Algebra 1 Final Exam Review 2012

Multiple Choice
Identify the choice that best completes the statement or answers the question.

Solve the equation.

1. \( \frac{3}{7}x + 5 = 8 \)
   a. \( 7 \)  
   b. \( \frac{-2}{17} \)  
   c. \( -7 \)  
   d. \( \frac{2}{7} \)  
2. \( 11 = -d + 15 \)
   a. \( 11 \)  
   b. \( -4 \)  
   c. \( 4 \)  
   d. \( 6 \)  
3. \( 37 - 18 + 8w = 67 \)
   a. \( -6 \)  
   b. \( 4 \)  
   c. \( 7 \)  
   d. \( 6 \)  
4. \( 3(y + 6) = 30 \)
   a. \( 5 \)  
   b. \( 16 \)  
   c. \( 4 \)  
   d. \( -16 \)  
5. \( 4.9x + 4.4 = 19.1 \)
   a. \( 4 \)  
   b. \( 3 \)  
   c. \( 4.8 \)  
   d. \( 7.2 \)  
6. \( 5x - 5 = 3x - 9 \)
   a. \( -2 \)  
   b. \( 1 \)  
   c. \( -1 \)  
   d. \( -3 \)  
7. \( 8d - 4d - 6d - 8 = 2d \)
   a. \( 0 \)  
   b. \( -1 \)  
   c. \( -2 \)  
   d. \( -4 \)  
8. You are driving to visit a friend in another state who lives 440 miles away. You are driving 55 miles per hour and have already driven 275 miles. Write and solve an equation to find how much longer in hours you must drive to reach your destination.
   a. \( 55h + 275 = 440; h = 3 \)  
   b. \( 55h - 275 = 440; h = 13 \)  
   c. \( 440h - 275 = 55; h = 110 \)  
   d. \( 55h + 275h = 440; h = 1.3 \)  
9. Find the value of \( y \).
   \( -6y + 14 + 4y = 32 \)
   a. \( 18 \)  
   b. \( 1.8 \)  
   c. \( -9 \)  
   d. \( 9 \)  
10. A 16-oz bottle of water costs $1.44. What is the cost per ounce?
   a. $0.09/oz  
   b. $0.18/oz  
   c. $0.90/oz  
   d. $1.78/oz  
11. A car is driving at a speed of 60 mi/h. What is the speed of the car in feet per minute?
   a. \( 5,280 \) ft/min  
   b. \( 3,600 \) ft/min  
   c. \( 316,800 \) ft/min  
   d. \( 2,580 \) ft/min  

Solve the proportion.

12. \( \frac{2}{10} = \frac{11}{x} \)
    a. \( 55 \)  
    b. \( 2.2 \)  
    c. \( 110 \)  
    d. \( 1.8 \)  
13. \( \frac{x - 8}{5} = \frac{2}{4} \)
    a. \( 9 \)  
    b. \( 5 \)  
    c. \( 21 \)  
    d. \( 18 \)  
    e. \( 2 \)  
    f. \( 2 \)
14. $\frac{13 - b}{6} = \frac{2 - 0.5b}{4}$
   a. 32  
   b. 40  
   c. 64  
   d. 72

15. $\frac{w + 14}{4w + 6} = \frac{3}{4}$
   a. $\frac{8}{19}$  
   b. $\frac{15}{28}$  
   c. $\frac{4}{19}$  
   d. $\frac{2}{7}$

16. A van travels 220 miles on 10 gallons of gas. Write and solve a function to find how many gallons the van needs to travel 550 miles.
   a. 31 gallons of gas  
   b. 121 gallons of gas  
   c. 115 gallons of gas  
   d. 25 gallons of gas

17. Simplify $\sqrt{\frac{144}{49}}$.
   a. $\frac{144}{7}$  
   b. 12  
   c. $\frac{49}{12}$  
   d. $\frac{12}{7}$

18. Which number is a solution of the inequality?
   b. $b > 11.3$
   a. 15  
   b. 9  
   c. $-14$  
   d. 4

19. $x(7 - x) > 8$
   a. 2  
   b. 8  
   c. $-1$  
   d. 0

Write the inequality in words.

20. $3n < 52$
   a. fifty-two less than three times $n$
   b. Three times $n$ is less than fifty-two.
   c. Three times $n$ is less than or equal to fifty-two.
   d. Three times $n$ is greater than fifty-two.

21. $5n - 10 > 26$
   a. Five times $n$ less than ten is twenty-six.
   b. Ten plus five times a number is less than or equal to twenty-six.
   c. Ten less than five times a number is greater than twenty-six.
   d. Ten less than a number is less than or equal to twenty-six.

Graph the inequality.

22. $d < 2$
   a. 
   b. 
   c. 
   d. 

23. $x \leq 5$
   a. 
   b. 
   c. 
   d. 

24. $x \geq 5$
24. \( y < 4x - 2 \)

25. \( y > -5x + 3 \)
Write an inequality for the graph.

26. 
   a. \( x \leq -8 \)  
   b. \( x < -8 \)  
   c. \( x > -8 \)  
   d. \( x < 8 \)

Write an inequality to model the situation.

27. Thomas earned $44 or more.
   a. \( t > 44 \)  
   b. \( t \leq 44 \)  
   c. \( t < 44 \)  
   d. \( t \geq 44 \)

   a. \( n \geq 21 \)  
   b. \( n \leq 21 \)  
   c. \( n > 21 \)  
   d. \( n < 21 \)

Solve the inequality. Then graph your solution.

29. \(-2w < -18\)
   a. \( w > 9 \)  
   b. \( w < -16 \)  
   c. \( w < 9 \)  
   d. \( w > -16 \)
30. Which graph is the most appropriate to describe a quantity decreasing at a steady rate?

- a. 
- b. 
- c. 
- d. 

31. Identify the mapping diagram that represents the relation and determine whether the relation is a function. 

\{(-3, -6), (-1, -6), (5, -6), (8, -6)\}

- a. The relation is not a function.
- b. The relation is a function.
- c. The relation is a function.
- d. The relation is not a function.

32. Evaluate \( f(x) = -2x - 5 \) for \( x = 3 \).

- a. -11  
- b. 1  
- c. -6  
- d. 11

Graph the function.

33. \( y = -2x + 3 \)
34. \( y = x^2 - 2 \)
35. \( y = -2x^2 - 1 \)

Write a function rule for the table.

36. | \( x \) | \( f(x) \) |
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>-8</td>
</tr>
</tbody>
</table>
Find the rate of change for the situation.

37. You run 7 miles in one hour and 21 miles in three hours.
   a. 3 miles per hour  
   b. 3 hours  
   c. 7 miles  
   d. 7 miles per hour

Find the slope of the line.

38.

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

39. (1, 7), (10, 1)
   a. \( \frac{3}{2} \)  
   b. \( -\frac{2}{3} \)  
   c. \( -\frac{3}{2} \)  
   d. \( \frac{2}{3} \)

State whether the slope is 0 or undefined.
40. Find the slope and y-intercept of the line.

41. \( y = \frac{4}{3}x - 3 \)
   a. \( \frac{4}{3}; \frac{3}{4} \)  
   b. \( -\frac{3}{4}; \frac{3}{4} \)  
   c. \( \frac{3}{4}; \frac{3}{4} \)  
   d. \( \frac{4}{3}; -3 \)

42. \( m = 1, b = 4 \)
   a. \( y = 4x + 1 \)  
   b. \( y = x - 4 \)  
   c. \( y = -1x + 4 \)  
   d. \( y = x + 4 \)

43. Write the slope-intercept form of the equation for the line.

   a. \( y = 3x - 1 \)  
   b. \( y = -3x - 1 \)  
   c. \( y = \frac{1}{3}x + 1 \)  
   d. \( y = \frac{1}{3}x - 1 \)
Find the $x$- and $y$-intercept of the line.

44. $2x + 3y = -18$
   a. $x$-intercept is 18; $y$-intercept is 18.
   b. $x$-intercept is -6; $y$-intercept is -9.
   c. $x$-intercept is 2; $y$-intercept is 3.
   d. $x$-intercept is -9; $y$-intercept is -6.

Match the equation with its graph.

45. $-7x + 7y = -49$
   a. 
   b. 
   c. 
   d. 

46. Tom has a collection of 30 CDs and Nita has a collection of 18 CDs. Tom is adding CD a month to his collection while Nita is adding 5 CDs a month to her collection. Write and graph a system to find the number of months after which they will have the same number of CDs. Let $x$ represent the number of months and $y$ the number of CDs.
   a. $y = x + 30$
   b. $y = 5x + 18$
   c. $y = x + 30$
   d. $y = 18x + 5$
47. Which graph represents the following system of equations?

\[ y = 3x + 3 \]
\[ y = -x - 3 \]
48. What is the solution of the system of equations?
   y = 3x + 7
   y = x – 9
   a. (–1, –10)  b. (17, –8)  c. (4, 19)  d. (–8, –17)

49. Use a graphing calculator to find the solution of the system.
   y = \frac{5}{6} x + \frac{1}{6}
   y = \frac{7}{6} x + \frac{11}{6}
   a. (0, 0.17)  b. (5, 6)  c. (–5, –4)  d. (–1.5, 0)

Find a solution of the system of linear inequalities.

50. y < 3x + 12
    y ≥ 5x + 7
    a. (1, 2)  b. (0, –1)  c. (2, 17)  d. (–2, –5)

Solve the system of linear inequalities by graphing.

51. y ≤ –x – 1
    y ≥ 2x + 4
Simplify the expression.

52. \((-8.6)^0\)
   a. \(-1\) 
   b. 0 
   c. \(-8.6\) 
   d. 1

53. \(-6\)^{-1}
   a. \(6\) 
   b. \(-\frac{1}{6}\) 
   c. \(\frac{1}{6}\) 
   d. \(-\frac{1}{6}\)

54. \((4)^{-2}\)
   a. \(\frac{1}{16}\) 
   b. 16 
   c. \(\frac{1}{16}\) 
   d. \(-8\)

55. \(7a^{-5}b^3\)
   a. \(7a^{-5}b^{-15}\) 
   b. \(\frac{b^3}{7a^5}\) 
   c. \(\frac{7b^3}{a^5}\) 
   d. \(7a^5b^{-3}\)

56. \(\frac{12}{c^{-8}d^2}\)
   a. \(\frac{12}{cd^{-6}}\) 
   b. \(\frac{96c}{d^2}\) 
   c. \(\frac{12}{c^8d^2}\) 
   d. \(\frac{12c^8}{d^2}\)
57. \(5^{-3} \cdot 7^0\)
   a. \(\frac{1}{125}\)   b. \(-15\)   c. 0   d. 125
58. \(2k^8 \cdot 3k^5\)
   a. \(5k^{24}\)   b. \(5k^{11}\)   c. \(6k^{11}\)   d. \(6k^{24}\)
59. \(a^2 \cdot 3b^9 \cdot 6a\)
   a. \(18a^6b^9\)   b. \(10a^6b^9\)   c. \(18ab^{15}\)   d. \(18a^{45}b^9\)
60. \((k^2)^4\)
   a. \(k^6\)   b. \(2k^8\)   c. \(k^{16}\)   d. \(k^8\)
61. \((5k^3)^3\)
   a. \(125k^6\)   b. \(125k^5\)   c. \(5k^6\)   d. \(5k^8\)
62. \(\frac{2^2}{3^5}\)
   a. \(\frac{3^{35}}{2^2}\)   b. \(3^{12}\)   c. \(\frac{1}{3^9}\)   d. 9
63. \(\frac{x^{14}}{x^7}\)
   a. \(x^7\)   b. \(x^{98}\)   c. \(\frac{1}{x^7}\)   d. \(x^{21}\)
64. \(\frac{m^{-6} n^{-3}}{m^{-13} n^{-1}}\)
   a. \(\frac{n^{-9}}{m^7}\)   b. \(m^7 n^{12}\)   c. \(m^7\)   d. \(m^9 n^2\)
65. \(\left(\frac{3x}{2}\right)^4\)
   a. \(\frac{81x^4}{16}\)   b. \(6x^4\)   c. \(\frac{12x^4}{8}\)   d. \(\frac{81x^4}{2}\)
66. Write the polynomial in standard form. Then name the polynomial based on its degree and number of terms.
   \(2 - 11x^2 - 8x + 6x^2\)
   a. \(-5x^2 - 8x + 2\); quadratic trinomial  
   b. \(5x^2 - 8x - 2\); quadratic trinomial  
   c. \(-6x^2 - 8x - 2\); cubic polynomial  
   d. \(6x^2 - 8x + 2\); cubic trinomial
67. Write the polynomial in standard form.
   \(4g - g^3 + 3g^2 - 2\)
   a. \(-2 + 4g + 3g^2 - g^3\)  
   b. \(g^3 - 3g^2 + 4g - 2\)  
   c. \(3g^3 - g^2 + 4g - 2\)  
   d. \(-g^3 + 3g^2 + 4g - 2\)

Find the degree of the monomial.
68. \(7m^5n^5\)
   a. 5   b. 11   c. 6   d. 7
69. Match the expression with its name.
6x^3 - 9x + 3
a. cubic trinomial  
b. quadratic binomial  
c. fourth-degree monomial  
d. not a polynomial

70. Write the perimeter of the figure.

![Diagram of a triangle with sides 3x + 2, 6x, and 5x.]

not to scale

a. 9x + 7x  
b. 11x + 3x + 2  
c. 14x + 2  
d. 14x

Simplify the difference.

71. \((-7x - 5x^3 + 5) - (-7x^4 - 5 - 9x)\)
   a. \(2x^4 + 2x + 8\)  
b. \(-14x^4 + 10x + 10\)  
c. \(-14x^4 - 10x + 10\)  
d. \(2x^4 + 2x + 10\)

Simplify the sum.

72. \((4u^3 + 4u^2 + 2) + (6u^3 - 2u + 8)\)
   a. \(10 - 2u + 4u^2 + 10u^3\)  
b. \(-2u^3 - 2u^2 + 4u - 10\)  
c. \(-2u^3 + 4u^2 - 2u + 10\)  
d. \(10u^3 + 4u^2 - 2u + 10\)

Simplify the product.

73. \(2n(n^2 + 3n + 4)\)
   a. \(2n^3 + 6n^2 + 8n\)  
b. \(2n^3 + 3n + 4\)  
c. \(2n^3 + 6n + 8\)  
d. \(n^2 + 5n + 4\)

74. Find the GCF of the terms of the polynomial.
\(8x^6 + 32x^3\)
   a. \(x^3\)  
b. \(8x^3\)  
c. \(8x^3\)  
d. \(8x^6\)

Simplify the product using FOIL.

75. \((3x - 7)(3x - 5)\)
   a. \(9x^2 - 6x - 35\)  
b. \(9x^2 - 36x + 35\)  
c. \(9x^2 - 36x - 35\)  
d. \(9x^2 - 36x + 35\)

76. \((4x + 3)(2x + 5)\)
   a. \(8x^2 + 14x - 15\)  
b. \(8x^2 - 14x - 15\)  
c. \(8x^2 + 26x + 15\)  
d. \(8x^2 - 26x + 15\)

Find the square.
77. \((2x - 6)^2\)
   a. \(4x^2 - 24x + 36\) 
   b. \(4x^2 - 8x + 36\) 
   c. \(4x^2 + 36\) 
   d. \(4x^2 - 12x + 36\)

Find the product.

78. \((2n + 2)(2n - 2)\)
   a. \(4n^2 - 4\) 
   b. \(4n^2 - 4n - 4\) 
   c. \(4n^2 + 2n - 4\) 
   d. \(4n^2 + 4n - 4\)

Complete.

79. \(y^2 + 15y + 56 = (y + 7)(y + \_\_\_)\)
   a. \(-8\) 
   b. \(8\) 
   c. \(-7\) 
   d. \(7\)

80. \(z^2 + 9z - 90 = (z - 6)(z + \_\_\_)\)
   a. \(-9\) 
   b. \(15\) 
   c. \(90\) 
   d. \(-15\)

Factor the expression.

81. \(d^2 + 10d + 9\)
   a. \((d + 9)(d - 1)\) 
   b. \((d - 9)(d + 1)\) 
   c. \((d - 9)(d - 1)\) 
   d. \((d + 9)(d + 1)\)

82. \(x^2 - x - 42\)
   a. \((x - 7)(x + 6)\) 
   b. \((x + 7)(x + 6)\) 
   c. \((x + 7)(x - 6)\) 
   d. \((x - 7)(x - 6)\)

83. Identify the vertex of the graph. Tell whether it is a minimum or maximum.

   a. \((0, -1);\) minimum 
   c. \((0, -1);\) maximum
b. \((-1, 0); \text{maximum}\)  \(\text{d. } (-1, 0); \text{minimum}\)

84. Which of the quadratic functions has the narrowest graph?
   a. \(y = -x^2\)  b. \(y = \frac{1}{4} x^2\)  c. \(y = 4x^2\)  d. \(y = \frac{1}{9} x^2\)

85. Which of the quadratic functions has the widest graph?
   a. \(y = \frac{1}{3} x^2\)  b. \(y = -4x^2\)  c. \(y = 0.3x^2\)  d. \(y = -\frac{4}{5} x^2\)

86. A parabola ______ has an axis of symmetry.
   a. always  b. sometimes  c. never

**Simplify the radical expression.**

87. \(-4\sqrt{160}\)
   a. \(-4\sqrt{80}\)  b. \(-4\sqrt{16}\)  c. \(-16\sqrt{10}\)  d. \(\sqrt{10}\)

88. \(\sqrt{144}\)
   a. 12  b. \(12\sqrt{2}\)  c. 6  d. \(4\sqrt{6}\)

89. \(-3\sqrt{180b^4}\)
   a. \(6\sqrt{5b^4}\)  c. \(-18b^2\sqrt{5}\)
   b. \(-15\sqrt{5b^4}\)  d. \(-3b\sqrt{90}\)

90. \(-2\sqrt{2p} \cdot 2\sqrt{22}\)

   factor 1: 1
   factpr 2: 11
   common factor: 2
   a. \(\sqrt{44p}\)  b. \(-8\sqrt{11p}\)  c. \(-4\sqrt{44p}\)  d. \(-8\sqrt{11p^2}\)
Algebra 1 Final Exam Review 2012
Answer Section

MULTIPLE CHOICE

1. A
2. C
3. D
4. C
5. B
6. A
7. C
8. A
9. C
10. A
11. A
12. A
13. C
14. B
15. C
16. D
17. D
18. A
19. A
20. B
21. C
22. B
23. B
24. C
25. D
26. C
27. D
28. C
29. A
30. C
31. B
32. A
33. D
34. A
35. B
36. A
37. D
38. A
39. B
40. B
41. D
88. A
89. C
90. B