Algebra 2 Summer Preparation Packet

Week 1: Order of Operations & Properties of Real Numbers

1. 1. Simplify: 3 + 6 × (5 + 4) ÷ 3 - 7 (Q1)

- A. 8
- B. 11
- C. 12
- D. 10

2. 2. Which of the following is a rational number? (Q2)

- A. √2
- B. π
- C. 1/3
- D. √5

3. 3. What is the result of 2^3 × 2^2? (Q3)

- A. 2^5
- B. 2^6
- C. 10
- D. 32

4. 4. Which property is shown: a + b = b + a (Q4)

- A. Associative
- B. Commutative
- C. Distributive
- D. Identity

5. 5. Simplify: (12 ÷ 4) + 6 × 2 (Q5)

- A. 15
- B. 18
- C. 24

- D. 21

6. 6. Simplify: 3 + 6 × (5 + 4) ÷ 3 - 7 (Q6)

- A. 8
- B. 11
- C. 12
- D. 10

7. 7. Which of the following is a rational number? (Q7)

- A. √2
- B. π
- C. 1/3
- D. √5

8. 8. What is the result of 2^3 × 2^2? (Q8)

- A. 2^5
- B. 2^6
- C. 10
- D. 32

9. 9. Which property is shown: a + b = b + a (Q9)

- A. Associative
- B. Commutative
- C. Distributive
- D. Identity

10. 10. Simplify: (12 ÷ 4) + 6 × 2 (Q10)

- A. 15
- B. 18
- C. 24
- D. 21

11. 11. Simplify: 3 + 6 × (5 + 4) ÷ 3 - 7 (Q11)

- A. 8
- B. 11
- C. 12
- D. 10

12. 12. Which of the following is a rational number? (Q12)

- A. √2
- B. π
- C. 1/3
- D. √5

13. 13. What is the result of 2^3 × 2^2? (Q13)

- A. 2^5
- B. 2^6
- C. 10
- D. 32

14. 14. Which property is shown: a + b = b + a (Q14)

- A. Associative
- B. Commutative
- C. Distributive
- D. Identity

15. 15. Simplify: (12 ÷ 4) + 6 × 2 (Q15)

- A. 15
- B. 18
- C. 24
- D. 21

Week 2: Solving Linear Equations and Inequalities

16. 1. Solve: 2x - 5 = 9 (Q1)

- A. 6

- B. 7
- C. 5
- D. 4

17. 2. Solve: 3(x - 4) = 2x + 1 (Q2)

- A. 13
- B. 10
- C. 7
- D. 4

18. 3. Solve: -2x + 3 > 7 (Q3)

- A. x < -2
- B. x > -2
- C. x < 2
- D. x > 2

19. 4. Which is a solution to x/3 = 5? (Q4)

- A. 8
- B. 15
- C. 10
- D. 18

20. 5. What is the first step to solve: 5x + 2 = 17? (Q5)

- A. Add 2
- B. Multiply by 5
- C. Subtract 2
- D. Divide by 5

21. 6. Solve: 2x - 5 = 9 (Q6)

- A. 6
- B. 7
- C. 5

- D. 4

22. 7. Solve: 3(x - 4) = 2x + 1 (Q7)

- A. 13
- B. 10
- C. 7
- D. 4

23. 8. Solve: -2x + 3 > 7 (Q8)

- A. x < -2
- B. x > -2
- C. x < 2
- D. x > 2

24. 9. Which is a solution to x/3 = 5? (Q9)

- A. 8
- B. 15
- C. 10
- D. 18

25. 10. What is the first step to solve: 5x + 2 = 17? (Q10)

- A. Add 2
- B. Multiply by 5
- C. Subtract 2
- D. Divide by 5

26. 11. Solve: 2x - 5 = 9 (Q11)

- A. 6
- B. 7
- C. 5
- D. 4

27. 12. Solve: 3(x - 4) = 2x + 1 (Q12)

- A. 13
- B. 10
- C. 7
- D. 4

28. 13. Solve: -2x + 3 > 7 (Q13)

- A. x < -2
- B. x > -2
- C. x < 2
- D. x > 2

29. 14. Which is a solution to x/3 = 5? (Q14)

- A. 8
- B. 15
- C. 10
- D. 18

30. 15. What is the first step to solve: 5x + 2 = 17? (Q15)

- A. Add 2
- B. Multiply by 5
- C. Subtract 2
- D. Divide by 5

Week 3: Coordinate Plane & Linear Functions

31. 1. What is the slope of a line that passes through (2,3) and (4,7)? (Q1)

- A. 1
- B. 2
- C. 4
- D. 5

32. 2. Which point lies on the line y = 2x - 1? (Q2)

- A. (1,1)

- B. (0,-1)
- C. (2,3)
- D. (3,5)

33. 3. What is the y-intercept of y = -3x + 4? (Q3)

- A. -3
- B. 3
- C. 4
- D. -4

34. 4. Find the slope of a horizontal line. (Q4)

- A. 0
- B. 1
- C. Undefined
- D. Not enough info

35. 5. Which equation is in slope-intercept form? (Q5)

- A. y - 2 = 3(x + 1)
- B. 3x + 2y = 6
- C. y = 3x - 5
- D. x = 2y + 1

36. 6. What is the slope of a line that passes through (2,3) and (4,7)? (Q6)

- A. 1
- B. 2
- C. 4
- D. 5

37. 7. Which point lies on the line y = 2x - 1? (Q7)

- A. (1,1)
- B. (0,-1)
- C. (2,3)

- D. (3,5)

38. 8. What is the y-intercept of y = -3x + 4? (Q8)

- A. -3
- B. 3
- C. 4
- D. -4

39. 9. Find the slope of a horizontal line. (Q9)

- A. 0
- B. 1
- C. Undefined
- D. Not enough info

40. 10. Which equation is in slope-intercept form? (Q10)

- A. y - 2 = 3(x + 1)
- B. 3x + 2y = 6
- C. y = 3x - 5
- D. x = 2y + 1

41. 11. What is the slope of a line that passes through (2,3) and (4,7)? (Q11)

- A. 1
- B. 2
- C. 4
- D. 5

42. 12. Which point lies on the line y = 2x - 1? (Q12)

- A. (1,1)
- B. (0,-1)
- C. (2,3)
- D. (3,5)

43. 13. What is the y-intercept of y = -3x + 4? (Q13)

- A. -3
- B. 3
- C. 4
- D. -4

44. 14. Find the slope of a horizontal line. (Q14)

- A. 0
- B. 1
- C. Undefined
- D. Not enough info

45. 15. Which equation is in slope-intercept form? (Q15)

- A. $y - 2 = 3(x + 1)$
- B. $3x + 2y = 6$
- C. $y = 3x - 5$
- D. $x = 2y + 1$

Week 4: Systems of Linear Equations

46. 1. Solve by substitution: $y = 2x$, $3x + y = 12$ (Q1)

- A. (2,4)
- B. (3,6)
- C. (4,8)
- D. (1,2)

47. 2. What is the solution to the system: $x + y = 5$ and $x - y = 1$? (Q2)

- A. (3,2)
- B. (2,3)
- C. (4,1)
- D. (5,0)

48. 3. Which method is best for solving: $x + y = 10$, $x - y = 2$? (Q3)

- A. Graphing

- B. Substitution
- C. Elimination
- D. Guess and check

49. 4. If two lines are parallel, what is their solution? (Q4)

- A. One point
- B. Infinite solutions
- C. No solution
- D. (0,0)

50. 5. What does it mean if two equations graph as the same line? (Q5)

- A. No solution
- B. One solution
- C. Infinite solutions
- D. Undefined

51. 6. Solve by substitution: y = 2x, 3x + y = 12 (Q6)

- A. (2,4)
- B. (3,6)
- C. (4,8)
- D. (1,2)

52. 7. What is the solution to the system: x + y = 5 and x - y = 1? (Q7)

- A. (3,2)
- B. (2,3)
- C. (4,1)
- D. (5,0)

53. 8. Which method is best for solving: x + y = 10, x - y = 2? (Q8)

- A. Graphing
- B. Substitution
- C. Elimination

- D. Guess and check

54. 9. If two lines are parallel, what is their solution? (Q9)

- A. One point
- B. Infinite solutions
- C. No solution
- D. (0,0)

55. 10. What does it mean if two equations graph as the same line? (Q10)

- A. No solution
- B. One solution
- C. Infinite solutions
- D. Undefined

56. 11. Solve by substitution: $y = 2x$, $3x + y = 12$ (Q11)

- A. (2,4)
- B. (3,6)
- C. (4,8)
- D. (1,2)

57. 12. What is the solution to the system: $x + y = 5$ and $x - y = 1$? (Q12)

- A. (3,2)
- B. (2,3)
- C. (4,1)
- D. (5,0)

58. 13. Which method is best for solving: $x + y = 10$, $x - y = 2$? (Q13)

- A. Graphing
- B. Substitution
- C. Elimination
- D. Guess and check

59. 14. If two lines are parallel, what is their solution? (Q14)

- A. One point
- B. Infinite solutions
- C. No solution
- D. (0,0)

60. 15. What does it mean if two equations graph as the same line? (Q15)

- A. No solution
- B. One solution
- C. Infinite solutions
- D. Undefined

Week 5: Exponents and Powers

61. 1. Simplify: (2^3)^2 (Q1)

- A. 2^5
- B. 2^6
- C. 8^2
- D. 64

62. 2. What is the result of 3^0? (Q2)

- A. 0
- B. 1
- C. 3
- D. Undefined

63. 3. Simplify: x^3 × x^4 (Q3)

- A. x^7
- B. x^12
- C. x^1
- D. x^0

64. 4. What is the reciprocal of 2^3? (Q4)

- A. 2^-3

- B. 1/8
- C. 8
- D. -8

65. 5. Simplify: (a^2b)^3 (Q5)
- A. a^6b^3
- B. a^5b^3
- C. a^3b^6
- D. a^2b^2

66. 6. Simplify: (2^3)^2 (Q6)
- A. 2^5
- B. 2^6
- C. 8^2
- D. 64

67. 7. What is the result of 3^0? (Q7)
- A. 0
- B. 1
- C. 3
- D. Undefined

68. 8. Simplify: x^3 × x^4 (Q8)
- A. x^7
- B. x^12
- C. x^1
- D. x^0

69. 9. What is the reciprocal of 2^3? (Q9)
- A. 2^-3
- B. 1/8
- C. 8

- D. -8

70. 10. Simplify: (a^2b)^3 (Q10)

- A. a^6b^3
- B. a^5b^3
- C. a^3b^6
- D. a^2b^2

71. 11. Simplify: (2^3)^2 (Q11)

- A. 2^5
- B. 2^6
- C. 8^2
- D. 64

72. 12. What is the result of 3^0? (Q12)

- A. 0
- B. 1
- C. 3
- D. Undefined

73. 13. Simplify: x^3 × x^4 (Q13)

- A. x^7
- B. x^12
- C. x^1
- D. x^0

74. 14. What is the reciprocal of 2^3? (Q14)

- A. 2^-3
- B. 1/8
- C. 8
- D. -8

75. 15. Simplify: (a^2b)^3 (Q15)

- A. a^6b^3
- B. a^5b^3
- C. a^3b^6
- D. a^2b^2

Week 6: Factoring Review

76. 1. Factor: x^2 + 5x + 6 (Q1)

- A. (x+3)(x+2)
- B. (x+6)(x-1)
- C. (x+2)(x-4)
- D. Prime

77. 2. Factor: x^2 - 9 (Q2)

- A. (x+3)^2
- B. (x-3)(x+3)
- C. (x-9)(x+1)
- D. Prime

78. 3. Factor: 3x^2 + 6x (Q3)

- A. 3x(x+2)
- B. x(3x+6)
- C. (x+3)(x+2)
- D. Prime

79. 4. Factor: x^2 + 4x + 4 (Q4)

- A. (x+2)(x+2)
- B. (x+4)(x+1)
- C. (x+3)^2
- D. Prime

80. 5. Factor: x^2 + 2x - 8 (Q5)

- A. (x-2)(x+4)

- B. (x+2)(x-4)
- C. (x-4)^2
- D. Prime

81. 6. Factor: x^2 + 5x + 6 (Q6)

- A. (x+3)(x+2)
- B. (x+6)(x-1)
- C. (x+2)(x-4)
- D. Prime

82. 7. Factor: x^2 - 9 (Q7)

- A. (x+3)^2
- B. (x-3)(x+3)
- C. (x-9)(x+1)
- D. Prime

83. 8. Factor: 3x^2 + 6x (Q8)

- A. 3x(x+2)
- B. x(3x+6)
- C. (x+3)(x+2)
- D. Prime

84. 9. Factor: x^2 + 4x + 4 (Q9)

- A. (x+2)(x+2)
- B. (x+4)(x+1)
- C. (x+3)^2
- D. Prime

85. 10. Factor: x^2 + 2x - 8 (Q10)

- A. (x-2)(x+4)
- B. (x+2)(x-4)
- C. (x-4)^2

- D. Prime

86. 11. Factor: x^2 + 5x + 6 (Q11)

- A. (x+3)(x+2)
- B. (x+6)(x-1)
- C. (x+2)(x-4)
- D. Prime

87. 12. Factor: x^2 - 9 (Q12)

- A. (x+3)^2
- B. (x-3)(x+3)
- C. (x-9)(x+1)
- D. Prime

88. 13. Factor: 3x^2 + 6x (Q13)

- A. 3x(x+2)
- B. x(3x+6)
- C. (x+3)(x+2)
- D. Prime

89. 14. Factor: x^2 + 4x + 4 (Q14)

- A. (x+2)(x+2)
- B. (x+4)(x+1)
- C. (x+3)^2
- D. Prime

90. 15. Factor: x^2 + 2x - 8 (Q15)

- A. (x-2)(x+4)
- B. (x+2)(x-4)
- C. (x-4)^2
- D. Prime

Week 7: Intro to Quadratic Equations

91. 1. What is the vertex of y = (x-2)^2 + 3? (Q1)

- A. (2,3)
- B. (-2,3)
- C. (3,2)
- D. (0,0)

92. 2. Solve: x^2 - 9 = 0 (Q2)

- A. ±3
- B. ±9
- C. 3
- D. -3

93. 3. Which is a quadratic function? (Q3)

- A. y = 2x + 1
- B. y = x^2 - 4x + 3
- C. y = √x
- D. y = 1/x

94. 4. Find the axis of symmetry for y = x^2 + 6x + 5 (Q4)

- A. x = -3
- B. x = 3
- C. x = -6
- D. x = 0

95. 5. If y = x^2 - 4, what is the value when x = -2? (Q5)

- A. 0
- B. 4
- C. -4
- D. -8

96. 6. What is the vertex of y = (x-2)^2 + 3? (Q6)

- A. (2,3)
- B. (-2,3)
- C. (3,2)
- D. (0,0)

97. 7. Solve: x^2 - 9 = 0 (Q7)

- A. ±3
- B. ±9
- C. 3
- D. -3

98. 8. Which is a quadratic function? (Q8)

- A. y = 2x + 1
- B. y = x^2 - 4x + 3
- C. y = √x
- D. y = 1/x

99. 9. Find the axis of symmetry for y = x^2 + 6x + 5 (Q9)

- A. x = -3
- B. x = 3
- C. x = -6
- D. x = 0

100.10. If y = x^2 - 4, what is the value when x = -2? (Q10)

- A. 0
- B. 4
- C. -4
- D. -8

101.11. What is the vertex of y = (x-2)^2 + 3? (Q11)

- A. (2,3)
- B. (-2,3)

- C. (3,2)
- D. (0,0)

102.12. Solve: x^2 - 9 = 0 (Q12)

- A. ±3
- B. ±9
- C. 3
- D. -3

103.13. Which is a quadratic function? (Q13)

- A. y = 2x + 1
- B. y = x^2 - 4x + 3
- C. y = √x
- D. y = 1/x

104.14. Find the axis of symmetry for y = x^2 + 6x + 5 (Q14)

- A. x = -3
- B. x = 3
- C. x = -6
- D. x = 0

105.15. If y = x^2 - 4, what is the value when x = -2? (Q15)

- A. 0
- B. 4
- C. -4
- D. -8

Week 8: Word Problems & Mixed Review

106.1. A movie ticket costs $10. How much for 5 tickets? (Q1)

- A. $50
- B. $15
- C. $10

- D. $5

107.2. If a car travels 60 miles in 2 hours, what is its speed? (Q2)

- A. 30 mph
- B. 60 mph
- C. 120 mph
- D. 90 mph

108.3. Which is the solution to x + 3 = 7? (Q3)

- A. x = 10
- B. x = 3
- C. x = 4
- D. x = 7

109.4. Simplify: 2(x + 3) = ? (Q4)

- A. 2x + 3
- B. 2x + 6
- C. x + 6
- D. 2x + 9

110.5. Factor: x^2 - 1 (Q5)

- A. (x+1)^2
- B. (x+1)(x-1)
- C. x(x-1)
- D. Prime

111.6. A movie ticket costs $10. How much for 5 tickets? (Q6)

- A. $50
- B. $15
- C. $10
- D. $5

112.7. If a car travels 60 miles in 2 hours, what is its speed? (Q7)

- A. 30 mph
- B. 60 mph
- C. 120 mph
- D. 90 mph

113.8. Which is the solution to x + 3 = 7? (Q8)

- A. x = 10
- B. x = 3
- C. x = 4
- D. x = 7

114.9. Simplify: 2(x + 3) = ? (Q9)

- A. 2x + 3
- B. 2x + 6
- C. x + 6
- D. 2x + 9

115.10. Factor: x^2 - 1 (Q10)

- A. (x+1)^2
- B. (x+1)(x-1)
- C. x(x-1)
- D. Prime

116.11. A movie ticket costs $10. How much for 5 tickets? (Q11)

- A. $50
- B. $15
- C. $10
- D. $5

117.12. If a car travels 60 miles in 2 hours, what is its speed? (Q12)

- A. 30 mph
- B. 60 mph

- C. 120 mph
- D. 90 mph

118.13. Which is the solution to x + 3 = 7? (Q13)

- A. x = 10
- B. x = 3
- C. x = 4
- D. x = 7

119.14. Simplify: 2(x + 3) = ? (Q14)

- A. 2x + 3
- B. 2x + 6
- C. x + 6
- D. 2x + 9

120.15. Factor: x^2 - 1 (Q15)

- A. (x+1)^2
- B. (x+1)(x-1)
- C. x(x-1)
- D. Prime