

St. Luke's Middle School Summer Math 2018



To: Students entering eighth grade and their parents

From: Mrs. Finan and Mrs. Noury

1. Over the summer, it is common for students entering the eighth grade to forget some of the mathematics they learned. So, we want to help you review over the summer; this will make the beginning of eighth grade mathematics much easier. We suggest that this work be spread out during the summer.

You should not use calculators in doing this work. You must show steps on any problem that cannot reasonably be done mentally. Try all of the problems but if you struggle with a concept, then just do your best. Teachers will be able to look at your work in the fall to identify what topics you may still need help with and what review topics to focus on.

This packet will be collected at the start of school, and be counted as two homework assignments. This material will be reviewed during the first week of school and students will take a short quiz on this material to begin the second week of school; the quiz will consist of exact problems from this packet.

2. There are many options for summer math skills review workbooks that can be purchased by families. Here is an excellent one. This workbook is intended to be used only 3 days per week for ten weeks.

http://www.summerskills.com/summerskillsbooks/math_books

3. In addition to the math packet, below are some ideas of activities you can do every day with your child. Also included in this letter is a list of games and websites that you can use with your child to assist in the development of good math skills, such as spatial recognition, sequencing, patterns, logical deduction, visual memory and number facts. These games can help strengthen a mathematical foundation that is further developed within the math classroom. Most of the items on the list are commercial games. They

GAMES

The following list of games, excerpted from *Games and Their Uses in Mathematics Learning* (Sharma, 2008), will help your child sharpen thinking skills, make inferences, draw conclusions, evaluate answers and strengthen reasoning. Beside each title are the skills and concepts which are reinforced.

- **Simon or Mini Wizard** (sequencing, following multi-step directions, visual and auditory memory)
- **Battleship** (spatial orientation, visualization, visual memory)
- **Cribbage** (number relationships, patterns, visual clusters)
- **Concentration** (visualization, pattern recognition, visual memory)
- **Chinese Checkers** (patterns, spatial orientation/space organization)
- **Pachisi** (sequencing, patterns, number relationships)
- **Checkers** (sequencing, patterns, spatial orientation/space organization)
- **Othello** (pattern recognition, spatial orientation, visual clustering, focus on more than one aspect, variable or concept of time)
- **Score Four or Connect Four** (pattern recognition, spatial orientation, visual clustering, geometric patterns)
- **Qubic** (pattern recognition, spatial orientation, visualization, geometrical patterns)

More Games:

- **Kalah or Mankalah** (sequencing, counting, estimation, visual clustering)
- **Master Mind** (sequencing, logical deduction, pattern recognition)
- **Four Sight** (spatial orientation, pattern recognition, logical deduction)
- **Card Games** (visual clustering, pattern recognition, number facts)
- **Dominos** (visual clustering, pattern recognition, number facts)
- **Stratego** (spatial recognition, logical deduction, graphing)
- **Number War Games** (visual clustering, arithmetic facts, mathematics concepts)

WEBSITES FOR MATH GAMES & HELP

<http://www.khanacademy.org/>

<http://www.ixl.com/math/grade-8>

<http://calculationnation.nctm.org/>

<http://mathforum.org/dr.math/>

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Summer Math Skills for 7th Grade going into 8th Grade

Copy and complete the statement using $<$, $>$, or $=$.

1. 17.1 g ? 1.71 mg
2. 6.3 cm ? 63 mm
3. 1250 mL ? 12.5 kL
4. $\frac{7}{12}$? $\frac{2}{3}$
5. $\frac{7}{10}$? $\frac{11}{15}$

Copy and complete the statement.

6. 8 pt = ? c
7. 23 qt = ? gal ? qt

Evaluate the expression for the given value(s) of the variables(s).

8. $m - 8$ when $m = 12$
9. $11y$ when $y = 5$
10. $a \div (b - 4)$ when $a = 24$ and $b = 7$
11. Find the perimeter and the area of a rectangle that has a length of 7 feet and a width of 4 feet.

Evaluate the expression.

12. $23 - (9 - 5)^2$
13. $\frac{17 - 8}{6 + 12}$

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14. $52 \div (13 \times 2)$

15. $-5 \cdot 8 \cdot \left(\frac{1}{5}\right)$

16. $\frac{1}{3}(1.3) + \frac{1}{3}(1.7)$

17. $9^2 - 16 \times 3$

18. $9.83 + (8.2)(7.01)$

Find the sum, difference, product, or quotient.

19. $3.24 + 5.48$

20. $21.73 - 14.87$

21. 2.4×0.125

22. $15.3 \div 0.09$

23. $\frac{11}{16} + \frac{3}{4}$

24. $7\frac{2}{5} - 4\frac{7}{10}$

25. $2\frac{1}{3} \cdot 3\frac{3}{4}$

26. $\frac{7}{12} \div \frac{14}{15}$

27. $-11 + (-17)$

28. $21 - 32$

Name: _____

53. $17t + 3(4t - 5)$

54. $5(3m + 1) - 8(2m + 3)$

55. $-3 - 4b + b - 8$

Solve the equation. Check your solution.

56. $w - 4 = -2$

57. $\frac{2}{3}x = -10$

58. $4y - 2 = 7$

59. $-9 = -9(2z - 3)$

Solve the inequality.

60. $15 > m + 8$

61. $-7x \leq 21$

62. Write a function rule for the input-output table.

Input, x	-2	-1	0	1
Output, y	7	5	3	1

63. Determine which package of laundry soap is the better buy: 65 ounces for \$6.99 or 120 ounces for \$12.99

Solve the proportion.

64. $\frac{x}{15} = \frac{3}{7.5}$

65. $\frac{12}{16} = \frac{y}{12}$

66. A map uses a scale of 1 in. : 25 mi. If the distance between two cities on the map is 3.5 inches, what is the actual distance between the cities?

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Write the percent as a decimal or the decimal as a percent.

- 67. 31.5%
- 68. 210%
- 69. 0.0125
- 70. What number is 45% of 520?
- 71. 75 is what percent of 30?

Identify the percent of change as an increase or a decrease. Then find the percent of change.

- 72. Original: 60
New: 45
- 73. Original: 75
New: 90
- 74. A store has a pair of boots that originally cost \$56 marked down 25%. How much will the boots cost on sale?
- 75. You deposit \$1200 in an account. The annual interest rate is 3%. How long will it take you to earn \$108 in simple interest?

For the given angle measure, find the measure of a supplementary angle and the measure of a complementary angle, if possible.

- 76. 27°
- 77. 105°
- 78. 18°

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109. A rectangular garden has a length of 10.25 feet and a width of 6.2 feet. Another rectangular garden has a length of 20.5 feet and a width of 12.4 feet. How many times greater is the area of the larger garden than the area of the smaller garden?

Find the GCF and LCM of the numbers using prime factorization.

110. 14, 21, 70

Evaluate the expression when $a = -5$, $b = 7$, $c = -2$, and $d = 3.2$.

111. $a^2 - b + (4.7 - d) - c$

Find the unit rate.

112. $\frac{\$18}{4 \text{ people}}$

Solve the following proportion problem.

113. You can walk 2 miles in 24 minutes. How long will it take you to walk 5 miles?
114. In the jazz band, 8 out of 24 students are in eighth grade. What percent of the students are not in eighth grade?

Use the following information. In a survey asking 1200 students what they did on winter vacation, the following results were found: 45% visited family and 270 had family visit them. The remainder of the students didn't see any family members outside of their immediate families.

115. How many students visited families?
116. Your bill at a restaurant comes to \$56. You want to leave a 15% tip. How much should you leave?

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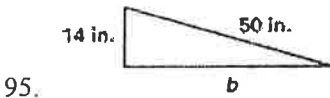
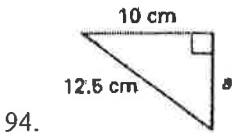
90. $3b^2 - 7 = 68$

91. $15 + c = -3$

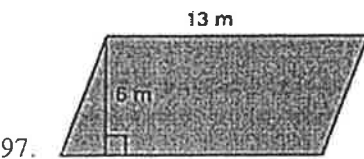
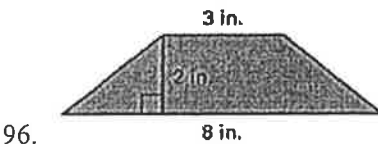
92. $\frac{3}{4}x = 12$

93. $4 + t^2 = 68$

Find the unknown length. (Hint: Pythagorean Theorem)
Round to the nearest tenth if necessary.



Find the area of the triangle, parallelogram, or trapezoid.



Find the circumference and the area of the circle with the given radius or diameter. Use 3.14 for π .

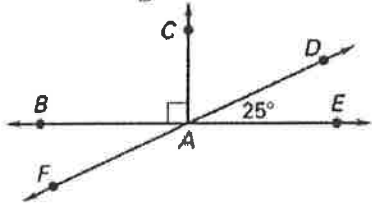
98. $r = 13$ m

99. $d = 10$ in.

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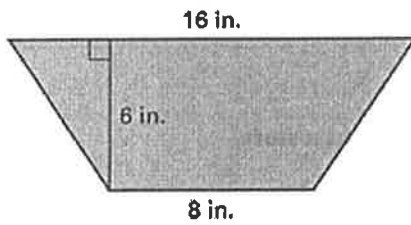
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Use the diagram below.



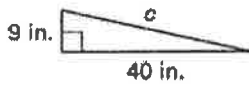
117. Name a pair of vertical angles.

Find the area of the figure.



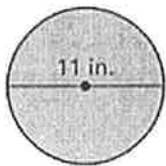
118.

Find the unknown length. (Hint: Pythagorean Theorem)



119.

Find the circumference and area of the circle. Use 3.14 for π .



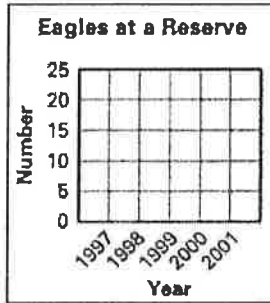
120.

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121. Make a line graph of the number of bald eagles at a national wildlife reserve.

Year	1997	1998	1999	2000	2001
Eagles	6	8	17	14	20



Use the data showing the amounts of money spent by 12 people at a store.

\$5, \$11, \$17, \$8, \$21, \$14, \$25, \$15, \$9, \$19, \$22, \$30

122. Make a box-and-whisker plot of the data.

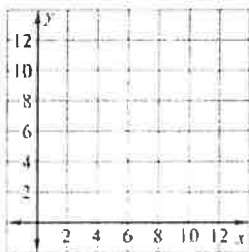
Solve the inequality. Then graph the solution.

123. $x - 4 > 15$

Write a function rule for the input-output table. Then graph the function.

124.

Input, x	1	2	3	4
Output, y	3	6	9	12

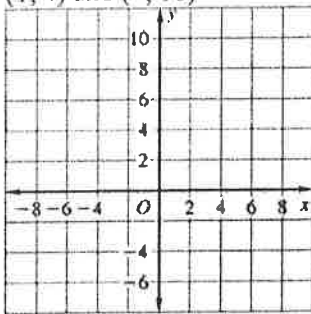


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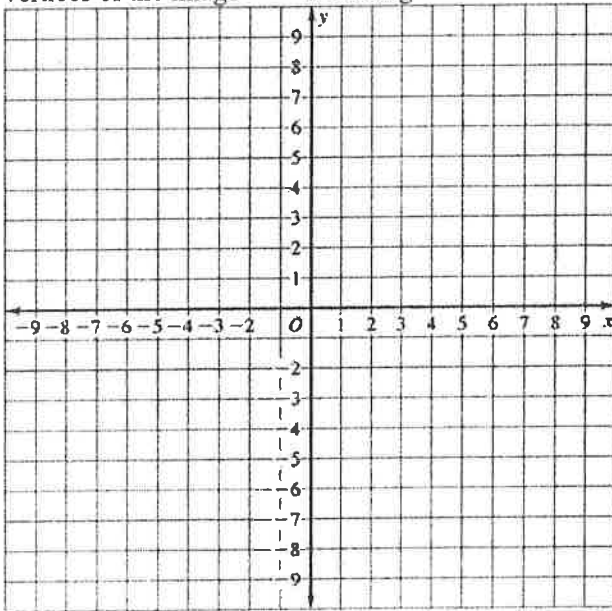
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Draw the graph of the line that passes through the two points. Then find the slope of the line.

125. (1, 4) and (4, 10)



126. Graph rectangle $FGHJ$ with vertices $F(-1, 3)$, $G(-1, 7)$, $H(4, 7)$, and $J(4, 3)$. Then find the coordinates of the vertices of the image after reflecting it in the x -axis. Then graph the image $F'G'H'J'$.



127. Susan owns a small business. There was a loss of \$11 on Monday and a profit of \$18 on Tuesday. On Wednesday, there was a loss of \$7 and on Thursday, there was a profit of \$8. Find the total profit or loss.

- a. \$13 loss
- b. \$8 profit
- c. \$44 profit
- d. \$18 profit

128. An elevator started on the 9th floor. It went down 4 floors, up 7 floors, up 8 floors, and up 8 floors. On what floor did the elevator finally stop?

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Find the product.

139. $-2(-16)$

140. $-7(3)(-1)$

Find the quotient.

141. $-272 \div (-8)$

142. A deep-sea diver must descend and ascend in short steps to equalize pressure on her body. If the diver rises toward the surface too quickly, she may suffer from a physical condition called "the bends." Suppose the diver descends to the bottom in three steps of 12 feet each. Write and simplify an expression to describe the diver's change in elevation.

Use the distributive property and mental math to find the product.

_____ 143. $7(6.1)$

- a. 427
b. 43.4

- c. 4.27
d. 42.7

144. $4(51)$

- _____ 145. Kaye runs a small business with three employees. She pays one employee \$2300 a month, another \$1700 a month, and the third \$1400 a month. How much does she pay her employees in a year?

- a. \$31,900
b. \$63,600

- c. \$30,700
d. \$64,800

Use the distributive property to write an equivalent variable expression.

_____ 146. $4(x + 3)$

- a. $4x + 12$
b. $4x - 12$

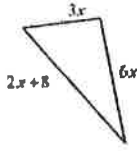
- c. $4x + 3$
d. $7x + 3$

147. $3(3 - 7x)$

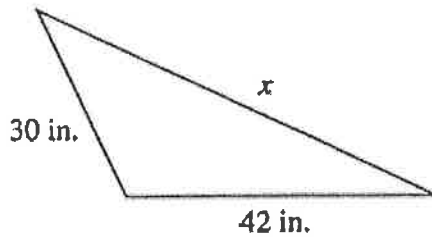
Name: _____

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156. Write and simplify an expression for the perimeter of the figure. (The figure may not be drawn to scale.)



157. The perimeter of the triangle is 131 inches. Write an equation to find the side length labeled x . Then solve the equation.



Solve the equation.

158. $14x = -728$

- a. $-\frac{1}{52}$
- b. $\frac{1}{52}$
- c. 52
- d. -52

159. $\frac{t}{3} = 9$

160. $7x = 182$

161. $\frac{e}{4} = 23$

162. $4x = 24$

163. $\frac{c}{24} = 19$

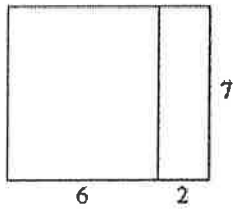
Name: _____

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148. Your club of 27 students is touring an Old-West town. How much money will be spent if all the students in the club go on the train ride and visit the museum?

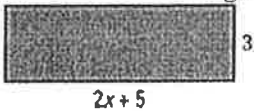
Admission Prices		
	Adult	Student
Museum	\$9	\$3
Train Ride	\$7	\$5

149. You and three friends go to a movie. The tickets cost \$5.50 each. You each buy a drink for \$2.50 and a box of popcorn for \$4.00. Write an expression that represents the total amount of money spent. Then evaluate the expression.
150. Write two expressions to describe the total area of the figure. Then find the area. (The figure may not be drawn to scale.)



151. $-4(x + 3)$

152. Consider the rectangle shown.



- a. Write an expression for the area of the rectangle.
b. Find the area for $x = 2$.

Identify the terms, like terms, coefficients, and constant terms. Then simplify the expression.

153. $3n - 13 - 5n + 6n$

Simplify the expression.

154. $7 - 7(5 + x) - 9x$

155. $4 + 10x + 5 - 9x$

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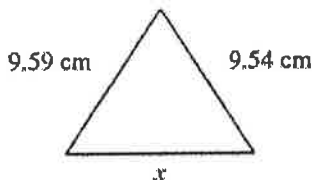
164. You receive \$68 for mowing lawns for 8 hours. What equation can you use to find how much you make per hour?
- a. none of these
 - b. $68x = 8$
 - c. $\frac{x}{8} = 68$
 - d. $8x = 68$

165. A person-hour is a unit of measure representing one person working for one hour. A construction foreman estimates that it will take 2880 person-hours to build a new library. If 12 workers are scheduled to work on the project at the same time, how many hours will it take to complete the project?

Solve the equation.

166. $1.87 = x + 11.04$

167. The perimeter of the figure is 28.01 centimeters. Find the value of x .



Solve the equation. Check your solution.

168. $-x + 6 = 8$

169. $-\frac{q}{4} + 3 = 18$

170. $\frac{t}{14} + 9 = 13$

171. $-\frac{w}{7} - 2 = 19$

172. The vice-president of a bank earns \$1635 per week. This is \$55 more than two times the weekly wage of a bank manager. Write an equation and a solution that show the weekly wage of a bank manager.
- a. $1635 = 2x + 55$; \$790
 - b. $1635 = 2x - 55$; \$845
 - c. $1635 = 55 - 2x$; \$780
 - d. none of these

81

13

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Solve the equation.

173. $2(2x - 3) = x + 7$

174. $3(x + 5) + 1 = 2(x + 5) + 4$

175. $x + 6 = 5(3x - 1)$

176. $11 - 2x = 5x - 12$

Write the verbal sentence as an equation. Then solve the equation.

177. Fifteen plus twice a number is equal to 3 times the number.

a. $15 + 2x = 3x; 15$

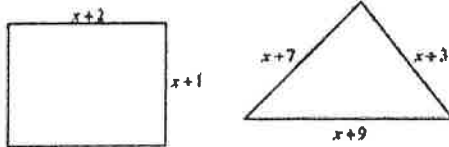
c. $15 = 2x + 3x; 3$

b. $15 + 3x = 2x; -1$

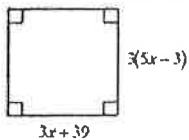
d. none of these

178. Eighteen minus 8 times a number is equal to -6 times the number.

179. Find the value of x so that the rectangle and the triangle have the same perimeter. What is the perimeter?

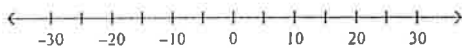


180. Find the value of x so that the figure is a square.



Solve the inequality. Then graph the solution.

181. $-4x + 10 > 2$



182. $7 - \frac{x}{5} < 27$