St. Michael Catholic

Summer Honors Geometry Packet

Name_____

- Work all problems on clean sheets of notebook paper with a #2 pencil. No INK!

- Show work where indicated.

- Follow all directions to each set of problems.

- This work is independent work. However, you may enlist the help of a tutor on *concepts*, but not specific problems in this packet. Having someone help you with the specific problems in this packet will be considered cheating.

- You will submit this packet to your geometry teacher on the first day of class.

Solve each equation. Check your answer.

1. $-67 = -8n + 5$ 2. $22 = 7 - 3a$ 3. $2x + 23 = 49$

Write an equation to model each situation. Then solve.

4. The perimeter of a pool table is 30 ft. The table is twice as long as it is wide. What is the length of the pool table?

5. Victoria weighs five sevenths as much as Mario. Victoria weighs 125 lb. How much does Mario weigh?

Solve each equation. Check your answer.

6. $-6 - 3(2k+4) = 18$ 7. $-w + 4(w-3) = -12$ 8. $5(t-3) -2t = -30$

Write an equation to model each situation. Then solve. Check your answer.

9. The length of a rectangle is 4 in. greater than the width. The perimeter of the rectangle is 24 in. Find the dimensions of the rectangle.

10. The length of a rectangle is twice the width. The perimeter is 48 in. Find the dimensions of the rectangle.

11. The sum of four consecutive odd integers is 216. Find the four integers.

12. Each of two congruent sides of an isosceles triangle is 8 in. less than twice the base. The perimeter of the triangle is 74 in. What is the length of the base?

Solve each formula in terms of the given variable.

13. $2(j + k) = m$; k 14. $5d - 2g = 9$; g 15. $y = mx + b$; x

Use a proportion to solve.

16. You are riding your bicycle. It takes you 28 min to go 8 mi. If you continue traveling at the same rate, how long will it take you to go 15 mi?

17. A blueprint scale is 1 in.:12 ft. The width of a building is 48 ft. What is the width of the building on the blueprint?

Find the slope of the line that passes through each pair of points.

18. (0, 0), (3, 7)   19. (-2, 4), (4, -1)   20. (2, 4), (4, -4)   21. (-5, -2), (-5, 3)

Find the slope and *y*-intercept of each equation.

22. $y = -5x - 2$ 23. $y - 2x = -3$ 24. $y - 6 = -2x$

For each equation below, find the *x*- and *y*-intercepts.
25. $-2x + 3y = 6$ 26. $5x - 4y = -20$ 27. $y = -2.5$ 28. $x = 3$

Write each equation in standard form using integers. Standard form has the *x* and *y* terms on the left of the = symbol and the constant (numerical) term on the right. Example: 2x − 6y = 7.

29. $y = -2x - 3$ 30. $y = 5x - 32$

Write an equation in slope-intercept form for the line through the given points or through the given point with the given slope.

31. (-5, 13), (-10, 9)   32. (-2, 3); $m = -1$ 33. (0, -7); $m = -4$

34. (1, 2); m undefined   35. (7, 5); $m = 0$

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

36. $y = x + 1$ 37. $6x + 2y = 4$ 38. $x = -4$ 39. $y - 3 = 0$

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

40. (6, 4); $y = 3x - 2$ 41. (-5, 5); $y = -5x + 9$ 42. (12, -6); $y = 4x + 1$

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

43. $y = 3x - 8$ 44. $9x + 3y = 6$ 45. $y = -4$ 46. $x = 10$
    $3x - y = -1$ $3x + 9y = 6$ $y = 4$ $y = -2$

Solve each system using substitution. Each may have a unique solution, no solution, or infinite solutions. Show your work.

47. $-3x + 2y = -6$ 48. $4x = 6y + 24$
    $-2x + \ y = \ 6$ $2x - 3y = 12$

Solve by elimination. Show your work.

49. $3x + 8y = \ 81$ 50. $8x - 6y = -122$ 51. $8x - 2y = 58$
    $5x - 6y = \ -39$ $-4x + 6y = \ 94$ $-9x - \ y = \ \ 0$

Use a system of linear equations to solve.

52. Your teacher is giving you a test worth 100 points containing 40 questions. There are two-point and four-point questions on the test. How many of each type of question are on the test?

Simplify each expression.

53. 3×8^0 54. $(16)(2^{-2})$ 55. $(-9)^2$ 56. -9^2 57. -7^2

Simplify completely each expression.

58. $(3ad^4)(5d^8)^2$ 59. $(-8m^4)(4m^8)$ 60. $(2r^4s^3)^2(9rs^2)$

Simplify completely.

61. $(2x^2 + 3 - x) - (2 + 2x^2 - 5x)$ 62. $(x^3 + 3x) - (x^2 + 6 - 4x)$

63. $(3 + 5x^3 + 2x) - (x + 2x^2 + 4x^3)$ 64. $(2x + 3) - (x - 4) + (x + 2)$

Multiply and express each answer in simplest form.

65. $(3x + 5)(5x - 7)$ 66. $(x - 5)(2x^2 - 7x - 2)$ 67. $(4x - 7)(2x - 5)$

68. $(y^2 - 4w^2)^2$ 69. $(4a - 3y)^2$ 70. $(3y + 2a)(3y - 2a)$

Factor each expression.

71. $y^2 - 16y + 64$ 72. $n^2 + 10n + 25$ 73. $r^2 - 14r - 51$

74. $x^2 + 3x - 40$ 75. $15x^2 - 19x + 6$ 76. $8y^2 + 17y + 9$

77. $4r^2 - 25$ 78. $2x^3 + 40x^2 + 200x$ 79. $8x^3 - 32x$

80. A circular pond will be placed on a square piece of land. The length of a side of the square is $2x$. The radius of the pond is x. The part of the square not covered by the pond will be planted with flowers. What is the area of the region that will be planted with flowers? Write your answer in factored form.

Solve each equation.

81. $x^2 - 9x - 10 = 0$ 82. $2a^2 - 21a - 65 = 0$ 83. $x^2 + 6x - 91 = 0$

84. $5x^2 + 25 = 90$ 85. $2x^2 + 6 - x^2 = 9$ 86. $x^2 - 225 = 0$

Name_____

Did you enlist the help of a tutor?_____
If so, pledge that your tutor did not help you with individual
questions in this packet._____
_____

Name of your tutor:_____

Date you began work in this packet:_____

Date you completed the packet:_____

Pledge in full:_____
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