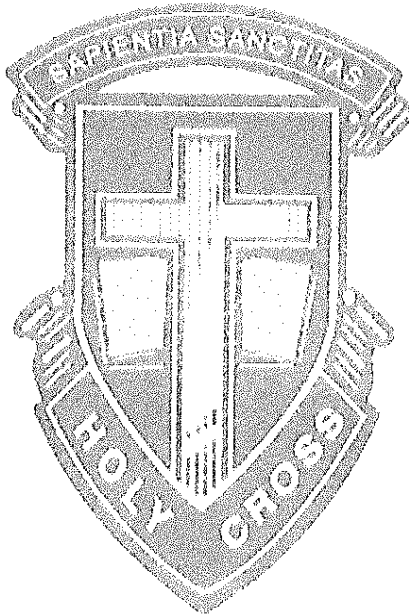


Algebra 1

Course Review Packet



Directions:

This review packet is to be completed by all students who are enrolled in Algebra 1. The completed packet must be submitted to your teacher on the Monday of the first full week of class. The packet will be used as the first assessment for the Honors Algebra I course.

Name _____

Pre-Algebra Review Packet

The problems in this packet are intended to review what you should already know from a Pre-Algebra Course. The skills selected are those that we will be using in the study of Algebra I. If you get stuck on any question you can ask another mathematics teacher for assistance or research the information on the Internet. This background information will appear at various times throughout this course and you will be expected to know it.

Part I: Number Sense (25)

Please convert the following decimals to fractions in their simplest form

- 1) 0.4 2) 0.46 3) 5.609 4) 4.081
 5) 0.00101 6) $0.\bar{3}$ 7) $0.\overline{35}$ 8) $1.\overline{124}$

Rules of Exponents

- 9) $x^4 \cdot x^3$ 10) $4m^3 2m^4$ 11) $(3x^5)^3$ 12) $(4r^0)^4$
 13) $(2x^4 z^2)(3x^4 yz^2)$ 14) $(x^2 y)^2 (x y^2)^3$ 15) $\frac{2x^4 y^2 z}{4x^2}$ 16) $\frac{a^4 b^3 c^3}{a^2 b^3 c^5}$

Please use Factor Trees to factor these numbers down to a product of prime factors. Use exponents to represent repeated multiplication

- 17) 315 18) 288 19) 3240 20) 22932

Part II: Numerical Operations (20)

- 21) $54 + (-57) + (-33)$ 22) $14 - 12 + 6 - 33 + 10 - 5$ 23) $14 - 5 \cdot 4$
 24) $9 \cdot 4 \div (10 - 4)$ 25) $10 \div 2 \cdot 6 + 2(10 - 4) \div 3$ 26) $(-6)(-12)(-3)$
 27) $\frac{3 + (7 \cdot 3) - 5^2}{5 \cdot 3 - (4^2)}$ 28) $\frac{6 \cdot 5 + 3 \cdot 8}{3(5 - 7)}$ 29) $|10| - |-13| + |2|$
 30) $10 - |-7| + |-11| - |-9|$ 31) $|6 - 9| + |18 - 13| + 2|-3|$

Find each percent change to the nearest percent. State if it is an increase or decrease.

- 32) From 95ft to 57ft 33) From 46 ounces to 72 ounces
 34) From 37 minutes to 58 minutes 35) From 259 hours to 214 hours
 36) From 56 days to 35 days 37) From 3100m to 3124m

38) From 517 liters to 489 liters

39) From 71 degrees to 82 degrees

40) 15.5mph to 20.4mph

Compare. Write $<$, $=$, or $>$. (1 point each)

41) 0.569 _____ $0.5\overline{69}$

42) $\frac{4}{5}$ _____ 0.8

43) -6.11 _____ $-6.\overline{11}$

Part III: Geometry (10)

Answer the following questions

44) A rectangular water tank has a capacity of 64 cubic meters. The length is two meters and height is eight meters. What is the width of the tank?

45) The perimeter of a square is 16 feet. What is its area?

46) A prism has a volume of 540 cubic yards, a width of six yards, and a height of 10 yards. What is the length of the prism?

47) A rug has an area of 48 square feet. If it has a length of eight feet, what is its width?

48) The addition Maria had built on her house adds more than 300 square feet to the floor area. The floor area of the house is now more than 2,400 square feet. What could have the dimensions of the room have been before the addition?

49) What is the length of the hypotenuse of a right triangle if the sides are 4m and 3m?

50) If the longest side of a right triangle is 10 and another side is 8, what is the measure of the third side?

51) Each side of a cube has a length of 9 centimeters. What is the volume of the cube?

52) If an isosceles right triangle has a leg measure 2. What is the measure of the shortest side?

53) What is the area and perimeter of a rectangular stage that is 48 feet long and 30 feet wide?

Part IV: Patterns

For the next set of problems (54-56) use the following information: For all real numbers a and b $a \lambda b = 2(a + 3b)$

54) Find $a \lambda b$ for a least five pairs of numbers

55) Is the operation commutative? If so, explain how you know. If not, give a counterexample

56) Is the operation associative? If not, give a counterexample.

57) Consider an operation $\%$ that is defined for only six whole numbers: 0, 1, 2, 3, 4, 5. The result $a \% b$ is the remainder when $a + b$ is divided by 6. Complete the table below for the operation

$\%$	0	1	2	3	4	5
0						
1						
2						
3						
4						
5						

Part IV: Measurement (20)

Measurement Vocab. From the vocabulary list below, chose the term(s) that best complete each sentence. Write the term(s) in the space(s) provided.

- | | | |
|--------------------|-------------------|----------------------|
| Capacity | length | scientific notation |
| Decimal number | metric system | rational number |
| Compatible numbers | negative exponent | terminating decimal |
| Mass | repeating decimal | negative power of 10 |

58) A deciliter is a metric unit of _____.

59) A kilogram is a metric unit of _____.

60) A hectometer is a metric measure of _____.

61) When a lesser integer is divided by a greater integer, the quotient will be a _____.

62) 8.5 is called a _____.

63) _____ is a more compact method of expressing large numbers and very small decimal numbers.

64) $4.333\dots$ or $4.\bar{3}$ is called a _____

Part VII: Units of measure.

Rename each unit of measure – express in scientific notation (2 points each)

65) $3.4 \text{ kg} = \underline{\hspace{2cm}} \text{ g}$

67) $2.3 \text{ hm} = \underline{\hspace{2cm}} \text{ km}$

69) $1000 \text{ cL} = \underline{\hspace{2cm}} \text{ hL}$

71) $9.4 \text{ kL} = \underline{\hspace{2cm}} \text{ L}$

73) $59.7 \text{ g} = \underline{\hspace{2cm}} \text{ mg}$

75) $1.5 \text{ cL} = \underline{\hspace{2cm}} \text{ mL}$

66) $3.5 \text{ mL} = \underline{\hspace{2cm}} \text{ L}$

68) $445 \text{ dm} = \underline{\hspace{2cm}} \text{ km}$

70) $23.2 \text{ cg} = \underline{\hspace{2cm}} \text{ dag}$

72) $45.1 \text{ dg} = \underline{\hspace{2cm}} \text{ mg}$

74) $0.011 \text{ cg} = \underline{\hspace{2cm}} \text{ kg}$

76) $41,000 \text{ m} = \underline{\hspace{2cm}} \text{ km}$

Part V: Data Analysis (5)

Given the set of numbers, please find the mean, medium and mode

77) 1, 2, 3, 4, 4, 5, 6

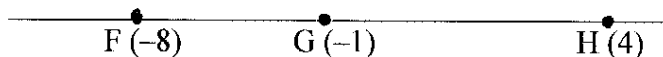
78) 11, 11, 12, 13, 14, 15, 15, 15, 16, 17, 18

79) 1.2, 1.3, 1.4, 1.5, 1.6, 1.7, 2.5, 2.6

80) 0, 1, 3, 5, 2, 3, 5, 4, 6, 7, 6, 4, 2, 4, 6, 9

Part VII: Probability (10)

81) If a point is chosen at random on \overline{FG} , what is the probability that it is within 6 units of G?



82) What is the probability of choosing a purple marble from a jar containing 5 green, 6 purple and 3 red marbles?

83) What is the probability of choosing a marble that is not red in problem 79?

84) What is the probability of getting an odd number when rolling a single 6-sided dice?

85) What is the probability of choosing a queen, king, or an ace from a standard deck of playing cards?

Part IX: Algebra (translations, substitute a number for a variable, simple simplification)

Part I - Vocabulary: Please put the given terms into the appropriate blank spaces. Fill in the blank with the appropriate word from the word bank. **(1 point each)**

- 86) _____. An expression that contains a variable is called a _____. A) Variable
- 87) _____. A(n) ____ is a symbol used to represent one or more numbers. B) Expression
- 88) _____. A(n) ____ is a mathematical phrase that can contain numbers, operations and variables. C) Equation
D) Solution
- 89) _____. The set of numbers that a variable may represent is called the ____ of the variable. E) Parenthesis
F) Bracket
- 90) _____. $\Lambda(n)$ ____, a (n) ____ and a(n) ____ are all symbols that denote grouping. G) Replacement Set
H) Division Bar
- 91) _____. Any value of a variable that makes a statement true is said to be the **root** or ____ of the equation. I) Solution Set
J) Variable
Expression
- 92) _____. The set of all solutions is called the ____ of the equation. K) Numerical
Expression
- 93) _____. An expression that contains only numbers is call a _____. L) Mathematical
Operation
- 94) _____. Addition, subtraction, multiplication and division are considered _____.
- 95) _____. A(n) ____ is a mathematical statement formed by placing an equals sign between two numerical or variable expressions
- 96) Four hundred is less than one third of a number
- 97) Marcus is 62 inches tall. This is at least 4 inches taller than Darnell
- 98) Fourteen less than a number is 12
- 99) Triple a number minus eight is -12

Part III: Evaluate the Expression with the given values. **(3 points each)**

Evaluate each expression if $t = 3, x = 4, y = 2, z = 6$

- 100) $5t - 7$
- 101) $3xy - t$
- 102) $6y - tx$
- 103) $\frac{6t + z}{9(t - z)}$
- 104) $3[z + 5(2y - x)]$
- 105) $2[x + 4(y + z)]$

Part IV: Word Problems. Solve each of the following word problems. Show all work.
(4 points each)

106) Paul and Mike work at the refreshment stand at the county fair. The owner of the stand pay the $\frac{1}{6}$ of whatever they sell. In the first hour, Paul sells \$42 worth of refreshments. Paul's earnings are half of Mike's. How much does Mike earn in the first hour?

107) The blue whale, presently the largest mammal, weights about 2.16 times more than the largest dinosaur. Blue whales weigh about 1.362×10^5 kilograms. Using scientific notation, about how much did the largest dinosaur weigh?

108) Chris bought apples that cost \$1.52 per pound. If he has \$12, what is the greatest number of pounds of apples he can buy, to the nearest quarter pound?

109) Juan checked out more than 5 library books. The maximum number of books he could check out was 10. How many book could he have checked out?

110) Three students clean the park. They share the money earned equally. They earned exactly \$51. If each student worked 2 hours total, how much money per hour did they earn?