Name _____ Date _____

Algebra 1 Final Exam Review School Year 2023-24

1. Evaluate the expression $2x^2 - 3y + 5z$ when $x = 3$, $y = -7$, and $z = -1$

2. Solve for x: $3(-2x + 4) = -8(x - 3)$

3. Solve for r: $-2(r - 3) > 4(4r - 1) - 8$

4. If $f(x) = -5x + 12$
   a) Find f(4)
   b) Find x if f(x) = -33

5. Solve the literal equation for **y**: $8x + 4\mathbf{y} = 36$

6. Your soccer team wants to buy T-shirts. You call two different companies about prices. Each company charges a price per T-shirt and a set-up fee to create the team logo.

	Logo set-up fee	Price per T-Shirt
Company A	$15	$8
Company B	$33	$5

   a) The cost is the same for each company. How many T-shirts is the team buying? Answer using a complete sentence.

   b) A few players decided not to get T-shirts. Which company has the lower cost? Answer using a complete sentence.

7. The function c = 8 + 6h represents the cost c (in dollars) of renting a canoe after *h* hours.

a) Identify the independent and dependent variables.

b) What would the cost be to rent the canoe for 3 hours?

c) How many hours would a customer have to rent the canoe for the cost to be $41?

Solve.

8. $7x + 4 = 32$

9. $-2(1 - d) + 2d = 14$

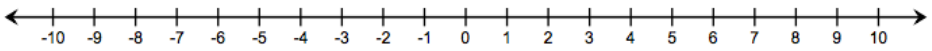
10. $5x + 7 - 3x = -17 + 2x$

11. $\frac{4x-2}{7} = -2$

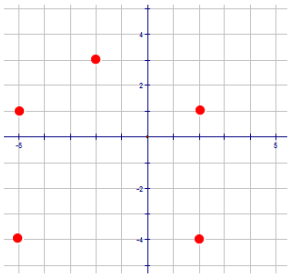
12. $|4x + 6| = 18$

13. $-6x + 23 > -5x + 14$

14. Graph the solution to #13



Use the graph to answer questions 15 & 16.



16. Is the graph discrete or continuous?

15. What is the domain and range of the graph?

17. Factor: $m^2 + 13m + 42$

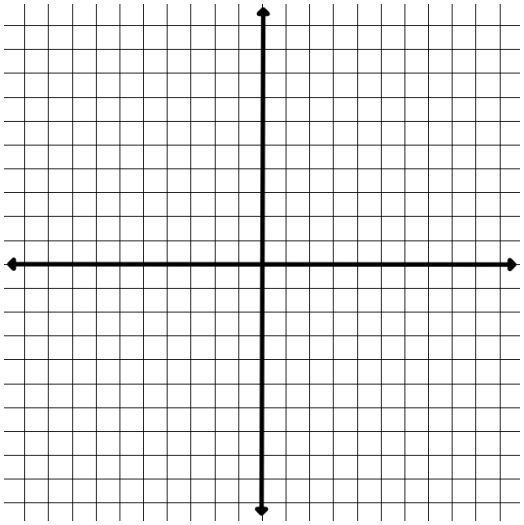
18. Use these two points to answer the questions below. (0, 2) and (-3, 4).

a) Find the slope of the line that passes through the given points.

b) Write the equation, in <u>point-slope form</u>, of the line that passes through these points.

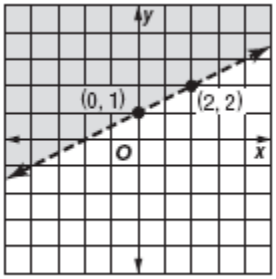
c) Rewrite your equation from part b in <u>slope-intercept form</u>.

d) Graph the equation



19. Solve the system: $y = 2x - 7$
$3x - 4y = 8$

20. Write the inequality of the graph shown.



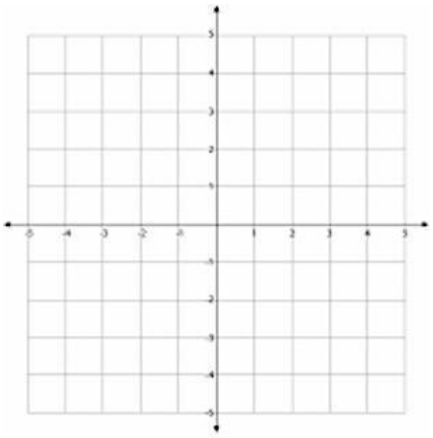
21. Sara and Roberto are making fruit salad. Shari purchases 3 pounds of strawberries and one pound of grapes for a total of $18.00. Roberto purchased 2 pounds of strawberries and 4 pounds of grapes for a total of $22.00. (Don't forget to define your variables)

a) Write a system of equations to model this situation.

b) Solve the system to determine the cost of one pound of strawberries and one pound of grapes.

22. a) Solve the system by graphing.

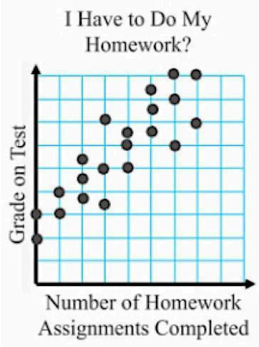
$y > 2x - 3$
$y < -3x + 4$



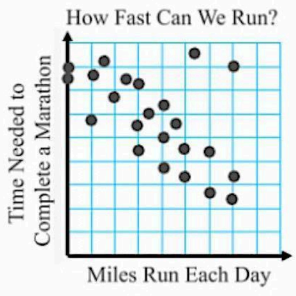
b) Identify one point in the solution set _____

23. The cost, *C*, of joining the sports center gym includes an initial membership fee of $139 plus a $29 monthly fee. Write an equation in slope-intercept form to find the total cost for *m* months.

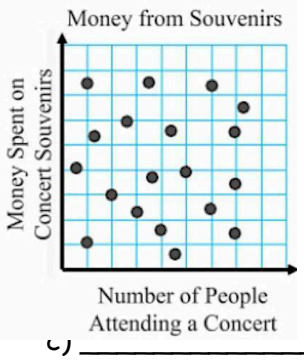
24. Which type of correlation do the following graphs have?



a) _____



b) _____



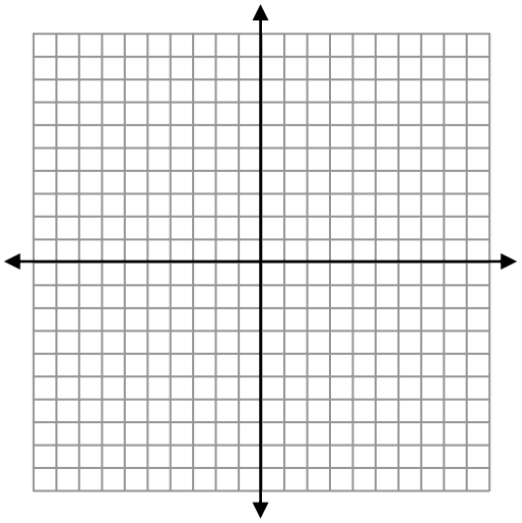
c) _____

25. Compare the function $g(x) = -3x^2 + 4$ to the parent function $f(x) = x^2$.
Describe the 3 transformations:

1.
2.
3.

26. Graph the function $h(x) = (x-1)^2 + 2$. Include at least 5 points in the table. Vertex is at (,)

x	$(x-1)^2 + 2$	h(x)



27. Determine which of the following points are solutions to the system of inequalities. (Test each one)

$y > 3x - 2$

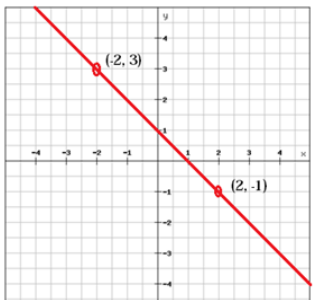
$-2x + 4y \leq -5$

a) (0,0) b) (-1, -4) c) (5, 1) d) (-5, -3)

28. Simplify: $(-2x^2 + 4x - 5) - (6x^2 + 2)$

29. Factor: $6x^2 + x - 12$

30. Write the equation of the line in slope-intercept form.



31. Determine which lines, if any, are parallel.

Line a: $4x + 2y = 9$

Line b: $4x + y = 6$

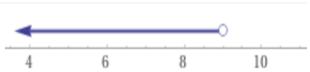
Line c: $y = -2x + 4$

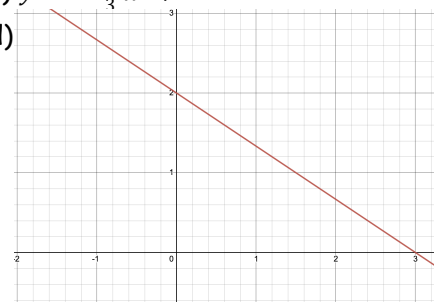
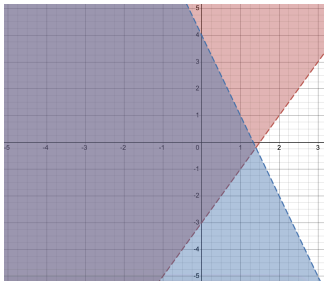
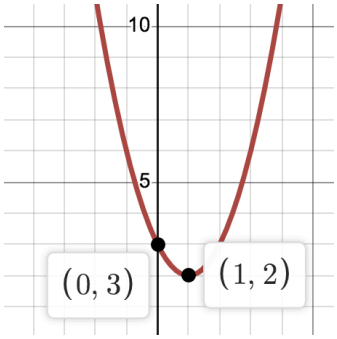
32. Find the product: $-3w^3(2w^2 - 5w + 7)$

33. Solve the equation: $0 = x(x + 6)(x - 1)$

34. Factor the following expression using the GCF: $10x^3 - 5x^2$

Answer Key

1. 34
2. x = 6
3. r < 1
4. a) -8 b) x = 9
5. y = -2x + 9
6. a) The team will buy 6 T-shirts when the price is the same.
   b) For less than 6 T-shirts Company A is cheaper.
7. a) Independent: h, hours Dependent: c, cost $
   b) $26
   c} 5.5 hours
8. x = 4
9. d = 4
10. No solution
11. x = -3
12. x = 3, x = -6
13. x < 9
14. 

15. Domain: {-5, -2, 2} Range: {-4, 1, 3}
16. Discrete
17. (m + 6)(m + 7)
18. a) $m = -\frac{2}{3}$
    b) $y - 2 = -\frac{2}{3}(x - 0)$ *or* $y - 4 = -\frac{2}{3}(x + 3)$
    c) $y = -\frac{2}{3}x + 2$
    d) 
19. (4, 1)
20. $y > \frac{1}{2}x + 1$
21. a) 3s + 1g = 18 b) Strawberries are $5 per pound and grapes are $3 per pound.
    2s + 4g = 22
22. a)  b) Answers Vary (0, 0) is one possible solution
23. C = 29m + 139
24. a) Positive b) Negative c) none
25. **Reflection, vertical stretch factor of 3 , and** a vertical translation up 4 units
26. Vertex (1, 2)
    Table values: (-1, 6), (0,3), (1,2), (2, 3), (3, 6)
    

27. b
28. $-8x^2 + 4x - 7$
29. (3x + 4)(2x - 3)
30. $y = -1x + 1$
31. $a \parallel c$, since they have the same slope.
32. $-6w^5 + 15w^4 - 21w^3$
33. x = -6, x = 0, x = 1
34. $5x^2(2x - 1)$