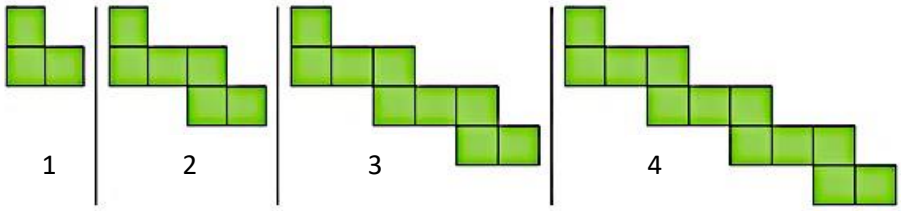
7A Adding & Subtracting Linear Functions

Name: _____Per: _____

SHOW YOUR WORK AND WORK IN PENCIL

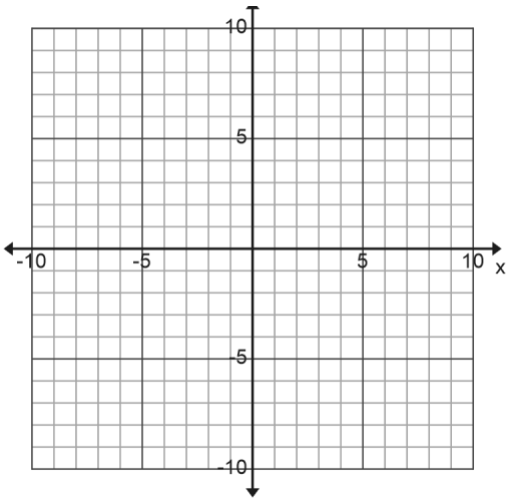
Due: January 7th / 8th

The following pattern represents $f(x)$. The table represents $g(x)$.



x	$g(x)$
-2	1
0	-3
1	-5
5	-13

1. Find the equations for *f*(x): _____ *g*(x): _____



   a. Graph *f*(x) and *g*(x) on the graph. Use different colors for the two graphs and label your lines.

   b. Where does $f(x) = g(x)$ on your graph? _____

   c. Show by substitution or elimination that your answer to the system is correct (Unit 4)

   d. Complete the tables for *f*(x).

x	$f(x)$
-3	
-2	
1	
2	
5	

   e. What is $f(-2)$? _____

   f. What is $f(1)$? _____

   g. What is $g(-2)$? _____

   h. What is $g(1)$? _____

   i. What is $f(-2) + g(-2)$? _____

   j. What is $f(1) + g(1)$? _____

   k. Combine your tables above to show the outputs for *f*(x) and *g*(x).

   l. Add the outputs to show the new function of $f(x) + g(x)$.

x	$f(x)$	$g(x)$	$f(x) + g(x)$
-2			
-1			
0			
1			
2			
5			

   m. Using the table, find the equation for $f(x) + g(x)$ _____

   n. Graph and label your new function $f(x) + g(x)$ in a different color.

   o. How does the slope of the new equation compare to $f(x)$ and $g(x)$?_____

   p. How does the y-intercept of the new equation compare to $f(x)$ and $g(x)$? _____

   q. Fill out the table for $f(x) - g(x)$.

x	$f(x)$	$g(x)$	$f(x) - g(x)$
-2			
-1			
0			
1			
2			
5			

   r. Write the equation for $f(x) - g(x)$_____.

   s. Graph your new function $f(x) - g(x)$ in a different color above.

   t. Explain how you found your equation.

   u. What's $f(-2) - g(-2)$? ____. Circle where you see it in your table

   v. What is $f(2) - g(2)$? _____. Circle where you see it on your graph

2. If $\boldsymbol{f(x) = 3x + 5}$ $\boldsymbol{and}$ $\boldsymbol{g(x) = -2x + 4}$. SYW for each of the below.

a. $f(1)$ = _____ e. $f(1) - g(1)$ = _____ i. $f(x) - g(x)$ = _____

b. $g(1)$ = _____ f. $g(x) = 20, x$ = _____ j. $g(x) - f(x)$ = _____

c. $f(2a)$ = _____ g. $f(x) = 11, x$ = _____ k. $f(2) + g(-1)$ = _____

d. $f(1) + g(1)$ = _____ h. $f(x) + g(x)$ = _____ l. $f(-3) - g(0)$ = _____

3. If $\boldsymbol{f(x) = -5x + 8}$ $\boldsymbol{and}$ $\boldsymbol{g(x) = 6x + 12}$. SYW for each of the below.

a. $f(2)$ = _____ c. $f(x) + g(x)$ = _____ e. $f(2) + g(2)$ = _____

b. $g(2)$ = _____ d. $f(x) - g(x)$ = _____ f. $f(2) - g(2)$ = _____

4. Use the **non-linear data** from the table to answer the questions.

a. What is $a(-3) + b(-3)$?____ e. What is $a(-1) + b(-1)$? ____

b. What is $a(0) + b(0)$? _____ f. What is $a(-1)b(-1)$?_____

c. What is $a(0)b(0)$? _____ g. Find where $a(x) = 1$ _____

d. What is $a(7) - b(7)$? _____ h. Find where $b(x) = -5$ _____

x	$a(x)$	$b(x)$
−3	1	−1
−1	7	−5
0	−3	−10
2	8	2
7	3	3

5. If $\boldsymbol{h(x) = 3x + 12}$

a. What is the slope? _____ Y-intercept? _____ X-intercept? _____

b. How could I change $h(x)$ to make each point on the line shift 5 units lower?_____

E.C. How could I change $h(x)$ make each point on the line shift 3 units to the right?_____

6. If $\boldsymbol{f(x) = 2x + 8}$ and $\boldsymbol{g(x) = 3x + 5}$.

a. Complete the table for each of the four functions.

b. What is the slope for $f(x) + g(x)$? _____
What is the y-intercept? _____

c. Write the equation for $f(x) + g(x) =$
_____

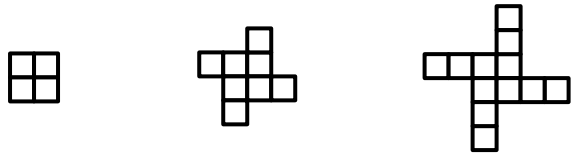
d. What is the slope for $f(x) - g(x)$? _____
What is the y-intercept? _____

e. Write the equation for $f(x) - g(x) =$ _____

f. Explain how you found your equations:

x	$f(x)$	$g(x)$	$f(x) + g(x)$	$f(x) - g(x)$
−2				
−1				
0				
1				
3				

7. Make a table and write an equation that can be used to find the number of blocks (n) in any stage (s) of the following pattern. You should recognize this from your term final. ☺



Stage 2 *Stage 3* *Stage 4*