ALGEBRA 1 EXEMPTION TEST REVIEW

(No Specified Time Allotment)

1. Simplify: $24 - [63 \div (6 + 3)]$

2. A train went 210 miles further than a bus. The train went four times further than the bus. How far did each vehicle travel?

3. Identify the property: $(-3)(5) = (5)(-3)$

4. Simplify: $-(r - 4) - (-r)$

5. Simplify: $-7(-2a + b) - (-3b)$

6. Simplify: $(-\frac{1}{2})(-72)(-\frac{t}{9})$

7. Evaluate $-x + y + (-3)$, if $x = -2$ and $y = -4$.

8. Solve: $4(a + 2) = 14 - 2(3 - 2a)$

9. Solve: $\frac{6 - 4y}{2} = y$

10. Find a number whose product with 10 is the same as its sum with 45.

11. Which <u>one</u> of the following is true? _____
    a. $x^3 + x^3 + x^3 = x^9$
    b. $(4x^2y^3)^2 = 16x^4y^6$
    c. $(5x^4)(2x^2) = 10x^8$
    d. $3x^2y + 6xy^2 = 9x^3y^3$
    e. $(3y^2)(2x^3) = (6xy)^3$

12. Simplify: $(2a^2 - 6a - 9) - (3a^2 - 2a + 5)$

13. Simplify: $(6y^4)(3y^2) - (2y^3)(7y^3) =$

14. Simplify: $(2x - 7)(3x + 2)$

15. Simplify: $(x + 7)^2$

16. Solve for m: $H = 2r + 3m$

17. Two jets leave Marble Airport at 3pm, one traveling east and the other traveling west. The westbound jet averages 625 km/h and the eastbound jet averages 825 km/h. At what time will the jets be 725 km apart?

18. Solve: $5x(2x - 1) - 14 = 2x(5x + 6) + 3$

19. Simplify: $\frac{-70de^7}{-7de}$

20. Simplify: $\frac{24n^3 - 12n^2 + 15n}{3n}$

Factor #21 – 25 completely.

21. $5ax^2 + 5ay^2$

22. $25x^2 - 9$

23. $2x^3 + 16x^2 + 24x$

24. $6x^2 + 25x + 21$

25. $49n^2 - 14n + 1$

26. Solve: $x(x - 7)(3x - 5) = 0$

27. Simplify: $\frac{x^2 - 10x + 21}{x^2 - 4x - 21}$

28. Simplify: $\frac{6r^3t^2}{5rt^3} \bullet \frac{10rt^2}{r^2t}$

29. Simplify: $\frac{y^2 - 6y + 5}{8x} \bullet \frac{4x^3}{y - 5}$

30. Simplify: $\frac{6}{5m} + \frac{3}{7m^2}$

31. Simplify: $\frac{x^2 - 2x - 3}{x} \div \frac{x^2 + 2x + 1}{x}$

32. Simplify: $6 + \frac{3}{a} - \frac{a}{3}$

33. Divide: $\frac{x^2 - 3x - 7}{x - 4}$

34. Write the ratio in simplest form: The ratio of wins to losses in 15 games with 8 wins and no ties.

35. Solve: $\frac{3n - 5}{2} - \frac{n}{3} = 8$

36. Solve: $\frac{v-1}{v+3} = \frac{v+3}{v}$

37. Two numbers are in the ratio 7:8, and their sum is 135. What are the numbers?

38. A grocer wants to mix nuts costing \$5 per kilogram with nuts costing \$8 per kilogram to make a 10 kg mixture selling for \$6 per kilogram. How much of each type should be mixed?

39. It takes Marie $1\frac{1}{2}$ hours to deliver newspapers every morning. Hal can deliver the papers alone in 1 hour. How fast can they deliver the papers if they work together?

40. Simplify, expressing answer with positive exponents: $(2y^{-2})^3$

41. Simplify expressing answer in scientific notation: $\frac{1.8\times10^9}{2\times10^4}$

42. Graph $y = -\frac{1}{4}x - 2$.

43. Graph $x = -6$.

44. Find the slope of a line through (1, -5) and (3, 2).

45. Find the equation of the line in standard form through (-4, 1) and (2, -2).

46. Find the equation of a line in slope-intercept form that passes through (2, 3) and is perpendicular to $y = -2x - 7$.

47. Given $t(x) = 1 - x^2$, find t(6) and t(-3).

48. List the range of $s:z \rightarrow 2 - 3z$ $\quad D = \{-3, -1, 0, 1, 3\}$

49. Solve by graphing:
$2x + y = 2$
$x - y = 4$

50. Solve by substitution:
$x = 2y + 3$
$2x - 3y = 4$

51. Solve using add-subtract method (with multiplication, if necessary):
$2m + n = 1$
$m - n = 8$

52. Solve, using a system of equations:
Gary has $4.40 in nickels and dimes. He has 10 more nickels than dimes. How many of each kind of coin does he have?

53. Flying with the wind, a jet can travel the 4200 km distance between San Francisco ad New York in 6 hours. The return trip against the wind takes 7 hours. Find the rate of the jet in still air and the rate of the wind.

54. A number is 6 times the sum of its digits. The tens digit is 1 greater than the units digits. Find the two digit number.

55. Don is 21 years older than Betty. In six years Don will be twice as old as Betty. How old is each now?

56. Solve and graph: $5 - 2x > 7$

57. Solve and graph: $-8 \leq 2c - 2 < 7$

58. Solve and graph: $|u - 5| \geq 1$

59. Graph: the system: $2x + 3y < 3$
$y > -3$

60. Four members of a bowling team had scores of 240, 180, 220 and 200. Find the lowest score a fifth person must get to maintain an average for the team of at least 220.

61. Simplify: $2\sqrt{40x^4}$

62. Simplify: $\sqrt{\frac{5}{6}} \cdot \sqrt{\frac{24}{25}}$

63. Simplify: $4\sqrt{8} + 7\sqrt{18}$

64. Simplify: $(5\sqrt{3} + 7)(\sqrt{3} - 3)$

65. Simplify: $\frac{8}{\sqrt{5}}$

66. Solve: $\sqrt{3x+8} - 2 = 6$

67. Solve by factoring: $x^2 + 4x - 12 = 0$

68. Solve by completing the square: $v^2 - 10v + 5 = 0$

69. Solve using the quadratic formula: $4x^2 + 3x - 2 = 0$

ANSWERS

(graphs not included)

1. 17
2. Bus – 70 mi
   Train – 280 mi
3. Commutative for Multiplication
4. 4
5. 14a – 4b
6. -4t
7. -5
8. Identity – All Real Solutions
9. 1
10. 5
11. B
12. $-a^2 - 4a - 14$
13. $4y^6$
14. $6x^2 - 17x - 14$
15. $x^2 + 14x + 49$
16. $m = \frac{H - 2r}{3}$
17. 3:30 PM
18. -1
19. $10e^6$
20. $8n^2 - 4n + 5$
21. $5a(x^2 + y^2)$
22. $(5x + 3)(5x - 3)$
23. $2x(x + 2)(x + 6)$
24. $(6x + 7)(x + 3)$
25. $(7n - 1)^2$
26. $0, 7, \frac{5}{3}$
27. $\frac{x-3}{x+3}$
28. 12r
29. $\frac{x^2(y-1)}{2}$
30. $\frac{42m+15}{35m^2}$
31. $\frac{x-3}{x+1}$
32. $\frac{-a^2+18a+9}{3a}$
33. $x + 1 - \frac{3}{x-4}$
34. 8:7
35. 9
36. $-\frac{9}{7}$
37. 63 and 72
38. $6\frac{2}{3}$ kg of \$5 nuts and $3\frac{1}{3}$ kg of \$10 nuts
39. 36 minutes
40. $\frac{8}{y^6}$
41. 9×10^4
42. (graph)
43. (graph)
44. $\frac{7}{2}$
45. $x + 2y = -2$
46. $y = \frac{1}{2}x + 2$
47. -35; -8
48. {11, 5, 2, -1, -7}
49. (2, -2)
50. (-1, -2)
51. (3, -5)
52. 26 dimes, 36 nickels
53. Jet – 650 km/hr, wind – 50 km/hr
54. 54
55. Betty – 15 years old, Don – 36 years old
56. $x < -1$
57. $-3 \leq c < 4.5$ (graph)
58. $u \geq 6$ or $u \leq 4$ (graph)
59. (graph)
60. 260
61. $4x^2\sqrt{10}$
62. $\frac{2\sqrt{5}}{5}$
63. $29\sqrt{2}$
64. $-6 - 8\sqrt{3}$
65. $\frac{8\sqrt{5}}{5}$
66. $\frac{56}{3}$
67. 2, -6
68. $5 \pm 2\sqrt{5}$
69. $\frac{-3 \pm \sqrt{41}}{8}$