Name: _____ Class: _____ Date: _____ ID: A

Algebra I Review FIRST

Short Answer

Solve the inequality. Graph the solution on a number line.

1. $y + 5 > -2$

Solve the inequality.

2. $\frac{b}{4} \geq 12$

3. $\frac{-3b}{8} > -3$

4. $9m \leq -72$

5. $3h + 9 > 15$

6. $3a + 3 - 6a > 15$

7. $-1 \geq -9n - 8 + 4n$

8. $-5(3z + 3) < -3(5z - 4)$

Solve the compound inequality and graph the solution set.

9. $u + 8 \geq 1$ and $u - 3 < 3$

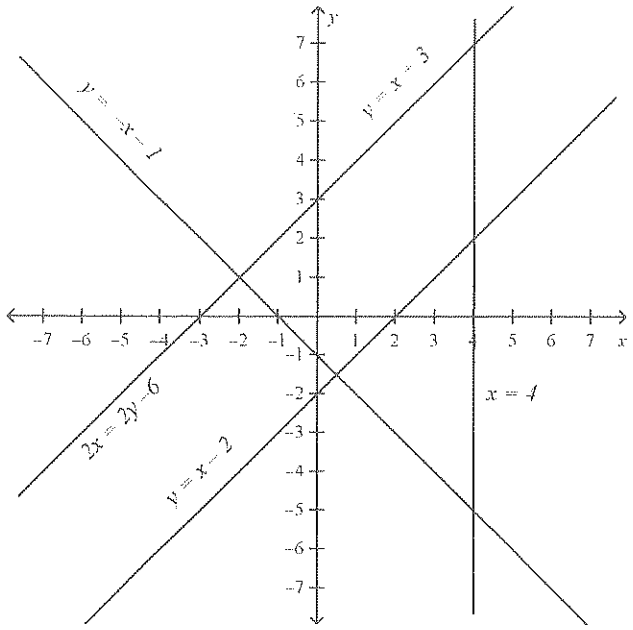
10. $g - 6 > -1$ or $g + 2 > 8$

Solve the system of inequalities by graphing.

11. $y \leq -x + 4$

$y > -2x - 4$

Use the graph below to determine the number of solutions the system has.



12. $x = 4$

$y = x + 3$

13. $2x = 2y - 6$

$y = -x - 1$

Graph the 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.*

14. $-3x + y = 3$

$-x - 6 = \frac{y}{2}$

Use substitution to solve the system of equations.

15. $7 = x - 2y$

$-2x + 8 = -2y$

16. The sum of two numbers is 90. Their difference is 12. What are the numbers?

17. At a local electronics store, CDs were on sale. Some were priced at \$14.00 and some at \$12.00. Sabrina bought 9 CDs and spent a total of \$114.00. How many \$12.00 CDs did she purchase?

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Use elimination to solve the system of equations.

18. $-5x - 3y = 1$
$x + 3y = 7$

19. $2x - 2y = -10$
$10x + 6y = -2$

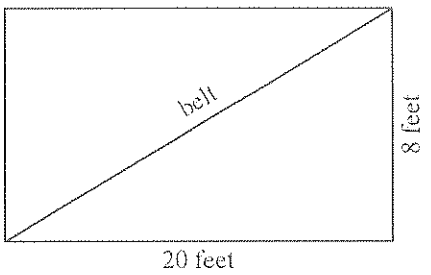
Determine the best method to solve the system of equations. Then solve the system.

20. $7x - 2y = 8$
$5x + 2y = 4$

21. $x = 2y - 1$
$3x - 3y = 9$

22. $-5x + 3y = -18$
$2x + 2y = 4$

23. A conveyor belt runs between floors of a building as pictured below. Find the slope of the belt as a positive number.



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

24. $(2, -4), (-5, 1)$

25. $(0, -3), (3, -2)$

Write a direct variation equation that relates x and y. Assume that y varies directly as x. Then solve.

26. If $y = 8$ when $x = -4$, find x when $y = -20$.

27. If $y = 4$ when $x = -8$, find y when $x = 7$.

Write an equation of the line with the given slope and y-intercept

28. slope: $-\frac{1}{2}$, y-intercept: 6

29. slope: -1.9, y-intercept: 4

Write an equation of the line that passes through each point with the given slope.

30. $(3, -2)$, $m = -1$

Write an equation of the line that passes through the pair of points.

31. $(-2, -1), (-1, 3)$

32. $(2, 2), (-1, -4)$

Write the point-slope form of an equation for a line that passes through the point with the given slope.

33. $(-4, -1)$, $m = -3$

34. $(-3, 2)$, $m = \frac{3}{5}$

Write each equation in standard form.

35. $y + 4 = 3(x + 5)$

36. $y + 9 = \frac{3}{5}(x + 5)$

Write the equation in slope-intercept form.

37. $y - 5 = (x - 4)$

38. $y + 1 = \frac{3}{5}(x + 3)$

Write the slope-intercept form of an equation of the line that passes through the given point and is parallel to the graph of the equation.

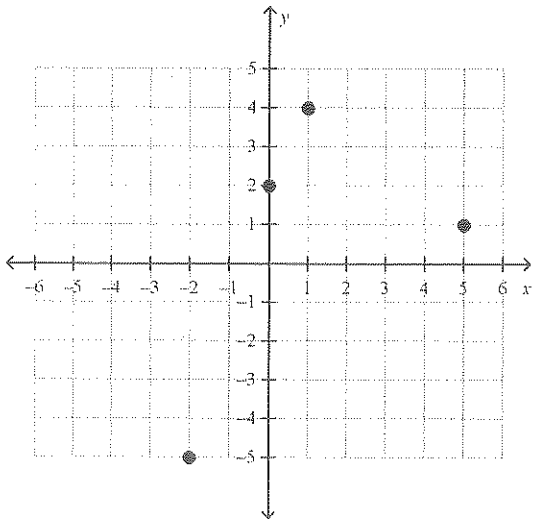
39. $(5, 3)$, $y = -\frac{1}{5}x - 3$

Write the slope-intercept form of an equation that passes through the given point and is perpendicular to the graph of the equation.

40. $(3, -4)$, $4x - 3y = 15$

Express the relation shown in each table, mapping, or graph as a set of ordered pairs. Then write the inverse of the relation.

41.



42. $f(x) = 5x + 2$, find $f(4)$.

Find the solution set for the equation, given the replacement set.

43. $y = 8x - 8$; {(5, 32), (6, 35), (4, 30), (7, 33)}

Solve the equation for the given domain. Graph the solution set.

44. $y = -x - 2$ for $x = \{-5, 0, 1, 3, 4\}$

Determine whether the sequence is an arithmetic sequence. If it is, state the common difference.

45. 3, 6, 7, 9, . . .

Find the next three terms of the arithmetic sequence.

46. 93, 84, 75, 66, . . .

47. The table below shows the cost of cartons of milk.

Number of cartons	1	2	3	4	5
Cost ($)	1.50	3.00	4.50	6.00	7.50

Graph the data.

48. The table below shows the yearly sales of a CD player in a particular store.

Year	1	2	3	4	5	6
Sales	55	100	145	490	235	280

Find an equation in function notation for the relation.

Write an algebraic expression for each verbal expression.

49. the sum of 35 and p

50. 20 less the product of 4 and x

Write a verbal expression for the algebraic expression.

51. 4^5

52. $x^3 \cdot y^5$

53. $\frac{8y^2}{3}$

54. $2x^3 - 4x$

55. $9m^4 + 7n^2$

56. $5x^4 \div 6$

57. $4a^6$

Evaluate the expression.

58. $-5+5(-3)^2(2)+4$

59. $50+2(10-7)$

60. Evaluate the following expression if $a = 12$, $b = 2$, and $c = 10$.
$3c + bc - 2a$

61. Solve the equation.
$a = \frac{4(13-3)}{3(6)+2} + 5$

Find the solution set for the inequality using the given replacement set.

62. $x-3<6; \{8, 9, 10, 11, 12\}$

Name the property used in the equation. Then find the value of n.

63. $0.38+3.1=n+3.1$

64. $2+(2+7)=n+9$

Evaluate the expression. Show each step.

65. $1+6(16-3^2)+4$

66. $11+8\left(64-4^3\right)+6$

Use the Distributive Property to find the product.

67. $3 \cdot 1040$

68. $15\left(3\frac{1}{3}\right)$

Simplify the expression. If not possible, write simplified.

69. $4(10x+9)$

70. $2(12m+10b-2b)$

Write an algebraic expression for the verbal expression. Then simplify.

71. twice the sum of c and d decreased by d

72. two times the square of n plus the sum of n squared and three times n

Simplify the expression.

73. $3x + 7(7x + 5)$

Identify the hypothesis and conclusion of the statement. Then write the statement in if-then form.

74. David goes swimming when he finishes mowing the lawn.

Identify the hypothesis and conclusion of the statement.

75. If you live in Tampa, then you are near a beach.

76. If $5x - 3 > 17$, then $x > 4$.

Name the sets of numbers to which each number belongs.

77. $-\sqrt{4}$

78. $\frac{36}{6}$

Graph each set of numbers on the number line.

79. $\{-5, -3, -1, 1, 3\}$

80. $x > -3.8$

Find the square root. If necessary, round to the nearest hundredth.

81. $\pm\sqrt{\frac{4}{81}}$

82. Write the ordered pairs that represent the car sales for the first week of October.

Translate the sentence into an equation.

83. Four times the number x increased by 15 is 83.

84. The sum of one-fifth p and 38 is as much as twice p.

85. Nine less than the product of three and the number x is equal to one-half the sum of x and 12.

86. The number x divided by the number y is the same as six less than three times the difference of x and y.

Translate the equation into a verbal sentence.

87. $x - 18 = 12$

88. $3y + 8 = 32$

89. $x + 6 = y \div 3$

Solve the equation. Then check your solution.

90. $x - 6 = 2$

91. $83 = n - 34$

92. $-\frac{3}{8} + z = \frac{4}{5}$

93. $x + 38 = 26$

94. $\frac{8}{13} = a + \frac{6}{7}$

95. $x + 7.8 = 3.9$

96. $\frac{v}{4} = 23$

97. $3x = -93$

98. $\frac{x}{32} = \frac{3}{4}$

99. $\frac{1}{2}m = \frac{9}{10}$

100. $1.1x = -6.6$

101. $-2.91 = -0.97z$

102. $-7x + 12 = 40$

Write an equation and solve each problem.

103. Five less than one fifth of a number is two. Find the number.

104. Fifty-six is twelve added to four times a number. What is the number?

105. Find three consecutive integers with a sum of 24.

106. Find four consecutive odd integers with a sum of −32.

Solve the equation. Then check your solution.

107. $-9x - 5 = -10x - 6$

108. $5 - 7x = x + 13$

109. $18x - 83 = -3x - 1805$

110. $26 - 1.8g = -2.3g + 21.45$

111. $-4 = -2(5d + 7)$

112. $2 - \frac{2}{3}(4a + 3) = -8$

113. $\frac{1}{2}(15 + 7g) = -\frac{g}{4}$

Solve the proportion. If necessary, round to the nearest hundredth.

114. $\frac{6}{7} = \frac{p}{28}$

115. $\frac{12}{h} = \frac{6}{13}$

State whether the percent of change is a percent of increase or a percent of decrease. Then find the percent of change. Round to the nearest whole percent.

116. original: 60
new: 10

117. The original price of a video game was $49.95. The price was dropped to $45.50. What was the percent of decrease from the original price?

118. Bernardo originally had 48 customers on his paper route. Through a newspaper sales promotion, his customer base increased to 63. What was the percent of increase over the original number of customers?

Find the total price of the item.

119. football: $25.98
tax: 6%

Find the discounted price of the item.

120. DVD: $19.95
discount: 20%

Find the final price of the item.

121. tennis racket: $47.50
discount: 25%
tax: 5%

Solve the equation or formula for the variable specified.

122. $xy + 5z = 3$ for y

123. Solve the formula for r.

Fumiko and Kenji leave home at the same time, traveling in opposite directions. Fumiko drives 50 miles per hour, and Kenji drives 55 miles per hour.

	r	t	$d = rt$
Fumiko			
Kenji			

124. Complete the table representing the situation.

125. Write an equation that could be used to determine when they will be 630 miles apart.

126. In how many hours will they be 630 miles apart?

Two airplanes leave Denver, one traveling east at 700 miles per hour and one traveling west at 750 miles per hour. Let t represent the time since their departure.

	r	t	$d = rt$
Eastbound			
Westbound			

127. Complete the table representing the situation.

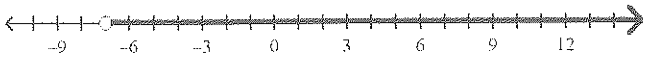
128. Write an equation that could be used to determine when the airplanes will be 3625 miles apart.

129. In how many hours will the airplanes be 3625 miles apart?

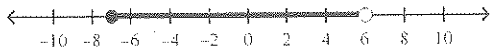
Algebra I Review
Answer Section

SHORT ANSWER

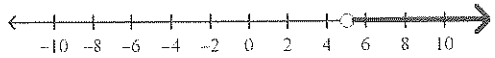
1. $y > -7$



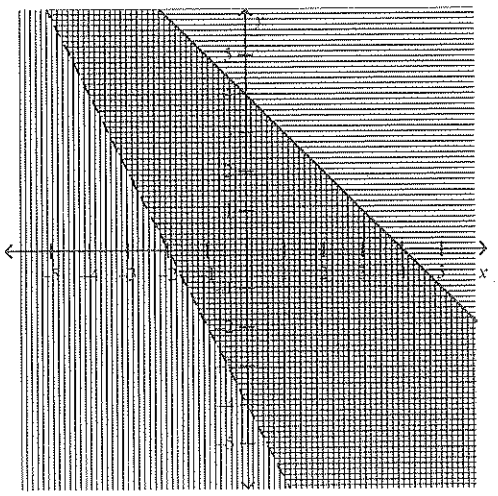
2. $b \geq 48$
3. $b < 8$
4. $m \leq -8$
5. $h > 2$
6. $a < -4$
7. $-1\frac{2}{5} \leq n$
8. $\mathbb{R}$ (all real numbers)
9. $-7 \leq u < 6$



10. $g > 5$

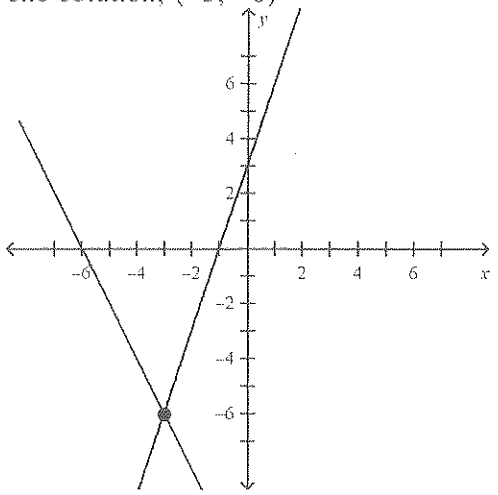


11.



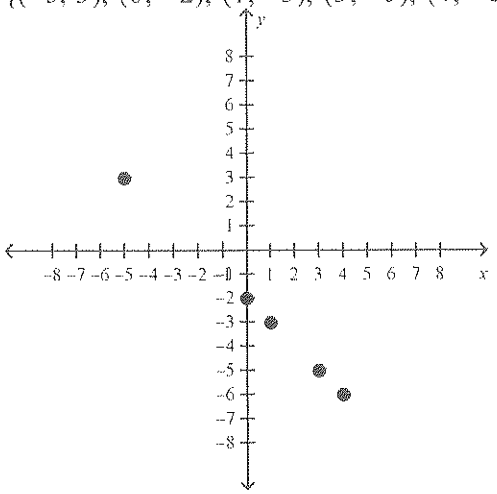
12. one
13. one

14. one solution; $(-3, -6)$

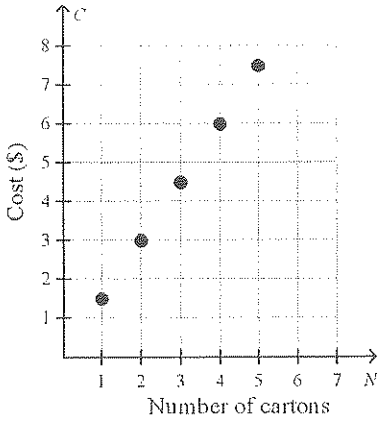


15. $(1, -3)$
16. 39 and 51
17. 6
18. $(-2, 3)$
19. $(-2, 3)$
20. elimination using addition; $\left(1, -\frac{1}{2}\right)$
21. substitution; $(7,4)$
22. elimination using multiplication; $(3, -1)$
23. $\frac{2}{5}$
24. $-\frac{5}{7}$
25. $\frac{1}{3}$
26. $y = -2x$; 10
27. $y = -\frac{1}{2}x$; $-\frac{7}{2}$
28. $y = -\frac{1}{2}x + 6$
29. $y = -1.9x + 4$
30. $y = -x + 1$
31. $y = 4x + 7$
32. $y = 2x - 2$
33. $y + 1 = -3(x + 4)$
34. $y - 2 = \frac{3}{5}(x + 3)$
35. $3x - y = -11$
36. $3x - 5y = 30$
37. $y = x + 1$
38. $y = \frac{3}{5}x + \frac{4}{5}$
39. $y = -\frac{1}{5}x + 4$

40. $y = -\frac{3}{4}x - \frac{7}{4}$
41. Relation: {(1, 4), (0, 2), (−2, −5), (5, 1)}
    Inverse: {(4, 1), (2, 0), (−5, −2), (1, 5)}
42. 22
43. {(5, 32)}
44. {(−5, 3), (0, −2), (1, −3), (3, −5), (4, −6)}



45. no
46. 57, 48, 39
47.



48. $f(x) = 45x + 10$
49. $35 + p$
50. $20 - 4x$
51. four to the fifth power
52. x cubed times y to the fifth power
53. the quotient of 8 times y squared and 3
54. 2 times x cubed minus 4 times x
55. 9 times m to the fourth power increased by 7 times n squared
56. the quotient of 5 times x to the fourth power and 6
57. 4 times a to the sixth power
58. 89
59. 56

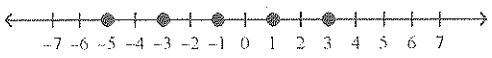
60. 26
61. 7
62. {8}
63. Reflexive; 0.38
64. Substitution; 2
65. $1+6(16-3^2)+4$
$=1+6(16-9)+4$
$=1+6(7)+4$
$=1+42+4$
$=47$
66. $11+8\left(64-4^3\right)+6$
$=11+8(64-64)+6$
$=11+8(0)+6$
$=11+0+6$
$=17$
67. 3120
68. 50
69. $40x+36$
70. $24m+16b$
71. $2(c+d)-d$

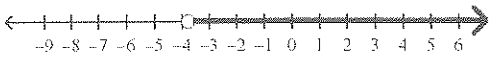
$2c+2d-d$

$2c+d(2-1)$

$2c+d$
72. $2n^2+\left(n^2+3n\right)$

$\left(2n^2+n^2\right)+3n$

$3n^2+3n$
73. $52x+35$
74. H: he has finished mowing the lawn
C: David is going swimming
If he has finished mowing the lawn, then David is going swimming.
75. H: you live in Tampa
C: you are near a beach
76. H: $5x-3>17$
C: $x>4$
77. Real, rational, and integer
78. Real, rational, integer, and whole
79. 

80. 

81. $\pm\frac{2}{9}$
82. (1, 3), (2, 4), (3, 6), (4, 7), (5, 9), (6, 10), (7, 12)
83. $4x + 15 = 83$
84. $\frac{1}{5}p + 38 = 2p$
85. $3x - 9 = \frac{1}{2}(x + 12)$
86. $x \div y = 3(x - y) - 6$
87. A number x minus 18 is 12.
88. Three times a number y plus 8 equals 32.
89. The sum of x and six is equal to y divided by three.
90. 8
91. 117
92. $1\frac{7}{40}$
93. −12
94. $-\frac{22}{91}$
95. −3.9
96. 92
97. −31
98. 24
99. $1\frac{4}{5}$
100. −6
101. 3
102. −4
103. $\frac{1}{5}x - 5 = 2$; 35
104. $56 = 12 + 4n$; 11
105. $x + (x + 1) + (x + 2) = 24$; 7, 8, 9
106. $x + (x + 2) + (x + 4) + (x + 6) = -32$; −11, −9, −7, −5
107. −1
108. −1
109. −82
110. −9.1
111. −1
112. 3
113. −2
114. 24
115. 26
116. decrease; 83%
117. about 9%
118. about 31%
119. $27.54
120. $15.96
121. $37.41

122. $y = \dfrac{3 - 5z}{x}$

123. $r = \dfrac{C}{2\pi}$

124.

	r	t	$d = rt$
Fumiko	50	t	$50t$
Kenji	55	t	$55t$

125. $50t + 55t = 630$

126. 6 hours

127.

	r	t	$d = rt$
Eastbound	700	t	$700t$
Westbound	750	t	$750t$

128. $700t + 750t = 3625$

129. 2.5 hours