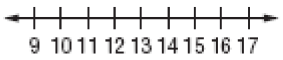
Name: _____ **Date:** _____ **Period:** _____

Algebra 1 Spring Semester Final Review

Short Answer

1. Solve $x - 12 > 1$. Then graph your solution on a number line.



2. $7 + z < 3$

3. $4x - 5 < 2x + 11$

4. $5(p + 2) - 2(p - 1) \geq 7p + 4$

5. $|3 - 2x| \geq 1$

6. $3y^5 \cdot y^3$

7. $(9m^3n^5)(-2mn^2)$

8. $(w^5y^4)^3$

9. $\dfrac{16r^3s^{-5}}{4r^{-1}s^2}$

10. $\dfrac{\left(-8x^2y^2\right)^2}{\left(4x^3y\right)^3}$

11. Find the degree of the polynomial $2x^3y^3 + 4xy - 10x^3y$.

12. Arrange the terms of the polynomial $4 + 3x^3y^3 - x^5y + xy$ so that the powers of x are in descending order.

13. $(5n^2 - 2ny + 3y^2) - (9n^2 - 8ny - 10y^2)$

14. $(11m^2 - 2mn + 8n^2) + (8m^2 + 4mn - 2n^2)$

15. $(x^2 + 5y) - (2x^2 + 6y)$

16. $5hk^2(2h^2k - hk^3 + 4h^2k^2)$

17. $(4x^2 + 2y^2)(2x^2 - y^2)$

18. $(3s + 5)(2s^2 - 8s + 6)$

19. $(5c - 4)^2$

Find the GCF of each set of monomials.

20. $12x^3y^2$, $44xy^3$

Factor each polynomial.

21. $35a^3bc^2 - 45a^2b^2c$

22. $t^2 - 11t + 24$

23. $n^2 + n - 42$

Factor each polynomial, if possible. If the polynomial cannot be factored, write *prime*.

24. $10y^2 - 31y + 15$

25. $36m^2 - 49$

26. $49w^2 - 25 = 0$

27. $m^2 + 12m - 28$

28. $5t^2 + 17t - 12$

29. $6p^2 - 20p + 16$

30. $49a^2 - 169$

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Use a table of values to graph each function.

31. $y = -x^2 + 3x + 10$

32. $y = 2x^2 - 3x$

Solve each equation by using the Quadratic Formula.

33. $15n^2 - 3 = 4n$

34. $r^2 + 16r + 21 = 0$

State the value of the discriminant for each equation. Then determine the number of real roots of the equation.

35. $7m^2 + 8m = 3$

36. $4p^2 = 4p - 1$

37. Write the equation of the axis of symmetry, and find the coordinates of the vertex of the graph of $y = -2x^2 + 4x - 5$. Identify the vertex as a maximum or a minimum.

Graph each system of equations. Then determine whether the system has *no* solution, *one* solution, or *infinitely many* solutions. If the system has one solution, name it.

38. $y = -x + 4$
$y = x \ \ 4$

39. $2x - y = -3$
$6x - 3y = -9$

Use substitution to solve each system of equations.

40. $y = 3x$
$x + y = 4$

Use elimination to solve each system of equations.

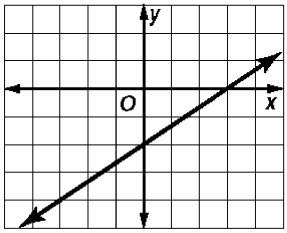
41. $x + 4y = -8$
$x - 4y = -8$

Find the slope of the line passing through each pair of points. If the slope is undefined, write "undefined."

42. (2, 5) and (3, 6)

43. (–1, 3) and (6, 3)

44. Write the slope-intercept form of an equation for the line graphed below.

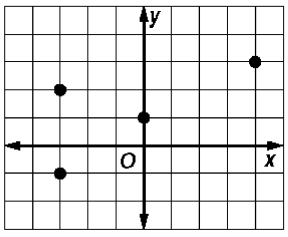


45. Graph the line with a y-intercept of 3 and slope $-\frac{3}{4}$.

46. Write an equation in slope-intercept form for the line that passes through (–1, –2) and (3, 4).

47. Write an equation in standard form for the line that has an undefined slope and passes through (–6, 4).

Use the graph.



48. What is the domain of the relation?

49. What is the range of the relation?

50. Write the inverse of the relation.

51. Express the relation {(1, 4), (–2, 3), (–5, 0), (7, 4), (3, 2)} as a mapping.

52. Find the x-intercept of $x - 2y = 9$.

Solve each equation.

53. $12 + r = 3$

54. $-12 = p - 7$

55. $31 = -\frac{n}{6}$

56. $\frac{9}{25} = \frac{p}{125}$

57. $-3a + 4 = -14$

58. Solve the proportion $\frac{x}{6} = \frac{2}{9}$.

Solve each equation.

59. $5n + 7 = 7(n + 1) - 2n$

60. $-4(p + 2) + 8 = 2(p - 1) - 7p + 15$

Solve each equation.

61. $-\frac{7}{9}y = -6$

62. $\frac{10}{27} = \frac{a}{135}$

Solve each equation.

63. $9 - t = t + 3$

64. $2(y - 6) = 3y + 12 - y$

65. $17 + 3(z - 2) - 11z = -7(z + 2) + 14$

66. Evaluate $3w + (8 - v)t$ if $w = 4$, $v = 5$ and $t = 2$.

67. Evaluate $4(5 \bullet 1 \div 20)$. Name the property used in each step.

68. $7(2y + 1) + 3y$

Write an algebraic expression for each verbal expression.

69. the sum of one-third of a number and 27

70. the product of a number squared and 4

71. Evaluate $4w + (v - 5)t$ if $w = 2$, $v = 8$, and $t = 4$.

72. Solve $\frac{6 + 4^2 \bullet 3}{10 - 1} = y$.

73. Evaluate $6(6 \bullet 1 \div 36)$. Name the property used in each step.