

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

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

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
- $8 - 6x + 1 + 3x$
 $-3x + 9$ (Standard Form)
- $5x - 16$
 $2x - 16 - 11x - 10$
 $-9x - 26$
- $2x + 14 + 8r$
 $15r + 14$
- $-2b - 42b + 12$
 $-44b + 12$
- $4b + 18b + 6$
 $22b + 6$
- $49x^2 + 7x - 3x^2$
 $46x^2 + 7x - 3x^2$
 $43x^2 + 7x$
- $8y^2 - 4y - 10 + 15y$
 $8y^2 + 11y - 10$
- $5xy - 14x^2 - 6xy$
 $-9xy - 14x^2$

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	$6a^2 + 11a + 3a^2$	$3a^2 + 10a + 9$
$7x + 6 + 2x + 5$	$2a^2 + 5a + a^2 + 5a + 9$	$9a^2 + 4a + 13b$
$5x + 5y + x + 8y$	$4a^2 + 7b^2 + 3a^2 + 15$	$9a^2 + 11d$
$3x + 4y + 10 + 12x + y + 1$	$1a^2 + 7b^2 + 3a^2 + 15$	$7a^2 + 4b^2 + 18$
$8x + 30y + 75x + 16y + 4x$	$1a^2 + 8ab + b^2 + 6a^2 + 7b^2$	$9a^2 + 8ab + 8b^2$
$87x + 46y$	$3(a^2 + 4) + 2(a^2 + b^2)$	$9a^2 + 3a + 11b$
$\frac{1}{2}x + 4$	$3(a^2 + b) + 4(a + b)$	$7a^2 + 7b^2 + 18$
$6x + 13y$	$2(a^2 + b) + 4(a + b)$	$7a^2 + 2b^2 + 20$
$\frac{1}{2}x + 4$	$2(5r + 8) + 9(2t + 1)$	$7t^2 + 8ab + 2a^2$
$5(n + 2) + 8n + 1$	$1 + 7(4 + 3d) + 5(12 + t)$	$44t^2 + 52t + 32$
$n + 4(n + 9) + 20$	$4(9t + 5) + 9t + 3(4t + 7)$	$26t + 89$
$7 + 2(3 + n) + 4n$	$1((t + 8) + 5(t^2 + 6))$	$7t^2 + 9ab + w^2$
$3(n + 8) + 8(n + 10)$	$3(t^2 + 7) + 2(5t + 16) + 8t^2$	$44t^2 + 8t + 30$
$9 + 2(5 + n) + 7(n + 5)$	$3t^2 + (4t + w) + 8tw + w^2$	$45t + 41$
$13n + 11$		$28t + 25$
$16(n + 1) + 4n + 6(5 + n)$		$6t^2 + 8t + 30$

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 31 32 33 34 35 36

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

October 23, 2018, Tuesday

Simplify each expression.

- $-4p - 1 + 10$
- $10(x + 10)$
- $-8(10 + 3k) + 10$
- $-3(-1 - a) + 2(8 - 6a)$
 $3 + 3a + 16 - 12a$
 $19 - 9a$
 $-9a + 19$

Oct 16-2:36 PM

October 24, 2018, Wednesday

Oct 24-1:32 PM

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 exactly 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	4	7	8
Meters Covered (output)	5	20	35	40

Domain: 1, 4, 7, 8
Range: 5, 20, 35, 40

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

x (input)	-3	0	2	4
y (output)	-9	-6	1	2

Domain: -3, 0, 2, 4
Range: -9, -6, 1, 2

Not a function

input	1	2	3
output	1	1	2

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: $f(x)$

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

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

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

Evaluation Functions:

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

When $x = -3$	When $x = 4$
$f(-3) = (-3)^2 - 2(-3) + 3$	$f(4) = (4)^2 - 2(4) + 3$
$f(-3) = 9 - 2(-3) + 3$	$f(4) = 16 - 8 + 3$
$f(-3) = 9 + 6 + 3$	$f(4) = 8 + 3$
$f(-3) = 18$	$f(4) = 11$

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**
- No**
- No**

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

- No**
- Yes**
- ML**

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

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

Oct 16-2:35 PM

October 25, 2018, Thursday

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

- $f(x) = 2x - 5$
 $f(3) = 2(3) - 5 = 1$
 $f(0) = -5$
 $f(-2) = 2(-2) - 5 = -9$
- $h(x) = 6x + 2$
 $h(3) = 6(3) + 2 = 20$
 $h(0) = 6(0) + 2 = 2$
 $h(-2) = 6(-2) + 2 = -10$
- $f(x) = 0.5x + 12$
 $f(3) = 0.5(3) + 12 = 13.5$
 $f(0) = 12$
 $f(-2) = 0.5(-2) + 12 = 11$
- $h(x) = \frac{2}{3}x - 1$
 $h(3) = \frac{2}{3}(3) - 1 = 1$
 $h(0) = \frac{2}{3}(0) - 1 = -\frac{1}{3}$
 $h(-2) = \frac{2}{3}(-2) - 1 = -\frac{4}{3} - 1 = -\frac{7}{3}$

Oct 16-2:38 PM

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

Day 3 - Evaluating Functions and Simplifying Expressions

Use the following functions to find the given value:

- $f(x) = x - 2$, $g(x) = \frac{1}{2}x + 1$, $h(x) = 2x^2 - 3$, $k(x) = 3 - x$
 $f(2) = 4 - 2 = 2$, $f(x) = y$
 $g(4) = \frac{1}{2}(4) + 1 = 3$
 $h(2) = 2(2)^2 - 3 = 5$
 $k(5) = 3 - 5 = -2$
- $g(4) = 3$, $g(0) = 1$
 $h(2) = 5$, $h(0) = 3$
 $k(5) = -2$, $k(0) = 3$
- $f(2) = 2$, $h(2) = 5$, $g(4) = 3$, $g(0) = 1$
 $h(2) = 5$, $h(0) = 3$
 $k(5) = -2$, $k(0) = 3$
- $h(2) = 5$, $h(0) = 3$, $g(4) = 3$, $g(0) = 1$
 $h(2) = 5$, $h(0) = 3$
 $k(5) = -2$, $k(0) = 3$

Simplify each expression.

- $-6x^2 + 4x - 2x^2 - 3 = -8x^2 + 4x - 3$
- $3xy - 4y - 5x(-7x + y) = 3xy - 4y + 35x^2 - 5xy = 35x^2 - 2xy - 4y$
- $2x^2(x^2 - 1) - 8x + 8x = 2x^4 - 2x^2$
- $3x^2(2y - 4x) + 5x^2(1 - 8x) = 6x^2y - 12x^3 + 5x^2 - 40x^3 = 6x^2y - 38x^3 + 5x^2$

Oct 16-2:36 PM

- $2x^4 + 22x^3 - 18x^2 - 6x$
- $-6x^2y + 2x^3 + 5x^2 = 40x^3$

Oct 25-9:36 AM

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

Find the indicated values by using the graph.

- $f(2) =$ _____
- $f(0) =$ _____
- $f(1) =$ _____
- $f(3) =$ _____
- $f(-1) =$ _____
- $f(-2) =$ _____
- What are the values for $f(-1) = 2$?

Find the indicated values by using the table.

x	$g(x) = 3x + 1$
0	1
2	7
4	13
6	19
8	25
10	31
12	37
14	43
16	49
18	55
20	61
22	67
24	73
26	79

Simplify each expression.

- $2(4x^2 - 8) - 3(-3x + 2)$
- $3(x^2 - 6) - 8(7x + 2)$
- $-3x^2(4x + 2) + 5x(1 - 6x)$
- $5x^2(-4) + 2(-3x^2 + 7)$

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 I and II
C graphs I and III
D graph III

3) Which represents the domain of the following relation? $\{(5, 5), (4, 3), (4, 0), (4, -3)\}$

A $\{5, 0, 3\}$
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. *= graph*
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: 5, 6, 7, 8, 9, 10, 11

In	Out
3	5
-2	6
-4	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) $f(0) = -2$ b) $f(-1) = -5$

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

a. $f(2) = 3(2) - 2 = 6 - 2 = 4$
b. $g(4) = \frac{1}{2}(4) + 3 = 2 + 3 = 5$
c. $f(0) + g(2) = -2 + 3 = 1$
d. $g(0) + f(-3) = 3 - 7 = -4$

Simplify each expression:

8) $2x - 8 + 1 + 2x = 4x - 7$
9) $10(1 - 2n) = 10 - 20n$

10) $4x^2 - 9(2x + 3) = 4x^2 - 18x - 27 = 4x^2 - 18x - 27$
11) $-(6 - 10x) + 5(2x + 9) = -6 + 10x + 10x + 45 = 20x + 39$

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

12) $f(x) + g(x) = 2x - 1 + 3x = 5x - 1$ 13) $g(x) - f(x) = 3x - (2x - 1) = x + 1$
14) $g(x) - h(x) = 3x - (x^2 + 1) = -x^2 + 3x - 1$ 15) $h(x) - f(x) = x^2 + 1 - (2x - 1) = x^2 - 2x + 2$

Oct 16-2:43 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 $g(x) = 4x^2 + 5x - 3$. Find $g(x) - f(x)$.

3. 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 $g(x) = 2x - 12$.

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 $g(x) = 4x^2 + 5x - 3$. Find $g(x) - f(x)$.

3. 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 $g(x) = 2x - 12$.

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

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

Day 5 - Combining Functions

Notes:

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

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

3. Given the functions $f(x) = 6x^2 + 3x - 2$ 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 $f(x) = 4x^2 - 2x + 3$ and $g(x) = x^2 + 3x - 8$.

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 $f(-2) - g(2)$ 11. 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 $f(x) = 6x^2 - 3x + 2$ and $g(x) = x^2 + 3x - 8$ and $h(x) = 2x^2$.

12. Find $4f(x) + 6g(x)$ 13. Find $f(x) - h(x)$

14. Find $-2f(x) + 2g(x)$ 15. Find $f(3) + g(-4)$

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

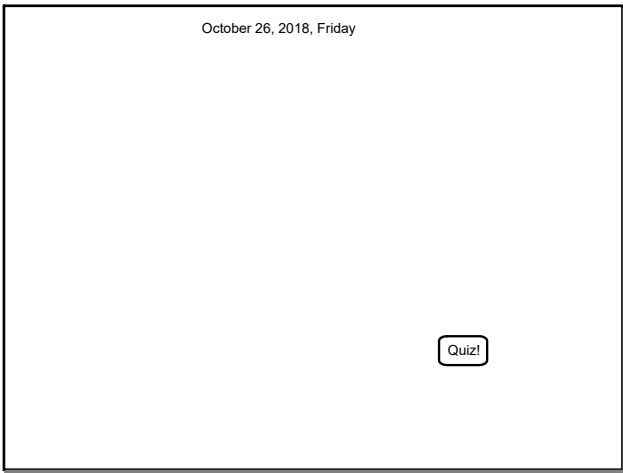
16. Find $3f(x) + 2g(x)$ 17. Find $g(x) - h(x)$ 18. Find $h(x) + g(x)$

19. Find $3f(x) + 2g(x)$ 20. Find $-2g(x) - f(x)$

21. Find $h(2) - f(-1)$ 22. Find $3f(x) + h(x)$

23. Find $f(-2) - g(3)$ 24. Find $f(-7) + g(6)$

Oct 16-2:41 PM



Oct 16-2:41 PM