Welcome to Algebra, Functions and Data Analysis (AFDA)!

This summer packet is for all students enrolled in AFDA at Herndon High School for Fall 2023.

This summer assignment is not *required*, but it is *strongly recommended.* The exercises will give you the opportunity to self-assess how prepared you are for AFDA this year. Success in our first unit will depend how well you understand the topics included, so put your best effort into it! Feel free to use old notes and online resources as needed to ensure that you understand the content.

Complete the work for this packet in the space provided or on a separate piece of paper. Do as many of the problems as you can WITHOUT the use of a calculator. It is important to spend time keeping these skills and concepts fresh in your mind – especially your mental math! We will provide you with a key at the start of next year for you to check your work. Be sure to keep track of sticky spots and ask questions when we return. You are also welcome to reach out to us over the summer; our contact information is below.

FCPS recommend activities for each level of mathematics are also posted on the Herndon High School website. Both resources will help you prepare for next year.

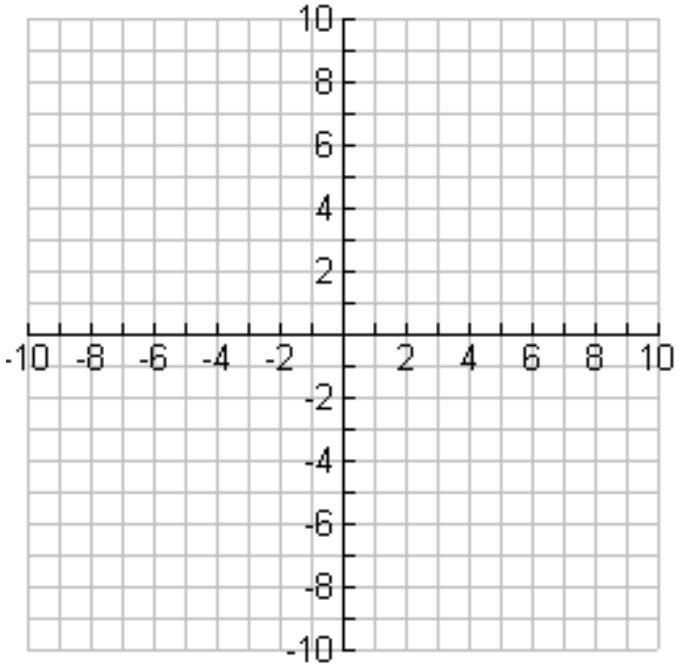
Have a great summer – we are looking forward to meeting you in August!

Mr. Barber	Ms. Moukalled	Ms. Koerner-Anderson	Ms. Mitchell
stbarber@fcps.edu	hamoukalled@fcps.edu	akoernerande@fcps.edu	kmmitchell@fcps.edu

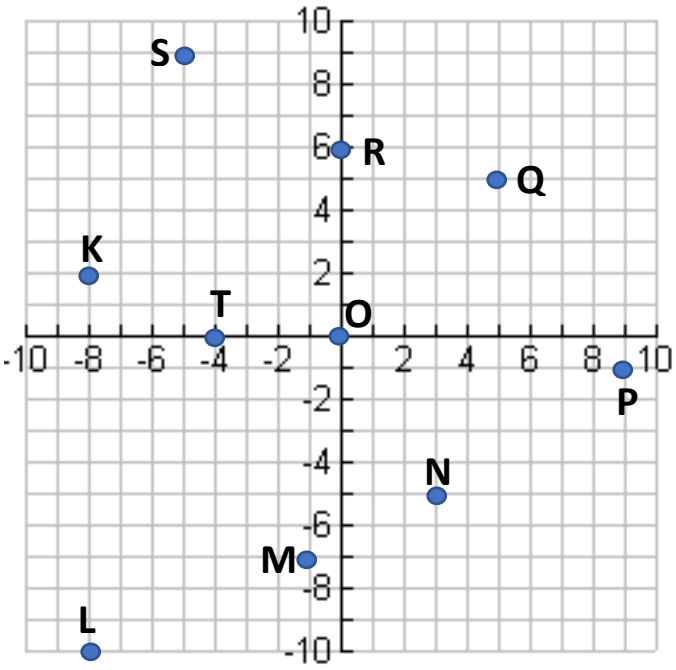
As you work through the packet, keep track of the following:

"Things I learned, but forget how to do:"	**"Things I never learned:"**

I. Plotting Points- Plot each of the points on the coordinate plane. Label each point with the corresponding letter.

A. (2, -2) B. (4, 5) C. (0, 7) D. (-6, -3) E. (-10, 2) F. (9, 0) G. (8, -6) H. (-1, 0) I. (0, -4) J. (-3, 8)	

II. Naming Points – In the spaces provided, write the correct coordinates of the point that corresponds with each letter.

K. L. M. N. O. P. Q. R. S. T.	

III. Simplify Expressions- Simplify each expression. Make sure to combine like terms!

1. $2^3 \bullet [3(5)+8\div 4]$	2. $-3p-4t-5t-2p$
3. $8-(5-x)$	4. $3(2x-3(x-1))$

IV. Evaluate Expressions- Plug in the value given to evaluate each expression. Your answer should be a number!

5. $10(t^2+t)$ for $t=-5$	6. $-5\lvert k+1\rvert$ for $k=-10$
7. $x^2-4x-12$ for $x=-2$	8. $\dfrac{(x+y)^2}{-y}$ for $x=-12, y=4$

V. Solve Equations- Solve each equation.

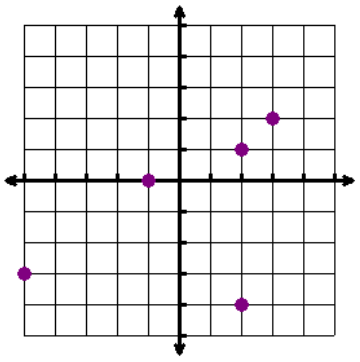
9. $5-v=3$	10. $8m+1=7m-9$
11. $-4(z+5)+2=14$	12. $-y+3y+7y=2y+14$
13. $\dfrac{t}{27}=\dfrac{4}{9}$	14. $-(x-1)+10=-3(x-3)$

VI. Determine if the Relation is a Function- circle YES if the relation is a function (the x-values do not repeat) and NO if the relation is not a function.

15. $\{(2,1),(0,4),(-3,1),(8,5)\}$

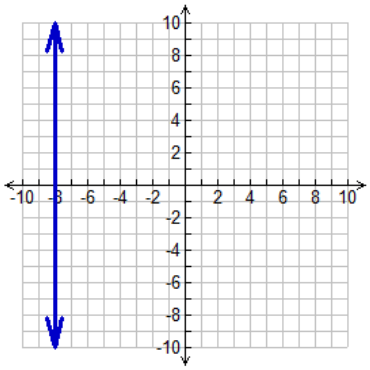
Function? YES or NO

16.



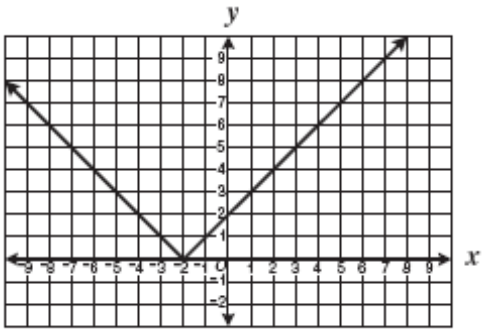
Function? YES or NO

17.



Function? YES or NO

18.



Function? YES or NO

VII. Determine the Domain & Range of Each Relation.

23. $\{(5,-1),(8,2),(-4,3),(-4,-4)\}$

Domain:_____

Range:_____

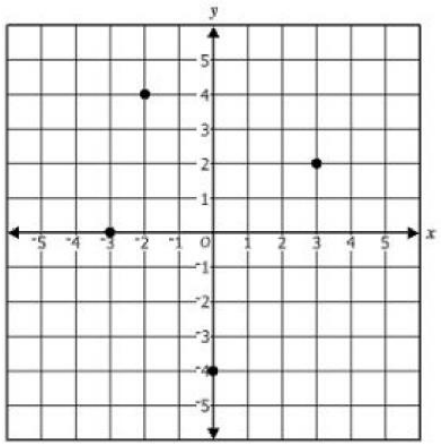
24.

X	-2	0	4	7
Y	6	-8	2	0

Domain:_____

Range:_____

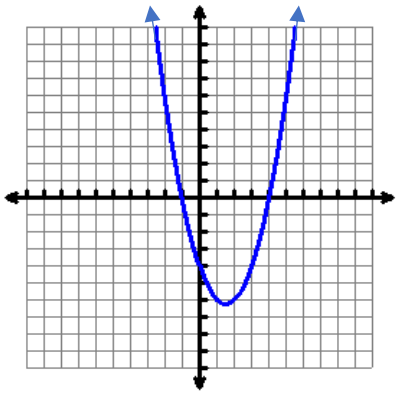
25.



Domain:_____

Range:_____

26.



Domain:_____

Range:_____

VIII. Determine the X- & Y- Intercept(s)- Find the x- and y- intercept of the function. Intercepts should be written as ordered pairs.

27. $y = 3x + 5$

X-Intercept(s):_____

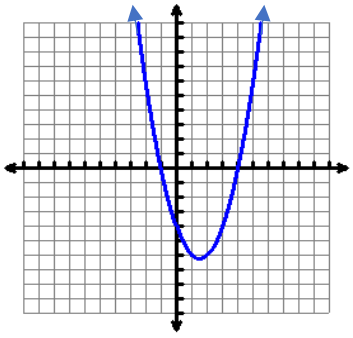
Y-Intercept:_____

28. $2x + 3y = 6$

X-Intercept(s):_____

Y-Intercept:_____

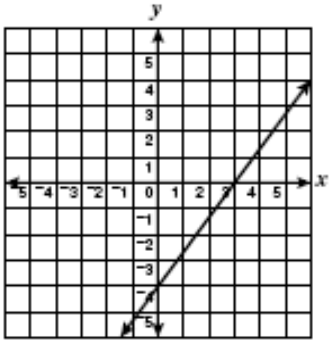
29.



X-Intercept(s):_____

Y-Intercept:_____

30.

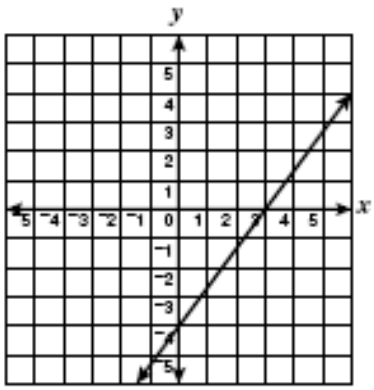
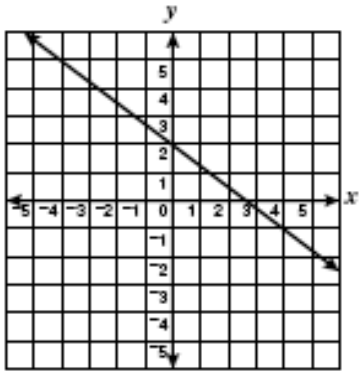


X-Intercept(s):_____

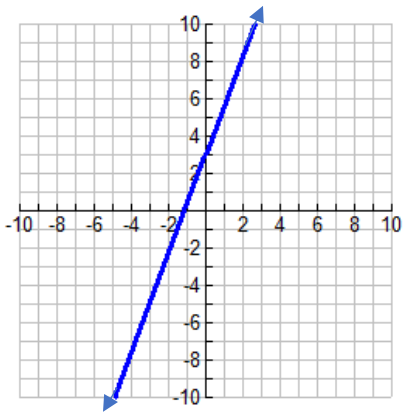
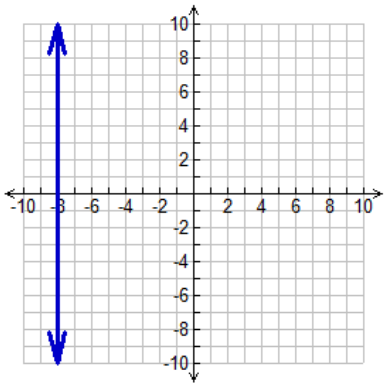
Y-Intercept:_____

IX. Determine the Slope of a Line- Find the slope of the line using the given information.

Remember: When given points, the slope formula is: $m = \frac{y_2 - y_1}{x_2 - x_1}$

31. 	32. 
33. $y = \frac{4}{3}x - 2$	34. $4x - 6y = 12$
35. (5, 6) (9, 8)	36. (-9, 13) (2, -10)

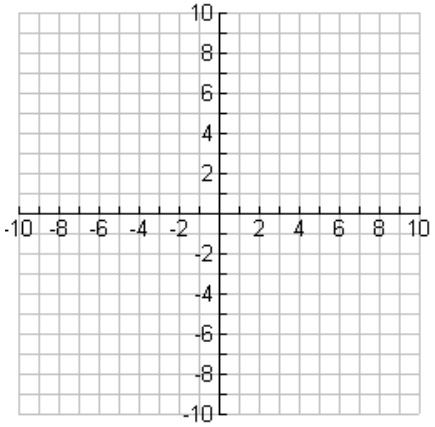
X. Write the Equation of a Line- Given the information provided, write the equation of the line in slope-intercept form (y = mx + b)

37. 	38. 

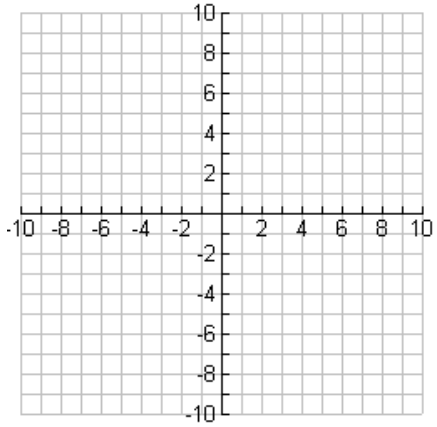
39. The line passes through: (1, 2) (-1, -4)	40. The line has a slope of 3 and a y-intercept of -5.

XI. Graph Lines- Graph each line on the coordinate plane provided. You should have at least 2 points on your graph.

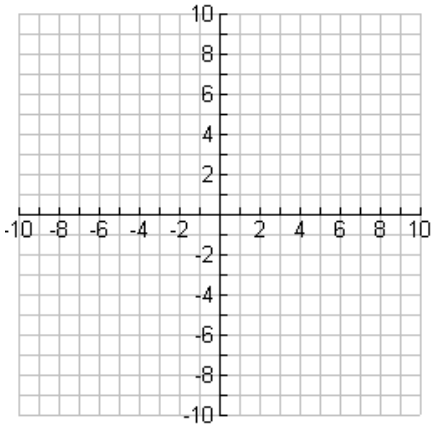
41. $y = -\frac{1}{3}x + 4$



42. $4x - 2y = 8$

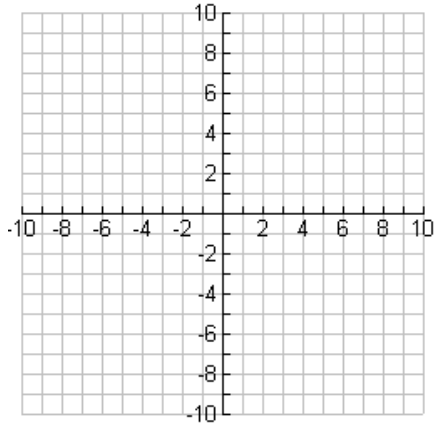


43. $y = 8$

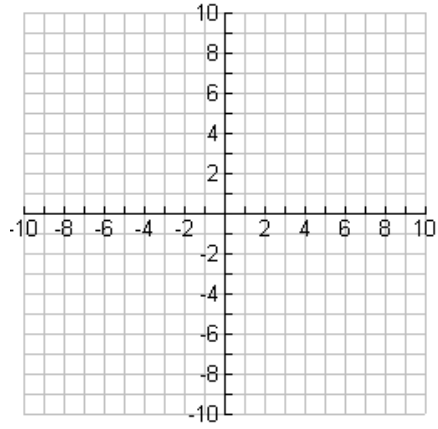


XII. Graph Quadratics- Graph each quadratic function on the coordinate plane provided. You should have at least 5 points on your graph. Graphs should be in the shape of a parabola!

47. $y = x^2 - 4$



48. $y = x^2 - 6x + 5$



49. $y = -2x^2$