Algebra I Summer Work

A student entering Algebra I at Porter-Gaud School is expected to:

- keep an organized notebook
- complete every homework assignment to the best of one's ability
- be an active learner by following along and taking detailed notes
- ask questions and participate in class on a daily basis
- seek help outside of class if needed
- respectfully work with classmates and the teacher
- work with and without a calculator

Summer work is given to ensure that the student described above has mastered certain topics and skills that are essential for success. These topics will not be retaught during the year. This assignment is optional. Solutions have been provided on the Porter-Gaud Website so that answers can be checked before school starts in August.

This work should be completed without the use of a calculator. Students may use notes, books, or other resources to help them complete the assignment, but they should be able to complete these problems on their own.

Student Name _____

As a student of Porter-Gaud School, I pledge not to lie, cheat, or steal. _____

Grade _____

Topics Covered in this Assignment

I. Order of Operations
- -parentheses
- -exponents
- -multiplication/division
- -addition/subtraction

II. Multiplying and Reducing Fractions
- -multiply numerators with numerators and denominators with denominators
- -make sure there is no factor in the numerator and the denominator

III. Dividing and Reducing Fractions
- -dividing by a number is the same as multiplying by the reciprocal of that number
- -make sure there is no factor in the numerator and the denominator

IV. Comparing and Ordering Numbers
- -think of your number line (negative numbers, zero, positive numbers)

V. Converting between Fractions, Decimals, and Percents
- -to convert the fraction to a decimal, divide the numerator by the denominator
- -to convert from a decimal to a percent, multiply the number by 100

VI. Addition, Subtraction, Multiplication, and Division of Signed Numbers
- -adding two positive numbers results in a positive number
- -adding two negative numbers results in a negative number
- -adding a positive with a negative results in the sign of the greater number
- -multiplying/dividing two positive or two negative numbers results in a positive
- -multiplying/dividing a positive number and a negative number results in a negative

VII. Solving Equations
- -get the variable alone on one side of the equation

VIII. Solving Inequalities
- -get the variable along on one side of the equation
- -interpret your answer and graph the solution on a number line

Part I. **Simplify the following using the order of operations.**

1. $4^2-\left(2\cdot 3^3\cdot 1\right)\div 2$

2. $(6\cdot 2)+2$

3. $\left|(-2)^2-6\cdot 7\right|$

4. $9^2+\left|(-1)^3+3\right|\cdot 9$

5. $3\div 1\cdot 2^3-5$

6. $2\cdot 2\cdot 2\cdot 2-2$

7. $(-2)^3+(2-1-1)$

8. $2+5(2\cdot 5-3)$

9. $5-2(7\cdot 2-6)$

10. $-3\cdot 4-5\cdot 6$

11. $\dfrac{3\cdot 2-6}{7-5}$

12. $\dfrac{2^3-2^2}{2^2-2}$

Part II. **Multiply each of the following. Make sure to simplify your answers.**

1. $\frac{10}{12} \cdot \frac{4}{10}$

2. $\frac{12}{13} \cdot \frac{1}{4}$

3. $\frac{6}{10} \cdot \frac{5}{12}$

4. $\frac{3}{6} \cdot \frac{1}{2}$

5. $\frac{1}{3} \cdot 9$

6. $3 \cdot \frac{10}{12}$

7. $\frac{14}{15} \cdot 5$

8. $1\frac{3}{7} \cdot \frac{2}{6}$

9. $1\frac{1}{5} \cdot \frac{4}{5}$

10. $2\frac{5}{6} \cdot \frac{1}{6}$

11. $\frac{1}{2} \cdot 4\frac{5}{7}$

12. $2\frac{2}{3} \cdot 9\frac{2}{3}$

13. $5\frac{2}{3} \cdot 1\frac{4}{7}$

14. $2\frac{1}{6} \cdot 5\frac{1}{4}$

Part III. **Divide each of the following. Make sure to simplify your answers.**

1. $\frac{1}{6} \div \frac{9}{12}$

2. $\frac{3}{6} \div \frac{4}{6}$

3. $\frac{2}{7} \div \frac{2}{5}$

4. $\frac{8}{9} \div \frac{3}{10}$

5. $3\frac{1}{6} \div \frac{5}{6}$

6. $\frac{4}{9} \div 2\frac{1}{2}$

7. $1\frac{1}{2} \div \frac{5}{8}$

8. $\frac{1}{2} \div 5$

9. $8 \div \frac{2}{5}$

10. $\frac{4}{9} \div 6$

11. $1\frac{5}{6} \div 2\frac{3}{7}$

12. $3\frac{1}{5} \div 1\frac{2}{3}$

Part IV. Order the numbers from least to greatest.

1. 2, -5, -2, 4, 1

2. $\frac{1}{4}, \frac{-1}{2}, \frac{2}{5}, -2$

3. -13, -100, -2, -0.1, -45

4. -0.01, 0.1, 0, -0.1

5. $\frac{9}{10}, \frac{4}{5}, \frac{2}{3}, \frac{1}{2}$

6. 3.08, 3.06, 3.008, 3.1

Part V. **Complete the following table.**

	Fraction (in simplest form)	Decimal	Percent
1	$\frac{16}{100}$		
2	$\frac{3}{5}$		
3	$\frac{7}{8}$		
4	$\frac{5}{6}$		
5	$2\frac{1}{4}$		
6		0.45	
7		0.002	
8		1.75	
9		0.075	
10		1.0025	
11			70%
12			7.25%
13			110%
14			$2\frac{1}{4}\%$
15			$\frac{1}{2}\%$

Part VI. Perform the indicated operation.

1. -3(8)

2. 5 - 21

3. $\frac{-3}{6}$

4. 1(-1)(1)(-1)(-1)

5. -6 + (-9)

6. 18 / (-3)

7. -5 - 21

8. $\frac{-10}{-12}$

9. 7 - 8

10. 7(-8)

11. 5 - 4 - 3 - 2 - 1

12. -6(-1)

13. (8) - 3

14. -8 - 2

15. 4(-2)(-3)

16. 4 + (-3) - 6

17. -8 - 6

18. (-1)(-2)(-3)(-4)

19. 3 - 7

20. 3 + (-12)

Part VII. Solve each equation for the variable.

1. $6 = 2x$

2. $-7a = -14$

3. $7y = 0$

4. $3n = -186$

5. $3b + 2b = -10$

6. $35 = x + 6x$

7. $3a - 4a = 4$

8. $8x - 2x = 30$

9. $9x - 12x = -15$

10. $5 = 2p - 7$

11. $-8 = 3y + 2$

12. $-5x = 3x$

13. $6 - 2x = -10$

14. $5 = 2 - 3x$

15. $2y + 5 = 5y + 2$

16. $3x - 4 = 2x - 24$

17. $8 - 2y = 1 + y$

18. $12 - 2a = 4 + a$

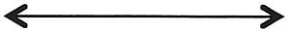
19. $7(2a + 3) = 21$

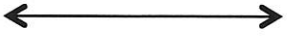
20. $3(x + 6) = -2$

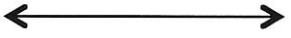
Part VIII. Solve the following inequalities. Graph your solution on a number line.

1. $x + 18 \geq 3$ 

2. $X - 4 < -12$ 

3. $3x + 9 \leq -6$ 

4. $-2 + 2x < 6$ 

5. $11 + x \geq 1$ 

6. $2x - 5 < -3$ 

7. $5 > x - 4$ 

8. $10 \leq x + 2$