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Algebra 2 - Summer Assignment

1. Add: $7\frac{1}{3} + 6\frac{1}{7}$

2. The length of $\overline{AC}$ is $5\frac{1}{4}$ meters. The length of $\overline{BC}$ is $1\frac{3}{4}$ meters. Find AB.

3. What numbers are also called counting numbers?

4. Multiply: $\frac{5}{7} \times \frac{2}{5} \times \frac{3}{4}$

5. (a) What is the result of a subtraction called?
   (b) What is the result of a multiplication called?

6. Evaluate: $\left| -5.4 \right|$

7. What property of addition states that the order in which two real numbers are added does not affect the sum?

8. What is another name for the opposite of a number?

9. Add: $(-5) + (+7) + (-5)$

Simplify:

10. $-12-19-10+5+10+5+6$

11. $-(-1) - \left| -2 \right| + (-12)$

12. $(3)(-12)$

13. Name the inverse operation. Divide by 11.

   [A] Multiply by -11.   [B] Add 11.   [C] Multiply by 11.   [D] Divide by -11.

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14. $\dfrac{15}{-3}$

    [A] 4   [B] 5   [C] –5   [D] –4

Simplify:

15. $\dfrac{1+7+(-8)}{4+(-5)+1}$

16. $(5)(1)(-2)(-1)$

17. (a) What is the reciprocal of $-\dfrac{1}{6}$?

    (b) What is the reciprocal of $\dfrac{1}{6}$?

18. Evaluate: $5 + 3 \cdot 4 - 2 =$

Simplify:

19. $-5(-3) + 6(-6) + 7 - 9$

20. $42 - 3(6 - 2)$

21. $-2(-6 + 9) - 7(-6 - 5)$

22. $2(-6+1)(7+6)+5$

23. $6 + \dfrac{(-6)}{(2)} + 7$

24. Simplify. $-(-8) - 4(3 - 2)$

    [A] 12   [B] –12   [C] 4   [D] –6

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Simplify:

25. $[4 \cdot (6 + 5)] + 4$

26. $25(85 - 15 \div 5) + 8 \cdot 3$

27. Is the product 6 positive numbers and 8 negative numbers a positive number or a negative number?

Evaluate:

28. $st - 5t$ if $s = -5$ and $t = 3$.

29. $-e[(c - d) - (c + d)]$ if $e = -3$, $c = -6$ and $d = 5$.

30. Use the letters x, y, and z, and parentheses to write the distributive property.

31. Which of the following terms are like terms?
    (a) $4uty$ (b) $6tuy$ (c) $-tuz$ (d) $-5tyu$ (e) $7ytu$

32. Simplify by adding like terms: $-3cb - 3bc - 8 - 7cb - 7bc + 4$

33. $5^2 =$

34. $2^4 =$
    [A] 18   [B] 16   [C] 15   [D] 17

35. Simplify: $(-2)^3$

Evaluate:

36. $\sqrt[3]{125}$

37. $c^3 d(c + d)$ if $c = -2$ and $d = -3$

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38. Simplify: $-(2)^3$

   [A] 6   [B] –8   [C] 8   [D] –6

39. Evaluate: $\sqrt[3]{-8}$

   [A] –4   [B] 2   [C] 4   [D] –2

40. Evaluate $x^2 + 5y - z$ when $x = 3$ and $y = 6$ and $z = 5$.

   [A] 79   [B] 15   [C] 34   [D] 31

Simplify:

41. $zz^5y^2x^3z^2z^5x^5x^4x^2x^4yz$

42. $-4ab^3m + 9b^3ma - 6mab^3 - m$

43. $3 - x^4y + 5xy + 5x^4y - xy + 3$

   [A] $4x^8y^2 - 4xy - 6$ [B] $-6x^4y + 6x^2y^2 - 6$

   [C] $-6x^4y + 6xy + 6$ [D] $4x^4y + 4xy + 6$

Solve:

44. $27 = m - 3$

45. $\dfrac{q}{6} = 6$

46. $3x + 2 = 23$

47. $-1\dfrac{1}{2} - 2\dfrac{1}{3}x = 2\dfrac{5}{12}$

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48. Expand by using the distributive property: $xy^2(8y^2-3)$

   [A] $8xy^2+3xy^2$ [B] $8xy^4-3$ [C] $8xy^4-3xy^2$ [D] $8xy^2-3xy^2$

49. Expand by using the distributive property: $st(5st^2-3s^2t)$

50. Expand by using the distributive property: $xy^3(7y^2-5)$

   [A] $7xy^5-5$ [B] $7xy^2-5xy^3$ [C] $7xy^5-5xy^3$ [D] $7xy^3+5xy^3$

Solve:

51. $3.5x-0.4=13.6$

52. $0.2m-0.06+0.5m=-0.018$

53. $0.4q-0.03+0.2q=0.09$

   [A] 0.2   [B] –0.2   [C] 0.1   [D] –0.1

54. $1\frac{2}{3}$ of what number is $2\frac{1}{3}$?

55. What fraction of 88 is 32?

56. $2\frac{1}{2}$ of what number is 15?

57. $4\frac{1}{3}$ of what number is 16?

   [A] $\frac{16}{39}$ [B] $3\frac{9}{13}$ [C] $\frac{13}{48}$ [D] $2\frac{7}{16}$

58. If $h(x)=5x-1$, find $h(-5)$.

59. Expand by using the distributive property: $-6a^2b^3(2a^{-1}b^2-5a^2b^{-1})$

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60. Multiply: $a^{-5}(a^4)(a^{-2})$

    [A] $\dfrac{1}{a^3}$ [B] a^{40} [C] a^3 [D] $\dfrac{1}{a^4}$

61. Simplify: (a) $\dfrac{1}{(-3)^{-2}}$ (b) $(-3)^{-2}$ (c) $(-3)^0$

62. Evaluate when $x = 6$ and $y = 4$: $x^0 y^{-3}$

    [A] $\dfrac{1}{36}$ [B] -12 [C] 0 [D] $\dfrac{1}{64}$

63. Write the algebraic phrases which correspond to the following word phrases: (a) The sum of six times the opposite of a number and –5.
(b) The product of –2 and the sum of 4 times a number and 3.

64. Which algebraic phrase corresponds to the following word phrase?
         The product of 4 and the sum of 4 times a number and 2.

    [A] $(N)(-N)(-N)(-N)+2$ [B] $4(4N)+2$ [C] $4 + 4N + 2$ [D] $4(4N+2)$

65. 0.50 of what number is 144?

66. Solve: $4d - 2(2d + 3) = 5d + 4$

67. Find a number such that 22 less than four times the number is –90.

68. Write 19,800 as a product of prime numbers.

69. Find the number that is 21 greater than twice the opposite of itself.

70. Find the greatest common factor of $288a^5b^3$ and $-64a^4b$.

71. Factor the greatest common factor of $4e^2f^3g^2 - 10e^3f^2g + 6efg^3$.

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72. Divide: $\dfrac{8x - 48x^2}{8x}$

73. Simplify (factor if necessary): $\dfrac{9x^2 y^4 + 12xy^2}{3xy}$

74. Simplify (factor if necessary): $\dfrac{6x^3 y^3 + 8x^2 y}{2xy}$

    [A] $3x^2 y^3 + 4x$ [B] $3x^2 y^2 + 4x$ [C] $3x^2 y^2 + 8x^2 y$ [D] $3x^3 y^2 + 8x$

75. Expand by using the distributive property: $\dfrac{x}{z}\left(\dfrac{4y^3}{x^2} - \dfrac{2x}{y^3}\right)$

76. Expand by using the distributive property: $\dfrac{x}{z^3}\left(\dfrac{5y^2}{x^3} - \dfrac{x^2}{y}\right)$

    [A] $5x^2 y^2 z^3 - \dfrac{x^2}{y}$ [B] $\dfrac{5y^2 z^3}{x^3} - \dfrac{x^3}{z^3 y}$ [C] $5x^2 y^2 z^3 - \dfrac{x^3}{z^3 y}$ [D] $\dfrac{5y^2}{x^2 z^3} - \dfrac{x^3}{z^3 y}$

77. Simplify: (a) $(-4)^{-2}$ (b) $\dfrac{1}{-4^{-2}}$

78. Which inequality matches the sentence?
    When a number is decreased by 7, the result is less than −3.
        [A] $x + 7 < -3$ [B] $x - 7 < -3$ [C] $x - 7 > -3$ [D] $x + 7 > -3$

79. Compare:
    $-7 \bigcirc 5$

80. Draw a number line and graph the solution to $x \geq -1$.

81. The ratio of sailors to pirates was 19 to 7. If there were 126 pirates, how many sailors were there?

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82. Write both an inequality and a negated inequality that describe this graph.

$$-10 \quad -5 \quad 0 \quad 5 \quad 10$$

83. The ratio of spiders to flies was 3 to 7. If there were 1950 in all, how many were flies?

84. Simplify. Write the answer with all positive exponents. $\dfrac{x^2 xy^3 z^{-4}}{z^{-2} z^{-1} y^{-2}}$

85. Expand by using the distributive property. Write the answer with all positive exponents.

$$x^{-3} y^{-1} \left(\frac{x^3 y^{-3}}{x} - \frac{3y^4}{x^2} \right)$$

86. Simplify by adding like terms. Write the answer with all exponents positive.

$$-\frac{3x^3 y^2 z^3}{z^{-2}} + \frac{x^4 z^5}{xy^{-2}} + \frac{5x^3 yz^4}{y^{-1} z^{-1}} - \frac{6x^3 y^2 z^3}{z^{-2}}$$

87. If $2x + 9 + 6x - 2 = 47$, what is the value of $6x + 1$?

88. Solve for u. $-3u - w = u + 4w$

89. Find the least common multiple of 26, 10, and 20.

[A] 262   [B] 10   [C] 260   [D] 5,200

90. Find the least common multiple (LCM) of $15uv^3$ and $18u^4 v$.

91. Find the least common multiple (LCM) of $15de^2$, $9d^3 e$, and $3d^2 e$

92. Add: $\dfrac{-6y + 3x}{6x^3 y^4} - \dfrac{-6y - 4x}{6x^3 y^4}$

93. Graph: $-2 < x \le 4$

94. 180 is 20% of what number?

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95. Find the degree: $3d^4e^4 - 14d^3e^5 + 12d^4e^5 - 2de^6 - d^5e$

96. Add. Write the answer in descending order of the variable.
$(-5x - 3x^4 + 3) + (5x^4 - 9 - 5x)$

97. Add: $(3x^2 + 3x + 1) + (-2x^2 + 3x - 3)$

[A] $5x^2 - 2$ [B] $5x^2 + 6x + 4$ [C] $x^2 + 6x - 2$ [D] $x^2 + 4$

98. Multiply: $(8x^2 - 5)^2$

99. Add: $\dfrac{5}{b^2} + \dfrac{3a}{b+a} + \dfrac{5}{b}$

100. The average of the first 6 numbers was 28. The average of the next 9 numbers was 33. What was the overall average of the numbers?

101. Simplify. Write the answer with all positive exponents. $\dfrac{27x^2y^{-2}(x^4)^{-2}y^{10}x^2y^{-5}}{(3x^0)^2 x^{-2}y^{-2}(-x^3 y^{-2})^0}$

102. Use six unit multipliers to convert 39 cubic meters to cubic inches.

103. Solve the system by the substitution method.
$x = 3y + 7$
$2x + y = 28$

Simplify:

104. $\dfrac{u+v}{\dfrac{1}{w}}$

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105. Simplify: $\dfrac{\dfrac{\dfrac{c}{t}}{u}}{t+c}$

106. Represent the following numbers as being members of set M:
$-3, -8, -8, -1, -7, -6, -5, -3, -8, -6, -2, -4$

107. Graph: $x - y = 1$

108. Add. Write the answer with all exponents positive. $xy^{-1} + 6z^{-2}$

109. A ski club planned a trip to Mount Bachelor, and 147 of the members signed up. If 30% of the members did not sign up, how many members does the club have?

110. Solve the system by substitution:
$4x + y = 24$
$6x - 2y = 8$

Evaluate:

111. $-\dfrac{-b - a \cdot 4 - a}{1 + \sqrt{-207 - (-b^3)}} - \left[(a - b \cdot 4 + 5)\dfrac{1}{2} + 2 \right]^0$ for $a = 4$ and $b = 6$

112. $4^2 - 2^2 \pm \sqrt{9}$

113. Simplify: $\sqrt{270}$

114. Indicate whether each of the following numbers is a rational or an irrational number.
(a) $5\sqrt{3}$ (b) $\dfrac{2}{3}$ (c) $2,\overline{74}$ (d) π

115. Graph the following inequality on a number line: $x - 5 \geq -4$; $D = \{$Real numbers$\}$

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116. Simplify: $3\sqrt{3} + 2\sqrt{3} - 2\sqrt{3}$

117. Tom's test scores were 89, 87, 95, and 69. What was his weighted average if the tests were weighted 3, 1, 4, and 5, respectively? Round your answer to the nearest whole number.

Simplify:

118. $2\sqrt{18} - \sqrt{300} - 5\sqrt{2} - 3\sqrt{27}$

119. $-2\sqrt{5} - 2\sqrt{500} + 7\sqrt{45}$

120. Simplify. Write the answer as a simple fraction with all exponents positive. $\dfrac{\dfrac{1}{a} + \dfrac{a}{b}}{\dfrac{3}{b}}$

Factor.

121. $x^2 - 2x - 63$

122. $-x^3 + 12x^2 - 35x$

123. Solve the system by the elimination method: $2N_Q - 5N_D = -26$
$$N_Q + 5N_D = 17$$

124. Factor. $(e + f)y^2 - 8y(e + f) + 7(e + f)$

125. Factor: $64x^2 - 9y^2$

126. Write the following numbers in scientific notation:
(a) 0.0883   (b) 8830

127. Find three consecutive odd integers such that the sum of the first and third equals the sum of the second and 19.

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128. If $\frac{1}{4}$ of the signs had been sold and there were 135 signs left, how many signs were printed?

129. Solve: $\dfrac{x}{4} - \dfrac{3+x}{6} = 3$

130. Given: $R_A T_A = R_B T_B$, $R_A = 3$, $R_B = 2$, $T_B = 5 - T_A$
     Find T_A and T_B.

131. Simplify: $\dfrac{\left(90 \times 10^{-4}\right)(800)}{(0.03)\left(20 \times 10^{-5}\right)}$

132. When Julian dumped out the big jar of nickles and dimes he found 112 coins. If there was $9.65 in the jar, how many of each kind of coin was there?

133. Simplify: $6\sqrt{2}\left(2\sqrt{8} - 3\sqrt{6}\right)$

134. Given: $R_m T_m + R_n T_n = 60$, $T_m = 8$, $T_n = 4$, $R_m - R_n = 3$. Find R_m and R_n

135. Solve: $x^2 + 3x = 18$

136. Marlow spent $12.55 on treats to put in Gift of Love boxes for the needy children in his city. A candy bar costs 40¢ and a bag of trail mix costs 75¢. Marlow bought 6 more bags of trail mix than candy bars. How many candy bars did he buy?

137. Graph the following inequality on a number line: $-3x + 9 \le 0$; $D = \{\text{Positive integers}\}$

138. Multiply: $\dfrac{3h^2 + 14h + 8}{h^2 + h - 20} \cdot \dfrac{4h^2 - 16h}{4 - 9h^2}$

139. Divide: $\dfrac{x^2 - 15x + 54}{x^2 - 9x} \div \dfrac{x^2 - 4x - 12}{x^3 + 3x^2 + 2x}$
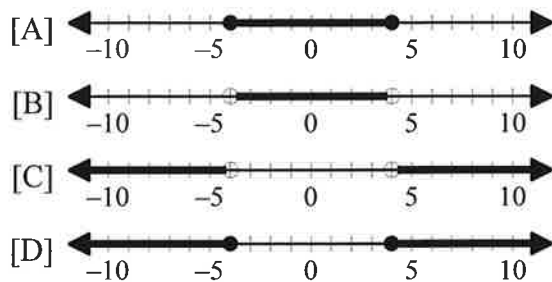
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140. Use the difference of squares theorem to find all of the solutions to the following
equations:
   (a) $q^2 = 49$ (b) $r^2 = 32$ (c) $s^2 = 14$

141. Add: $\dfrac{5}{t-4} + \dfrac{5}{t^2-16}$

142. Graph: $|x|+2 < 6$

[A]

[B]

[C]

[D]

Solve:

143. $\dfrac{2+x}{x} + \dfrac{5}{x} = 0$

144. $\dfrac{2}{5x} = \dfrac{2}{x+8}$

145. Factor by grouping: $p^2q + pqr - 6p - 6r$

146. Solve: $\sqrt{u+16} + 4 = u$

147. Factor completely: $4x^2 - 21x + 5$

148. Simplify: $\dfrac{36+18\sqrt{66}}{6\sqrt{11}}$

149. Solve by completing the square: $x^2 + 3x = 40$

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150. Solve using the quadratic formula: $8x^2 + 3x = 1$

[1] _____

[2] _____

[3] _____

[4] _____

[5] _____

[6] _____

[7] _____

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[9] _____

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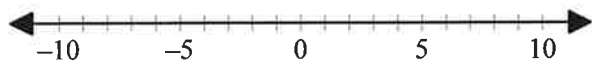[15] _____

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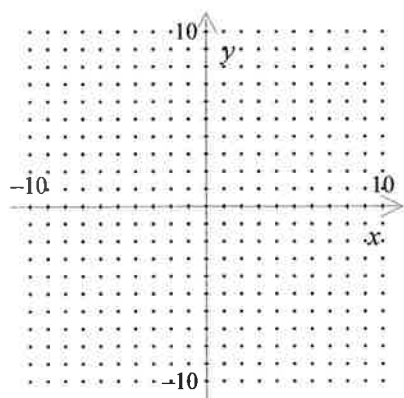
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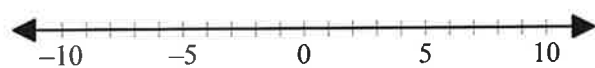
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