October 23, 2018, Tuesday

Rewrite the following in slope intercept form (y = mx + b).

1) $3x - 4y = 0$

$y = \frac{3}{4}x + 0$

2) $x + y = -5$

$y = -1x - 5$

3) $-x + y - 1 = 0$

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

4) $0 = 1 + y - \frac{1}{3}x$

$-y = 1 - \frac{1}{3}x$

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

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

$y = \frac{1}{3}x - 1$

Oct 16-2:33 PM

Foundations of Algebra Unit 4 – Characteristics of Linear Equations Notes/Practice
Name: ______________ Date: ______________

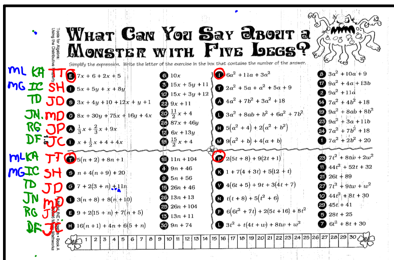
Day 1 – Combining Like Terms

Conditions for Combining Like Terms:
1) The terms must have the same ______________.
2) Variables must have the same variables/letter ______________.
letter

Simplify each expression:

1. $-5n - 2 - 6$ — $-5n - 8$; $-8 - 5n$
2. $8 - 6x + 1 + 3x$ — $-3x + 9$ ← Standard Form; $9 - 3x$
3. $5x - 2(5 + 8x)$ — $5x - 10 - 16x$; $-11x - 10$; 5-16
4. $7(r + 2) + 8r$ — $7r + 14 + 8r$; $15r + 14$
5. $2b - 6(7b - 2)$ — $-2b - 42b + 12$; $-44b + 12$
6. $6b(1 + 3b) - 2(-4b - 3)$ — $14b + 18b^2 + 6$
7. $-7x(-7x + 1) + x(1 - 3x)$ — $49x^2 - 7x + 1x - 3x^2$; $49x^2 - 6x - 3x^2$; $46x^2 - 6x$
8. $-2y(-4y + 1) - 5(2 - 3y)$ — $8y^2 - 2y - 10 + 15y$; $8y^2 + 13y - 10$
9. $5x(y - 8) - 8(x + 2)$
10. $-3x(x - 5) + 5(x + 5)$

Oct 19-8:57 AM



Oct 19-8:57 AM

Foundations of Algebra Unit 4 – Characteristics of Linear Equations Notes
Name ______________ Date ______________

Day 2 – Function Notation and Evaluating Functions (Graphs)

Terms to Know:

- Relation: Any set of ______________ that have ______________.
- Function: A ______________ such that every single ______________ has exactly ______________ output.
- Domain: All the possible input values (_____ - coordinates).
- Range: All the possible output values (_____ - coordinates).

The notation of a function is important in higher mathematics, such as calculus, and in other areas that use mathematics, such as physics.

Here are a few examples:

- **Example 1:** Input the number of seconds after the starting gun in a race to get an output of the number of meters the runner has covered.

Race Chart

Number of Seconds (input)	1	4	7	8
Meters Covered (output)	5	20	35	40

Domain:

Range:

- **Example 2:** Observe the function y = x – 6, where x is the place holder (also called a ______________) for the input and y is the place holder for the output.

Function: $y = x - 6$

x (input)	-3	0	7	8
y (output)	-9	-6	1	2

Domain:

Range:

- The rule about only **one output** each time is crucial and must not be violated.

Not a Function

input	3	2	0	3
output	4	-1	2	-3

Why is this not a function? ______________

Foundations of Algebra Unit 4 – Characteristics of Linear Equations Notes

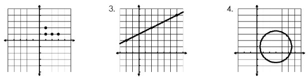
How do I determine if a relation is a function?

- Each input must have ______________ output.
- Look at the graph…The vertical line test: **No** vertical line can pass through ______________ points on the graph.

Examples: Are these relations functions?

1. $\{(3,2),(4,3),(5,4),(6,5)\}$

2. 3. 4.



Function Notation:

- Function notation is ______________.
- f(x) is a fancy way of writing _____ in an ______________. It is pronounced ______________.
  - Example: f(x) = 2x + 4 is the same as y = 2x + 4

Function Notation	x-y Notation
$f(x) = 5x + 2$	
	$y = -3x - 7$

Evaluation Functions:

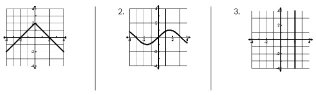
- Evaluate $f(x) = x^2 - 2x + 3$, when $x = -3$ and $x = 4$.

Foundations of Algebra Unit 4 – Characteristics of Linear Equations Practice
Name: ______________ Date: ______________

Day 2 – Function Notation and Evaluating Functions (Graphs)

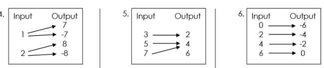
Decide whether the graph represents y as a function of x. Explain your reasoning.

1. 2. 3.



Decide whether the relation is a function.
If it is a function, give the domain and the range.

4. 5. 6.



Evaluate the function when $x = 3$, $x = 0$, and $x = -2$.

7. $f(x) = 2x - 5$
8. $h(x) = 6x + 2$
9. $g(x) = 2.4x$
10. $f(x) = 0.5x + 12$
11. $h(x) = \frac{2}{3}x - 1$
12. $f(x) = \frac{3}{5}x + 2$

Oct 16-2:35 PM

October 23, 2018, Tuesday

Oct 16-2:36 PM

Foundations of Algebra Unit 4 – Characteristics of Linear Equations Notes/Practice
Name: _____ Date: _____

Day 3 - Evaluating Functions and Simplifying Expressions

Use the following functions to find the given value:

$f(x) = x + 2$ $g(x) = -\frac{1}{2}x + 1$ $h(x) = 2x^2 - 3$ $k(x) = 3 - x$

1. $f(2) =$ _____
2. $g(4) =$ _____
3. $f(-6) =$ _____
4. $k(5) =$ _____
5. $h(2) =$ _____
6. $g(6) =$ _____
7. $h(-3) =$ _____
8. $k(-4) =$ _____

Simplify each expression.

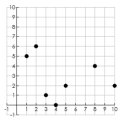
9. $-6(1+3x)-2x(-3x+2)$
10. $3x(y-4)-5x(-7x+y)$
11. $-6x^2(6x-1)-8x(1+8x)$
12. $-7(y^2+7)+2y(8y^2+1)$
13. $2x(x^3+11x^2-9x-3)$
14. $-3x^2(2y-4x)+5x^2(1-8x)$

Oct 16-2:36 PM

Foundations of Algebra Unit 4 – Characteristics of Linear Equations Notes/Practice

Find the indicated values by using the graph.

1. $h(2) =$ _____
2. $h(4) =$ _____
3. $h(1) =$ _____
4. $h(5) =$ _____
5. $h($_____$) = 4$
6. $h($_____$) = 1$
7. *What are the values for* $h($_____$) = 2$?



Find the indicated values by using the table.

8. $g(10) =$ _____
9. $g(22) =$ _____
10. $g(0) =$ _____
11. $g(28) =$ _____
12. $g($_____$) = 21$
13. $g($_____$) = 33$

x	g(x) = 2x + 1
0	
2	
4	
6	
8	
10	
12	
14	
16	
18	
20	
22	
24	
26	

Simplify each expression.

14. $2(4x^2-8)-3x(-3x+2)$
15. $3x(x-6)-8(7x+2)$
16. $-3x^2(4x+2)+5x(1-6x)$
17. $5(x^2-4)+2x(-3x^2+7)$

Oct 16-2:38 PM

October 24, 2018, Wednesday

Oct 16-2:38 PM

Foundations of Algebra Unit 4 – Characteristics of Linear Equations Notes/Practice
Name _____ Date _____

Day 4 - Combining Functions

Notes:

1. Given the functions $f(x)=2x+4$ and $g(x)=3x-7$
   Find $f(x)+g(x)$
2. Given the functions $f(x)=6x^2-3x+5$ and $g(x)=4x^2+5x-8$
   Find $g(x)-f(x)$
3. Given the functions $f(x)=4x^2+2$ and $g(x)=3x$
   Find $g(x)\bullet f(x)$

Practice:

Given the functions $f(x)=4x+8$ and $g(x)=2x-12$

4. Find $f(x)+g(x)$
5. Find $f(x)-g(x)$

Given the functions $f(x)=3x^2+5x-8$ and $g(x)=2x^2+4x-9$

6. Find $f(x)+g(x)$
7. Find $f(x)-g(x)$
8. Find $f(2)$
9. Find $g(2)$
10. Find $f(2)-g(2)$
11. Find $g(x)-f(x)$

Oct 16-2:39 PM

Foundations of Algebra Unit 4 – Characteristics of Linear Equations Notes/Practice
Name _____ Date _____

Day 4 - Combining Functions

Notes:

1. Given the functions $f(x)=2x+4$ and $g(x)=3x-7$
   Find $f(x)+g(x)$
2. Given the functions $f(x)=6x^2-3x+5$ and $g(x)=4x^2+5x-8$
   Find $g(x)-f(x)$
3. Given the functions $f(x)=4x^2+2$ and $g(x)=3x$
   Find $g(x)\bullet f(x)$

Practice:

Given the functions $f(x)=4x+8$ and $g(x)=2x-12$

4. Find $f(x)+g(x)$
5. Find $f(x)-g(x)$

Given the functions $f(x)=3x^2+5x-8$ and $g(x)=2x^2+4x-9$

6. Find $f(x)+g(x)$
7. Find $f(x)-g(x)$
8. Find $f(2)$
9. Find $g(2)$
10. Find $f(2)-g(2)$
11. Find $g(x)-f(x)$

Oct 16-2:40 PM

October 25, 2018, Thursday

Oct 16-2:40 PM

Foundations of Algebra Unit 4 – Characteristics of Linear Equations Practice

Name: _____ Date: _____

Day 5 - Combining Functions

Notes:

1. Given the functions $g(x)=2x-1$ and $h(x)=3x-4$
   Find $g(x)-h(x)$

2. Given the functions $f(x)=2x-4$ and $g(x)=x^2-3$
   Find $2f(x)+3g(x)$

3. Given the functions $f(x)=6x^2-x+3$ and $g(x)=x^2+3x$
   Find $2f(x)-5g(x)$

Practice:

Given the functions $f(x)=4x+8$ and $g(x)=2x-12$

4. Find $2f(x)+3g(x)$

5. Find $g(x)-f(x)$

Given the functions $f(x)=4x^2-2x+5$ and $g(x)=x^2+7x-8$

6. Find $f(x)+g(x)$

7. Find $g(x)-f(x)$

8. Find $3f(x)+g(x)$

9. Find $g(x)-4f(x)$

10. Find $f(-2)-g(3)$

11. Find $g(-2)-f(3)$

Oct 16-2:41 PM

Foundations of Algebra Unit 4 – Characteristics of Linear Equations Practice

Given the functions $f(x)=5x^2-9x+2$ and $g(x)=x^2+3x-8$ and $h(x)=-2x$

12. Find $4f(x)+6g(x)$

13. Find $h(x)-f(x)$

14. Find $-2f(x)+2g(x)$

15. Find $f(3)+g(-4)$

Given the functions: $f(x)=3x^2-7x-$ and $g(x)=-x^2+4x-10$ and $h(x)=6x^2$

16. Find $3f(x)+6h(x)$

17. Find $g(x)-h(x)$

18. Find $h(x)\bullet g(x)$

19. Find $3f(x)+7g(x)$

20. Find $-5g(x)-h(x)$

21. Find $f(2)-f(-1)$

22. Find $3f(x)\bullet h(x)$

23. Find $f(-2)+g(5)$

24. Find $f(-7)\bullet g(6)$

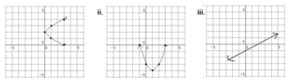
Oct 16-2:41 PM

Foundations of Algebra Name _____ Block_____

Unit 4 Study Guide 1

1) Circle the graph/s which are relations.

i. ii. iii.



2) Which graph/s from question 1 is a function?

A graph i **B** graphs ii and iii

C graphs i and ii **D** graph iii

3) Which represents the **domain** of the following relation? {(-6, 5), (-4, 3), (-1, 0), (4, 3)}

A 5, 3, 0, 3

B -6, 4, 1, -4

C 6, 4, 1, 4

D -6, -4, -1, 4

4. Which of the following does represent a way to determine if something is a function, if you have a table of values?

A The graph passes the vertical line test.

B The table of values has one input for every output.

C The table of values has one output for every input.

D None of the above.

5) List the range of the following: _____

In	Out
-3	5
-2	6
-1	7
0	8
1	9
2	10
3	11

Oct 16-2:42 PM

Foundations of Algebra Name _____ Block_____

6) If $f(x)=3x-2$, evaluate the following:

a) $f(0)$ b) $f(-1)$

7) evaluate the given function as indicated, $f(x)=3x-2$ $g(x)=\frac{1}{2}x+3$

a. f (2) =

b. g(4) =

c. f (0) + g(2) =

d. g(0) + f(-3) =

Simplify each expression.

8) $2x-8+1+9x$ 9) $10(1-2n)$

10) $4a^2-9a(2a+3)$ 11) $-7(6-10v)+5(2v+9)$

Let $f(x)=2x-1$, $g(x)=3x$, and $h(x)=x^2+1$. Compute the following:

12) f(x) + g(x) 13) 2g(x) – f(x)

14) g(x) – h(x) 15) g(x) • h(x)

Oct 16-2:43 PM

October 26, 2018, Friday

Quiz!

Oct 16-2:41 PM