Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\*\*\* I know and can use the Order of Operations to evaluate expressions. \*\*\*

 ☺😐☹

Quiz 1: 3, 4

Test: 4, 7, 16, 17, 23

(1) If $x=-2 and y=5$,

what is the value of $3x^{2}-4xy$ ?

(2) What is the value of $x\left(x-3\right)-(x+6)$

if $x=-3$?

**Unit 1**

**Expressions**

a group of ***terms*** separated by $+ or-$

(and no relationship symbols!)

A ***term*** is either a single number (***constant***), a ***variable***, or numbers and variables multiplied together.

When a number and variable are multiplied together, the number is called the ***coefficient***.

We use ***exponents*** when we have repeated multiplication of the same number or same variable. It tells how many times to use the value in a multiplication.

In Algebra 1, we will work with the ***real*** ***number*** ***system*** (versus the imaginary number system).

The real number system contains ***rational*** and ***irrational*** numbers. Subsets of rational numbers include whole numbers and *integers*.

\*\*\* I can classify numbers as either rational or irrational. \*\*\*

 ☺😐☹

Quiz 1: 2, 5

Test: 6

(3) Circle each irrational number:

 $-23.4$ $\frac{3}{4}$ $\sqrt{64}$ $-\frac{6}{7}$ $\sqrt{8}$ $\sqrt{\frac{1}{2}} $

 $1.33$ $π$ 15.125 $\sqrt{3}$ 5

 Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_

\*\*\* I understand that exponents are repeated multiplication and can use this definition, or Exponent Rule #1, to write equivalent expressions for the product of two or more monomials. \*\*\*

 ☺😐☹

Quiz 2: 4, 5, 6

Test: 12, 13, 15, 19

(4) What is the product of $-7x^{4}y and 3x^{2}y^{2}?$

(5) Express in simplest form: $ \left(3x^{3}\right)\left(4x^{2}y\right)^{2}(2y^{5})$

(6) Express in simplest form:

$$2^{4}∙2^{3}∙2^{2}∙2$$

\*\*\* I can identify and apply the properties of real numbers, including the Commutative Property, Associative Property, and Distributive Property to write equivalent expressions. \*\*\*

 ☺😐☹

Quiz 1: 1, 6, 9

Test: 5, 8, 24

(7) State each property expressed below:

$3x+9=3(x+3)$ $x+0=x$

$3∙x∙4=3∙4∙x$ $\%\left(\$+@\right)=\%\$+\%@$

$8=1∙8$ $\left(b+c\right)+5=5+(b+c)$

$(\$+\#)+!=\$+(\#+!)$ $a+b=b+a$

$\left(7∙x\right)∙x=7∙(x∙x)$ $1 ∙y=y$

\*\*\* I can translate a verbal phrase into an algebraic expression.

 ☺😐☹

Quiz 2: 3, 9

Test: 3, 28

\*\*\* I can write expressions for word problems including perimeter and area of rectangles and triangles, and consecutive integers.

 ☺😐☹

Test: 2, 11, 25

(8) Find the perimeter of each:

(a) An equilateral triangle with side $3x-1$

(b) A square with side, 4 less than the product of *x* and 5

(c) A regular pentagon with side $2x-3$

(d) A regular octagon with side $x+7$

The ***Properties of Real Numbers*** allow us to ***simplify*** algebraic expressions by eliminating ( )

and combining ***like*** ***terms***.

***like terms***: terms whose ***variables*** and their ***exponents*** are the same

(note: the ***coefficients*** can be different)

A ***polynomial*** ***expression*** can have ***constants***, ***variables*** and non-negative ***exponents*** (0,1,2,…)

but it never has division by a variable.

***monomial***, ***binomial***, ***trinomial***: special names for ***polynomials*** with 1, 2, or 3 terms.

\*\*\* I can apply the distributive property and combine like terms to find equivalent expressions. \*\*\*

 ☺😐☹

Quiz 1: 7, 8

Quiz 2: 2

Test: 10, 18, 20, 21, 26

(9) Simplify: $7\left(2x-3\right)-2(6-x)$

(10) What is the product of:

 $-2ab^{2} and (4a^{2}b+3ab)$?

\*\*\* I can apply the distributive property twice (“double distribute”) to multiply binomials and combine like terms to find equivalent expressions.

 ☺😐☹

Quiz 2: 1, 7, 8

Test: 9, 14, 22, 27

(11) Write as an equivalent trinomial: $\left(x-6\right)^{2}$

(12) Simplify: $\left(3x-2\right)\left(4-x\right)+9x^{2}-11$

**Equations**

$$=$$

expression #1 = expression #2

(1) Determine whether $x=4$ is a solution to the equation $2\left(x+5\right)=6(x-1)$.

**Properties of Equality:**

Additive Property of Equality

Multiplicative Property of Equality

(2) $3\left(x-2\right)+4x=5x+14$

$3x-6+4x=5x+14$

$3x+4x-6=5x+14$

$\left(3x+4x\right)-6=5x+14$

$x\left(3+4\right)-6=5x+14$

$x∙7-6=5x+14 $

 $7x-6=5x+14$

 $2x-6=14$

$ 2x=20$

$ x=10$

**Unit 2**

**Inequalites**

$$>,<,\geq ,\leq ,\ne $$

expression #1 > expression #2

\*\*\* I understand that a solution to an equation (or inequality) is the value for the variable(s) that make the equation (or inequality) TRUE\*\*\*

 ☺😐☹

Quiz 1: 1

Quiz 2: 6

\*\*\* I can explain each step in solving a simple equation (or inequality) as following from the equality (inequality) of numbers asserted at the previous step, starting from the assumption that the original equation (inequality) has a solution. [A-REI.1] \*\*\*

 ☺😐☹

 Quiz 1: 5

(3) Given the inequality $3\left(x-2\right)>2x+1$ , determine if $x=7$ is a solution.

(4) Determine if $x=2$ is part of the solution set:

$$3x+4\geq 8 and \frac{4x-5}{3}<1$$

**Properties of Inequality:**

Additive Property of Inequality

Multiplicative Property of Inequality

(5) $4\left(x+5\right)-9>7x+2$

$4\left(x+5\right)>7x+11 $ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

$4x+20>7x+11$ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

$-3x+20>11$ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

$-3x>-9$ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

 $x<3$ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

(6) Solve for *w*:

$$6w-3=8w+15$$

(7) Determine the solution to the equation:

 $-18=6+\frac{3}{4}x$

(8) Solve: $7-2\left(3x-6\right)=8$

(9) Solve for *x*:

$$\left(x+4\right)\left(x-2\right)=x^{2}-5x-22$$

\*\*\*I can solve linear equations and inequalities in one variable, [A-REI..3] and graph the solution.\*\*\*

 ☺😐☹

Quiz 1: 3

Quiz 2: 1, 3, 4

\*\*\* I can solve compound inequalities and express the solution set graphically and in interval notation. \*\*\*

 ☺😐☹

Quiz 2: 9

(10) Find and graph the solution to the following inequality:

$$\frac{1}{6}(12-x)<3$$



(11) Given $6x+bx-8>-4$ . Determine the largest integer value of *b* when $x=-2$.

(12) Solve the compound inequality below and graph its solution on the number line below.

$$-3\left(x-4\right)<24 and 9+4x\leq 21$$



Express the solution set as:

a single inequality using interval notation

(13) James has $9.15 in his pocket. He has three more quarters than nickels, and four times as many dimes than nickels. How many of each type of coin does he have?

(14) The length of a rectangle is four less than twice the width. If the perimeter of the rectangle is 94 cm2, find the dimensions of the rectangle.

(15) Find two consecutive odd integers such tha three times the smallest integer is equal to 21 more than their sum. Find the integers.

\*\*\* I can create equations and inequalities in one variable and use them to solve problems.

[A-CED.1] \*\*\*

\*\*\* I can represent constraints by equations or inequalities and interpret solutions as viable or non-viable options in a modeling context.

[A-CED.3] \*\*\*

 ☺😐☹

Quiz 1: 2, 4

Quiz 2: 2, 5, 7, 8

(16) Keith has $500 in a savings account at the beginning of the summer. He wants to have at least $200 in the account at the end of the summer. He withdraws $25 each week for food, clothes, and movie tickets. Write an inequality that represents Keith’s situation. What is the maximum number of weeks Keith can withdraw money from his account?

(17) Yellow Cab Taxi charges a $1.75 flat rate in addition to $0.65 per mile. Katie only has $10 to spend for cab fare. What is the maximum number of miles Katie can travel?

(18) The revenue *R* for selling *x* fleece jackets is given by the equation $R=49.95x$. The cost to produce *x* jackets is $C=2300+18.50x$. Find the number of jackets that the company needs to sell to produce a profit. (Hint: A profit occurs when revenue exceeds cost.)

(19) Sandi bought six yards of material. She wants to cut it into two pieces so that the difference between the lengths of the two pieces will be 1.5 yards. What should be the length of each piece?

(20) Tom pays $2 every time he places an overseas call plus 7 cents per minute. If he spends $3.61 on a call to Italy, how long was he on the phone?

(21) Byron has 72 coins in his piggy bank. The piggy bank contains only dimes and quarters. If has $14.70, in his piggy bank, how many dimes and quarters does Byron have in his piggy bank.

(22) The cost of two tables and three chairs is $705. If the table costs $40 more than the chair, find the cost of the table and the chair.

(23) The tigers won eight games more than they lost, and there were no ties. If the tigers played 78 games, how many games did they win?

**ANSWER KEY**

**Unit 1 - Expressions:**

(1) 52 (2) 15 (3) $\sqrt{8}$ , $\sqrt{\frac{1}{2}} $ , $π$, $\sqrt{3}$ (4) $-21x^{6}y^{3}$ (5) $96x^{7}y^{7}$ (6) $2^{10}$

(7) D, Id+, Cx, D, IDx, C+, A+, C+, Ax, IDx (8) a: $9x-3$ b: $20x-16$ c: $10x-15$ d: $8x+56$

(9) $16x-33$ (10) $-8a^{3}b^{3}-6a^{2}b^{3}$ (11) $x^{2}-12x+36$ (12) $6x^{2}+4x-19$

**Unit 2 – Equations and Inequalities:**

(1) yes, $x=4$ is a soln (2) D, C+, A+, D, Cx, add prop of equal, add prop of equal, mult prop of equal

(3) no, $x=7$ is not a solution (4) T and F = False, so $x=2$ is not part of the solution set

(5) add prop of inequal, D, add prop of inequal, add prop of inequal, mult prop of inequal (6) $w=-9$

(7) $x=-32$ (8) $x=\frac{11}{6}$ (9) $x=-2$ (10) $x>-6$ (11) $b=-9$

(12) $x>-4 and x\leq 3, -4<x\leq 3, (-4,3]$ (13) 12n, 48d, 15q (14) *w*=17, *l*=30 (15) 23, 25

(16) $w\leq 12$ (17) 12 miles (18) 74 jackets+ (19) 3.75 and 2.25 (20) 23 minutes (21) 22d, 50q (22) chair $125, table $165 (23) lost 35, won 43 (24) $v\geq 38 voters$ (25) 39 bags

(24) Bill earns $12.00 for the day plus $0.25 for every person he gets to register to vote. How many people must he register to earn at least $50.00 for the day?

(25) An elevator at a construction site has a maximum capacity of 2800 pounds. If the elevator operator weighs 265 pounds and each bag of cement weighs 65 pounds, how many bags of cement can be safely lifted on the elevator in one trip?