

8. What is half of 2^6 ?

- A. 1^3 C. 2^3
 B. 1^6 D. 2^5

9. Which equation represents a line that is parallel to the line $y = -4x + 5$?

- A. $y = -4x + 3$
 B. $y = -\frac{1}{4}x + 5$
 C. $y = \frac{1}{4}x + 3$
 D. $y = 4x + 5$

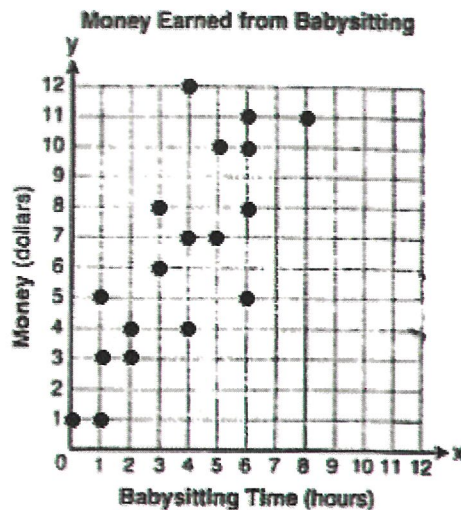
10. Pam is playing with red and black marbles. The number of red marbles she has is three more than twice the number of black marbles she has. She has 42 marbles in all. How many red marbles does Pam have?

- A. 13 C. 29
 B. 15 D. 33

11. What is $\frac{\sqrt{32}}{4}$ expressed in simplest radical form?

- A. $\sqrt{2}$ C. $\sqrt{8}$
 B. $4\sqrt{2}$ D. $\frac{\sqrt{8}}{2}$

12. Which equation most closely represents the line of best fit for the scatter plot below?



- A. $y = x$ C. $y = \frac{3}{2}x + 4$
 B. $y = \frac{2}{3}x + 1$ D. $y = \frac{3}{2}x + 1$

13. In a linear equation the independent variable increases at a constant rate while the dependent variable decreases at a constant rate. The slope of this line is

- A. Zero C. Positive
 B. Negative D. Undefined

14. Which ordered pair is a solution to the system of equations $y = x$ and $y = x^2 - 2$?

- C. $(-2, -2)$ C. $(0, 0)$
 D. $(-1, 1)$ D. $(2, 2)$

KEYSTONE – ALGEBRA I REVIEW

20. Sam and Odel have been selling frozen pizzas for a class fundraiser. Sam has sold half as many pizzas as Odel. Together they have sold a total of 126 pizzas. How many pizzas did Sam sell?

- A. 21
- B. 42
- C. 63
- D. 84

21. Which ordered pair is in the solution set of the system of equations $y = -x + 1$ and $y = x^2 + 5x + 6$?

- A. $(-5, -1)$
- B. $(-5, 6)$
- C. $(5, -4)$
- D. $(5, 2)$

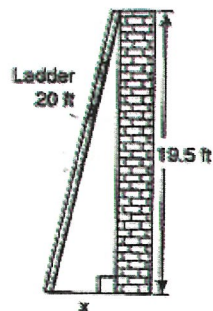
22. Which statement is true about the data set 3, 4, 5, 6, 7, 7, 10?

- A. Mean = Mode
- B. Mean > Mode
- C. Mean = Median
- D. Mean < Median

23. Which value of x is in the solution set of the inequality $-4x + 2 > 10$?

- A. -2
- B. 2
- C. 3
- D. -4

24. Don placed a ladder against the side of his house as shown in the diagram below.



Which equation could be used to find the distance, x , from the foot of the ladder to the base of the house?

- A. $x = 20 - 19.5$
- B. $x = 20^2 - 19.5^2$
- C. $x = \sqrt{20^2 - 19.5^2}$
- D. $x = \sqrt{20^2 + 19.5^2}$

25. Which value of x is a solution of

$$\frac{5}{x} = \frac{x+13}{6}?$$

- A. -2
- B. -3
- C. -10
- D. -15

26. A rectangle has an area of 24 square units. The width is 5 units less than the length. What is the length, in units, of the rectangle?

- A. 6
- B. 8
- C. 3
- D. 19

KEYSTONE – ALGEBRA I REVIEW

27. The table below shows a cumulative frequency distribution of runners' ages.

Age Group	Total
20-29	8
20-39	18
20-49	25
20-59	31
20-69	35

According to the table, how many runners are in their forties?

- A. 25
 B. 10
 C. 7
 D. 6
28. Mr. Turner bought x boxes of pencils. Each box holds 25 pencils. He left 3 boxes of pencils at home and took the rest to school. Which expression represents the total number of pencils he took to school?

- A. $22x$
 B. $25x - 3$
 C. $25 - 3x$
 D. $25x - 75$

29. Lenny made a cube in technology class. Each edge measured 1.5 cm. What is the volume of the cube in cubic centimeters?

- A. 2.25
 B. 3.375
 C. 9.0
 D. 13.5

30. Which value of p is the solution of $5p - 1 = 2p + 20$?

- A. $\frac{19}{7}$
 B. $\frac{19}{3}$
 C. 3
 D. 7

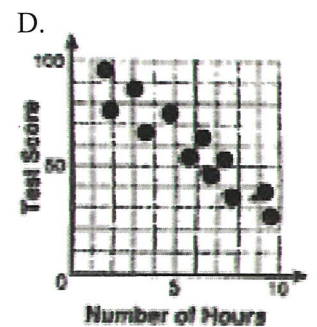
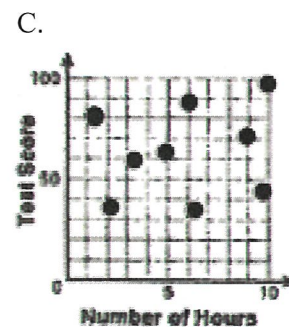
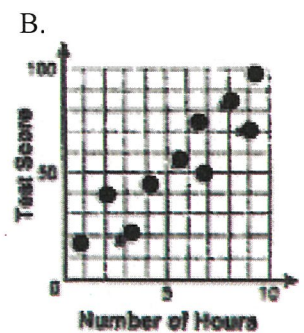
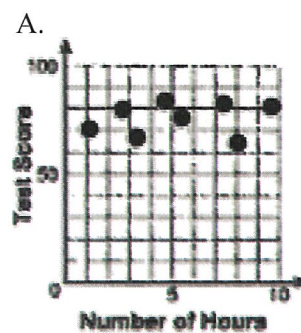
31. The statement $2 + 0 = 2$ is an example of the use of which property of real numbers?

- A. associative
 B. additive identity
 C. additive inverse
 D. distributive.

32. Mrs. Smith wrote "Eight less than three times a number is greater than fifteen" on the board. If x represents the number, which inequality is a correct translation of this statement?

- A. $3x - 8 > 15$
 B. $3x - 8 < 15$
 C. $8 - 3x > 15$
 D. $8 - 3x < 15$

33. There is a negative correlation between the number of hours a student watches television and his or her social studies test score. Which scatter plot below displays this correlation?



KEYSTONE – ALGEBRA I REVIEW

34. When $3g^2 - 4g + 2$ is subtracted from $7g^2 + 5g - 1$, the difference is
- A. $-4g^2 - 9g + 3$
B. $4g^2 + g + 1$
C. $4g^2 + 9g - 3$
D. $10g^2 + g + 1$
35. Factored completely, the expression $2x^2 + 10x - 12$ is equivalent to
- A. $2(x - 6)(x + 1)$
B. $2(x + 6)(x - 1)$
C. $2(x + 2)(x + 3)$
D. $2(x - 2)(x - 3)$
36. Factored, the expression $16x^2 - 25y^2$ is equivalent to
- A. $(4x - 5y)(4x + 5y)$
B. $(4x - 5y)(4x - 5y)$
C. $(8x - 5y)(8x + 5y)$
D. $(8x - 5y)(8x - 5y)$
37. What is the product of $-3x^2y$ and $(5xy^2 + xy)$?
1. $-15x^3y^3 - 3x^3y^2$
2. $-15x^3y^3 - 3x^3y$
3. $-15x^2y^2 - 3x^2y$
4. $-15x^3y^3 + xy$
38. Which value of x makes the expression $\frac{x+4}{x-3}$ undefined?
- A. -4
B. -3
C. 3
D. 0
39. Which expression represents $\frac{25x-125}{x^2-25}$ in simplest form?
- A. $\frac{5}{x}$
B. $-\frac{5}{x}$
C. $\frac{25}{x-5}$
D. $\frac{25}{x+5}$
40. What is the product of $\frac{x^2-1}{x+1}$ and $\frac{x+3}{3x-3}$ expressed in simplest form?
- A. x
B. $\frac{x}{3}$
C. $x + 3$
D. $\frac{x+3}{3}$
41. What is the product of $\frac{4x}{x-1}$ and $\frac{x^2-1}{3x+3}$ expressed in simplest form?
- A. $\frac{4x}{3}$
B. $\frac{4x^2}{3}$
C. $\frac{4x^2}{3(x+1)}$
D. $\frac{4(x+1)}{3}$

KEYSTONE – ALGEBRA I REVIEW

42. Is the equation $3(2x - 4) = -18$ equivalent to $6x - 12 = -18$?

- A. Yes, the equations are equivalent by the Associative Property of Multiplication.
- B. Yes, the equations are equivalent by the Commutative Property of Multiplication.
- C. Yes, the equations are equivalent by the Distributive Property of Multiplication.
- D. No, the equations are not equivalent.

43. $\sqrt{16} + \sqrt[3]{8} =$

- A. 4
- B. 6
- C. 9
- D. 10

44. Which expression is equivalent to x^6x^2 ?

- A. x^4x^3
- B. x^5x^3
- C. x^7x^3
- D. x^9x^3

45. Which number does not have a reciprocal?

- A. -1
- B. 0
- C. $\frac{1}{1000}$
- D. 3

46. What is the multiplicative inverse of $\frac{1}{2}$?

- 1. -2
- 2. $-\frac{1}{2}$
- C. $\frac{1}{2}$
- D. 2

47. What is the solution for this equation?

$$|2x - 3| = 5$$

- A. $x = -4$ or $x = 4$
- B. $x = -4$ or $x = 3$
- C. $x = -1$ or $x = 4$
- D. $x = -1$ or $x = 3$

48. What is the solution set of the inequality

$$5 - |x + 4| \leq -3?$$

- A. $-2 \leq x \leq 6$
- B. $x \leq -2$ or $x \geq 6$
- C. $-12 \leq x \leq 4$
- D. $x \leq -12$ or $x \geq 4$

49. Which equation is equivalent to

$$5x - 2(7x + 1) = 14x?$$

- A. $-9x - 2 = 14x$
- B. $-9x + 1 = 14x$
- C. $-9x + 2 = 14x$
- D. $12x - 1 = 14x$

50. Which equation is equivalent to

$$4(2 - 5x) = 6 - 3(1 - 3x)?$$

- A. $8x = 5$
- B. $8x = 17$
- C. $29x = 5$
- D. $29x = 17$

KEYSTONE – ALGEBRA I REVIEW

51. The total cost (c) in dollars of renting a sailboat for n days is given by the equation

$$c = 120 + 60n$$

If the total cost was \$360, for how many days was the sailboat rented?

- A. 2 C. 6
B. 4 D. 8
52. Solve: $3(x + 5) = 2x + 35$

Step 1: $3x + 15 = 2x + 35$

Step 2: $5x + 15 = 35$

Step 3: $5x = 20$

Step 4: $x = 4$

Which is the first incorrect step in the solution shown above?

- A. Step 1 C. Step 3
B. Step 2 D. Step 4
53. A 120-foot-long rope is cut into 3 pieces. The first piece of rope is twice as long as the second piece of rope. The third piece of rope is three times as long as the second piece of rope. What is the length of the longest piece of rope?
- A. 20 feet C. 60 feet
B. 40 feet D. 80 feet

54. The cost to rent a construction crane is \$750 per day plus \$250 per hour for use. What is the maximum number of hours the crane can be used each day if the rental cost is not to exceed \$2500 per day?

1. 2.5 C. 7.0
2. 3.7 D. 13.0

55. What is the solution to the inequality $x - 5 > 14$?

- A. $x > 9$ C. $x > 19$
B. $x < 9$ D. $x < 19$

56. The lengths of the sides of a triangle are y , $y + 1$, and 7 centimeters. If the perimeter is 56 centimeters, what is the value of y ?

- A. 24 C. 31
B. 25 D. 25

57. Which number serves as a counterexample to this statement below?

All positive integers are divisible by 2 or 3.
--

- A. 100 C. 30
B. 57 D. 25

58. Which of the following is a valid conclusion to the statement “If a student is a high school band member, then the student is a good musician”?

- A. All good musicians are high school band members.
B. A student is a high school band member.
C. All students are good musicians.
D. All high school band members are good musicians.

KEYSTONE – ALGEBRA I REVIEW

59. The chart below shows an expression evaluated for hour different values of x .

x	$x^2 + x + 5$
1	7
2	11
6	47
7	61

Josiah concluded that for all positive values of x , $x^2 + x + 5$ produces a prime number. Which value of x serves as a counterexample to prove Josiah's conclusion false?

- A. 5
- B. 11
- C. 16
- D. 21

60. John's solution to an equation is shown below.

Given: $x^2 + 5x + 6 = 0$

Step 1: $(x + 2)(x + 3) = 0$

Step 2: $x + 2 = 0$ or $x + 3 = 0$

Step 3: $x = -2$ or $x = -3$

Which property of real numbers did John use for Step 2?

- A. Multiplication Property of Equality
- B. Zero Product Property of Multiplication
- C. Commutative Property of Multiplication
- D. Distributive Property of Multiplication over Addition

61. Stan's solution to an equation is shown below.

Given: $n + 8(n + 20) = 110$

Step 1: $n + 8n + 20 = 110$

Step 2: $9n + 20 = 110$

Step 3: $9n = 110 - 20$

Step 4: $9n = 90$

Step 5: $\frac{9n}{9} = \frac{90}{9}$

Step 6: $n = 10$

Which statement about Stan's solution is true?

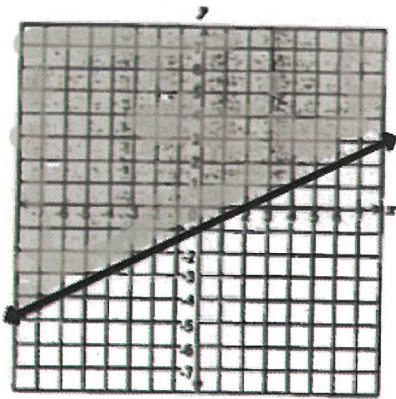
- A. Stan's solution is correct.
- B. Stan made a mistake in Step 1.
- C. Stan made a mistake in Step 3.
- D. Stan made a mistake in Step 5.

62. What is the y -intercept of the graph of $4x + 2y = 12$?

- A. -4
- B. -2
- C. 6
- D. 12

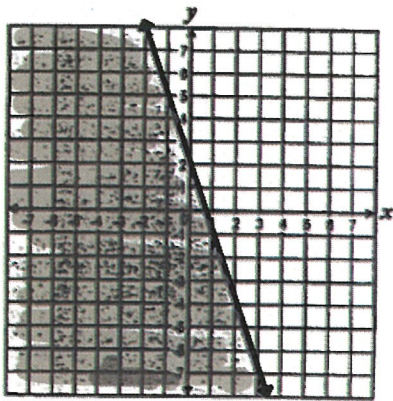
KEYSTONE – ALGEBRA I REVIEW

63. Which inequality is shown on the graph below?



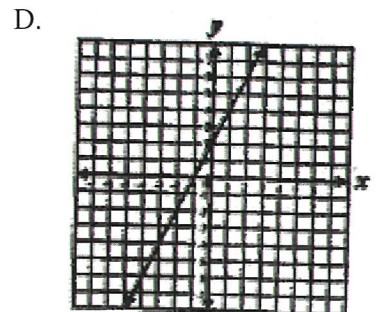
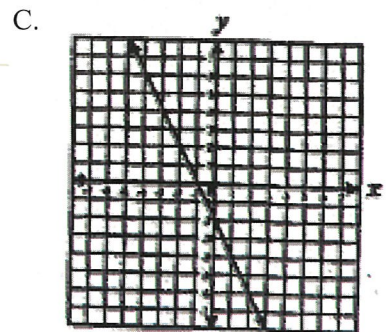
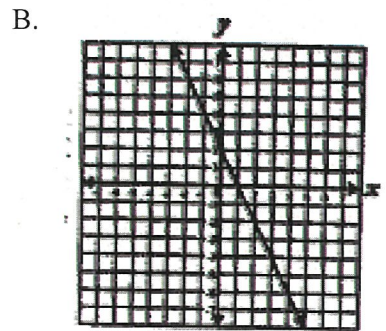
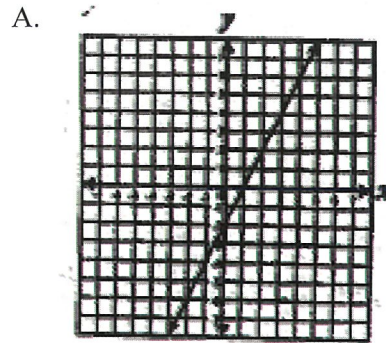
- A. $y < \frac{1}{2}x - 1$
- B. $y \leq \frac{1}{2}x - 1$
- C. $y > \frac{1}{2}x - 1$
- D. $y \geq \frac{1}{2}x - 1$

64. Which inequality does the shaded region of the graph represent?



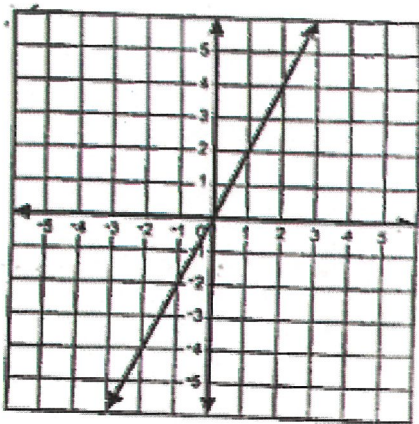
- A. $3x + y \leq 2$
- B. $3x + y \geq 2$
- C. $3x + y \leq -2$
- D. $3x + y \geq -2$

65. Which best represents the graph of $y = 2x - 2$?



KEYSTONE – ALGEBRA I REVIEW

66. Which equation best represents the graph below?



- A. $y = x$
- B. $y = 2x$
- C. $y = x + 2$
- D. $y = 2x + 2$

67. Which point lies on the line defined by $3x + 6y = 2$?

- A. $(0, 2)$
- B. $(0, 6)$
- C. $(1, -\frac{1}{6})$
- D. $(1, -\frac{1}{3})$

68. What is the equation of the line that has a slope of 4 and passes through the point $(3, -10)$?

- A. $y = 4x - 22$
- B. $y = 4x + 22$
- C. $y = 4x - 43$
- D. $y = 4x + 43$

69. The data in the table shows the cost of renting a bicycle by the hour, including a deposit.

Hours (h)	Cost in dollars (c)
2	15
5	30
8	45

If hours, h , were graphed on the horizontal axis and cost, c , were graphed on the vertical axis, what would the equation of a line be that fits the data?

- A. $c = 5h$
- B. $c = \frac{1}{5}h + 5$
- C. $c = 5h + 5$
- D. $c = 5h - 5$

70. Some ordered pairs for a linear function of x are given in the table below.

x	y
1	1
3	7
5	13
7	19

Which of the following equations was used to generate the table above?

- A. $y = 2x + 1$
- B. $y = 2x - 1$
- C. $y = 3x - 2$
- D. $y = 4x - 3$

KEYSTONE – ALGEBRA I REVIEW

71. The equation of the line l is $6x + 5y = 3$, and the equation of line q is $5x - 6y = 0$. Which statement about the two lines is true?

- A. Lines l and q have the same y -intercept.
- B. Lines l and q are parallel.
- C. Lines l and q have the same x -intercept.
- D. Lines l and q are perpendicular.

72. Which equation represents a line that is parallel to $y = -\frac{5}{4}x + 2$?

- A. $y = -\frac{5}{4}x + 1$
- B. $y = -\frac{4}{5}x + 2$
- C. $y = \frac{4}{5}x + 3$
- D. $y = \frac{5}{4}x + 4$

73. What is the solution to this system of equations?

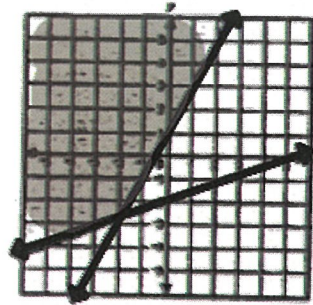
$$\begin{aligned} y &= -3x - 2 \\ 6x + 2y &= -4 \end{aligned}$$

- A. (6, 2)
- B. (1, -5)
- C. No solution
- D. Infinitely many solutions

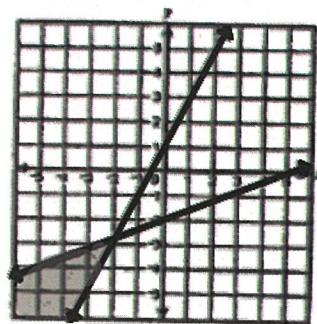
74. Which graph best represents the solution to this system of inequalities?

$$\begin{aligned} 2x &\geq y - 1 \\ 2x - 5y &\leq 10 \end{aligned}$$

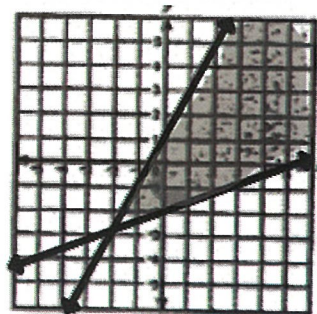
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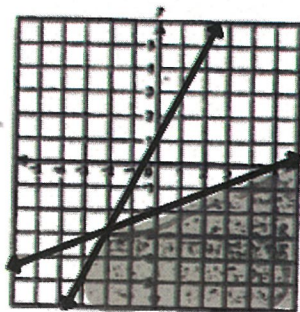
B.



C.



D.



KEYSTONE – ALGEBRA I REVIEW

75. Which ordered pair is the solution to the system of equations below?

$$\begin{aligned}x + 3y &= 7 \\x + 2y &= 10\end{aligned}$$

- A. $(\frac{7}{2}, \frac{13}{4})$ C. (-2, -3)
- B. $(\frac{7}{2}, \frac{17}{5})$ D. (16, -3)
76. Marcy has a total of 100 dimes and quarters. If the total value of the coins is \$14.05, how many quarters does she have?
- A. 27 C. 56
- B. 40 D. 73
77. Which of the following best describes the graph of this system of equations?

$$\begin{aligned}y &= -2x + 3 \\5y &= -10x + 15\end{aligned}$$

- A. Two identical lines
- B. Two parallel lines
- C. Two lines intersection in only one point
- D. Two lines intersecting in only two points

78. $\frac{5x^3}{10x^7} =$

- A. $2x^4$ C. $\frac{1}{5x^4}$
- B. $\frac{1}{2x^4}$ D. $\frac{x^4}{5}$

79. $(4x^2 - 2x + 8) - (x^2 + 3x - 2) =$

- A. $3x^2 + x + 6$
- B. $3x^2 + x + 10$
- C. $3x^2 - 5x + 6$
- D. $3x^2 - 5x + 10$

80. The sum of two binomials is $5x^2 - 6x$. If one of the binomials is $3x^2 - 2x$, what is the other binomial?

- A. $2x^2 - 4x$
- B. $2x^2 - 8x$
- C. $8x^2 + 4x$
- D. $8x^2 - 8x$

81. Which of the following expressions is equal to $(x + 2) + (x - 2)(2x + 1)$?

- A. $2x^2 - 2x$
- B. $2x^2 - 4x$
- C. $2x^2 + x$
- D. $4x^2 + 2x$

82. A volleyball court is shaped like a rectangle. It has a width of x meters and a length of $2x$ meters. Which of the expressions gives the area of the court in square meters?

- A. $3x$ C. $3x^2$
- B. $2x^2$ D. $2x^3$

83. Which is the factored form of $3a^2 - 24ab + 48b^2$?

- A. $(3a - b)(a - 6b)$
- B. $(3a - 16)(a - 3b)$
- C. $3(a - 4b)(a - 4b)$
- D. $3(a - 8b)(a - 8b)$

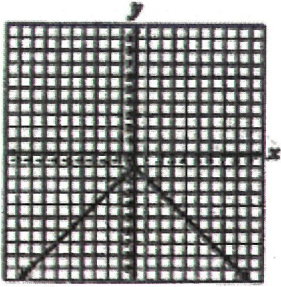
KEYSTONE – ALGEBRA I REVIEW

84. Which is a factor of $x^2 - 11x + 24$?
- A. $x + 3$
B. $x - 3$
C. $x + 4$
D. $x - 4$
85. Which of the following shows $9t^2 + 12t + 4$ factored completely?
- A. $(3t + 2)^2$
B. $(3t + 4)(3t + 1)$
C. $(9t + 4)(t + 1)$
D. $9t^2 + 12t + 4$
86. What is the complete factorization of $32 - 8z^2$?
- A. $-8(2 + z)(2 - z)$
B. $8(2 + z)(2 - z)$
C. $-8(2 + z)^2$
D. $8(2 - z)^2$
87. If x^2 is added to x , the sum is 42. Which of the following could be the value of x ?
- A. -7
B. -6
C. 14
D. 42
88. Two airplanes left the same airport traveling in opposite directions. If one airplane averages 400 miles per hour and the other airplane averages 250 miles per hour, in how many hours will the distance between the two planes be 1625 miles?
- A. 2.5
B. 4
C. 5
D. 10.8
89. Lisa will make punch that is 25% fruit juice by adding pure fruit juice to a 2-liter mixture that is 10% pure fruit juice. How many liters of pure fruit juice does she need to add?
- A. 0.4 liters
B. 0.5 liters
C. 2 liters
D. 8 liters
90. Which relation is a function?
- A. $\{(-1, 3), (-2, 6), (0, 0), (-2, -2)\}$
B. $\{(-2, -2), (0, 0), (1, 1), (2, 2)\}$
C. $\{(4, 0), (4, 1), (4, 2), (4, 3)\}$
D. $\{(7, 4), (8, 8), (10, 8), (10, 10)\}$

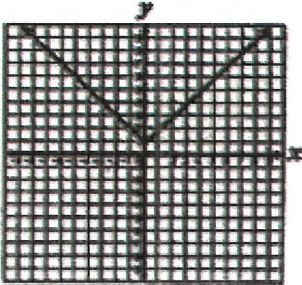
KEYSTONE – ALGEBRA I REVIEW

91. For which equation graphed below are all the y -values negative?

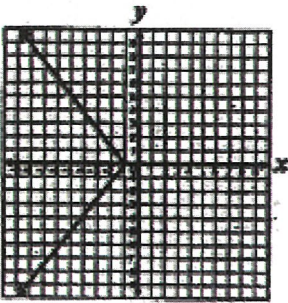
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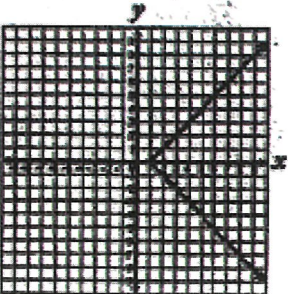
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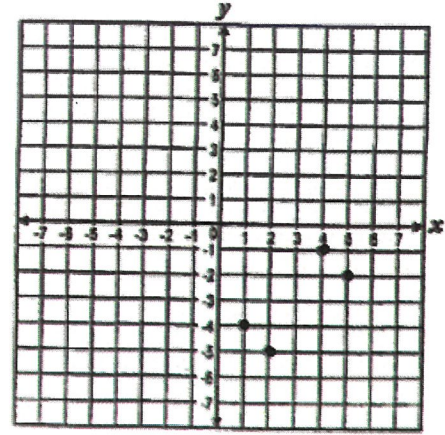
C.



D.



92. What is the domain of the function shown on the graph below?



A. $\{-1, -2, -3, -4\}$

B. $\{-1, -2, -4, -5\}$

C. $\{1, 2, 3, 4\}$

D. $\{1, 2, 4, 5\}$

KEYSTONE – ALGEBRA I REVIEW

93. Which of the following graphs represents a relation that is not a function of x ?

