

HONORS GEOMETRY/TRIGONOMETRY SUMMER MATH PACKET INFORMATION

Dear Honors Geo/Trig Student,

The Mathematics Department at Central Catholic High School would like to congratulate you on your placement into Honors Geometry/Trigonometry for the fall of 2022.

Honors Geo/Trig is a rigorous and demanding course. It is the second course in our Honors program following Honors Algebra I/II. In Honor Algebra I/II students review the latter topics of Algebra I followed by the first part of Algebra II. The Honors Geo/Trig course combines the rest of Algebra II with Geometry to prepare students for subsequent classes. A Texas Instrument graphing calculator (TI 83/TI 84 or higher) is required for this course and should be brought to class each day, starting the first day of school.

In the fall we will use the first week of school to review Algebra II material from the Honors Algebra I/II course. To help you prepare for this material, we have compiled a packet of review exercises. In the first week of school there will be an exam covering the summer packet, problems #1 - 121. You certainly do not need to do ALL of the problems, but you should be prepared to do similar problems on the first day of school - and take an exam soon after.

If you have any questions, please contact your Honors Geo/Trig teacher, Mr. Frank, via their school email at dfrank@centralcatholichigh.org.

Have a safe and relaxing summer. We look forward to seeing you in the fall.

Sincerely,

Kimberly Zoucha
Math Department Chair

Chapter 3

Cumulative Review

In Exercises 1–24, simplify.

1. $\sqrt{50}$

2. $\sqrt{45}$

3. $\sqrt{96}$

4. $\sqrt{192}$

5. $\sqrt{300}$

6. $-\sqrt{54}$

7. $-\sqrt{175}$

8. $-\sqrt{72}$

9. $\sqrt{\frac{5}{36}}$

10. $\sqrt{\frac{6}{49}}$

11. $\sqrt{\frac{3}{4}}$

12. $\sqrt{\frac{7}{9}}$

13. $\sqrt{\frac{1}{16}}$

14. $-\sqrt{\frac{4}{25}}$

15. $-\sqrt{\frac{7}{81}}$

16. $-\sqrt{\frac{5}{64}}$

17. $\sqrt{7+2}$

18. $\sqrt{-6+9-3}$

19. $\sqrt{15-11}$

20. $\sqrt{-13+22}$

21. $\sqrt{14+9-12}$

22. $\sqrt{16+4-10}$

23. $\sqrt{22+25+20}$

24. $\sqrt{-3-20+24}$

In Exercises 25–34, find the sum or difference.

25. $(-24x - 4) + (11 - 22x - 2)$

26. $(17 + 20x) - (-8x - 5)$

27. $(19x^2 + 12x + 5) + (-23 - 12x^2 + 10)$

28. $(x - 9) - (-x^2 - 19x + 6)$

29. $(18x + 2x - 21) + (13x + 8 - 11)$

30. $(-16x^2 - 14) - (21 - 25x - 15x^2)$

31. $(24x^3 + 23x - 7) + (18x - 7x^2 + 3x^3 + 16)$

32. $(21x^5 + 5x - 17) - (12x + 16x^2 - 4x^4 - 11 + 22x^5)$

33. $(9 + x^3 + 22x + 25) + (-15 + 10x^2 + 7x^3)$

34. $(-10x^4 - 19x^2 + 8x + 15x^3 + 3) - (-6x^2 - 20x^3 + 23 + 6x^2)$

35. After you get on the school bus, there are six additional stops before you reach school. The travel time between stops varies. The times (in minutes) between stops are 2.3, 1.4, 2.8, 1.7, 1.9, 2.1, and 3.4, respectively.

- Each stop is 0.8 minute long. How long does it take to reach school from where you get on the bus?
- Each stop is 0.9 minute long. How long does it take to reach school from where you get on the bus?
- The total time you are on the bus is 22.2 minutes. How long is each stop, if all the stops take an equal amount of time?

Chapter
3**Cumulative Review (continued)**

In Exercises 36–47, find the product.

36. $4(x^2 - 10x + 11)$

37. $-5(2x^2 - x - 3)$

38. $(x + 4)(x + 2)$

39. $(x - 1)(x - 2)$

40. $(5x + 10)(-4x + 9)$

41. $(3x^2 - 11)(2x - 7)$

42. $(12x + 2)(x^2 - 12x + 7)$

43. $(-5x^2 - 1)(-6x^2 + 8x - 3)$

44. $(-7x - 9)(12x^2 + 8x + 1)$

45. $(x^2 - 8x + 11)(x^2 + 4x - 9)$

46. $(-2x^2 + 12x + 1)(x^3 + 3x - 11)$

47. $(x^2 + 9x - 6)(6x^2 + 11x - 10)$

In Exercises 48–59, simplify the expression. Write your answer in standard form.

48. $4(x^2 + 7x + 3)$

49. $-5(2x^2 + 5x - 10)$

50. $(x + 12)(x + 4)$

51. $-8(x - 9)(x - 11)$

52. $3(x - 1)(x + 3)$

53. $-4(-4x + 7)(x + 1)$

54. $6(-2x - 11)(8x - 7)$

55. $2(x^2 + 10x - 11) + 12$

56. $(x + 4)(7x - 5) + 3$

57. $9(6x^2 + x + 4) - 5$

58. $(2x + 9)(-3x - 4) - 12x + 8$

59. $2(x + 7)(2x - 5) + 3x - 17$

60. During a school food drive, your class collects 137 nonperishable food items.

a. How many total items are collected Tuesday through Friday if you know there are 42 items collected on Monday?

b. Twenty-nine items are collected on Wednesday, and the number of items collected on each of the remaining three days is the same. How many items are collected on Thursday?

61. You walk your dog each night. To walk the same route and distance, it takes your sister 3 additional minutes and your brother 2 fewer minutes. If it takes you 9 minutes to walk your dog, how long does it take your brother and sister to walk the dog?

62. You are building a fence around a garden. The length is 5 feet more than the width.

a. The perimeter is 66 feet. What are the length and width of the fence?

b. Fence material is \$16 per linear foot. How much will the fence material cost?

c. Determine the area of the garden.

**Chapter
3****Cumulative Review (continued)**

In Exercises 63–77, solve the quadratic equation.

63. $x^2 - 3x - 28 = 0$

64. $x^2 - 5x + 6 = 0$

65. $x^2 - 2x - 63 = 0$

66. $2x^2 - 3x - 5 = 0$

67. $4x^2 + 21x + 27 = 0$

68. $5x^2 + 13x - 6 = 0$

69. $15x^2 - 11x - 14 = 0$

70. $8x^2 - 38x + 35 = 0$

71. $24x^2 + 2x - 1 = 0$

72. $84x^2 + 29x = 3$

73. $56x^2 + 18x = 8$

74. $80x^2 - 74x = 18$

75. $6x^2 = -67x + 60$

76. $35x - 50 = -22x^2$

77. $52x = 48 - 66x^2$

In Exercises 78–89, solve the equation for y .

78. $y - x = 9$

79. $x = 2y - 10$

80. $17 = 3x - y$

81. $2y + 8 = 4x$

82. $22x - 2y = 46$

83. $4y + 3x = 5$

84. $15 - 5y = -30x$

85. $-3y + 27 = -15x$

86. $\frac{1}{7}y = -2x + 3$

87. $\frac{1}{3}y + 8 = 2x$

88. $14 - \frac{1}{2}y = x$

89. $9x - \frac{1}{5}y = 4$

In Exercises 90–101, evaluate $b^2 - 4ac$ for the given values of a , b , and c .

90. $a = -4, b = 2, c = -7$

91. $a = 12, b = -2, c = 11$

92. $a = 8, b = -8, c = -12$

93. $a = -7, b = 12, c = 8$

94. $a = 6, b = -9, c = 1$

95. $a = 7, b = -5, c = -1$

96. $a = 9, b = 4, c = 1$

97. $a = 4, b = -10, c = 8$

98. $a = -12, b = 3, c = -6$

99. $a = 6, b = 10, c = 9$

100. $a = 6, b = 5, c = -2$

101. $a = 1, b = -6, c = 10$

102. You and your friend are playing basketball. Your friend makes 4 more baskets than you, and the total number of baskets you both make is 18.

a. Write an algebraic equation to represent the situation.

b. How many baskets does your friend make?

c. How many baskets do you make?

103. You travel 165 miles for 3 hours.

a. What is your traveling rate?

b. You travel at a rate of 5 miles per hour faster than the original rate. Now how long does it take you to travel 165 miles?

**Chapter
3****Cumulative Review** (continued)

In Exercises 104–112, solve the absolute value equation. Check for extraneous solutions.

104. $2|x - 1| = 18$

105. $\frac{1}{4}|x + 6| = 7$

106. $-3|x - 2| = -6$

107. $|x + 4| - 1 = 9$

108. $|x + 5| + 3 = 11$

109. $|8 - x| - 5 = 12$

110. $3|x - 4| + 5 = 6$

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

112. $-\frac{1}{4}|x + 1| - 3 = -2$

In Exercises 113–124, solve the system of linear equations.

113. $x - 2y = 13$

$3x + 2y = 15$

114. $2x + y = -10$

$x - 3y = 2$

115. $x + y = 9$

$-x - y = 7$

116. $x + 3y = -12$

$2x + 2y = 0$

117. $-2x + y = -16$

$2x - y = 16$

118. $-x - 4y = 23$

$-3x + y = -22$

119. $x - y + z = 13$

$x + y - z = -7$

$-2x + 2y + z = -8$

120. $x + y + z = 15$

$x + y + 2z = 13$

$-x + y - 2z = 3$

121. $-x + y - z = 3$

$2x - y + 3z = -7$

$x - 2y - 2z = -4$