81. Which graph <u>best</u> represents the solution to this system of inequalities?

$$2x \geq y - 1$$
$$2x - 5y \leq 10$$

Pick $(0,0)$

$0 \geq -1$ True
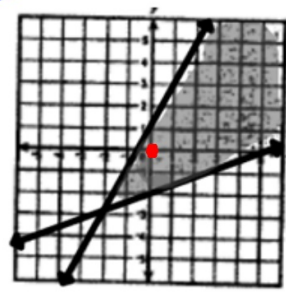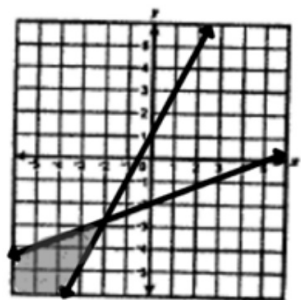
$0 \leq 10$ True

✓

A.
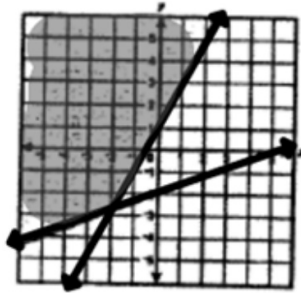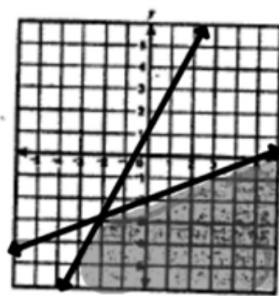
C.

B.

D.

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

$$x + 3y = 7$$
$$x + 2y = 10$$

A. $\left(\frac{7}{2}, \frac{13}{4}\right)$ C. $(-2, -3)$

B. $\left(\frac{7}{2}, \frac{17}{5}\right)$ D. $(16, -3)$

$(-)$ $\begin{cases} x + 3y = 7 \\ x + 2y = 10 \end{cases}$

$y = -3$

$x + 2(-3) = 10$

$x - 6 = 10$

$+6 \quad +6$

$x = 16$

83. 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

Let d = # dimes
Let q = # quarters

$d + q = 100$

$(10)(.10d + .25q = (14.05))(10)$

$d + q = 100$
$d + 2.5q = 140.5$

$\dfrac{-1.5q}{-1.5} = \dfrac{-40.5}{-1.5}$

$q = 27$

84. Which of the following best describes the graph of this system of equations?

Solve for y to put in slope-intercept form to compare slopes.

$y = -2x + 3$

$\dfrac{5y}{5} = \dfrac{-10x + 15}{5}$

$y = -2x + 3$

It's the same line.

A. Two identical lines

B. Two parallel lines

C. Two lines intersection in only one point

D. Two lines intersecting in only two points

85.

$$\frac{\cancel{5x^3}}{\cancel{10x^7}} = \frac{1}{2x^4}$$

$$\frac{1}{2} \quad \frac{1}{x^4} \quad \frac{1}{2x^4}$$

A. $2x^4$

C. $\frac{1}{5x^4}$

B. $\frac{1}{2x^4}$

D. $\frac{x^4}{5}$

Distribute -1.

86. $(4x^2 - 2x + 8) - (x^2 + 3x - 2) =$

A. $3x^2 + x + 6$

B. $3x^2 + x + 10$

C. $3x^2 - 5x + 6$

D. $3x^2 - 5x + 10$

$4x^2 - 2x + 8 - x^2 - 3x + 2$ CLT

$3x^2 - 5x + 10$

87. 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. $8x^2 - 8x$

Notice sign change

$$5x^2 - 6x - (3x^2 - 2x) = 5x^2 - 6x - 3x^2 + 2x$$

$$2x^2 - 4x$$

88. 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. $4x^2 + 2x$ *F.O.I.L.*

$$x + 2 + (x - 2)(2x + 1)$$

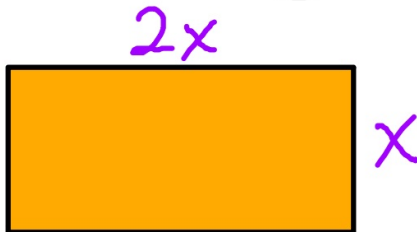$$x + 2 + 2x^2 + x - 4x - 2 \overset{CLT}{=} 2x^2 - 2x$$

89. 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. $2x^3$

2x

x

Area = lw

$A = (2x)(x) = 2x^2$

90. 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. $3(a - 8b)(a - 8b)$

GCF $3(a^2 - 8ab + 16b^2)$

$3(a - 4b)(a - 4b)$

Note: You can always check your answer in a case like this by FOILing and then distributing to see if you end up back where you started.

91. Which is a factor of $x^2 - 11x + 24$?

$(x-8)(x-3)$

A. $x + 3$

B. $x - 3$

C. $x + 4$

D. $x - 4$

92. Which of the following shows $9t^2 + 12t + 4$ factored completely?

$(3t+2)(3t+2)$

A. $(3t + 2)^2$

B. $(3t + 4)(3t + 1)$

C. $(9t + 4)(t + 1)$

D. $9t^2 + 12t + 4$

**Perfect square trinomial pattern.
FOIL to check answer.**

93. What is the complete factorization of $32 - 8z^2$?

    A. $-8(2+z)(2-z)$ $8(4-z^2)$

    B. $8(2+z)(2-z)$

    C. $-8(2+z)^2$ $8(2+z)(2-z)$

    D. $8(2-z)^2$

Note: Once a GCF of 8 is pulled out, it is a difference of two squares pattern.

94. If x^2 is added to x, the sum is 42. Which of the following could be the value of x?

Could plug in, or.....

    A. -7 C. 14

    B. -6 D. 42

$$x^2 + x = 42$$
$$-42 \quad -42$$
$$x^2 + x - 42 = 0$$
$$(x+7)(x-6) = 0$$

ZPP $x+7=0$ or $x-6=0$
         $x=-7$ or $x=6$

95. 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

C. 5

B. 4

D. 10.8

Let h = #hrs.

$$400h + 250h = 1625$$
$$\frac{650h}{650} = \frac{1625}{650}$$
$$h = 2.5$$

96. 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

C. 2 liters

B. 0.5 liters

D. 8 liters

Let l = # liters of pure fruit juice added

10% of 2 liters   liters of pure fruit juice added   25% of total after pure juice added

$$.10(2) + l = .25(2 + l)$$
$$100(.2 + l) = (.50 + .25l)100$$
$$20 + 100l = 50 + 25l$$
$$\frac{75l}{75} = \frac{30}{75}$$
$$l = .4 \text{ liters}$$

97. Which relation is a function?

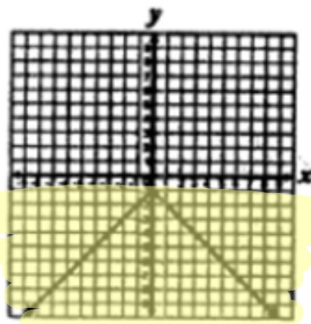X. $\{(-1,3),(-2,6),(0,0),(-2,-2)\}$

B. $\{(-2,-2),(0,0),(1,1),(2,2)\}$

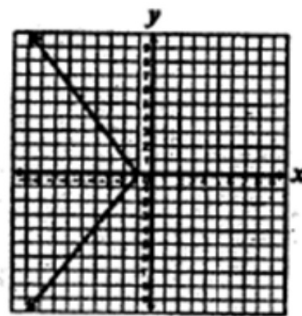X. $\{(4,0),(4,1),(4,2),(4,3)\}$

X. $\{(7,4),(8,8),(10,8),(10,10)\}$

Note: For each value of x, there can be one and only one value for y. *in order to be a function.* All of the underlined values of X show situations where there would be a violation of the vertical line test.

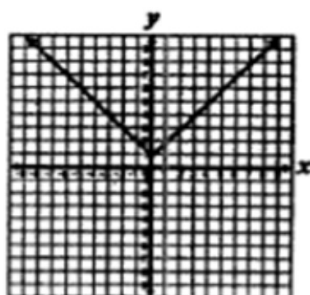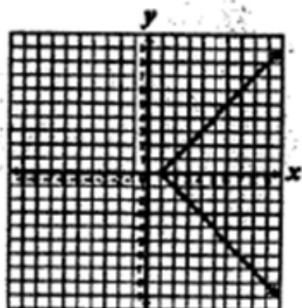98. For which equation graphed below are all the y-values negative?
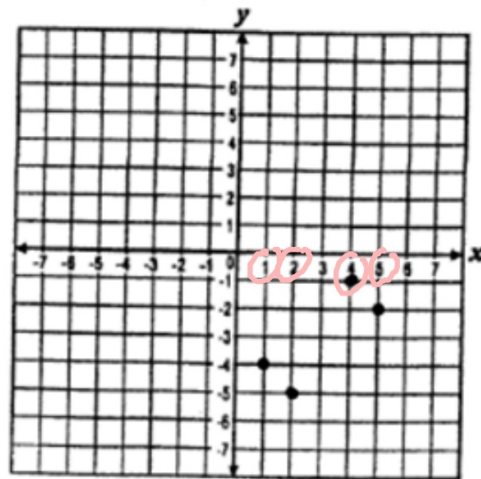
A.

C.

All values below the x-axis.

B.

D.

99. What is the domain of the function shown on the graph below? *possible x values*

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

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

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

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

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

A.

B.

C.

D.

Violation of the VLT (vertical line test)