Name: Key Summative date _____

Expressions and Equations Part One Summative Review Guide

1.) Solve $\left(\frac{1}{3}\right)^4 =$ $\frac{1}{3}\times\frac{1}{3}\times\frac{1}{3}\times\frac{1}{3} = \frac{1}{81}$

9 × 9

Directions: Evaluate the following problems to find the solution. Show all steps.

2.) $20 - 12 \div 6 + 3^3 =$

$3\cdot3\cdot3$

$20-12\div6+27$

$20-2+27$

$18+27 = 45$

3.) $100 - 35 + (6+2)^2 =$

$100-35+8^2$

$100-35+64$

$65+64 = 129$

Directions: For #4-12 write an algebraic expression using letters and/or numbers for each statement below.

4.) The sum of 3 and ***f*** doubled $3+2f$

5.) The sum of ***a*** and ***b*** and then divided by ***x*** $(a+b)\div x$ OR $\frac{a+b}{x}$

6.) The product of ***c*** and 7 $7c$

7.) 14 less than ***m*** $m-14$

8.) The quotient of ***g*** and ***h*** $\frac{g}{h}$ OR $g\div h$

9.) 54 divided by the difference between 32 and ***y*** $54\div(32-y)$ OR $\frac{54}{32-y}$

10.) Katie is planning a birthday party at Zero Gravity. It costs a flat fee of $120 to rent the facility. Each guest costs an additional $7.00. Write an algebraic expression to show the total cost if Katie were to invite ***g*** guests.

unit rate

$120 + 7g$

11.) Gavin worked 6 hours less than triple what Steven worked. Steven worked ***h*** hours. Write an algebraic expression to represent how we can find the hours Gavin worked.

3x

$3h-6$

12.) Korey made $5.00 per hour working as a server at a nearby restaurant serving tables plus an additional $32.00 in tips. Write an algebraic expression to show how much she earned in ***h*** hours.

unit rate

+

$5h+32$

Directions: Evaluate the following algebraic expression given the value of the variable.

13.) The cost to rent a trolley is a flat fee of $15.00 for the trolley, plus an additional $5.00 per passenger. The total cost of renting the trolley is represented by the expression: **$15.00 + $5.00*n***, where ***n*** is the number of passengers on the trolley. How much would it cost if there were 12 passengers on the trolley?

$n=12$

$15+5n$

$15+5(12)$

$15+60=75$

It will cost $75 for 12 total passengers

14.) Brittany and Rachel are collecting pop tabs for a fundraiser. Brittany's dad brought home a collection from work of 18 pop tabs. Rachel started off with 9 pop tabs from her family's recycle bin. Both girls then collect 5 additional pop tabs per day.

a.) Complete the table below to show how many pop tabs each girls saved in total after each day.

Day	Brittany's Total Pop Tabs	Rachel's Total Pop Tabs
0	18	9
1	23	14
2	28	19
3	33	24
4	38	29
5	43	34
	b	$b-9$
	$r+9$	*r*

b.) Use your expression to determine how many pop tabs Rachel has when Brittany has 68 pop tabs.

$b-9$ $\quad b=68$

$68-9=$ 59 pop tabs

c.) Use your expression to determine how many pop tabs Brittany has when Rachel has 44 pop tabs.

$r=44$

$44+9=$ 53 pop tabs

unit rate

15.) Bubbles the Clown is buying balloons for a party. The cost is $1.15 for each helium balloon. The party store charges a flat fee of $15 for processing and delivery on orders, regardless of how many balloons are purchased.

a.) Complete the table below to show the relationship between the number of balloons purchased (*b*) and the total cost.

Number of balloons	Total Cost in dollars	
1	16.15	1.15(1)+15
2	17.30	1.15(2)+15
3	18.45	1.15(3)+15
4	19.60	1.15(4)+15
10	26.50	1.15(10)+15
20	38	1.15(20)+15
50	72.50	1.15(50)+15
100	130	1.15(100)+15
b	1.15b+15	

b.) Write an expression to show the ~~relationship between~~ the number of balloons purchased, ***b***, and the total cost.

$1.15b + 15$

(unit rate (cost of balloon)) · (# of balloons) + additional fee for processing + delivery

c.) Use your expression to determine the total cost if Bubbles were to purchase 130 helium balloons.

$1.15 \cdot 130 + 15$

$149.50 + 15 =$ $164.50

16.) Is 6n equivalent to n^6? Explain why or why not using examples and/or work.

No! $6n = n+n+n+n+n+n$ * multiplication shows repeated addition

$n^6 = n \cdot n \cdot n \cdot n \cdot n \cdot n$ * exponents show repeated multiplication.

17.) Write an equivalent expression by combining like terms.

a.) b + b + b + b + b — 5b

b.) 7y + 8y - 3 — 15y - 3

c.) 6 + 10x – 4x + 3 — 6x + 9

d.) 3g + 4s + s + 7 + 9g — 12g + 5s + 7

Do not solve! Write equivalent expressions!!!

18.) Use the Distributive Property to write an equivalent expression for the following:

a.) $63r + 49z$

GCF

63: 1, 3, 7, 9, 21, 63

49: 1, 7, 49

*no common variable in GCF

$7(9r + 7z)$

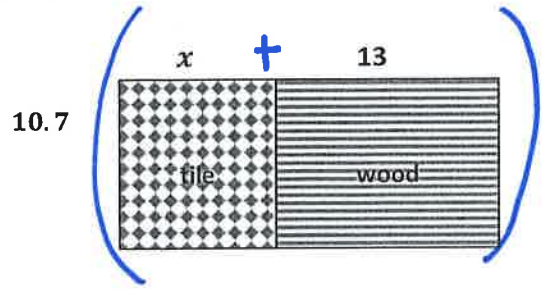
b.) $4n(7 + 14)$

$4n \cdot 7 + 4n \cdot 14$

$28n + 56n$

19.) Jim is remodeling the floor in a portion of his basement. He plans to use both tile and wood flooring as shown below.

a.) Create an algebraic expression to represent the entire area of the basement. $10.7(x + 13)$



$(10.7x) + (10.7 \cdot 13)$

$10.7x + 139.1$

b.) Solve for entire area of the basement if $x = 9$.

(all measurements are in feet)

$10.7(9) + 139.1$

$96.3 + 139.1 =$

A = $235.4\ ft^2$

20.) Mrs. Potts gave Marla and Barry this expression to evaluate: $6(10 - 3)$. Marla said that to evaluate the expression you must first find the difference of 10 and 3, then multiply that number by 6. Barry disagreed. He says that you have to find the product of 6 and 10, then subtract the product of 6 and 3 from it. In the space below, solve the expression **using each student's method.**

Marla's Method	Barry's Method
$6(10 - 3)$	$6(10 - 3)$
$6(7) = 42$	$(6 \cdot 10) - (6 \cdot 3)$
	$60 - 18 = 42$
*order of Op.	* Distributive Property

Who solved the expression correctly? How do you know? Both solved the problem correctly to get an answer of 42. Marla solved using order of Operations and Barry applied the Distributive Property.

21.) Identify the following parts of the algebraic expression: $4^9 - 8e$

a.) Base: 4 b.) Exponent: 9 c.) Variable: e d.) Coefficient: 8

e.) **How many terms** are in this expression? 2

4^9 and $8e$