Name: Key - Miss Ryan Section:_____ Date:_____

Unit 1 Pre-Test

Section I. - Vocabulary - 1 pt. Per blank.

Write the vocabulary word from the word bank next to the definition. *Not all words will be used.*

Domain	Term	Power	Relation	Function
Coefficient	Variable	Range	Power	Equation

1. Variable - Symbol used to represent unspecified numbers or values
2. Term - May be a number, a variable, or a product or quotient of numbers and variables.
3. Domain - The set of the first numbers of the ordered pairs in a relation.
4. Function - A relationship between input and output. In a function, there is exactly one output for each input.
5. Range - The set of second numbers of the ordered pairs in a relation.

Section II. - Variable and Expressions - 2 pts. Per question.

#6-8 Write an algebraic expression for the given verbal expression. Use *n* for a number.

6. The sum of a niumber and 10.

   $n + 10$

7. Nine less than *g* to the fourth power.

   $g^4 - 9$

   *Don't forget about turn around #'s.

8. The quotient of a number and 9 times 3.

   $9n \div 3$ or $\frac{9n}{3}$

#9-11 Write a verbal expression for the given algebraic expression.

9. $9a^2$
   - Nine times a number "a" squared.
   - A number "a" squared times nine.
10. $4 - 5h$
    - Four minus five times a number "h"
    - Five times a number "h" subtracted from
11. $\frac{1}{3}k$
    - One-third times a number "k"
    - One-third of a number "k"

Section III. - Order of Operation - 4 pts. Per question.

Simplify the following expressions.

12. $14 \div 7 \cdot 5 - 3^2$

$14 \div 7 \cdot 5 - 9$

$2 \cdot 5 - 9$

$10 - 9$

(1)

13. $3[4 - 8 + 4^2(2 + 5)]$

$3[4 - 8 + 4^2(7)]$

$3[4 - 8 + 16(7)]$

$3[4 - 8 + 112]$

$3[-4 + 112]$

$3[108]$

324

4 16 × 7 = 112

2 108 × 3 = 324

Evaluate each expression if $a = 8$, $b = 4$, and $c = 16$.

14. $a^2bc - b^2$

$(8)^2(4)(16) - (4)^2$

$(64)(4)(16) - 16$

$(256)(16) - 16$

$4096 - 16$

4080

16 × 4 = 64; 256 × 16 = 4096; 96 − 16 = 80

15. $\frac{2b + 3c^2}{4a^2 - 2b}$

$\frac{2(4) + 3(16)^2}{4(8)^2 - 2(4)}$

$\frac{2(4) + 3(256)}{4(64) - 2(4)}$

$\frac{8 + 768}{256 - 8} \rightarrow \frac{776 \div 8}{248 \div 8}$

simplified → $\frac{97}{31}$

16 × 16 = 256; 96 + 160 = 256; 3 × 256 = 768; 64 × 4 = 256

Section IV. - Distributive Property - 3 pts. Per question.

Use the Distributive Property to rewrite each expression. Then evaluate.

16. $3(8 - 2x)$

$24 - 6x$

or

$-6x + 24$

17. $2(3a - 2b + c)$

$6a - 4b + 2c$

18. $\frac{1}{4}(12 - 4t)$

$\frac{1}{4}(12)^3 - \frac{1}{4}(4^1t)$

$3 - 1t$ or

$-1t + 3$

19. $12(2 + 1/2x)$

$12(2) + 12(\frac{1}{12}x)$

$24 + 6x$ Or

$6x + 24$

Section V. - Properties of Real Numbers. - 1 pts. Per blank.

Fill in the missing lines. 1 Pt. per blank.

20. $2[\frac{1}{4} + (\frac{1}{2})^2]$

= 2 (¼ + ¼) — GIVEN

= 2 (1/2) — SUBSTITUTION

= 1 — substitution

multiplicative inverse

21. 18 * 1 - 3 * 2 + 2(6 ÷ 3 - 2) — GIVEN

= 18 * 1 - 3 * 2 + 2(2 - 2) — SUBSTITUTION

= 18 * 1 - 3 * 2 + 2 (0) — substitution

multiplicative identity

= 18 - 3 * 2 + 2(0)

= 18 - 6 + 2(0) — SUBSTITUTION

multiplication prop. of zero

= 18 - 6 + 0

= 12 + 0 — ~~SUBSTITUTION~~ or

additive identity

= 12

Section VI. - Equations - 2 pts. Per question.

Given the replacement set, *a* = {4, 5, 6, 7, 8}, find the solution of each equation.

22. 5a - 9 = 26

5(4) - 9 = 26
20 - 9 ≠ 26

5(5) - 9 = 26
25 - 9 = 26
16 ≠ 26

5(6) - 9 = 26
30 - 9 ≠ 26

7

5(7) - 9 = 26
35 - 9 = 26
26 = 26

23. 7a + 21 = 56

7(4) + 21 = 56
28 + 21 = 56
49 ≠ 56

7(5) + 21 = 56
35 + 21 = 56
56 = 56

5

24. 4a - 8 = 16

4(4) - 8 = 16
16 - 8 ≠ 16

4(5) - 8 = 16
20 - 8 = 16
12 ≠ 16

4(6) - 8 = 16
24 - 8 = 16
16 = 16

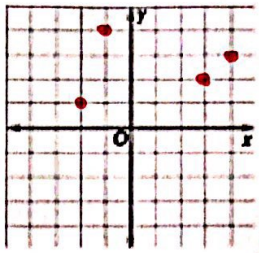
6

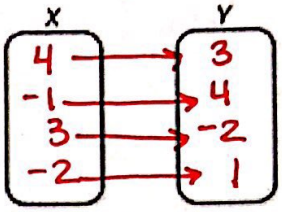
Section VII. - Relations. #25- 5 pts. #26 - 2 pts

Express {(4, 3), (−1, 4), (3, −2), (−2, 1)} as a table, a graph, and a mapping. Then determine the domain and range.

25.

x	y
4	3
-1	4
3	-2
2	1

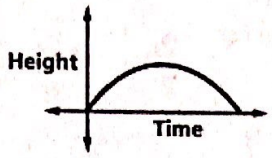




D = {-1, 2, 3, 4}

R = {-2, 1, 3, 4}

26. **The graph below represents the height of a football after it is kicked downfield. Describe what is happening.**



Overtime, the height of the football rose and then dropped as time went on.

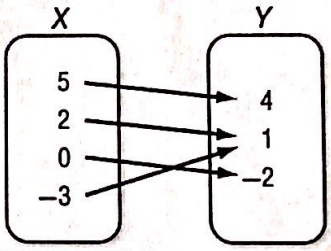
Section VIII. - Functions. #27-30 1 pt. Per question. #31-33 2pts. Per question

Circle yes or no if the relation is a function.

27. {(6, -1), (-4, 2), (5, 2), (4, 6), (6, 5)}

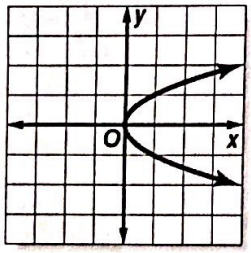
YES (NO)

28.



YES (NO)

29.



YES (NO)

30.

x	y
3	7
−1	1
1	0
3	5
7	3

YES (NO)

If $f(x) = 3x + 2$ and $g(x) = -x$, find each value.

31. $f(4)$ $f(4) = 3(4) + 2$, $f(4) = 12 + 2$, $f(4) = 14$

32. $f(g(2))$ *work inside out. $g(2) = -2$, $f(-2) = 3(-2) + 2$, $f(-2) = -6 + 2 \rightarrow f(-2) = -4$

33. $g(-1) + 4$ $g(-1) = 1 + 4$, (5)

33. $f(1) + g(2)$ $f(1) = 3(1) + 2$, $3 + 2$, $5 + (-2)$, (3)