

Dear Future Honors Geometry Student,

Welcome to high school! May your high school career that you now face be filled with much fun and success.

To help you prepare for the challenge that lies before you, the following summer packet has been put together. This packet reviews material ranging from basic skills arithmetic to skills learned in Algebra 1.

You should complete this packet over the summer and bring it with you to the second geometry class next year. Do your work neatly on separate paper. Do not just list the answers! Show all work where necessary. You should be able to complete the basic arithmetic portion without the aid of a calculator. Most of the work in this packet is a review of what you should already know and we will not be spending a lot of time going over this material next year.

If you have difficulty doing this work, you need to re-evaluate whether you should stay in the honors section or whether you should change to the academic section. Your parents may wish to contact the guidance department or myself to discuss this.

You will need the following items for geometry: a three-ring binder notebook, colored pencils and/or highlighters and a scientific calculator. I find the TI-30 the easiest to use. At this level, a graphing calculator is not necessary, but will be in higher-level courses.

I strongly urge you to be fully competent when working with integer operations, fraction operations and divisibility rules. It has been my observation that many bright students waste time solving basic number computations on calculators when it is not necessary. This often leads students to “second-guessing” themselves.

If you have any questions or concerns, please feel free to contact me over the summer. You can email my Kingsway account (pelleritij@kingsway.k12.nj.us) or my personal account (jaketater2002@yahoo.com). I will be checking my Kingsway account some time in August and my personal account throughout the summer break.

Have a great summer! I am looking forward to having you in class next year!

Sincerely,

Mrs. Pelleriti

I. Simplify. Add, subtract, multiply, or divide. You should be able to complete this section without the use of a calculator.

Evaluate each absolute value.

1. $|-3|$

2. $|4|$

3. $|0|$

4. $|-5|$

Find each sum or difference.

5. $-4 - 5$

6. $7 + (-3)$

7. $3 - 5$

8. $-3 - (-9)$

9. $-4 - (-2)$

10. $-6 + 11$

11. $-4 + (-4)$

12. $2 - (-8)$

Evaluate each expression.

13. $|-4| - |6|$

14. $|-5 + 2|$

15. $|1| + |-2|$

16. $|-3 - 3|$

Find each product or quotient.

17. $-36 \div 9$

18. $-3(-7)$

19. $6(-4)$

20. $80 \div (-16)$

21. $-63 \div (-7)$

22. $-7(12)$

23. $44 \div (-4)$

24. $11(3)$

Add, subtract, multiply or divide.

25. $7.2 \div (-2.5)$

26. $-7 + (-2)$

27. $5.2 + (-2.5)$

28. $-1 - (-1)$

29. $-\frac{1}{3} + \left(-\frac{3}{4}\right)$

30. $\frac{-128}{-16}$

31. $-\frac{1}{4} \bullet 20$

32. $\frac{1}{2} - \left(-\frac{1}{2}\right)$

33. $8 - 9$

34. $8 - (-9)$

35. $-4.8 - 3.2$

36. $24 - 67$

37. $0 \div (-1)$

38. $-\frac{7}{12} \div \frac{2}{3}$

39. $7 \bullet 0 \bullet (-12)$

40. $(-4)(-4)(-4)$

II. Evaluate each expression. You should be able to complete this section without the use of a calculator.

Evaluate the expression.

41. $8^2 + (-6)^2$

42. $-4 \cdot 5 - 8 \div 2$

43. $\frac{2-9}{8-8^2}$

44. $18 \div [(4 - 7) + 5]$

Evaluate the expression when $x = -4$ and $y = 3$.

45. $xy \div (x + y)$

46. $x^2 - x + 5$

47. $\frac{x+2}{x-2}$

48. $\frac{1}{2}x^3$

Evaluate each expression if $a = 2$, $b = -3$, $c = -1$ and $d = 4$.

49. $2cd + 3ab$

50. $\frac{bd}{2c}$

51. $\frac{2d-a}{b}$

52. $3d - c$

Evaluate each expression if $x = 2$, $y = -3$ and $z = 1$.

53. $24 + |x - 4|$

54. $13 + |8 + y|$

55. $|5 - z| + 11$

III. These exercises are to reinforce your knowledge of the Cartesian Coordinate System.

Write the ordered pair for each point shown at the right.

56. B

57. C

58. D

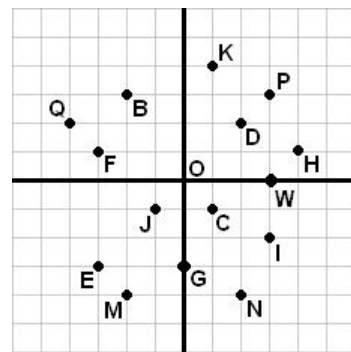
59. E

60. F

61. G

62. H

63. I



Name the quadrant in which each point is located.

64. $M(-1, 3)$

65. $S(2, 0)$

66. $R(-3, -2)$

67. $P(1, -4)$

68. $B(5, -1)$

69. $D(3, 4)$

70. $T(2, 5)$

71. $L(-4, -3)$

IV. Simplifying ratios and converting measurements.

Find the reciprocal of the number.

72. 12 73. -99 74. $\frac{1}{4}$ 75. $-\frac{5}{2}$

Simplify the ratio.

76. $\frac{48 \text{ miles}}{120 \text{ miles}}$ 77. $\frac{72 \text{ m}}{1.5 \text{ cm}}$ 78. $\frac{9 \text{ yards}}{15 \text{ feet}}$ 79. $\frac{12 \text{ ounces}}{2 \text{ pounds}}$

Find the ratio of girls to boys in a class, given the number of boys and the total number of students.

80. 15 boys, 28 students 81. 12 boys, 27 students

State which metric unit you would probably use to measure each item.

82. radius of a tennis ball 83. mass of a beach ball
84. amount of liquid in a cup 85. thickness of a penny

Complete each sentence.

86. 18 ft = ___ yd 87. 48 c = ___ gal 88. 3100 m = ___ km
89. 130 g = ___ kg

V. Set up and solve each proportion problem. Show all work.

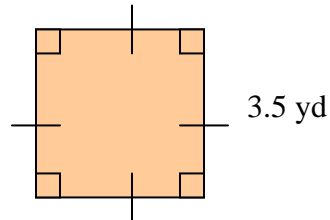
Solve. Express each ratio as a fraction reduced to lowest terms.

90. Pam has 3 red marbles and 5 blue ones. Write the ratio of red marbles to blue marbles.
91. Joan has 10 nickels and 12 dimes. Write the ratio of nickels to dimes.
92. The length of a rectangle is 27 centimeters and the width is 18 centimeters. Write the ratio of length to width.
93. The base of a parallelogram is 21 centimeters and the height is 14 centimeters. Write the ratio of the base to the height.
94. The perimeter of a rectangle is 28 km and the length is 4 km more than the width. Write the ratio of the length to the width.
95. Two numbers are in a ratio of 1 to 5. Their sum is 30. Find the numbers.

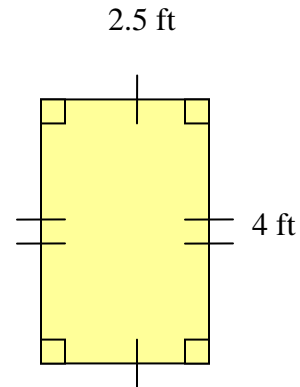
VI. Find the perimeter and area of each figure. Sketch a drawing and label properly. Show all of your work.

Find the perimeter and area of each figure.

96.



97.



98. a rectangle with length 7 meters and width 11 meters

99. a square office with length 12 feet

100. Jansen purchased a lot that was 121 feet in width and 360 feet in length. If he wants to build a fence around the entire lot, how many feet of fence does he need?

101. Leonardo's bedroom is 10 feet wide and 11 feet long. If the carpet store has a remnant whose area is 105 square feet, could it be used to cover his bedroom floor? Explain.

VII. Use the distributive property to rewrite each expression without parentheses and then simplify.

Use the distribute property to rewrite the expression without parentheses.

102. $y(y - 9)$ 103. $(j - 1)(-3)$ 104. $\frac{1}{2}(8n - 14)$ 105. $(3k + 5)(-k)$

106. $2r(s + t)$ 107. $(b + c - 1)6$ 108. $7(-x^2 + 3x - 2)$

109. $-\frac{2}{3}x(6x + 9y - 12)$

Simplify the expression.

110. $9k - 2(3k - 5) - 10$ 111. $3 - (2x - 7)$ 112. $3z + 6 - 3z - 7$
113. $\frac{1}{5}d + \frac{2}{7}d$ 114. $18g^3 + 9g^2 + g^3$ 115. $2(n + 8) + 3n(n - 5)$

Solve each equation.

116. $n + 7 = 35$ 117. $-\frac{m}{8} + 7 = 5$ 118. $c - 14 = -11$
119. $-3(d - 7) = 6$ 120. $9n + 4 = 5n + 18$ 121. $-\frac{t}{13} - 2 = 3$

VIII. Proportions

Solve each proportion for x .

$$122. \frac{x}{3} = \frac{5}{9}$$

$$123. \frac{x+2}{5} = \frac{x+3}{7}$$

$$124. \frac{3x-2}{5} = \frac{x+2}{3}$$

$$125. \frac{4x+3}{2x-3} = \frac{6x-5}{3x+2}$$

$$126. \frac{x+2}{3x-1} = \frac{3x+1}{5x+1}$$

$$127. \frac{x-3}{x-1} = \frac{x+3}{2x+3}$$

IX. Translate each phrase or sentence to an algebraic expression or equation.

Translate each sentence into an equation. Use n to represent the unknown number.

128. The sum of a number and 7 is 35.

129. Five is 6 less than twice a number.

130. The product of three times a number and twelve is twenty.

131. One-half of a number equals 16.

132. Ten more than a number is 62.

133. Ten times a number is 420.

X. Set up and solve each problem. Show all work.

Write an equation and solve.

134. One-half of a number is fifteen. Find the number.

135. The length of a rectangle is eight times the width. If the length is 24 inches, what is the width?

136. Three-fifths of the students in class are boys. If 21 of the students are boys, how many students are in the class?

137. If $\frac{2}{3}$ pound of coffee costs \$4.84, what does one pound cost?

XI. Write the equation that passes through the following pairs of points in slope-intercept form.

Write an equation in slope-intercept form of the line that passes through the given point and has the given slope.

138. $(1, -5), m = 2$

139. $(-9, 7), m = -1$

140. $(0, 16), m = 0$

Write an equation in slope-intercept form of the line that passes through the given points.

141. $(1, 3), (7, 4)$

142. $(2, 0), (-6, -5)$

143. $(-6, -7), (-5, 1)$

XII. Graph each equation. Identify the y-intercept and the slope.

Graph each equation.

144. $y = \frac{2}{3}x - 3$

145. $y = \frac{1}{2}x - 1$

146. $y = 2x - 2$

147. $-6x + y = 2$

148. $2y - x = -2$

149. $3x + 4y = -12$

150. $4x - 3y = 6$

151. $4x + y = 4$

152. $y = 2x - \frac{3}{2}$

XIII. Simplify each expression. The simplified expression should have no negative exponents.

153. $\left(\frac{1}{2}ab\right)^5$

154. $x^3 \cdot x \cdot x^3$

155. $2n^4 \cdot (3n)^2$

156. $(5ab^3)^2 \cdot (-7b^2c)$

157. $(rst)^0$

158. $\frac{(-3)^5}{-3^5}$

XIV. Simplify each radical expression. Show all work where necessary.

Find all square roots of the number or write "no square roots." Check the results by squaring each root.

159. 64

160. $\frac{7}{100}$

161. $\frac{49}{81}$

Simplify the expression. Give the exact value in simplified form.

162. $\sqrt{36+64}$

163. $\sqrt{(-1)^2+7^2}$

164. $\sqrt{16+16}$

Simplify the expression. Give the exact value in simplified form.

165. $-\sqrt{196}$

166. $\frac{5}{\sqrt{20}}$

167. $\sqrt{54}$

168. $\sqrt{12} \cdot \sqrt{6}$

169. $\frac{\sqrt{48}}{\sqrt{6}}$

170. $\frac{6}{\sqrt{2}}$

171. $\frac{\sqrt{6}}{\sqrt{96}}$

172. $\frac{\sqrt{147}}{\sqrt{3}}$

173. $\sqrt{56a^2b^4c^5}$

174. $\sqrt{75}$

175. $\sqrt{50} \cdot \sqrt{10}$

176. $\frac{\sqrt{10p^3}}{\sqrt{27}}$

XV. Find each product or quotient. Show all work where necessary.

Simplify.

177. $(4b+1)(2+b)$

178. $(5d+3)(d-2)$

179. $(3c+3)(c-1)$

Find the product by squaring the binomial.

180. $(x+2)^2$

181. $(x-1)^2$

182. $(15-x)^2$

Find each product.

183. $\left(\frac{3}{2}m^3n^2\right)^2$

184. $(5m)(4m^3)$

185. $\left(\frac{9}{2}c\right)(8c^5)$

186. $4m^2(-2m^2+7m-5)$

187. $(2ab^3)(4a^2b^2)$

188. $(-5wx^5)^3$

Find each quotient.

189. $\frac{b^2d^5}{8b^{-2}d^3}$

190. $\frac{5p^{-3}x}{2p^{-7}}$

191. $\left(\frac{w^4}{6}\right)^3$

192. $\left(\frac{-2y^2}{7}\right)^2$

193. $(t^2 - 7t + 12) \div (t - 3)$

194. $(c^2 + 3c - 54) \div (c + 9)$

XVI. Solve each formula for the indicated variable. Show all work.

Solve the formula for the indicated variable.

195. Volume of a pyramid: $V = \frac{1}{3}Bh$. Solve for h .

196. Area of a trapezoid: $A = \frac{1}{2}hb_1 + \frac{1}{2}hb_2$. Solve for h .

197. Surface area of a rectangular solid: $S = 2lw + 2lh + 2wh$. Solve for l .

XVII. Factor each polynomial and solve each equation by factoring.

Factor each polynomial

198. $w^2 + 4w$

199. $2g^2 + 24g$

200. $5t^2 - 30t$

201. $n^2 + 8n + 15$

202. $x^2 + 14x + 48$

203. $b^2 + 2b - 24$

204. $p^2 - 5p + 6$

205. $k^2 - 4k - 32$

206. $y^2 - 3y - 88$

207. $2y^2 + 9y - 5$

208. $3s^2 + 11s - 4$

209. $8a^2 + 15a - 2$

210. $c^2 - 64$

211. $b^2 + 18b + 81$

212. $4t^2 - 25$

Solve each equation by factoring.

213. $3x^2 + 15x = 0$

214. $w^2 - 8w + 12 = 0$

215. $z^2 - z - 42 = 0$

216. $3b^2 - 4b - 15 = 0$

217. $u^2 + 5u + \frac{25}{4} = 0$

218. $a^2 - 6a + 9 = 0$