

Name _____

Algebra I Summer Packet

As you prepare to go into Algebra 1 there are many skills and tools you must possess to be in order to be successful in Algebra 1. Here are some of the tools that will be most beneficial to you in the coming year. I WOULD STRONGLY ENCOURAGE YOU **NOT** TO USE A CALCULATOR, as this will help to build you basic math skills and help you grow more. If there is something you do not know on here, use the resources at the end or look up the topic on Youtube to help you out. If you do not know your multiplication table you need to learn that as well.

Order of Operations

1) $14 \div 7 + 3^2$

2) $42 \div 2(-12 + 9)$

3) $\sqrt{49}$

4) $|-14|$

5) $18 - 30 \div 5$

6) $48 \div (5 + 7) - 9$

7) $4^3 - 5(2) + 13$

Adding/Subtracting/Multiplying/Dividing Positive and Negative Numbers

8) $-2 + 11 - 7$

9) $5 - 3 + 12 - (-9)$

10) $\frac{-4}{\left(\frac{3}{4}\right)}$

11) $(-2)(4)(-5)(-1)$

12) $-4 + -9 - 3(-6)$

13) $\left(\frac{3}{5}\right)\left(-\frac{7}{12}\right)$

14) $\frac{3}{4} + \frac{1}{6}$

15) $2\frac{1}{3} - \frac{7}{9}$

16) $\left(\frac{2}{3}\right) \div \left(1\frac{5}{9}\right)$

Evaluating Expressions

17) $3(n - 1) + 2n$, when $n = 5$

18) $7b - 2a$, when $a = -3$ and $b = 4$

19) $3x^2 + 5x + 1$, when $x = -2$

20) $\frac{2r}{t} + 7$, when $r = 12$ and $t = 3$

21) $(3x)^2 - 7y^2$, when $x = 3$ and $y = 2$

22) $4(3d + 6) - 2d$, when $d = -6$

Solving Equations

Here is an example:

$\begin{array}{r} 3b + 2 = 6(3 - b) \\ 3b + 2 = 18 - 6b \\ \quad - 2 \quad - 2 \\ \hline 3b = 16 - 6b \\ + 6b \quad + 6b \\ \hline 9b = 16 \\ \quad \frac{9}{9} \quad \frac{9}{9} \\ b = \frac{16}{9} \end{array}$	<p>Check:</p> <p>Does $3(\frac{16}{9}) + 2 = 6(3 - (\frac{16}{9}))$?</p> $\begin{array}{l} \frac{16}{3} + 2 = 6(\frac{11}{9}) \\ \frac{16}{3} + \frac{6}{3} = \frac{22}{3} \\ \frac{22}{3} = \frac{22}{3} \checkmark \end{array}$
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Solve the equation. Include a check

23) $14 = b + 5$

24) $5r = 22$

25) $\frac{x}{4} = -9$

26) $3x - 5 = 13$

27) $\frac{1}{4}d + 2 = 3$

28) $-21 - 5x = 64$

29) $3y + 2y = 81 - 6$

30) $18y - 21 = 15y + 3$

31) $\frac{2a}{7} = \frac{2}{3}$

32) $2x - 10 + 2 = 12$

33) $3(y - 4) = -2y - 12$

34) $\frac{4x}{7} = \frac{6}{5}$

Properties

Match each equation on the left with the property it illustrates on the right.

35) $4 + (9 + 6) = (4 + 9) + 6$

A. Identity Property of Addition

36) $x + 12 = 12 + x$

B. Associative Property

37) $(3 + y) + 0 = 3 + y$

C. Distributive Property

38) $x \cdot 1 = x$

D. Identity Property of Multiplication

39) $5(x + y) = 5x + 5y$

E. Commutative Property

Distributive Property

Simplify each expression using the distributive property.

Example: $4(x + 5) = 4(x) + 4(5) = 4x + 20$

40) $3(b + 9)$

41) $5(2x - 3)$

42) $-3(4x + 9)$

43) $x(2x + 4)$

44) $\frac{1}{2}(4r + 12)$

45) $-(6p - 11)$

Subsets of Real Numbers and Number Sense

46) List all the perfect squares between 1 and 250

47) What is the smallest prime number? The smallest composite number?

48) List 4 factors of 24. List 4 multiples of 24.

49) Are both 7 and $-\frac{1}{2}$ integers? Why or why not?50) Are both 7 and $-\frac{1}{2}$ rational numbers? Why or why not?

51) Round 43.77301 to the nearest hundredth.

52) Round -5.1982569 to the nearest hundredth.

Simplifying Expressions

Simplify each expression by distributing and combining like terms.

53) $4x + 7y - 14x + 2y$

54) $-13 - 4y - 5z + 15 - (-4z) + 11y$

55) $20xy + 3x^2y - 10x^2y - 30xy$

56) $-3(2x - 5y)$

57) $9(6 + 2y) - 5 + 2y$

58) $2(3x - 1) + 3(x + 7)$

59) $9(2x + 4) - 2(3x - 1)$

Translating Expressions and Equations

Write an algebraic expression or equation to represent each verbal expression.

Example: 18 less than the quotient of a number and 3. $\rightarrow \frac{n}{3} - 18$

60) The sum of six times a number and 25

61) 7 less than fifteen times a number

63) Four times the square of a number increased by five times the same number

64) The sum of a number and 23 is 78.

65) The sides of a rectangle are a number and 4 less than that same numbers. The perimeter is 56. Find the dimensions of the rectangle.

66) If a number is decreased by 6, and the result is multiplied by 3, than the answer is 15. Find the unknown number.

Consecutive Number Problems

Include a let statements and checks for each problem.

67) The sum of two consecutive integers is 61.

68) The sum of three consecutive even integers is 144.

69) Find two consecutive odd whole numbers whose sum is 2 less than 6 times the first number.

Word Problems

Write an equation to model each word problem. Include let statements and checks for each problem.

70) Joelle had \$24 to spend on seven pencils. After buying them she had \$10. How much did each pencil cost?

Example:

Let x = cost per pencil

$$7x + 10 = 24$$

$$\begin{array}{r} -10 \\ -10 \end{array}$$

$$\frac{7x}{7} = \frac{14}{7}$$

$$x = 2$$

Check:

$$\text{Does } 7(2) + 10 = 24?$$

$$14 + 10 = 24$$

$$24 = 24$$

Each pencil cost 2 dollars.

73) 331 students went on a field trip. Six buses were filled and 7 students traveled in cars. How many students were in each bus?

71) Marla bought seven boxes. A week later half of all her boxes were destroyed in a fire. There are now only 22 boxes left. With how many did she start?

74) You bought a magazine for \$5 and four erasers. You spent a total of \$25. How much did each eraser cost?

72) Coral spent half of her weekly allowance playing mini-golf. To earn more money her parents let her wash the car for \$4. What is her weekly allowance if she ended with \$12?

75) Jacki won 40 super bouncy balls playing horseshoes at her school's game night. Later, she gave two to each of her friends. She only has 8 remaining. How many friends does she have?

Radicals

Write the integer approximation value of the radical. Use what you know about perfect squares and not just type it into a calculator.

Ex. $\sqrt{7}$. The perfect squares on either side of 7 are 4 and 9. Seven is closer to 9, so $\sqrt{7}$ is close to $\sqrt{9} = 3$, so $\sqrt{7}$ is close to 3

76. $\sqrt{18}$

77. $\sqrt{23}$

78. $\sqrt{52}$

79. $\sqrt{69}$

80. $\sqrt{77}$

81. $\sqrt{105}$

82. $\sqrt{213}$

83. $\sqrt{260}$

Multiplication

1	2	3	4	5	6	7	8	9	10	11	12	13
2												
3												
4												
5												
6												
7												
8												
9												
10												
11												
12												
13												

Here are some websites you might find useful in completing your summer assignment.

1. <http://www.regentsprep.org> – use the Math A site
2. <http://www.math.com> – use both Algebra and Pre-Algebra
3. [http:// library.thinkquest.org](http://library.thinkquest.org)
4. http://www.mathgoodies.com/lessons/toc_vol5.html – there are others on here, but this is the integer site
5. http://www.teacherschoice.com.au/Maths_Library/Algebra/Alg_1.htm
6. <http://education.jlab.org/solquiz>
7. http://w3.fiu.edu/math/cine_math/fast/pie.htm -- solving equations
8. <http://www.algebrahelp.com/worksheets/>
9. <http://www.math.com/homeworkhelp/Algebra.html>
10. <http://www.math.com/homeworkhelp/PreAlgebra.html>

