

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

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

Oct 16-2:33 PM

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

Day 1 - Combining Like Terms

Conditions for Combining Like Terms:

- The terms must have the same variables/letter.
- Variables must have the same letter.

Simplify each expression:

- $-5n - 2 = 6$
 $-5n - 8 = 8$
 $-5n = 16$
 $n = -\frac{16}{5}$
- $8 - 6x + 1 + 3x$
 $-3x + 9$ (Standard Form)
- $5x - 16$
 $5x - 16 + 6x = 11x - 16$
- $2x + 14 + 8r$
 $15r + 14$
- $-2b - 42b + 12$
 $-44b + 12$
- $4b + 18b + 6$
 $22b + 6$
- $-7x - 7x + 1 + x - 3x$
 $-14x + 1 - 2x = -16x + 1$
- $2y - 4y + 3(2 - 3y)$
 $-2y - 6 + 6 - 9y = -11y$
- $49x^2 + 7 + 1x - 3x^2$
 $46x^2 - 2x + 7$
- $8y^2 - 2y - 10 + 15y$
 $8y^2 + 13y - 10$

Oct 19-8:57 AM

WHAT CAN YOU SAY ABOUT A MONSTER WITH FIVE LEGS?

Simplify the expressions. Write the letter of the answer in the box that contains the number of the answer.

10x
 $7x + 6 + 2x + 5$
 $5x + 5y + x + 8y$
 $3x + 4y + 10 + 12x + y + 1$
 $8x + 30y + 75x + 16y + 4x$
 $87x + 46y$
 $6x + 13y$
 $x + \frac{1}{2}x + 4 + 4x$

11a + 3a
 $2a^2 + 11a + 3a^2$
 $3a^2 + 10a + 9$
 $9a^2 + 4a + 13b$
 $9a^2 + 41d$
 $4a^2 + 7b^2 + 3a^2 + 15$
 $7a^2 + 4b^2 + 18$
 $9a^2 + 8ab + 8b^2$
 $9a^2 + 3a + 11b$
 $7a^2 + 7b^2 + 18$
 $3(a^2 + b) + 4(a + b)$
 $7a^2 + 2b^2 + 20$

11n + 104
 $5(n + 2) + 8n + 1$
 $n + 4(n + 9) + 20$
 $n + 7(4 + 3d) + 5(12 + 7)$
 $26n + 46$
 $13n + 13$
 $20n + 104$
 $13n + 11$
 $9n + 74$

7t^2 + 8ab + 2a^2
 $44t^2 + 52t + 32$
 $26t + 89$
 $7t^2 + 9ab + w^2$
 $44t^2 + 8t + 30$
 $45t + 41$
 $28t + 25$
 $6t^2 + 8t + 30$

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30

HIS PANTS FIT HIM LIKE
 2 2 23 24 25 26 27 28 29 30
 a G L O V E.

Oct 19-8:57 AM

Foundations of Algebra Unit 4 - Characteristics of Linear Equations Notes

Day 2 - Function Notation and Evaluating Functions (Graphs)

Terms to Know:

- Relation: Any set of NUMBERS that have RELATIONSHIP.
- Function: A RELATION such that every single INPUT has ONLY ONE output.
- Domain: All the possible input values (X - coordinates).
- Range: All the possible output values (Y - 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.

Number of Seconds (input)	1	2	3	4
Meters Covered (output)	5	20	35	40

Domain: 1, 2, 3, 4
 Range: 5, 20, 35, 40

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

Function: $y = x - 6$				
x (input)	3	6	12	18
y (output)	-3	0	6	12

Domain: -3, 0, 6, 12
 Range: -9, -6, 0, 6, 12

Not a Function

Input	1	2	3
Output	1	2	3

Why is this not a function? 3 has 2 outputs 4, 3

Foundations of Algebra Unit 4 - Characteristics of Linear Equations Notes

How do I determine if a relation is a function?

- Each input must have ONE output.
- Look at the graph. The vertical line test: No vertical line can pass through more than one points on the graph.

Examples: Are these relations functions?

- $\{(3,2), (4,3), (5,4), (6,3)\}$ Yes, Function
- No, not a function
- Yes!
- No!

Function Notation:

- Function notation is $f(x)$.
- $f(x)$ is a fancy way of writing an equation in x is pronounced f of x.

Example: $f(x) = 2x + 4$ is the same as $y = 2x + 4$

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

Evaluating Functions:

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

When $x = -3$:
 $f(-3) = (-3)^2 - 2(-3) + 3$
 $f(-3) = 9 - 2(-3) + 3$
 $f(-3) = 9 + 6 + 3$
 $f(-3) = 18$

When $x = 4$:
 $f(4) = (4)^2 - 2(4) + 3$
 $f(4) = 16 - 8 + 3$
 $f(4) = 8 + 3$
 $f(4) = 11$

Oct 16-2:35 PM

Foundations of Algebra Unit 4 - Characteristics of Linear Equations Practice

Day 2 - Function Notation and Evaluating Functions (Graphs)

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

- Yes
- Yes
- No
- No
- Yes
- Yes

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

- No
- Yes
- Yes

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

- $f(x) = 2x - 5$
- $h(x) = 6x + 2$
- $g(x) = 24x$
- $f(x) = 0.5x + 12$
- $h(x) = \frac{2}{3}x - 1$
- $f(x) = \frac{3}{2}x + 2$

October 23, 2018, Tuesday

Simplify each expression.

1) $-4p - 1 + 10$

2) $10(x + 10)$

3) $-8(10 + 3a) + 10$

4) $-3(-1 - a) + 2(8 - 6a)$

Handwritten work:
 $3 + 3a + 16 - 12a$
 $19 - 9a$
 $-9a + 19$

October 25, 2018, Thursday

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

7. $f(x) = 2x - 5$

8. $h(x) = 6x + 2$

10. $f(x) = 0.5x + 12$

11. $h(x) = \frac{2}{3}x - 1$

Oct 16-2:36 PM

Oct 16-2:38 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. $-4(1 + 3k) - 2(4 - 3k + 2)$

10. $3k(y - 4) - 5(x - 7x + y)$

11. $-6x^2(6x - 1) - 8x(1 + 6x)$

12. $-7(y^2 + 7) + 2y(9y^2 - 1)$

13. $2y(x^2 + 1)(x^2 - 9x - 3)$

14. $-3x^2(2y - 4) + 5x^2(1 - 8x)$

Oct 16-2:36 PM

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

Name: _____ Date: _____

Find the indicated values by using the graph.

1. $f(2) =$ _____

2. $h(4) =$ _____

3. $f(3) =$ _____

4. $h(5) =$ _____

5. $h(\text{---}) = 4$

6. $f(\text{---}) = 1$

7. What are the values for $h(\text{---}) = 2$?

Find the indicated values by using the table.

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

8. $g(4) =$ _____

9. $g(2) =$ _____

10. $g(3) =$ _____

11. $g(28) =$ _____

12. $g(\text{---}) = 21$

13. $g(\text{---}) = 33$

Simplify each expression.

14. $2(4x - 8) - 3(4 - 3x + 2)$

15. $3(x - 4) - 8(7x + 2)$

16. $-3x^2(4x + 2) + 5x(1 - 6x)$

17. $5(x^2 - 4) + 2x(3x^2 + 7)$

Oct 16-2:38 PM

Foundations of Algebra Name: _____ Block: _____

Unit 4 Study Guide 1

1) Circle the graph(s) which are relations.

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? $\{(4, 5), (-4, 3), (-1, 0), (4, 3)\}$

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) $2x - 8 + 1 + 5x$

9) $10(1 - 2a)$

10) $4x^2 - 9x(2a + 3)$

11) $-(6 - 10b) + 5(2c + 9)$

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

12) $f(x) + g(x)$

13) $g(x) - f(x)$

14) $g(x) - h(x)$

15) $g(x) \cdot h(x)$

Oct 16-2:43 PM

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

Day 4 - Combining Functions

Notes:

- Given the functions $f(x) = 2x + 4$ and $g(x) = 3x - 7$
Find $f(x) + g(x)$

- Given the functions $f(x) = 6x^2 - 3x + 5$ and $g(x) = 4x^2 + 5x - 3$
Find $g(x) - f(x)$

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

Practice:

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

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

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

- Find $f(x) + g(x)$
- Find $f(x) - g(x)$
- Find $f(2)$
- Find $g(2)$
- Find $f(2) - g(2)$
- 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:

- Given the functions $f(x) = 2x + 4$ and $g(x) = 3x - 7$
Find $f(x) + g(x)$

- Given the functions $f(x) = 6x^2 - 3x + 5$ and $g(x) = 4x^2 + 5x - 3$
Find $g(x) - f(x)$

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

Practice:

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

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

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

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

Oct 16-2:40 PM

Foundations of Algebra Unit 4 - Characteristics of Linear Equations Practice
 Name _____ Date _____

Day 5 - Combining Functions

Notes:

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

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

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

Practice:

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

- Find $2f(x) + 3g(x)$
- Find $g(x) - f(x)$

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

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

Oct 16-2:41 PM

Foundations of Algebra Unit 4 - Characteristics of Linear Equations Practice
 Name _____ Date _____

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

- Find $4f(x) + 6g(x)$
- Find $h(x) - f(x)$
- Find $-2f(x) + 2g(x)$
- Find $h(x) + g(-4)$

Given the functions $f(x) = 3x^2 - x - 1$ and $g(x) = x^2 + 4x + 10$ and $h(x) = 6x$

- Find $2f(x) + 4g(x)$
- Find $3f(x) - g(x)$
- Find $h(x) + g(x)$
- Find $2f(x) + g(x)$
- Find $-5g(x) - f(x)$
- Find $h(x) - f(-1)$
- Find $3f(x) + f(x)$
- Find $f(-2) + g(5)$
- Find $f(-2) + g(5)$

Oct 16-2:41 PM

October 26, 2018, Friday

Quiz!

Oct 16-2:41 PM