
(7, 11)

Write and solve a system of equations.

26. The sum of two numbers is 76. Their difference is 8. Write a system of equations that describes this situation. Solve by elimination to find the two numbers.

$$\begin{cases} x + y = 76 \\ x - y = 8 \end{cases}$$

$x = 42$
$y = 34$

27. A jar containing only nickels and dimes contains a total of 60 coins. The value of all the coins in the jar is $4.45. Solve by elimination to find the amount of nickels and dimes that are in the jar.

$$\begin{cases} x + y = 60 \\ .05x + .10y = 4.45 \end{cases}$$

x = # nickels
y = # dimes

31 nickels
29 dimes

28. Tickets to the school play cost $8 for adult tickets and $5 for student tickets. The show sold a total of 170 tickets and raised $1000. How many adult tickets and how many student tickets were sold?

$$\begin{cases} x + y = 170 \\ 8x + 5y = 1000 \end{cases}$$

x = # adult tickets
y = # student tickets

50 adult
120 student

29. The length of a rectangle is 3cm greater than its width. The perimeter is 24. Find the dimensions of the rectangle. Set up and solve a system of equations to model this situation.

$$\begin{cases} 24 = 2l + 2w \\ l = w + 3 \end{cases}$$

l = length
w = width

w = 4.5 cm
l = 7.5 cm