Key

Algebra I Summer Review 2019

1. Solve for y: $2x+3y=18$

$y=-\frac{2}{3}x+6$

2. Kim is 5 years younger than Amy. If A represents Amy's age, write an expression to represent Kim's age.

$A-5$

3. Simplify: $3+4(x-5)$

$4x-17$

4. Simplify: $\frac{16x^3+4x}{-4x}$

$-4x^2-1$

5. Simplify: $(3x+5)(x-8)$

$3x^2-19x-40$

6. Simplify: $3x^4\ 2x^5$

$6x^9$

7. Simplify: $\frac{24w^{15}}{6w^5}$ $4w^{10}$

8. Factor: $x^2+7x+12$

$(x+3)(x+4)$

9. Solve for x: $(x+5)(x-2)=0$

$x=-5, 2$

10. If $f(x)=-3x^3-6x$, then find $f(-2)$

36

11. Solve the system: $\begin{cases} 3x+y=11 \\ 6x-2y=14 \end{cases}$

$(3,2)$

12. Solve using the quadratic formula:
$4x^2-6x-1=0$

$x=\frac{3\pm\sqrt{13}}{4}$

13. Connor has \$134 in his bank account. He starts saving \$45 a month. After some time, he has \$450.00 saved. Write an equation to the model the situation. *Do not solve.*

$450=134+45m$ m = # of months

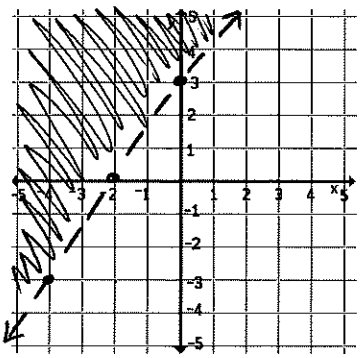
14. Find the x- and y-intercepts for $0.5x+1.5y=10.5$

x-int (21, 0) y-int (0, 7)

15. Write an equation for the line in slope-intercept form that passes through the points (5, -3) and (5, 4).

$x = 5$

16. Graph: $-3x + 2y > 6$



17. Write a system of equations to represent the situation. *Do not solve.* Bob has 21 coins in dimes and quarters in his pocket. If the total value of these coins is \$3.30, how many dimes and how many quarters does Bob have in his pocket?

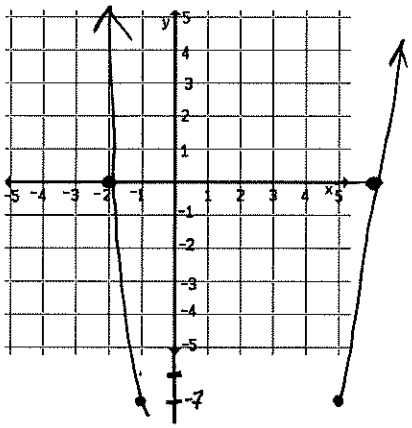
$$\begin{cases} D + Q = 21 \\ .1D + .25Q = 3.3 \end{cases}$$

18. The line joining the points C(5,7) and D(1, k) has a slope of ¼. Find the value of k.

$k = 6$

19. Simplify: $\dfrac{4y^3}{(4y^5)^2}$ $\dfrac{1}{4y^7}$

20. Graph: $y = x^2 - 4x - 12$ (label at least 5 points)



(2, -16)
(-2, 0)
(-1, -7)
(5, -7)
(6, 0)

21. Write an expression for the perimeter of a rectangle with a width of x inches and a length that is three inches less than four times the width.

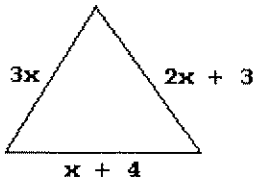
$2x + 2(4x - 3)$

22. The population, P, is represented by the function:

$$P(t) = 4105 - 15t^2$$

where t is the number of years since 2008. According to this model, how many years will it take for the population to go to zero? ~16.5 years

22. The triangle below has a perimeter of 25, solve for x.



$x = 3$

23. Joseph runs a lawn care service. He charges an initial estimation fee of \$15 plus an hourly rate of \$5.75 an hour for lawn care. Write an equation that describes the total cost for a person receiving his services for the first time.

$C = 15 + 5.75h$

C = total cost
h = # of hours to provide lawn care

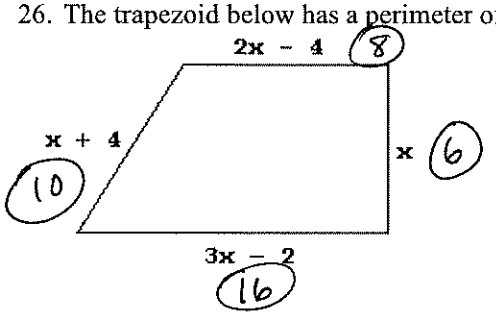
24. Solve the equation: $2x + 14 - 5x = 9 - 2(3x - 2)$.

$x = -1/3$

25. Simplify the expression $\frac{-24n - 8}{-4}$.

$6n + 2$

26. The trapezoid below has a perimeter of 40; find the length of each side.



27. Solve the equation for y. Round your result to two decimal places.

$$27.4y - 11.2 = 7.3y - 12.6$$

$y = -0.07$

28. Solve for x: $-\frac{2x}{3} = 6$

$x = -9$

28. If $f(x) = 2x - 3x^2 \div (x + 5)$, what is $f(-2)$?

-8

29. Solve for p: $3p + 2 = p + 3$

$p = 1/2$

30. Simplify: $8 - 3(2x - 1) + 5x$.

$-x + 11$

31. Solve for m: $4m - 3(m + 2) = 5(4 - m)$.

$m = 13/3$

32. Solve for x: $-3(2 - x) + x = \dfrac{6 + 3x}{-3} - 9$

$x = -1$

33. Simplify the expression $\left[(5 \bullet 3a) \div a\right] + 2a$, if $a = 3$.

21

34. Solve for d: $4d + 3 = 27$.

$d = 6$

35. Which of the following sets of ordered pairs is a function?

a. {(-3, -2), (-3, 2), (-4, -2), (-4, 2)}
b. {(-3, -3), (2, 2), (-2, -2), (3, 3)}
c. {(-3, 1), (3, -1), (-5, 2), (-5, -2)}
d. {(2, 4), (2, 3), (2, 1), (2, 0)}

36. Simplify $(6 - 2)^2 - 4\left[(2 + 1)^2 - 4\right] \div 2$

6

37. Given that the area of a rectangle is $A = lw$, where l represents the length and w represents the width. Find the area of the figure below given that $p = 3$.

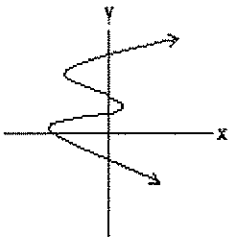
$w = 1 + 2p$

$l = 1 + (2p - 3)^2$

$A = 70$ units^2

38. Which graph below ***does not*** represent a function?

a.



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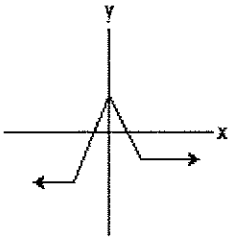

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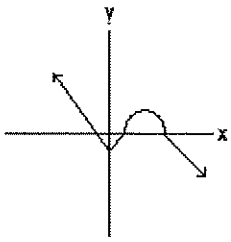
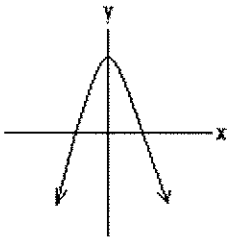


d.



39. Write an algebraic expression that represents the statement: "60 less than three times Abe's salary"

$3A - 60$ A = Abe's salary

40. Which property is described by the expression? (ax + by) + cz = ax + (by + cz)

Associative property of addition

41. Simplify: $(-8+4)(-3)^2 - (5) + (2)(-3+5)$.

-37

42. Given the function $f(x) = 3(4-2x) - x^2$ and its domain is {-8, -6, -3}. Find the range for this function.

$R = \{-4, 12, 21\}$

43. Simplify: $2 + \dfrac{-8x-12}{-4} + 3x$?

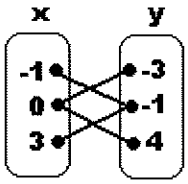
$5x + 5$

44. Evaluate $y + 2\left[-3(y+x)^2 - 5\right] \div (1-x)$ when $x = 3$ and $y = -4$.

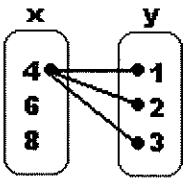
4

45. Which of the following diagrams represent a function?

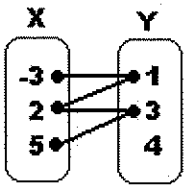
a.



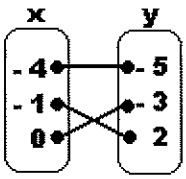
b.



c.



d.



46. Simplify $\sqrt{48}$ $4\sqrt{3}$

47. Simplify $\sqrt{300}$ $10\sqrt{3}$

48. If $g(x) = -4 - 3x + 3x^2$, what is $g(-2)$? 14

49. Simplify $(6-2)^2 - 4\left[(2+1)^2 - 4\right] \div 2$ 6

50. Simplify the expression: $-3x + 9 - 2(x-7)$.

$-5x + 23$

51. Write an equation that describes the verbal phrase: "Eight less than twice the sum of a number and three is equal to four increased by the quotient of the number and two"

$2(n+3) - 8 = 4 + \dfrac{n}{2}$

52. What is the value of $\frac{4x-5y}{2y}$ if $x=-6$ and $y=2$?

$-17/2$

53. What is the slope of line containing the points $(3,2)$ and $(-1,-4)$?

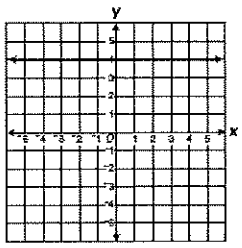
$3/2$

54. What is the value of $3x+4y$ if $x=\frac{1}{3}$ and $y=\frac{1}{2}$?

3

55. Which graph best represents a line with undefined slope?

a



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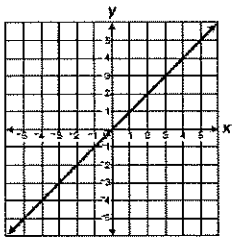

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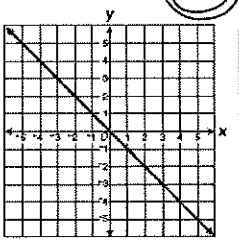

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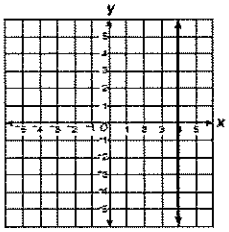


56. What is the slope of the line that passes through the points (3, 2) and (6, 2)?

0

57. **What is the slope of the line $3y = 4x + 5$?** $4/3$

58. Solve for x: $\frac{1}{4}x+1>\frac{15}{2}$ $x > 26$

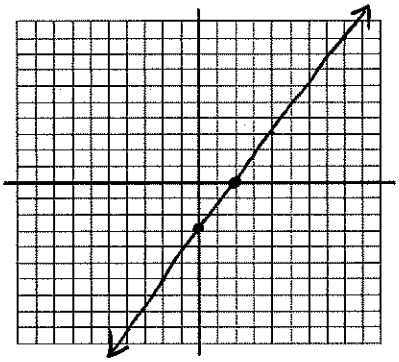
59. What are the x- and y-intercepts of the line with equation $4x+5y=40$?

x-int : $(10, 0)$ y-int: $(0, 8)$

60. What is the equation for the line with slope $=\frac{1}{2}$ and y-intercept of 3?

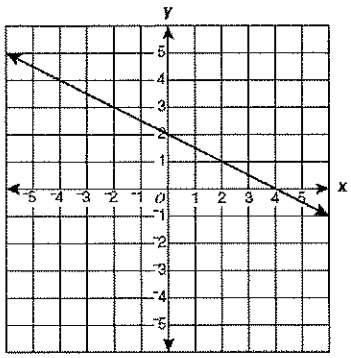
$y = 1/2\,x + 3$

61. Graph the line with an x-intercept of 2 and a y-intercept of -3?

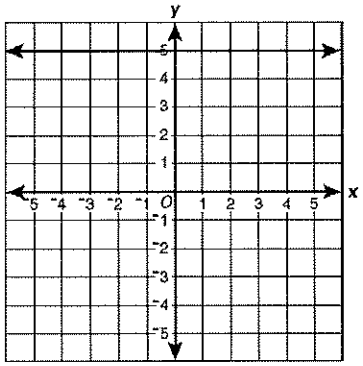


62. What is the equation of the line graphed below?

$y = -1/2\,x + 2$



63. Write the equation of the line graphed below:



$y = 5$

64. The elements of a function of x are $(-4,1)$, $(-2,0)$, and $(8,-1)$. What is the range of the function?

$R: \{-1, 0, 1\}$

65. What is the solution to the following equation: $4x - 1 = 2x + 5$?

$x = 3$

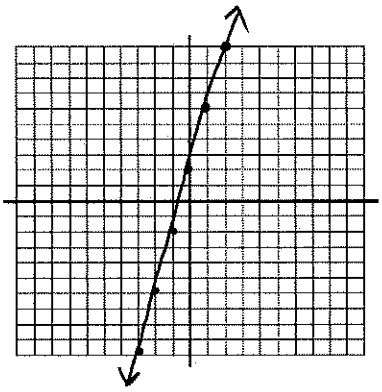
66. What is the solution to the following equation? $5(x+2) = 7(4-x)$

$x = 3/2$

67. If $f(x) = 5x - 2$, what is $f(3)$?

13

68. Graph $y = 4x + 2$



69. What is the solution to $4(2x-3) = 2(3x+1)$?

$x = 7$

70. The ordered pairs in the sets shown below are of the form (x, y). In which set of ordered pairs is y not a function of x?

a $\{(11, 2), (12, 14), (13, 6)\}$
b $\{(1, 4), (2, 4), (3, 4), (4, 4)\}$
c $\{(-6, 37), (-6, 10), (-5, 26)\}$
d $\{(2, 0), (4, 1), (6, 2), (8, 3)\}$

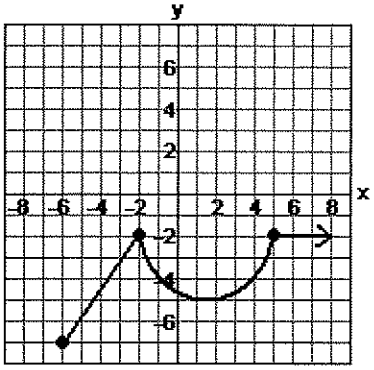
71. Which property justifies rewriting $3x - 5x$ as $(3 - 5)x$?

Distributive Property

72. If $\frac{1}{3}t - 6 = 15$, what is the value of t?

$t = 63$

73. What is the range of the given graph below?



$-7 \le y \le -2$

or

$[-7, -2]$

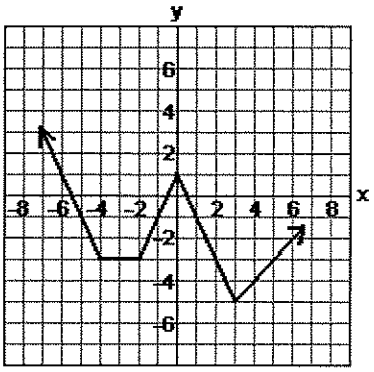
or

$\{y \in \mathbb{R} \mid -7 \le y \le -2\}$ or $\{y \mid -7 \le y \le -2\}$

74. **What is the range of the function $f(x) = x^2 - 3$ when the domain is $\{1, 3, 5\}$?**

R: $\{-2, 6, 22\}$

75. What is the domain of the given graph?



D: all real #s, $(-\infty, \infty)$

R: $y \ge -5$ or $[-5, \infty)$ or $\{y \mid y \ge -5\}$

76. The perimeter of a rectangular playing field is 244 feet. If its length is 2 feet longer than twice its width, what are the dimensions of the field?

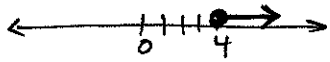
40 ft x 82 ft

77. What is the value of $\frac{mn}{r^2}$ if $m = 7$, $n = 18$, $r = 6$?

$\frac{7}{2}$

78. Solve and graph your solution: $-3(x+1) \le 15$

$x \ge 4$



79. Solve the proportion: $\frac{5}{3z-4} = \frac{-3}{1-2z}$

$z = -7$

80. What is the slope and y-intercept of $2x + 5y = 10$?

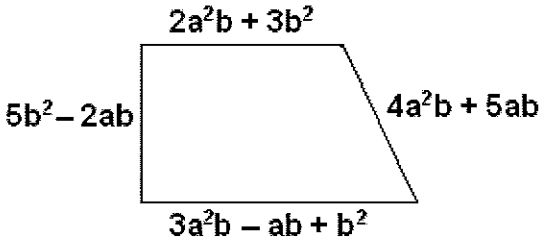
$m = -2/5$ y-int: $(0, 2)$ or $b = 2$

81. Simplify completely.

$(2p+5)(2p-5) - 3(3p-4)^2$

$-23p^2 + 72p - 73$

82. Write the expression that gives the perimeter of the trapezoid below:



$9a^2b + 9b^2 + 2ab$

83. Simplify

$\frac{(3m^2p^{-3})^2}{4m^{-1}p^2} \bullet \frac{2m^{-2}p^4}{6m^3p^6}$ $\frac{3}{4p^{10}}$

84. Simplify $(2x^2y^3)^3 \bullet (3xy^2)^2$ $72x^8y^{13}$

85. Write an equation for the line that contains the points (-3, 5) and (1, -3).

$y = -2x - 1$

86. Factor: $x^2 - 2x - 15$.

$(x-5)(x+3)$

87. Solve: $3x - y = 2$

$x + 2y = 10$ $(2, 4)$

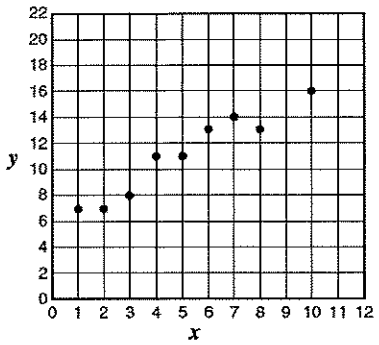
88. If $f(x) = 5x^2 - 7$, what is $f(-3)$?

38

89. The continent of North America has an area of approximately 9.4×10^6 square miles. The area of Asia is approximately 1.74×10^7 square miles. How many square miles larger is Asia than North America?

8×10^6 mi.^{2}

90.



Using the data plotted on the scatterplot, which equation most closely describes a line of best fit for the data?

a. $y = x + 6$
b. $y = 2x - 4$
c. $y = 2x + 5$
d. $y = 3x - 4$

91. A delivery service company maintains several vehicles. The table summarizes the cost for auto insurance related to the number of vehicles insured.

Number of Vehicles	Cost ($)
1	1,700
2	2,200
3	2,700
4	3,200
5	3,700
6	4,200

Using an equation of a line of best fit for the data, estimate the total cost of insuring eight vehicles.

$1,600

92. What is the solution to the system of equation below?

$x + 2y = -8$

$3x - 4y = -4$

$(-4, -2)$

93. Factor: $2x^2 + 5x + 3$

$(2x + 3)(x + 1)$

94. Find the x-intercept and y-intercept of the graph of $5x - 3y = -30$.

x-int: $(-6, 0)$ y-int: $(0, 10)$

95. Heather's weekly pay varies directly to the number of hours she works at the record store. Her pay is $174 for 24 hours of work. Find the amount of pay for 40 hours of work.

$290

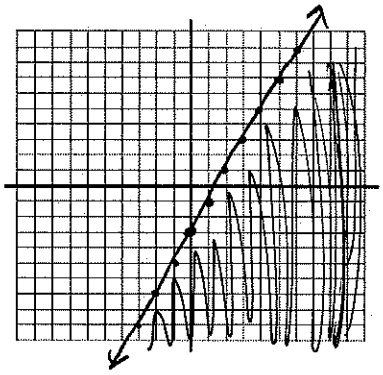
96. The diameter of a hydrogen atom is 0.000000725 millimeters. Express this in scientific notation.

7.25×10^{-7}

97. Which property below will make the equation true?

$6a^2 - 2a = 2a(3a - 1)$ Distributive Property

98. Graph $2x - y \geq 3$



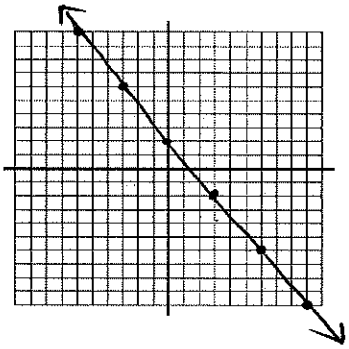
99. The difference in cost between a large bag of chips and a small bag of chips was \$0.65. Alicia bought 5 large bags and 3 small bags of chips for her party and spent \$7.25. What was the cost of a small bag of chips?

\$0.50

100. What is the solution to $5 - \frac{n}{2} = 12$?

$n = -14$

101. Graph $y = -4/3x + 2$



102. In which table of ordered pairs does y vary directly as x?

a.

X	1	2	3
Y	2	5	8

b.

X	1	2	3
Y	1	4	9

c.

X	1	2	3
Y	2	8	16

d.

X	1	2	3
Y	4	8	12

103. Simplify: $2x(3x + y) - 4(5x + 9y)$

$6x^2 + 2xy - 20x - 36y$

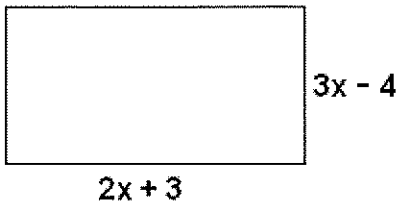
104. Simplify: $2x^3y(x^2y - 3xy^2)$?

$2x^5y^2 - 6x^4y^3$

105. Solve: $\frac{x-2}{18} = \frac{x-3}{15}$

$x = 8$

106. Write an expression that best describes the area of the rectangle below. (Hint: A = lw)



$(3x-4)(2x+3)$

$6x^2+x-12$

107. Simplify $(5x-2)^2$.

$25x^2-20x+4$

108. What is the slope of the line represented by the equation $-2y = x - 1$?

$-1/2$