

Name _____

School _____

Math Teacher _____

Geometry

Summer Packet

Port Charlotte High School

Many topics that we will study next year in your *Geometry* class build on topics that you have already learned in previous classes. Since many of you may have been away from these ideas for a period of time, you might need a refresher in order to be up to speed at the beginning of the course. We have chosen a selection of topics for you to cover during the summer. Please understand that they are not all the areas that we will expect you to know.

Do all work for these problems on a separate sheet of paper in PENCIL. Anything written on the packet will not be graded. Work for each problem must be in chronological order. Just an answer is not sufficient for most problems and will count as a wrong answer. If you are unfamiliar with a term or type of problem, refer back to your notes or go online to the various help sites for mathematics (see below). The skills covered are part of the foundation for your course. Mastery of these skills is assumed.

Have this work ready for the first day of class. This packet will be collected. You will be graded on the number of problems you completed. At the end of the first week, you will be tested on this review material.

NO CALCULATORS OF ANY KIND MAY BE USED IN THIS PACKET.

We look forward to working with you next year!

Free Online math help sites:

www.math.com/homeworkhelp/Algebra.html

<http://www.algebra-help.info/>

<http://www.algebrahelp.com/>

Graph the following geometric figures.

1. A square with vertices $W(-3,3)$, $X(-3,-1)$, $Y(1,3)$, and $Z(1,-1)$.
2. A polygon with vertices $J(4,2)$, $K(1, -1)$, $L(-2,2)$, and $M(1,5)$.
3. A triangle with vertices $F(2,4)$, $G(-3,2)$, and $H(-1,-3)$.
4. A rectangle with vertices $P(-2, -1)$, $Q(4, -1)$, $R(-2, 1)$, and $S(4, 1)$.

Find each sum or difference.

5. $-4-5$ 6. $-3+1$ 7. $-4-(-2)$

Find each product or quotient:

8. $-6(-3)$ 9. $44 \div (-4)$ 10. $-10(4)$

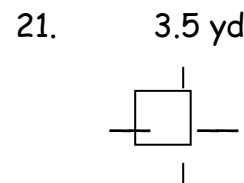
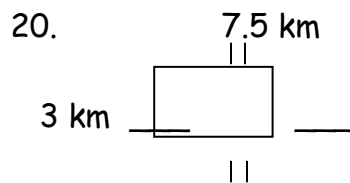
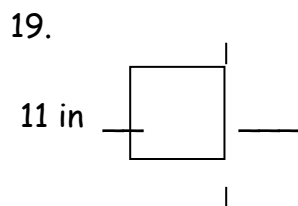
Evaluate each expression:

11. $|-4|-|6|$ 12. $|-5+2|$ 13. $-|3-7|$

Perform the following conversions:

14. 18 ft. = _____ yd.
15. 180 mm. = _____ m.
16. 5280 yd. = _____ mi.
17. 4 gal. = _____ qt.
18. 130 g. = _____ kg.

Find the perimeter and area of each figure:



22. A rectangle with length 7 meters and width 11 meters.
23. A square with length 4.5 inches.

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

24. $2a + c$

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

26. $\frac{3b}{5a + c}$

27. $5bc$

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

28. $24 + |x - 4|$

29. $13 + |8 + y|$

30. $|y| - 7$

31. $11 - 7 + |-x|$

Solve each equation:

32. $r + 11 = 3$

33. $\frac{8}{5}a = -6$

34. $\frac{12}{5}f = -18$

35. $c - 14 = -11$

36. $b + 2 = -5$

37. $5s = 30$

38. $\frac{m}{10} + 15 = 21$

39. $9n + 4 = 5n + 18$

40. $-2y + 17 = -13$

41. $9 - 4g = -15$

42. $-2(n + 7) = 15$

43. $\frac{7}{4}q - 2 = -5$

Find the slope of a line parallel to the graph of each equation.

44. $y = \frac{1}{2}x + 2.3$

45. $y = 6$

46. $3x + 4y = 12$

Write an equation for the line that is parallel to the given line and that passes through the given point.

47. $y = 6x - 2$ through $(0, 0)$

48. $y = -3x$ through $(3, 0)$

49. $y = 0.5x - 8$ through $(8, -5)$

50. $y = -\frac{7}{2}x + 6$ through $(-4, -6)$

Find the slope of a line perpendicular to the graph of each equation.

51. $y = 2x$

52. $y = -\frac{x}{5} - 7$

53. $2x + 3y = 5$

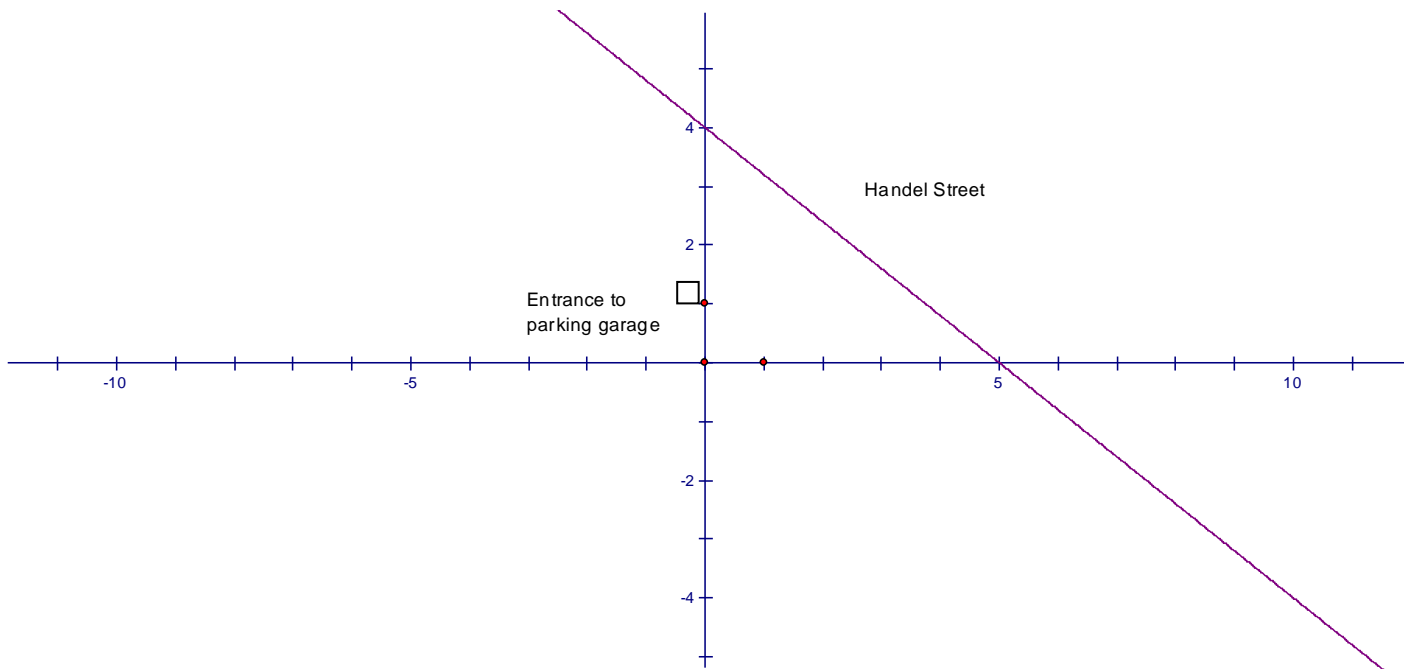
Write an equation for the line that is perpendicular to the given line and that passes through the given point.

54. $y = 2x + 7$ through $(0, 0)$

55. $y = -\frac{1}{3}x + 2$ through $(4, 2)$

56. $-10x + 8y = 3$ through $(15, 12)$

57. Maps: A city engineer is planning a new parking garage and a new street. The new street will go from the entrance of the parking garage (0,1) to Handel Street. It will be perpendicular to Handel Street. What is the equation of the line representing the new street?



Tell whether the lines for each pair of equations are *parallel*, *perpendicular* or *neither*.

58. $y = 4x + \frac{3}{4}$, $y = -\frac{1}{4}x + 4$

59. $y = -x + 5$, $y = x + 5$

60. $y = \frac{x}{3} - 4$, $y = \frac{1}{3}x + 2$

61.
$$\begin{cases} y = -\frac{1}{2}x + \frac{3}{2} \\ 5x - 10y = 15 \end{cases}$$

62. $4x - 3y = 36$, $3x + 4y = 20$

63.
$$\begin{cases} y = 4x + 12 \\ -4x + 3y = 21 \end{cases}$$

Simplify. All answers are to be in radical form.

64. $\sqrt{6} \cdot \sqrt{6}$

65. $\sqrt{16} \cdot \sqrt{25}$

66. $\sqrt{32}$

67. $\sqrt{75}$

68. $\sqrt{12} \cdot \sqrt{20}$

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

70. $\sqrt{\frac{81}{49}}$

71. $\sqrt{\frac{121}{16}}$

72. $\frac{16}{\sqrt{2}}$

73. $\frac{12}{\sqrt{3}}$

74. $\sqrt{\frac{63}{8}}$

75. $\sqrt{\frac{288}{147}}$

76. $\frac{3}{\sqrt{48}}$

77. $\frac{\sqrt{108}}{\sqrt{2q^6}}$

78. $\frac{\sqrt{24}}{\sqrt{125}}$

79. $\frac{10\sqrt{2}}{\sqrt{5}}$

Find each product.

80. $(3q^2)(q^5)$

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

82. $(2ab^3)(4a^2b^2)$

83. $-2q^2(q^2+3)$

84. $15c(-3c^2+2c+5)$

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

86. $(5d+3)(d-4)$

87. $(k^2l)^3(13k^2)^2$

88. $(x-3)(x+4)$

89. $(-5wx^5)^3$

90. $(2q+3)(5q+2)$

91. $(d+1)(d-1)$

92. $(s-2)^2$

93. $(2r-5)^2$

94. $(x+4)(x^2-5x-2)$

95. $(3b-2)(3b^2+b+1)$

Factor completely each polynomial.

96. u^2-12u

97. $2g^2+24g$

98. $z^2+10z+21$

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

100. $q^2-9q+18$

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

102. x^2-16

103. $w^2-\frac{9}{4}$

Solve each equation by factoring.

104. $10r^2-35r=0$

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

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

Find the distance between each pair of points.

107. $(7,-3), (-8,-3)$

108. $(-4,-4), (4,4)$

109. $(-2,7), (-2,-74)$

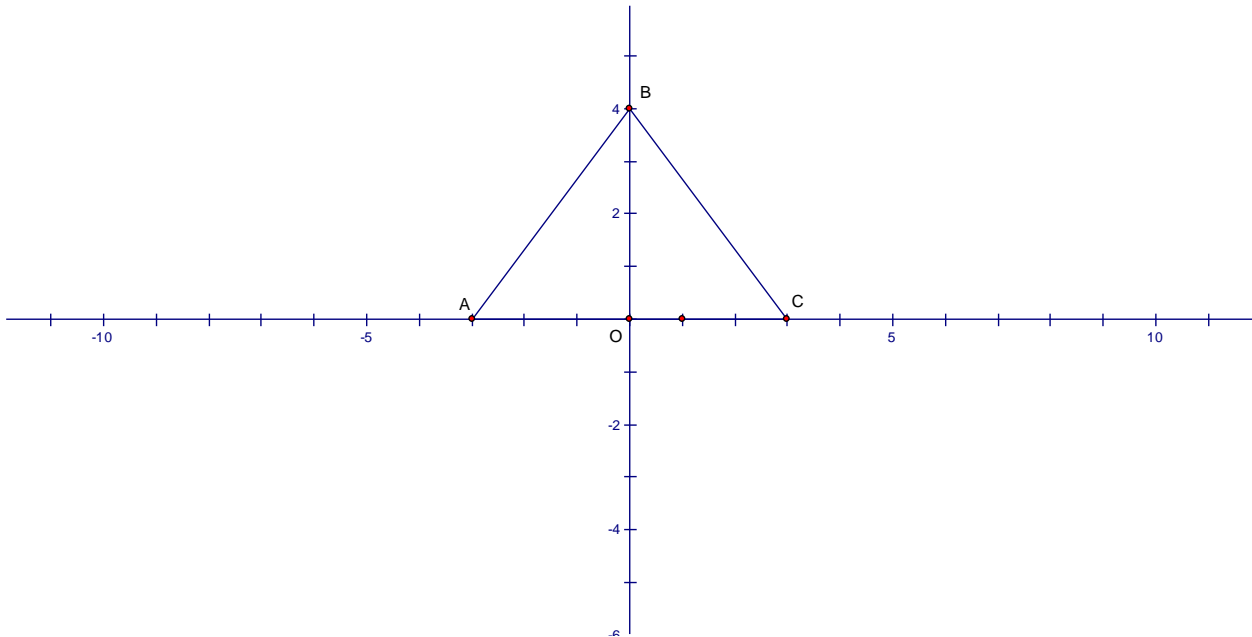
110. $(9,10), (11,12)$

111. $(0,0), (6,-8)$

112. $(3,-2), (-1,5)$

GEOMETRY: Find the perimeter of each figure.

113.



Find the midpoint of each segment with the given endpoints.

114. $A(2,5)$ and $B(0,7)$

115. $M(4,1)$ and $N(-4,-1)$

116. $C(12,-2)$ and $D(-2,-9)$

117. $A(2,5)$ and $B(0,7)$

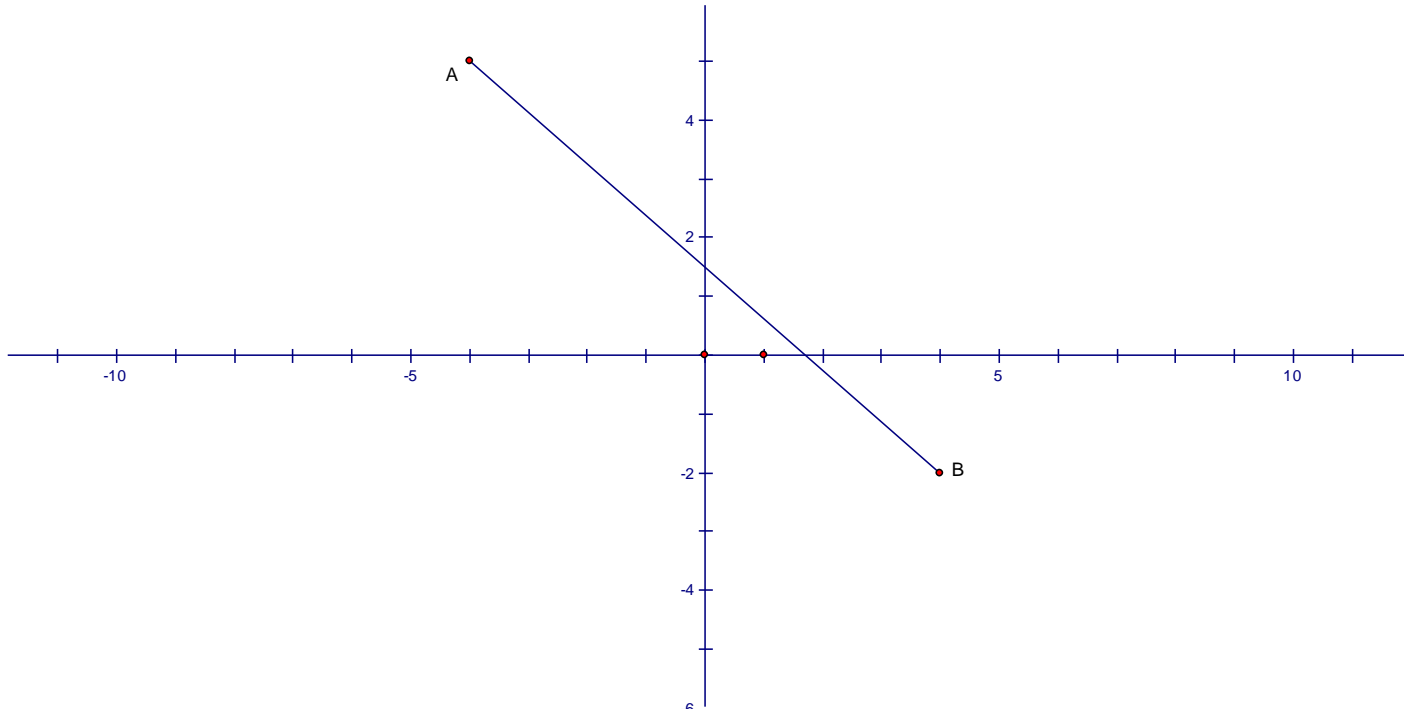
118. $R(5,3)$ and $S(-9,3)$

119. $P(0,6)$ and $Q(-5,-8)$

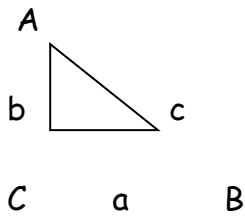
120. \overline{PQ} is a diameter of a circle. The coordinates of P are $(-1,8)$ and the coordinate of Q are $(-7,0)$. Find the center of the circle.

Find AB.

121.



Use the triangle below. Find the length of the missing side.



122. $a = 6, b = 8$

123. $a = 8, b = 15$

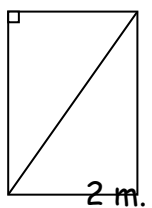
124. $a = 1.5, b = 2$

125. $a = 3, c = 5$

126. $a = 9, c = 15$

127. $a = 5, c = 9$

128. Packaging. Use the diagram provided. Find the width w that the box needs to be for the fishing rod to fit flat inside of it. The fishing rod will fill the diagonal.



129. A 16 foot ladder is placed 4 feet from the base of a building. How high on the building will the ladder reach?

Determine whether the given lengths can be sides of a right triangle.

130. 9 ft., 12 ft., 15 ft. 131. 1 in., 2 in., 3 in. 132. 2 m, 5 m., 5 m.

Find the slope of the line passing through the pairs of points below.

133. (-3,2) and (1,5) 134. (5,-2) and (5, 4) 135. (-1,3) and (4,3)

136. (-6.1, 4.5) and (0.5, -3.2) 137. $\left(\frac{1}{2}, \frac{2}{3}\right)$ and $\left(\frac{-3}{2}, \frac{1}{3}\right)$

Find an equation in slope-intercept form of the line passing through the pairs of points below.

138. (-2,3) and (5,1) 139. (3,-2) and (3, 4) 140. (-4,-5) and (1,2)

Graph the following equations using graph paper.

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

142. $y = x$

143. $3x - 4y = 12$

144. $y = -2$