My Math Plan Assessment #1 Study Guide

1. Find the **x-intercept** and the **y-intercept** of the linear equation.
   
   \[8x - 3y = 43\]

2. Use factoring to solve the quadratic equation.
   
   \[x^2 + 9x + 1 = -17\]

3. Find the difference.
   
   \[-6 - (-13)\]

4. Find the difference.
   
   \[-13 - 18\]

5. Multiply and simplify the radical expression.
   
   \[(\sqrt{3} - 5)(\sqrt{5} - 2)\]

6. Multiply and simplify the radical expression.
   
   \[(\sqrt{7} - 9)(\sqrt{7} + 5)\]

7. Perform the indicated operations and simplify.
   
   \[5\sqrt{20} + 5\sqrt{45} - 4\sqrt{80}\]

8. Perform the indicated operations and simplify.
   
   \[4\sqrt{50} + 3\sqrt{32} - 3\sqrt{98}\]

9. Simplify the expression.
   
   \[\sqrt[3]{250x^9}\]

10. Simplify the expression.
    
    \[\sqrt[3]{-72x^{12}}\]

11. Solve the linear inequality.
    
    \[2x + 5 < -11\]
12. Solve the linear inequality.
   
   \[-3x + 15 > -12\]

13. Solve the linear inequality.

   \[-2x + 4 \geq -8\]

14. Solve the linear inequality.

   \[3x - 12 \leq -4\]

15. Find the LCM of the two terms.

   \[64x^5y^2, 24x^4y^3z\]

16. Find the LCM of the two terms.

   \[5x^2y^5z^4, 19x^3y^4z^3\]

17. Find the sum.

   \[\frac{3}{5} + \frac{7}{2} + \frac{2}{3}\]

18. Add the mixed numbers and simplify the result.

   \[\frac{2}{5} + 5\frac{3}{4}\]

19. Rationalize the denominator and simplify if possible.

   \[\frac{3}{2 - \sqrt{7}}\]

20. Find the \(x\)- and \(y\)-intercepts and graph the linear equation.

   \[3x - 4y - 24 = 0\]

21. Solve the proportion.

   \[\frac{6}{x} = \frac{8}{21}\]
22. Identify the coordinates of points A and B.

23. Kara has five exam scores of 67, 74, 60, 85, and 87 in her biology class. What score does she need on the final exam to have a mean (average) grade of 72? Round your answer to two decimal places, if necessary. (All exams have a maximum of 100 points.)

24. The price of a computer is $250. The sales tax is 7%. What is the total cost of the computer?

25. Let $a$ and $b$ be the lengths of the legs and let $c$ be the length of the hypotenuse of a right triangle. Using the Pythagorean Theorem, find the length of the side not given.

\[ a = 5, b = 12 \]

26. Find the missing rate, base, or amount.

40% of 259 is ______

27. Solve the following linear equation using equivalent equations to isolate the variable. Write your solution as a whole number.

\[ y - 28 = 5 \]

28. If the quotient of 495 and 5 is decreased by 97, what is the difference?

29. Evaluate the following polynomial at $x = 6$.

\[ 9x + 2x^2 - 8 \]

30. Evaluate the following expression:

\[ 8 + (5)^2 + (3 + 2) - 3 \]

31. Find the following quotient.

\[ \frac{(-34) + 37}{-1} \]

32. Simplify the algebraic expression by combining the like (or similar) terms.

\[ 2a - 3x^2 - 1 - 5x^2 - 4a + 7 \]
33. Solve the linear equation using equivalent equations to isolate the variable.
\[11x + 7x = 35 + 29\]

34. Find the prime factorization of the following number.
90

35. Reduce the fraction to its simplest form.
\[-\frac{42}{12}\]

36. Solve the linear equation using equivalent equations to isolate the variable. Express your solution as an integer or as a simplified fraction.
\[\frac{7}{3}x - \frac{5}{3}x = -\frac{1}{7} + \frac{2}{7}\]

37. Round the decimal number to the nearest thousandth.
1.29954

38. Find the difference.
146.317 − 87.43

39. Find the quotient rounded to the nearest tenth.
8.85 ÷ 7.8

40. Write 4.437 × 10^{-5} in decimal form.

41. Change the following fraction to a percent. Write your answer in percent form. Round your answer to the nearest tenth of a percent, if necessary.
\[\frac{2}{9}\]

42. A real estate agent works on a 13% commission. What is her commission on a house that she sold for $859,300? Follow the problem-solving process and round your answer to the nearest cent, if necessary.

43. Evaluate the following algebraic expression at \(x = -4, y = 2\) and simplify your answer.
\[-2x^2 + 5y^2 - 6\]

44. Solve the linear equation and simplify your answer. Express your solution as an integer, a simplified fraction, or a decimal rounded to two decimal places.
\[-6y + 15 = 9y - 15\]
45. Solve the following linear equation and simplify your answer.
\[-2 - 3(y - 6) = 5(4y - 2) - 7\]

46. Find the slope determined by the following pair of points.
\[(-2, 7), (7, 3)\]

47. Find the equation (in slope-intercept form) of the line passing through the points with the given coordinates.
\[(3, -2), (6, 5)\]

48. Perform the indicated operation by removing the parentheses and combining like terms.
\[(6x^2 - 12) + (9x^2 - 14x - 4)\]

49. Multiply the polynomials using the distributive property and combine like terms.
\[(x + 4)(2x - 3)\]

50. Multiply the polynomials using the distributive property and combine like terms.
\[(x - 2)(x^2 + 2x + 4)\]

51. Factor the given polynomial by finding the greatest common monomial factor (or the negative of the greatest common monomial factor) and rewrite the expression.
\[-14x - 56xy - 63x^2\]

52. Completely factor the trinomial, if possible.
\[4t^2 + 25t + 6\]

53. Completely factor the trinomial, if possible.
\[6t^3 + 41t^2 - 7t\]

54. Completely factor the polynomial, if possible.
\[25 - 81x^2\]

55. Divide the following and reduce the answer to its simplest terms.
\[\frac{-2}{21} \div \frac{5}{24}\]

56. Solve the following formula for the indicated variable.
\[P = 2l + 2w; \text{ solve for } w\]
57. The area of a trapezoid is 44 square meters. One base is 3 meters long and the other is 8 meters long. Find the height of the trapezoid.

\[ A = \frac{1}{2}h(b + c) \]

58. Simplify the expression. Assume all variables represent positive numbers.

\[ \sqrt{48x^3y^6} \]

59. Multiply and reduce the product to lowest terms.

\[ \frac{35a^2}{4b} \cdot \frac{8b^3}{14a^3} \]

60. Write the number in scientific notation.

681,000

61. Evaluate the following expression.

\[ (3^3 - 6) \div 3 + 4^2 \cdot 2 \]

62. Find the perimeter of a rectangle with a length of 4.2 centimeters and a width of 2.9 centimeters.

63. Find the area of a triangle with a base of 6 inches and a height of 9 inches.

64. Find the volume of a rectangular solid with a length of 5.1 feet, a width of 3.5 feet, and a height of 2 feet. Round your answer to two decimal places.

65. Simplify the expression.

\[ 2x^2 \cdot x^4 \]

66. Simplify the expression.

\[ \frac{6y^8}{-2y^5} \]

67. Simplify the expression.

\[ (4a^2)^3 \]
68. Simplify the expression.
\[5x^0 + y^0\]

69. Completely factor the polynomial, if possible.
\[x^3 - 27y^3\]

70. Completely factor the polynomial, if possible.
\[2x + 2y + bx + by\]

71. Simplify the expression using positive exponents.
\[\left(\frac{2x}{y}\right)^{-3}\]

72. Find the GCF for the set of terms.
\[28c^2d^4, 14c^3, 42cd^3\]

73. Find the difference.
\[\frac{2}{a} - \frac{3}{4}\]

74. If the product of 16 and 5 is increased by 42, what is the sum?

75. Perform the indicated operation by removing the parentheses and combining like terms.
\[(4b^3 - 3b^2 + b) - (-2b^3 + b^2 - 5b)\]

76. Simplify the expression using the properties of exponents. (The answer should contain only positive exponents.)
\[\left(\frac{2a^3b^{-1}}{b^3}\right)^2\]

77. Rationalize the denominator and simplify if possible.
\[\frac{3\sqrt{x^5}}{\sqrt{9xy}}\]

78. The sum of two consecutive integers is \(-175\). Find the two integers.
79. 14 times the difference between a number and 5 is equal to −98. Find the number.

80. Evaluate the expression at \( x = 3, y = -2, \) and \( z = 4 \).
\[
\frac{8x - 2y}{3z}
\]

81. The discount on a new refrigerator was $225. This was a discount of 20%. What was the original price of the refrigerator?

82. Write an equation, in slope-intercept form, of the line through the given point \( P \) with the given characteristic.
\( P(−5, 4); 5x - 4y = 9 \)
a. Parallel to the given line
b. Perpendicular to the given line

83. Find the product of the binomial factors.
\[ (2x - 3)^2 \]

84. Factor the polynomial. If the polynomial does not factor, write “not factorable”.
\[ 25x^2 + 9 \]

85. A total of $7000 is invested: part at 6% and the remainder at 10%. How much is invested at each rate if the annual interest is $520?

86. Solve the following linear equation.
\[
\frac{3}{8}(y - \frac{1}{2}) = \frac{1}{8}(y + \frac{1}{2})
\]

87. Two planes, which are 2660 miles apart, fly toward each other. Their speeds differ by 65 mph. If they pass each other in 4 hours, what is the speed of each plane?

88. Find the following quotient. If the quotient is undefined, state undefined.
\[
\frac{-17}{0}
\]

89. Your bank account indicates that you are overdrawn on your checking account by $279. How much must you deposit to bring the checking account balance up to $750?
90. Find the average of the following set of integers.

\[56, -28, 93, 84, -60\]

91. Louis has to buy a calculator for $49, graph paper for $9, a textbook for $117, and a notebook for $6. If Louis has $250, how much will he have left after his purchase?

92. Simplify the following absolute value expression.

\[-| -12 |

93. Solve the linear equation using equivalent equations to isolate the variable.

\[-7.2 = -1.6x - 5.6\]

94. Change the following mixed number to an improper fraction and reduce if possible.

\[3 \frac{8}{10}\]

95. Find the difference.

\[1 - \frac{7}{9}\]

96. Find the difference. Write your answer in mixed number form.

\[31 \frac{3}{7} - 26 \frac{6}{7}\]

97. Find \( \frac{2}{3} \) of \( \frac{3}{8} \).

98. Solve the linear equation.

\[\frac{5}{8} y = -5\]

99. Write the following comparison as a ratio reduced to lowest terms.

18 quarters to 6 dollars

100. Change the following decimal to a fraction in lowest terms.

\[0.175\]
Answer Key
1. x-int: \(\left(\frac{43}{8}, 0\right)\) y-int: \((0, -\frac{43}{3})\)
2. \(x = -6, -3\)
3. 7
4. \(-31\)
5. \(\sqrt{15} - 2\sqrt[3]{3} - 5\sqrt{5} + 10\)
6. \(-38 - 4\sqrt{7}\)
7. \(9\sqrt{5}\)
8. \(11\sqrt{2}\)
9. \(5\sqrt[3]{\sqrt{2}}\)
10. \(-2\sqrt[4]{5}\)
11. \(x < -8\)
12. \(x < 9\)
13. \(x \leq 6\)
14. \(x \leq \frac{8}{3}\)
15. \(192x^3y^3z\)
16. \(95x^3y^5z^4\)
17. \(\frac{116}{3}\)
18. \(\frac{9\sqrt{5}}{20}\)
19. \(-2 - \sqrt{7}\)
20. x-int: \((8, 0)\) y-int: \((0, -6)\)
21. \(\frac{63}{4}\)
22. \(A = (-2, 3)\) B = \((4, -3)\)
23. 59
24. \$267.50
25. \(c = 13\)
26. 103.6
27. \(y = 33\)
28. 2
29. 118
30. 10
31. \(-3\)
32. \(-8x^2 - 2a + 6\)
33. \(x = \frac{32}{9}\)
34. \(2 \cdot 3 \cdot 3 \cdot 5\)
35. \(\frac{7}{2}\)
36. \(x = \frac{3}{14}\)
37. 1.300
38. 58.887
39. 1.1
40. 0.00004437
41. 22.2%  
42. \$111,709
43. \(-18\)
44. \(y = 2\)
45. \(y = \frac{33}{23}\)
46. \(m = \frac{1}{9}\)
47. \(y = \frac{7}{3}x - \frac{27}{3}\)
48. \(15x^2 - 14x - 16\)
49. \(2x^2 + 5x - 12\)
50. \(x^3 - 8\)
51. \(-7x(9x + 8y + 2)\)
52. \((4t + 1)(t + 6)\)
53. \((6t - 1)(t + 7)\)
54. \((5 - 9x)(5 + 9x)\)
55. \(-\frac{16}{35}\)
56. \(w = \frac{p - 2t}{2}\)
57. \(h = 8\ m\)
58. \(4xy^3\sqrt{3x}\)
59. \(\frac{5b^3}{a}\)
60. \(6.81 \times 10^5\)
61. 39
62. 14.2 cm
63. 27 in²
64. 35.7 ft³
65. \(2x^6\)
66. \(-3y^3\)
67. \(64a^6\)
68. 6
69. \((x - 3y)(x^2 + 3xy + 9y^2)\)
70. \((x + y)(2 + b)\)
71. \(\frac{y^3}{8a^3}\)
72. \(14c\)
73. \(\frac{8 - 3a}{a}\)
74. \(\frac{4a}{b^4}\)
75. \(6b^3 - 4b^2 + 6b\)
76. \(\frac{x^3}{3x^2y^2}\)
77. \(-88, -87\)
78. \(-2\)
79. \(7\)
80. \(\frac{7}{3}\)
81. \$1125
82. a. \(y = \frac{5}{4}x + \frac{41}{4}\) b. \(y = \frac{4}{5}x\)
83. \(4x^2 - 12x + 9\)
84. not factorable
85. \$4500 at 6% ; \$2500 at 10%
86. \(y = 1\)
87. 300 mph, 365 mph
88. undefined
89. \$1029
90. 29
91. \$69
92. \(-12\)
93. \(x = 1\)
94. \(\frac{19}{5}\)
95. \(\frac{2}{5}\)
96. \(\frac{4}{7}\)
97. \(\frac{1}{4}\)
98. \(y = -8\)
99. 3 to 4
100. \(\frac{7}{40}\)