Honors Algebra I Summer Work

A student entering Honors 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 in Honors Algebra I. These topics will be reviewed throughout the course of the school year, but students should already have a solid grasp of these concepts before entering the class.

The following assignment (#1-30) should be completed over the summer. All work must be shown neatly in order to receive full credit, and the work should be done in pencil. Outside resources (notes, books, internet sources, tutors, etc.) may be used to help with the completion of the assignment. Summer work is due on the first day of class and will be graded for completeness and accuracy. A calculator should not be used.

Name: _____

Grade: _____

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

Honors Algebra I Summer Work – Topics by Question

1. Grouping Symbols/Order of Operations
2. Opposites
3. Simplifying Fractions – Addition/Subtraction
4. Average
5. Absolute Value
6. Consecutive Integers
7. Solving One-Step Equations
8. Using Equations to Solve Problems/Variable on One Side
9. Solving Multi-Step Equations/Variables on Both Sides
10. Using Equations to Solve Problems/Variables on Both Sides
11. Using Equations to Solve Problems/Variables on Both Sides/Geometry Concept
12. Exponents
13. Ratios
14. Proportions
15. Using Proportions to Solve Problems/Geometry Concept
16. Percents
17. Percent Increase/Decrease
18. Using Percents to Solve Problems/Geometry Concept
19. Equation in Two Variables/Points and Lines
20. Slope-Intercept Form of a Linear Equation/Graphing Linear Equations
21. Point-Slope Form of a Linear Equation
22. Using Slope Formula to Solve Problems
23. Systems of Linear Equations
24. Inequalities
25. Radicals/Rational Square Roots
26. Pythagorean Theorem
27. Unit Conversions
28. Rate-Distance-Time Problem
29. Using Volume of a Rectangular Prism to Solve Problems/Geometry Concept
30. Probability

1) Compute the following:

A) $3(2+3+5)$ Solution: _____

B) $(9+6-3)\div 3$ Solution: _____

C) $3(2\cdot 3\cdot 5)$ Solution: _____

D) $3\div(9+6-3)$ Solution: _____

2) State the opposite of:

A) -2.341 Solution: _____

B) $\frac{1}{3}$ Solution: _____

C) x Solution: _____

D) $x+2$ Solution: _____

3) Combine into one fraction:

A) $\frac{1}{3}+\frac{1}{7}$ Solution: _____

B) $\frac{1}{5}-\frac{1}{10}$ Solution: _____

C) $\frac{2}{3}-\frac{1}{8}$ Solution: _____

D) $\frac{2}{x}+\frac{2}{x}$ Solution: _____

4) On a number line, what number is halfway between:

A) -2 and 12 Solution: _____

B) -3.1 and -15.5 Solution: _____

C) $\frac{2}{5}$ and $\frac{2}{3}$ Solution: _____

D) m and n Solution: _____

5) The absolute value of a non-zero number can be defined by $|a| = a$ or $|a| = -a$, whichever is positive. Evaluate each of the following:

A) $|-3|$ Solution: _____

B) $|10-5|$ Solution: _____

C) $|-3-1|$ Solution: _____

D) $|-5|-|12|$ Solution: _____

6) Suppose that *n* represents a positive even integer. What expression represents:

A) The next even integer? Solution: _____

B) The next odd integer? Solution: _____

C) The previous even integer? Solution: _____

D) The previous odd integer? Solution: _____

7) Solve each of the following equations for x:

A) $x+2=-12$ Solution: _____

B) $-2x=-12$ Solution: _____

C) $-x-2=-12$ Solution: _____

D) $\frac{x}{-2}=-12$ Solution: _____

8) Chandler was given $75 for a birthday present. This present, along with earnings from a summer job, is being set aside for a mountain bike. The job pays $6 per hour, and the bike costs $345. To be able to buy the bike, how many hours does Chandler need to work?

Solution: _____

9) Solve each of the following equations for *x*:

A) $3x-4=11$ Solution: _____

B) $-4(2x-2)=3(x-1)$ Solution: _____

C) $-2(x-1)=-3(x+2)$ Solution: _____

D) $4-(x+3)=8-(2x-3)$ Solution: _____

10) A group of ten people were planning to contribute equal amounts of money to buy some pizza. After the pizza was ordered, one person left. Each of the other nine people had to pay 60 cents extra as a result. How much was the total bill?

Solution: _____

11) A rectangle is four times as long as it is wide. If its length were diminished by 6 meters and its width were increased by 6 meters, it would be a square. What are the rectangle's dimensions?

Solution: _____

12) A monomial is a constant or a product of a constant and variables. If some variable factors occur more than once, it is customary to use positive integer exponents to consolidate them. Thus 12, $3ax^2$, and x^5 are all monomials, but $3xy^4 + 3x^2y^3$ is not. Rewrite each of these solutions as monomials in simplest form:

A) $x \cdot x^2 \cdot x^3 \cdot x^4$ Solution: _____

B) $(2x)^5$ Solution: _____

C) $(2x)^3 \cdot 5x^3$ Solution: _____

D) $4x^4 \cdot \left(\frac{1}{2}x\right)^2 \cdot xy^6$ Solution: _____

13) There are 396 people in a theatre. If the ratio of women to men is 2:3, and the ratio of men to children is 1:2, how many men are in the theatre?

Solution: _____

14) Ryan took 25 minutes to type the final draft of a 750-word English paper. How many minutes should Ryan expect to spend typing the final draft of a 3000-word History paper?

Solution: _____

15) A blueprint of a building gives a scale of 1 inch = 8 feet. If the blueprint shows the building sitting on a rectangle with dimensions 15 inches by 18 inches, what is the actual area of the rectangle on which the building sits? Express your answer in square feet.

Solution: _____

16) Percent practice:

A) 25% of 200 is what number?

Solution: _____

B) 200 is 25% of what number?

Solution: _____

C) Express 2/25 as a decimal and a percent.

Solution: _____

D) Express 24 % as a decimal and a fraction in lowest terms.

Solution: _____

17) Last year the price of a gizmo was $160.

A) This year the price was increased to $200. By what percent did the price increase?

Solution: _____

B) If the price the next year were 10% more than this year's price, what would that price be?

Solution: _____

C) If the price dropped 10% the year after that, what would that price be? (Show that the price would not return to $200.)

Solution: _____

18) If you double all the sides of a square, a larger square results.

A) By what percentage has the perimeter increased?

Solution: _____

B) By what percentage has the area increased?

Solution: _____

19) The point $(3,2)$ is on the line $y = 2x + b$. Find the value of *b*.

Solution: _____

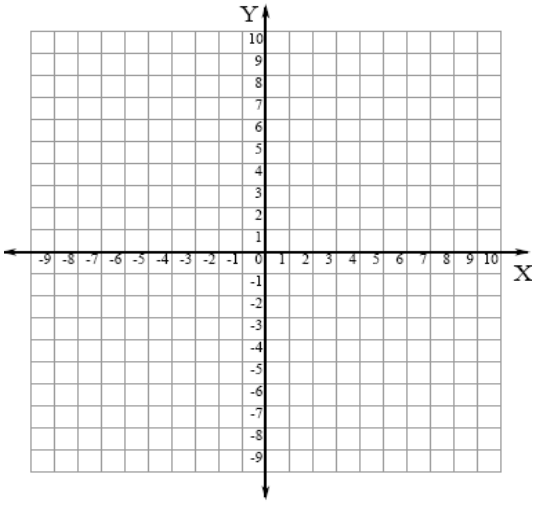
20) For the equation $y = -\frac{3}{2}x + 6$, what is:

A) The slope? Solution: _____

B) The *y*-intercept? Solution: _____

C) The *x*-intercept? Solution: _____

D) Graph the line below.



21) Write an equation in point-slope form for:

A) The line that goes through the point (x_1, y_1) and has slope *m*.

Solution: _____

B) The line that goes through $(2,5)$ and $(6,-3)$.

Solution: _____

22) Find the value for *x* for which the slope of the line through $(-5,6)$ and $(x,12)$ is $\frac{3}{4}$.

Solution: _____

23) A restaurant has 23 tables. Some of the tables seat 4 people and the rest seat 2 people. In all, 76 people can be seated at once. How many tables of each kind are there?

Solution: _____

24) Solve the inequality for x: $3-2x>5$ Solution: _____

A) Is $x=5$ a solution to this inequality? Solution: _____

B) Is $x=0$ a solution to this inequality? Solution: _____

C) Is $x=-1$ a solution to this inequality? Solution: _____

D) Is $x=-5$ a solution to this inequality? Solution: _____

25) Simplify the following radical expressions:

A) $\sqrt{25}+\sqrt{25}$ Solution: _____

B) $\sqrt{121}-\sqrt{49}$ Solution: _____

C) $\sqrt{9}\cdot\sqrt{100}$ Solution: _____

D) $\dfrac{\sqrt{144}}{\sqrt{36}}$ Solution: _____

26) Starting at school, you and a friend ride your bikes in different directions – you ride 4 blocks north and your friend rides 3 blocks west. At the end of the adventure, how far apart are you and your friend?

Solution: _____

27) You measure your stride and find it to be 18 inches. If you were to walk 4 miles, how many steps would you have to take? Remember that there are 12 inches in a foot, 3 feet in a yard, and 5280 feet in a mile.

Solution: _____

28) At 1 pm, you start out on your bike at 12 mph to meet a friend who lives 8 miles away. At the same time, the friend starts walking toward you at 4 mph. At what time will you meet your friend?

Solution: _____

29) A small pool is 20 feet long, 12 feet wide, and 4 feet deep. There are 7.5 gallons of water in every cubic foot. At the rate of 5 gallons per minute, how many hours will it take to fill this pool?

Solution: _____

30) Express the following solutions in lowest terms. Mary rolls two dice simultaneously. What is the probability of rolling:

A) A sum of 1? Solution: _____

B) A sum of 5? Solution: _____

C) A sum of 10? Solution: _____

D) Doubles? (e.g. two fours, two fives) Solution: _____