Due Date: Friday, September 9th

Attached is your summer review packet for the **Algebra 1** course.

THIS IS YOUR FIRST GRADED HW GRADE.

You MUST SHOW WORK in order to receive credit. This means if you typed something into a calculator to solve it, you must write what you typed so I know how you found the answers.

NO WORK = NO CREDIT (GRADED FOR CORRECTNESS)

The problems are on the work you've covered this year in 8th Grade.
Use your old notes to help you, and if possible, the internet.
(kahn academy, purple math, desmos.com etc.)

"I didn't know how to do that one" will not get you credit.
Try something, even if it is wrong.

NOT HAVING A CALCULATOR IS NO EXCUSE FOR NOT COMPLETING A PROBLEM. FIND A WAY.

If you do not hand this packet in on September 9th, OR if there is no work with your answers, then you will receive a 0 as your first graded HW grade.

If you need more room, just attach any papers with work on them with problem numbers labeled.

If you attempt to complete this packet the night before it is due, you will most likely not finish, or not have all the work I'm asking for.
I suggest you do a little at a time.

Good luck and have a great summer !

Objectives for Algebra I Summer Packet
2016

I. Variables and translating (Problems #1 – 5)
- Write Algebraic Expressions
- Writing Algebraic Equations

II. Exponents and Order of Operations (Problems #6 – 11)
- Simplifying and Evaluating Expressions and Formulas
- Simplifying a Numerical Expression
- Evaluating an Algebraic Expression
- Simplifying an Expression with Parentheses
- Evaluating Expressions with Exponents

III. Exploring Real Numbers (Problems #12 – 16)
- Classifying Numbers
- Finding Absolute Value

IV. Adding and Subtracting Real Numbers (Problems #17-23)
- Using a Number Line Model
- Adding Rational Numbers
- Subtracting Rational Numbers
- Adding Numbers
- Evaluating Expressions

V. Evaluating (Problems #24-34)
- Substitution
- Evaluating Algebraic Expressions
- Use PEMDAS to evaluate algebraic expressions

VI. Simplifying Expressions (Problems #35-40)
- Simplify Algebraic Expressions
- Combining Like Terms

VII. Graphing Data on the Coordinate Plane (Problems #41-44)
- Graphing Points on the Coordinate Plane
- Identifying Coordinates
- Identifying Quadrants

VIII. Equations (Problems #45-50)

- Solving one step equations involving addition
- Solving one step equations involving subtraction
- Solving one step equations involving multiplication
- Solving one step equations involving division
- Solving two step equations

IX. Distance Formula (Problems: #51-54)

- Use the distance formula to find the distance between two points
- Solving equations involving radicals

X. The Midpoint Formula (Problems: #55-57)

- Identifying the x coordinate and the y coordinate in an ordered pair
- Using the midpoint formula to find the midpoint of two points

Directions: Complete each problem *showing all work*. You must show work or explain your solution in order to receive credit for the answer.

Write an algebraic expression for each phrase.

1. The sum of x and 5 **Hint: Sum means addition**
2. 30 minus p **Hint: Minus means subtraction**
3. The quotient of 7 and x **Hint: Quotient means division**
4. A number divided by four is twelve **Hint: Write as an equation with division**
5. Three times a number decreased by five **Hint: First multiplication than subtraction**

Simplify each expression

Hint for 6-7: (PEMDAS) Parentheses first, then Exponents, Multiply and Divide from left to right, Add and Subtract from left to right.

6. $6+5\cdot 4\div 2$
7. $3(4+6)-6$

Evaluate each expression for x = 3, y = 4, and z = 1

Hint for 8-11: Substitute (plug in) each given value for the given variable and evaluate using order of operations(PEMDAS).

8. $3(x + 4)$
9. $2z - 4y$
10. $2x^2 + 3z$
11. $x(z+4) - y^2$

Name the set(s) of numbers to which each number belongs. (Natural, Whole, Integers, Rational, Irrational, Real).

Hint for 12-14:
Natural Numbers = 1,2,3,4…;
Whole Numbers = 0,1,2,3…;
Integers = …-3,-2,-1,0,1,2,3…;

Rational Numbers = Any number that you can write in the form $\frac{a}{b}$, where a and b are integers and $b \neq 0$.;

Irrational Numbers = Numbers that can't be expressed in the form $\frac{a}{b}$, where a and b are integers.

Real Numbers = Any number that is rational or irrational
(Each number will have more than one answer)

12. 8

13. -4.6

14. 3π

Find each absolute value.

Hint for 15-16: The absolute value of a number is the distance the number is from 0 on a number line. It will always come out of the absolute value brackets as a positive.

15. $|8|$

16. $|-12|$

Simplify

Hint for 17-23: For addition, if the signs are the same take the sum and keep the sign the same. If the signs the different take the difference and keep the sign of the "larger" For subtraction, change any double signs for example, –(–) = + , and use the sign in front of each number to follow adding rules.

17. $3 + 12$

18. $5 + (-9)$

19. $-8.7 - (-10.3)$

20. $\frac{9}{7} + (-2\frac{3}{14})$

21. 3-7

22. $-8-(-5)$

23. $-9+6$

Evaluate each expression for x = 2.5

Hint for 24-25: Substitute (plug in) each given value for the given variable and solve.

24. $5.2 + x$

25. $-9.1 + -x$

Evaluate each expression for x=2, y=-3

Hint for 26-28: Substitute (plug in) each given value for the given variable and evaluate using order of operations(PEMDAS). The absolute value of a number is the distance the number is from 0 on a number line. It will always come out of the absolute value brackets as a positive.

26. $x - y$

27. $2x + y$

28. $|y - 2x|$

Simplify each expression

Hint for 29-31 Same sign the answer will be positive. Different signs the answer will be negative.

29. 3(-5)

30. -20(-4)

31. $-35 \div 7$

Evaluate each expression for x = -4, y = 3, z = 6

Hint for 32-34: Substitute (plug in) each given value for the given variable and evaluate using order of operations(PEMDAS)

32. xy-z

33. 2xz + 3y

34. $(3x + 2y) \div z$

Simplify each expression

Hint for 35-40: An expression is in simplest form when all parentheses have been distributed and all common terms (like families) are combined.

35. $7(t - 4)$

36. $\frac{2}{5}(5x + 10)$

37. $-18v^2 + 23v^2 - 13v$

38. $14 + 8x - 2(3x - 4)$

39. $7(2x + 3y) + 5(2x + 8y)$

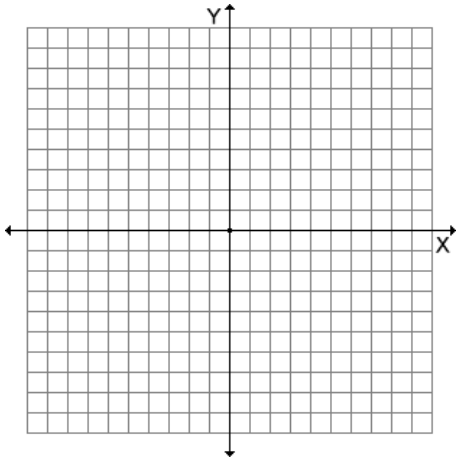
40. $4(x^2 + 3x - 6)$

Graph the points on the coordinate plane

41. A(-3,4)

42. C(0,4)

Hint for 41-42: The first number is your x-coordinate and the second number is your y-coordinate.



In which quadrant would you find each point

43. (5,2)

44. (-4,-3)

Hint for 43-44: Quadrant I is in the top right corner of the coordinate plane and the remaining quadrants go in sequential order counter-clockwise.

Directions: Solve for x.

45. $x + 15 = -32$

Hint: Solve by doing the inverse operation of addition.

46. $x - 38 = -50$

Hint: Solve by doing the inverse operation of subtraction.

47. $-8x = 48$

Hint: Solve by doing the inverse operation of multiplication.

48. $2x - 5 = 19$

Hint: Isolate the variable, undo subtraction first, then undo multiplication.

49. $3x + 12 = -24$

Hint: Isolate the variable, undo addition first, then undo multiplication.

50. $\frac{x}{-8} - 12 = -8$

Hint: Isolate the variable, undo subtraction first, then undo division.

Distance Formula

Example: Find the distance between the points (-4, 3) and (-7, 8).

Formula: $d = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$

$d = \sqrt{(-7 - (-4))^2 + (8 - 3)^2}$

$d = \sqrt{(-3)^2 + (5)^2}$

$d = \sqrt{34}$

Exercises: Find the distance between the points.

51. (3, 6), (0, -2) _____

52. (5, -2), (-6, 5) _____

53. (-6, -6), (-3, -2) _____

54. (-8, 5), (-1, 1) _____

Midpoint Formula

Example: Find the midpoint between (8, 14), (2, 6).

Formula: $(\frac{x_1 + x_2}{2}, \frac{y_1 + y_2}{2})$

$(\frac{8+2}{2}, \frac{14+6}{2})$

$(\frac{10}{2}, \frac{20}{2})$

$(5,10)$

The midpoint is always an ordered pair!

Exercises: Find the midpoint between the given points.

55. (-3, 5) and (8, 9) _____

56. (-7, -17) and (11, 4)_____

57. (3, -8) and (-5, -13)_____

ALGEBRA I
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Name_____

Teacher_____