



## Lemont High School

800 Porter Street

Lemont, IL 60439

Phone - (630) 257-5838

Fax - (630) 257-7603

Web - [www.lhs210.net](http://www.lhs210.net)

*Dr. Mary Ticknor, Superintendent*

*Eric Michaelsen, Principal*



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The solutions to the Integrated Math I Summer Packet are below.

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

|   |  |
|---|--|
| <p>1) Complete the statement with the appropriate symbol (&lt;, &gt;, =).</p> <p>12.5 <input type="text" value="&gt;"/> 12.4</p>  | <p>2) Complete the statement with the appropriate symbol (&lt;, &gt;, =).</p> <p>-2 <input type="text" value="&gt;"/> -4</p>   |
| <p>3) Complete the statement with the appropriate symbol (&lt;, &gt;, =).</p> <p><math>\sqrt{9}</math> <input type="text" value="="/> 3</p>   | <p>4) Complete the statement with the appropriate symbol (&lt;, &gt;, =).</p> <p><math>\frac{5}{6}</math> <input type="text" value="&gt;"/> <math>\frac{3}{4}</math></p> |
| <p>5) Complete the statement with the appropriate symbol (&lt;, &gt;, =).</p> <p>-3 <input type="text" value="&gt;"/> -3.1</p>  | <p>6) Complete the statement with the appropriate symbol (&lt;, &gt;, =).</p> <p><math>\frac{4}{3}</math> <input type="text" value="&lt;"/> <math>\sqrt{2}</math></p>    |
| <p>7) Place the following numbers in order from least to greatest: 4, 7, -2, 2, -4</p> <p>-4, -2, 2, 4, 7</p>   | <p>8) Place the following numbers in order from least to greatest: 4, 0.04, 0.0004, 0.4, 40</p> <p>0.0004, 0.04, 0.4, 4, 40</p>  |
| <p>9) Place the following numbers in order from least to greatest: <math>\frac{4}{3}, \frac{5}{3}, \frac{3}{2}, \frac{11}{6}, \frac{7}{6}</math></p> <p><math>\frac{7}{6}, \frac{4}{3}, \frac{3}{2}, \frac{5}{3}, \frac{11}{6}</math></p> | <p>10) Place the following numbers in order from least to greatest: -7, -6.28, -6.3, -6.03, -6</p> <p>-7, -6.3, -6.28, -6.03, -6</p>                                     |

Percent

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

|  |  |
|--|--|
| 11) Write the following decimal as a percent:<br>0.375<br><br>$37.5\%$ | 12) Write the following decimal as a percent:<br>0.08<br><br>$8\%$     |
| 13) Write the following percent as a decimal:<br>30%<br><br>$0.3$      | 14) Write the following percent as a decimal:<br>6.25%<br><br>$0.0625$ |
| 15) What is 20% of 50?<br><br>$10$                                     | 16) 46 is what percent of 107?<br><br>$\approx 42.99\%$                |
| 17) 62% of what is 89.3?<br><br>$\approx 144.03$                       | 18) What percent of 126 is 22?<br><br>$\approx 17.46\%$                |
| 19) What is 270% of 60?<br><br>$162$                                   | 20) What percent of 88.6 is 70?<br><br>$\approx 79.01\%$               |

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

|   |   |
|---|---|
| 21) Simplify: $3 + 2 \cdot 10$<br><br>$23$                | 22) Simplify: $2(1 - 4)^2$<br><br>$18$                    |
| 23) Simplify: $-3^2 + (-3)^2$<br><br>$0$                  | 24) Simplify: $\frac{ 3 - 9  -  -5 }{ 4 - 5 }$<br><br>$1$ |
| 25) Simplify: $8 - [(4 - 7) + (8 - 1)]$<br><br>$4$        | 26) Simplify: $4 - [8 - (2 - 4)]$<br><br>$-6$             |
| 27) Simplify: $10 - [(4 - 5)^2 + (12 - 14)]^4$<br><br>$9$ | 28) Simplify: $7 - (3 - 8)^2$<br><br>$-18$                |
| 29) Simplify: $\frac{(-1 - 2)(-3^2)}{-6 - 3}$<br><br>$-3$ | 30) Simplify: $3[11 - (1 - 3)]$<br><br>$39$               |

*Solving Equations*

31) Solve for  $x$ :  $-3x = 36$

$$x = -12$$

32) Solve for  $x$ :  $x + 2.8 = 1.9$

$$x = -0.9$$

33) Solve for  $x$ :  $-4 = 3x + 11$

$$x = -5$$

34) Solve for  $x$ :  $5x - 4 = 26$

$$x = 6$$

35) Solve for  $x$ :  $5x + 12 = 2x - 3$

$$x = -5$$

36) Solve for  $x$ :  $4x + 14 = 6x + 8$

$$x = 3$$

37) Solve for  $x$ :  $5(x + 4) = 4(x + 5)$

$$x = 0$$

38) Solve for  $x$ :  $3x - 4 - 5x = x + 4 + x$

$$x = -2$$

39) Solve for  $x$ :  $\frac{x}{4} + 3 = 8$

$$x = 20$$

40) Solve for  $x$ :  $3(x - 6) = 5x$

$$x = -9$$

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

|   |  |
|---|--|
| <p>41) Which fraction is larger?</p> <p><math>\frac{2}{7}</math> or <math>\frac{3}{15}</math></p>   | <p>42) Arrange these fractions from smallest to largest:</p> <p><math>\frac{1}{3}, \frac{0}{4}, -\frac{1}{2}, -\frac{7}{8}, \frac{9}{100}</math></p> <p><math>-\frac{7}{8}, -\frac{1}{2}, \frac{0}{4}, \frac{9}{100}, \frac{1}{3}</math></p> |
| <p>43) Circle any values that are equivalent:</p> <p><math>\frac{4}{5}, \frac{6}{8}, \frac{1}{2}, \frac{9}{27}, \frac{15}{20}, \frac{33}{44}</math></p> | <p>44) Evaluate</p> <p><math>\frac{1}{2} \cdot \frac{3}{7} \cdot \frac{8}{3}</math></p> <p><math>\frac{4}{7}</math></p>  |
| <p>45) Evaluate</p> <p><math>\frac{2}{5} + \frac{4}{5}</math></p> <p><math>\frac{6}{5}</math></p>   | <p>46) Evaluate</p> <p><math>\frac{5}{4} - \frac{3}{4}</math></p> <p><math>\frac{1}{2}</math></p>  |
| <p>47) Evaluate</p> <p><math>\frac{1}{3} - \left(-\frac{4}{5}\right)</math></p> <p><math>\frac{17}{15}</math></p>                                       | <p>48) Convert to an improper fraction:</p> <p><math>4\frac{3}{5}</math></p> <p><math>\frac{23}{5}</math></p>  |
| <p>49) Evaluate</p> <p><math>2\frac{1}{3} - 1\frac{2}{3}</math></p> <p><math>\frac{2}{3}</math></p>   | <p>50) Evaluate</p> <p><math>-3\frac{5}{8} + 2\frac{4}{5}</math></p> <p><math>-\frac{33}{40}</math></p>  |

Exponents

|  |   |
|--|---|
| <p>51) Simplify. Leave in exponent form.</p> $4^3 \cdot 4^2$ $4^5$               | <p>52) True or False?</p> $4^3 + 4^2 = 4^5$ <p>false</p>  |
| <p>53) Simplify. Leave in exponent form.</p> $6r \cdot 5r^2$ $30r^3$             | <p>54) Simplify. Leave in exponent form.</p> $-2x^2y \cdot 3x^5y^2$ $-6x^7y^3$  |
| <p>55) Simplify. Leave in exponent form.</p> $(3x)^2$ $9x^2$                     | <p>56) Simplify. Leave in exponent form.</p> $\frac{2^8}{2^3}$ $2^5$  |
| <p>57) Simplify. Leave in exponent form.</p> $\frac{8x^3}{4x^5}$ $\frac{2}{x^2}$ | <p>58) Simplify. Leave in exponent form.</p> $\left(\frac{2xy^3}{y^2}\right) \cdot \left(\frac{x^3y^3}{2x^4y^2}\right)$ $y^2$ |
| <p>59) Simplify. Leave in exponent form.</p> $(3x^{-3})(-4x^5)$ $-12x^2$         | <p>60) Simplify. Leave in exponent form.</p> $\left(\frac{(6a^5)^2}{9a^9}\right)$ $4a$  |

Proportions

|   |   |
|---|---|
| <p>61) Solve the following equation for <math>x</math>: <math>\frac{3}{10} = \frac{x}{4}</math></p> <p><math>x = \frac{6}{5}</math></p> | <p>62) Solve the following equation for <math>x</math>: <math>\frac{x+3}{7} = \frac{2x}{5}</math></p> <p><math>x = \frac{5}{3}</math></p> |
| <p>63) Solve the following equation for <math>x</math>: <math>\frac{7}{12} = \frac{x-3}{2x+4}</math></p> <p><math>x = -32</math></p>    | <p>64) List five fractions that are proportional to <math>\frac{3}{4}</math></p> <p>answers may vary</p>                                  |
| <p>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?</p>          | <p>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?</p> <p>\$ 760</p>   |

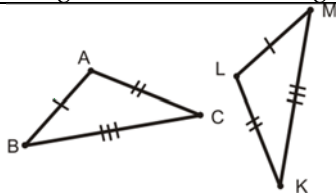
Analyzing Points on a Graph

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

- Which tree is the tallest? **A**
- Which tree is the cheapest? **D**
- Which trees are the same height? **D + E**
- Which trees are the same price? **C + E**
- Which is cheaper per foot, B or C? **B**
- Which is cheaper per foot, A or F? **A**



Labeling and Understanding Geometric Diagrams

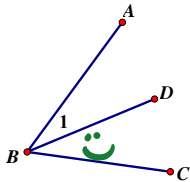


$$\overline{AB} \cong \overline{LM} \quad \overline{MK} \cong \overline{BC}$$

$$\overline{LK} \cong \overline{AC}$$

68) For the triangles above, name all pairs of congruent segments.

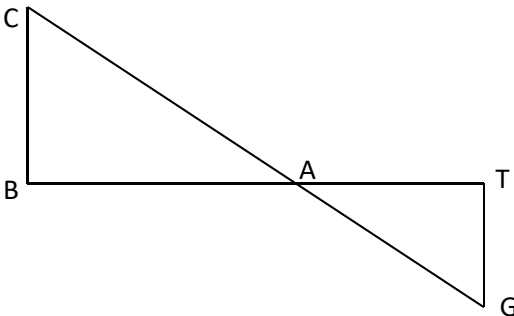
69) Given the following diagram, name  $\angle 1$  in two different ways. Also, put a smiley face in  $\angle DBC$ .



$$\angle ABD$$

$$\angle DBA$$

70) Name 3 segments in the following picture:



options:  
 $\overline{CB}$ ,  $\overline{BA}$ ,  $\overline{BT}$ ,  $\overline{AT}$ ,  $\overline{TG}$   
 $\overline{GA}$ ,  $\overline{GC}$ ,  $\overline{AC}$

Evaluating

71) If  $a = -2$  and  $b = 5$  then what is the value of  $3a - 2b$ ?

$$-16$$

72) If  $a = -2$  and  $b = 5$  then what is the value of  $|4a|$ ?

$$8$$

73) If  $a = -2$  and  $b = 5$  then what is the value of  $|a| - |b|$ ?

$$-3$$

74) If  $x = 4$  then what is the value of  $5x - x^2$ ?

$$4$$

75) If  $a = 7$  and  $b = -10$  then what is the value of  $-7a - b$ ?

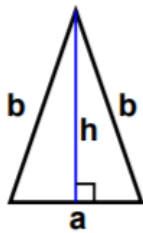
$$-39$$

76) If  $x = -1$  then what is the value of  $x^5$ ?

$$-1$$

Perimeter and Area

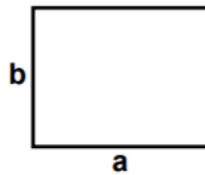
77) Identify and calculate the perimeter and area



$a = 50 \text{ ft}$     $b = 84 \text{ ft}$   
 $h = 77.5 \text{ ft}$

Area =  $1937.5 \text{ ft}^2$   
 Perimeter =  $218 \text{ ft}$

78) Identify and calculate the perimeter and area



$a = 72 \text{ yds}$     $b = 57 \text{ yds}$

Area =  $4104 \text{ yds}^2$   
 Perimeter =  $258 \text{ yds}$

Reading and Writing Inequalities

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

$4n < 6$

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:  $-5x + 3 \leq -1$

$x \geq 4/5$



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

$w \leq -2$



*The following problems do not have solutions provided. Many of the problems have multiple solutions.*

*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  $\square\square + \square^{\square}$

86) If the area of a rectangle is  $40 \text{ inches}^2$ , 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.