Lemont High School

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Lemont High School Students and Parents/Guardians,

Though the 2019-2020 school year has completed, we know the last few months have not been easy on anyone. During the suspension of in-person instruction this spring, Lemont High School teachers adjusted the curriculum in math courses with a goal of creating the best opportunity for students to achieve success during remote learning.

We have put together this packet in an effort to provide support for students and parents/guardians during the summer, as Integrated Math I students prepare for their first high school math class.

Because of the sequential nature of mathematics, Lemont High School's Mathematics Department annually makes supplemental practice available to students in the summer. The concepts included are from prior years of school, and this resource is a tool for students to strengthen readiness for the next school year.

The completion of this packet is not required work for the upcoming school year. However, we believe it is important for students to maintain their skills over the summer. This never has been more important than now.

The packet includes a review of basic mathematics, mathematical concepts, and applications of these concepts. Students can use external resources if they are not familiar with some of the concepts included in this packet, and a list is provided on the high school website. Many of the answers for this packet will be available on the school's website by June.

We expect to move forward with instruction as usual in the fall. Therefore, it is our goal for students to be ready for their next courses, and completing this packet will help students with their preparation.

Please contact me at either **kyoung@lhs210.net** or at (630) 243-3263 with any questions. The Mathematics Department wants to continue to provide tools to practice and strengthen the mastery of mathematics.

Sincerely,

Kathryn A. Young

Mathematics Department Chair

Number Sense (This material is expected to be completed without a calculator.)

1) Complete the statement with the appropriate symbol $(<,>,=)$. $12.5 \ \boxed{} \ 12.4$	2) Complete the statement with the appropriate symbol $(<,>,=)$. $-2 \ \boxed{} \ -4$
3) Complete the statement with the appropriate symbol $(<,>,=)$. $\sqrt{9} \ \boxed{} \ 3$	4) Complete the statement with the appropriate symbol $(<,>,=)$. $\dfrac{5}{6} \ \boxed{} \ \dfrac{3}{4}$
5) Complete the statement with the appropriate symbol $(<,>,=)$. $-3 \ \boxed{} \ -3.1$	6) Complete the statement with the appropriate symbol $(<,>,=)$. $\dfrac{4}{3} \ \boxed{} \ \sqrt{2}$
7) Place the following numbers in order form least to greatest: $4, 7, -2, 2, -4$	8) Place the following numbers in order form least to greatest: $4, 0.04, \ 0.0004, 0.4, \ 40$
9) Place the following numbers in order form least to greatest: $\dfrac{4}{3}, \dfrac{5}{3}, \dfrac{3}{2}, \dfrac{11}{6}, \dfrac{7}{6}$	10) Place the following numbers in order form least to greatest: $-7, -6.28, -6.3, -6.03, -6$

Percent

***Please round all answers to the nearest tenth when needed.

11) Write the following decimal as a percent: 0.375	12) Write the following decimal as a percent: 0.08
13) Write the following percent as a decimal: 30%	14) Write the following percent as a decimal: 6.25%
15) What is 20% of 50?	16) 46 is what percent of 107?
17) 62% of what is 89.3?	18) What percent of 126 is 22?
19) What is 270% of 60?	20) What percent of 88.6 is 70?

Order of Operations (This material should be completed without a calculator.)

21) Simplify: $3 + 2 \cdot 10$	22) Simplify: $2(1-4)^2$
23) Simplify: $-3^2 + (-3)^2$	24) Simplify: $\dfrac{\lvert 3-9 \rvert - \lvert -5 \rvert}{\lvert 4-5 \rvert}$
25) Simplify: $8 - [(4-7) + (8-1)]$	26) Simplify: $4 - [8 - (2-4)]$
27) Simplify: $10 - [(4-5)^2 + (12-14)]^4$	28) Simplify: $7 - (3-8)^2$
29) Simplify: $\dfrac{(-1-2)(-3^2)}{-6-3}$	30) Simplify: $3[11 - (1-3)]$

Solving Equations

31) Solve for x: $-3x = 36$	32) Solve for x: $x + 2.8 = 1.9$
33) Solve for x: $-4 = 3x + 11$	34) Solve for x: $5x - 4 = 26$
35) Solve for x: $5x + 12 = 2x - 3$	36) Solve for x: $4x + 14 = 6x + 8$
37) Solve for x: $5(x + 4) = 4(x + 5)$	38) Solve for x: $3x - 4 - 5x = x + 4 + x$
39) Solve for x: $\dfrac{x}{4} + 3 = 8$	40) Solve for x: $3(x - 6) = 5x$

Fractions (This material should be completed without a calculator.)

41) Which fraction is larger? $$\frac{2}{7} \quad or \quad \frac{3}{15}$$	42) Arrange these fractions from smallest to largest: $$\frac{1}{3}, \frac{0}{4}, -\frac{1}{2}, -\frac{7}{8}, \frac{9}{100}$$
43) Circle any values that are equivalent: $$\frac{4}{5}, \frac{6}{8}, \frac{1}{2}, \frac{9}{27}, \frac{15}{20}, \frac{33}{44}$$	44) Evaluate $$\frac{1}{2} \cdot \frac{3}{7} \cdot \frac{8}{3}$$
45) Evaluate $$\frac{2}{5} + \frac{4}{5}$$	46) Evaluate $$\frac{5}{4} - \frac{3}{4}$$
47) Evaluate $$\frac{1}{3} - \left(-\frac{4}{5}\right)$$	48) Convert to an improper fraction: $$4\frac{3}{5}$$
49) Evaluate $$2\frac{1}{3} - 1\frac{2}{3}$$	50) Evaluate $$-3\frac{5}{8} + 2\frac{4}{5}$$

Exponents

51) Simplify. Leave in exponent form. $4^3 \cdot 4^2$	52) True or False? $4^3 + 4^2 = 4^5$
53) Simplify. Leave in exponent form. $6r \cdot 5r^2$	54) Simplify. Leave in exponent form. $-2x^2 y \cdot 3x^5 y^2$
55) Simplify. Leave in exponent form. $(3x)^2$	56) Simplify. Leave in exponent form. $\dfrac{2^8}{2^3}$
57) Simplify. Leave in exponent form. $\dfrac{8x^3}{4x^5}$	58) Simplify. Leave in exponent form. $\left(\dfrac{2xy^3}{y^2}\right) \cdot \left(\dfrac{x^3 y^3}{2x^4 y^2}\right)$
59) Simplify. Leave in exponent form. $\left(3x^{-3}\right)\left(-4x^5\right)$	60) Simplify. Leave in exponent form. $\left(\dfrac{\left(6a^5\right)^2}{9a^9}\right)$

Proportions

61) Solve the following equation for x: $\dfrac{3}{10} = \dfrac{x}{4}$	62) Solve the following equation for x: $\dfrac{x+3}{7} = \dfrac{2x}{5}$
63) Solve the following equation for x: $\dfrac{7}{12} = \dfrac{x-3}{2x+4}$	64) List five fractions that are proportional to $\dfrac{3}{4}$
65) The cost of a 6 ounce can of tomato paste is 29 cents. A 16 ounce can sells for 65 cents. Which is the better deal?	66) Rob's paycheck for six days of work was $152. At this rate, what will be his paycheck be for 30 days of work?

Analyzing Points on a Graph

67) The graph shows relative height and cost for six trees. Based on the graph, answer the questions below.

1. Which tree is the tallest?
2. Which tree is the cheapest?
3. Which trees are the same height?
4. Which trees are the same price?
5. Which is cheaper per foot, B or C?
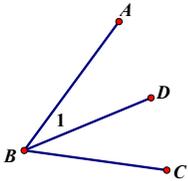6. Which is cheaper per foot, A or F?
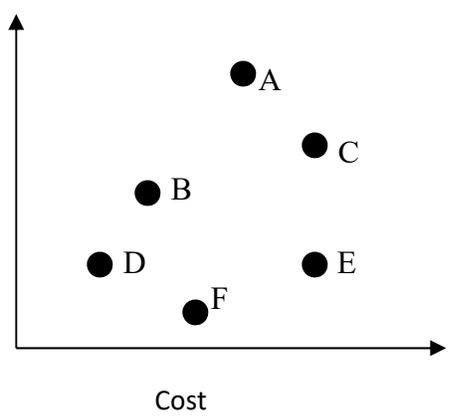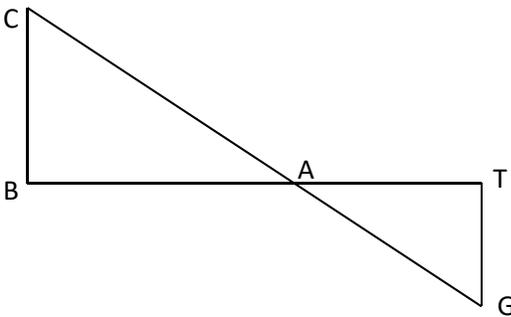
Height

Cost

Labeling and Understanding Geometric Diagrams
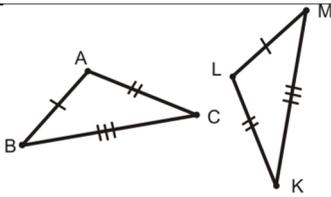
68) For the triangles above, name all pairs of congruent segments.

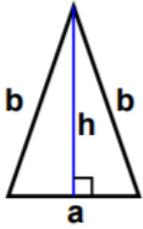69) Given the following diagram, name ∡1 in two different ways. Also, put a smiley face in ∡DBC.
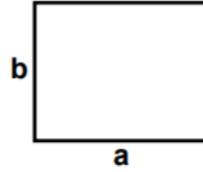
70) Name 3 segments in the following picture:

Evaluating

71) If $a = -2$ and $b = 5$ then what is the value of $3a - 2b$?	72) If $a = -2$ and $b = 5$ then what is the value of $\lvert 4a \rvert$?	73) If $a = -2$ and $b = 5$ then what is the value of $\lvert a \rvert - \lvert b \rvert$?
74) If $x = 4$ then what is the value of $5x - x^2$	75) If $a = 7$ and $b = -10$ then what is the value of $-7a - b$?	76) If $x = -1$ then what is the value of x^5?

Perimeter and Area

77) Identify and calculate the perimeter and area	78) Identify and calculate the perimeter and area
$a = 50$ ft $b = 84$ ft $h = 77.5$ ft	$a = 72$ yds $b = 57$ yds

Reading and Writing Inequalities

79) Write the inequality: four times a number, n, is less than 6.

80) Six Flags requires that you are 48 inches tall to ride a roller coaster. Which of the following inequalities best represents their requirement if h is height measured in inches?

a. $h > 48$

b. $h < 48$

c. $h \geq 48$

d. $h \leq 48$

81) Solve the following inequality for x and graph the solution on a number line: $-5x + 3 \leq -1$

82) Solve the following inequality for x and graph the solution on a number line: $-\frac{w}{2} + 3 \geq 4$

Conceptual Understanding

83) Your friend tells you a number that is between 0 and 1. How can you describe the reciprocal of the number?

84) The number 20 increased by 20% results in 24. Explain why the value of 24 decreased by 20% is not equal to 20.

85) Using the digits of 1,2,3,4 (without repeating) find the largest value for the arithmetic operation of

$$\boxed{}\boxed{}+\boxed{}^{\boxed{}}$$

86) If the area of a rectangle is $40\,inches^2$, and each side is an integer, then find the smallest perimeter possible. What is the largest perimeter possible?

87) Jessie finds $1.00 in change when doing laundry. The pile of coins contains pennies, nickels, dimes and quarters. What is the least amount of coins possible?

88) The arithmetic mean of the numbers 1,2,5, and 12 is 5. Add 4 different numbers to the set without changing the value of the arithmetic mean.

89) Find all of the numbers between 0 and 100 that when divided by 5 have a remainder of 2 and when divided by 4 have a remainder of 2.

90) The linear function of $y = 2x + 5$ exists in 3 of the quadrants. Find a coordinate in each quadrant that is a solution to the function. Then, explain why the fourth quadrant does not have any solutions.