

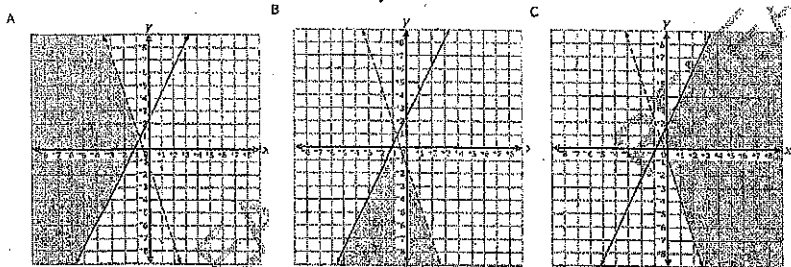


**Directions:** The following questions are sample items similar to those found on the EOC Exam. Answer each to the best of your ability. Show all work on a separate sheet of paper.

1. Which graph shows the solution for the system of inequalities below?

$$y \leq 2x + 2$$

$$y > -3x - 1$$



2. The amount of medicine in Elizabeth's blood is modeled by the function  $M(t) = -t^2 + 10t$ , where  $t$  is the number of hours after she takes the medicine. How many hours after Elizabeth takes her medicine is the amount of medicine in her blood the highest?

- A 5 hours
- B 10 hours
- C 25 hours

3. What is the smallest positive integer for  $x$ , so that the value of  $f(x) = 200(2)^x$  is greater than the value of  $g(x) = 500x + 400$ ?

4. What is the  $y$ -intercept of the function  $f(x) = \frac{1}{2}(2)^x - 4$ ?

- A (0, -4)
- B (0, -2)
- C (0, 1)

5. A girl drops a ball from a height of 10 feet. Each time the ball hits the ground, it bounces to  $\frac{2}{3}$  its previous height. Which equation gives  $y$ , the height of the ball after  $x$  bounces?

6. Which expression is equivalent to  $3(x - 4)^2$ ?

- A  $3x^2 + 48$
- B  $3x^2 - 24x + 48$
- C  $9x^2 - 72x + 144$

- A  $y = 10^{\frac{2}{3}x}$
- B  $y = 10\left(\frac{2}{3}\right)^x$
- C  $y = \frac{2}{3}(10)^x$

7. Jane owns  $x$  comic books. Derrek owns  $y$  comic books.

- The number of comic books Jane owns is 1 less than 2 times the number Derrek owns.
- Together they have a total of 11 comic books.

8. James is at a gift sale where everything costs \$4 (tax included).

- James has \$50.
- James must have at least \$28 remaining when he is finished buying gifts.

How many comic books does Derrek own?

What is the greatest number of gifts James can buy?

9. The expression  $-5t^2 + 40t$  predicts the height, in meters, of an object  $t$  seconds after a person launches it into the air. Using this expression, how many seconds will it take the object to hit the ground?

10. The function  $f(x) = \frac{1}{2}x - 6$  was replaced with  $f(x + k) = \frac{1}{2}x - 4$ . What is the value of  $k$ ?

11. The function  $f(x) = 10,000 - 1,500x$  can be used to predict the number of termites in an area  $x$  days after the area has been treated. How many termites are predicted in the area after 5 days?

12. Avis used a quadratic function to solve a problem. The factored form of the function is show below.

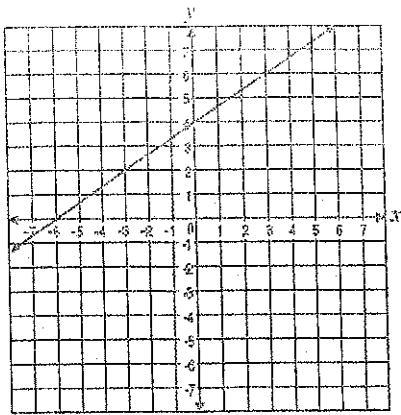
$$(4x + 3)(6x - 3) = 0$$

What is the positive solution to the problem?

The cost to rent a construction crane is \$750 per day plus \$250 per hour of 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?

14. The average daily high temperature for the month of May in Ocala, Florida is approximated by the function  $f(n) = 0.2n + 80$ , where  $n$  is the day of the month. May has 31 days. The maximum daily high temperature occurred on May 31<sup>st</sup>. What was the maximum temperature?

15. Jorge graphed the line shown below.



What is the slope of the line?

17. The table below shows the amount of money Bernard earned selling newspapers during a 6-week time period.

Week	1	2	3	4	5	6
Money Earned	\$100.00	\$110.60	\$130.10	\$130.80	\$150.15	\$170.25

Which describes the relationship between the week,  $x$ , and the money Bernard earned,  $y$ ?

- A a weak, positive relationship
- B a strong, negative relationship
- C a strong, positive relationship

19. The volume of a cone can be found using the formula  $V = \frac{1}{3}Bh$ , where  $B$  is the area of the base of the cone and  $h$  is the height. A cone has a volume of 262 cubic inches and a height of 10 inches. What is the **approximate** length of the radius of the cone?

- A 2.5 inches
- B 5 inches
- C 25 inches

21. A quadrilateral has vertices located at  $(-3, -5)$ ,  $(4, 2)$ ,  $(4, 1)$ , and  $(2, -1)$ . Which **best** describes the figure?

- A rhombus
- B rectangle
- C trapezoid

23. Jenna cut a piece of cloth several times. The table below shows the number of pieces of cloth she had after making several cuts.

Cuts	1	2	3	4	5	6
Pieces of Cloth	2	4	8	16	32	64

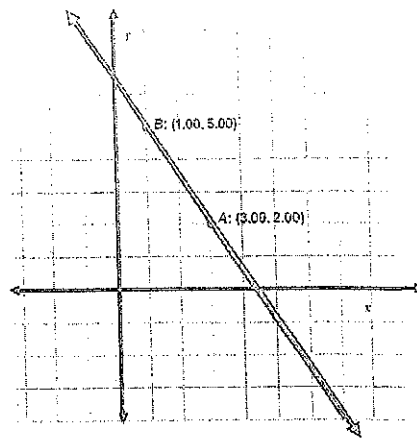
Which equation could be used to determine the number of pieces of cloth,  $y$ , Jenna had after making  $x$  cuts?

- A  $y = 2x$
- B  $y = 2^x$
- C  $y = x^2$

25. A liquid is evaporating. The amount of a liquid remaining, in liters, after  $x$  weeks is modeled by the equation  $y = 100(0.78)^x$ . **Approximately** what percent of the liquid evaporates per week?

- A 47%
- B 53%
- C 78%

16. Shirley graphed the line shown on the coordinate plane below.



What is the  $x$ -coordinate of the point at which this line intersects the  $x$ -axis?

18. A system of equations is shown below.

$$y = -2x + 4$$

$$y = (2)^x + 1$$



What is the **approximate** value of  $x$  in the solution of the system?

- A 0.69
- B 0.75
- C 3.24

20.  $M$  is the midpoint of  $\overline{KL}$ .  $M$  is at  $(5, -2)$  and  $L$  is at  $(3, 6)$ . What are the coordinates of  $K$ ?

- A  $(2, -8)$
- B  $(4, 2)$
- C  $(7, -10)$

22. A school opened with 100 students. The number of students has increased by 25% each year since the school opened. Which function can be used to determine the number of students at the school  $x$  years after it opened?

- A  $f(x) = 0.25x + 100$
- B  $f(x) = 100(0.25)^x$
- C  $f(x) = 100(1.25)^x$

24. A teacher surveyed 160 students to see how many students leave school during lunch. The results of the survey are shown in the relative frequency table below.

	Boys	Girls
Leave School	0.125	0.1875
Stay at School	0.40625	0.28125

**Approximately** what percent of the boys surveyed leave school during lunch?

- A 13%
- B 24%
- C 31%

26. The function  $y = 45x + 6$  can be used to determine the cost for a person to purchase  $x$  tickets to a concert. A person can purchase up to 8 tickets. What is an appropriate domain for the function?

- A all integers  $\leq 8$
- B all positive integers  $\leq 8$
- C all positive real numbers  $\leq 8$

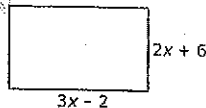
27. The table below shows monthly pet expenses based on the number of pets owned.

Number of pets owned ( $x$ )	0	1	2	4	6
Monthly pet expenses ( $y$ )	\$0	\$22	\$43	\$100	\$160

Using the line of best fit for the data in the table, what is the *approximate* predicted monthly expense for owning 3 pets?

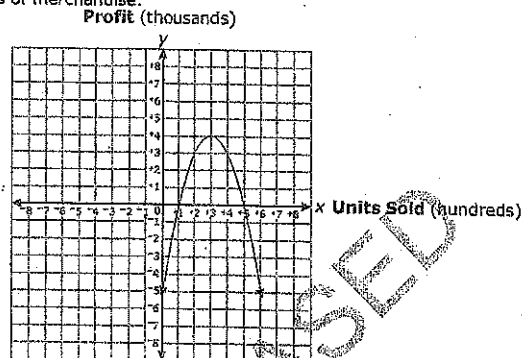
- A \$66
- B \$76
- C \$80

29. What is the area of the rectangle below?



- A  $5x + 4$
- B  $6x^2 + 14x - 12$
- C  $6x^2 - 22x - 12$

31. The graph below shows the amount of profit,  $y$ , a company makes from selling  $x$  units of merchandise.



How many units of merchandise does the company need to sell to make the maximum profit?

- A 100
- B 300
- C 500

33. Which equation has a graph which is perpendicular to the line  $y = -2x$  and which passes through the point  $(-2, 3)$ ?

- A  $x - 2y = 8$
- B  $x + 2y = -8$
- C  $x - 2y = -8$

35. Which situation could be best modeled with an exponential function?

- A the value of a car that loses 6% of its value per year
- B the cost to purchase different weights of bananas at a store
- C the total number of miles run by a person who runs 8 miles per day

37. Fred has \$200. Each week he will save an additional \$50. If Fred does not spend any of the money, how many weeks will it take for Fred to have \$650?

- A 9
- B 13
- C 17

28. A clothing store sells pants and shirts.

- The store can buy up to a total of 500 pants and shirts each month.
- The store wants to buy at least as many shirts as pants.
- The store wants to buy at least 100 pants each month.

Which system of inequalities represents the constraints on the number of shirts,  $s$ , and number of pants,  $p$ , the store buys each month?

- A  $s + p \leq 500$   
 $s \leq p$   
 $p \geq 100$
- B  $s + p \geq 500$   
 $s \geq p$   
 $p \geq 100$
- C  $s + p \leq 500$   
 $s \geq p$   
 $p \geq 100$

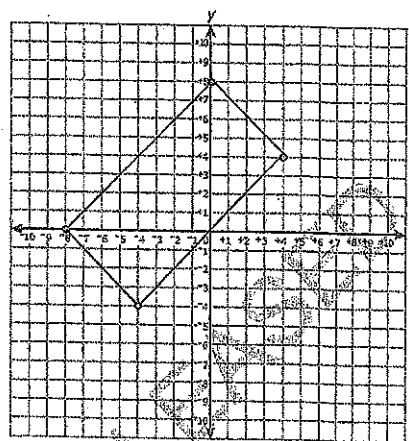
30. A sequence is shown below.

10, 12, 14, 16, ...

Which function can be used to determine the  $n$ th number in the sequence?

- A  $F(n) = n + 2$
- B  $F(n) = 2n + 8$
- C  $F(n) = 2n + 10$

32. The quadrilateral shown below has vertices at  $(-8, 0)$ ,  $(-4, -4)$ ,  $(0, 8)$ , and  $(4, 4)$ .



What is the area of the quadrilateral?

- A 32 units<sup>2</sup>
- B 45 units<sup>2</sup>
- C 64 units<sup>2</sup>

34. The cost to mail a box of textbooks can be modeled by the function  $f(x) = 1.75x + 5.25$ , where  $x$  is the number of books mailed. What does the  $y$ -intercept of the function represent?

- A the cost to mail a box with no textbooks
- B the number of books mailed
- C the cost per book

36. The function  $f(x) = 4(2.0)^x$  models the population of rabbits on a farm after  $x$  months with no removal. The function  $g(x) = 2(2.0)^x$  models the number of rabbits removed from the population after  $x$  months. Which function,  $h(x)$ , models the total number of rabbits on the farm after  $x$  months?

- A  $h(x) = 2(1.0)^x$
- B  $h(x) = 2(2.0)^x$
- C  $h(x) = 6(2.0)^x$

38. Which expression is equivalent to  $\sqrt[4]{x^8}$ ?

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

39. The table below shows the cost of a season ticket to an amusement park in various years.

Years Since 1990 ( $x$ )	Ticket Price (in dollars) ( $y$ )
9	25.00
14	46.25
16	54.75
20	71.75

What is represented by the  $y$ -intercept of the line of best fit for this data set?

- A the predicted average change in ticket price per year
- B the predicted number of years per \$1 increase in ticket price
- C the predicted price of a ticket in 1990

41. The density of an object can be found using the formula  $D = \frac{m}{v}$ .

- $m$  is the mass of the object
- $v$  is the volume of the object

Which formula could be used to determine the volume of an object?

- A  $v = mD$
- B  $v = \frac{D}{m}$
- C  $v = \frac{m}{D}$

43. Yanice needs to solve the problem below using the quadratic formula.

$$x^2 + 8x + 7 = -8$$

Which use of the following shows the quadratic formula being used correctly to determine the solutions for this problem?

- A.  $x = \frac{-8 \pm \sqrt{8^2 - 4(1)(7)}}{2(1)}$
- B.  $x = \frac{-8 \pm \sqrt{8^2 - 4(1)(-8)}}{2(1)}$
- C.  $x = \frac{8 \pm \sqrt{8^2 - 4(1)(15)}}{2(1)}$
- D.  $x = \frac{-8 \pm \sqrt{8^2 - 4(1)(15)}}{2(1)}$

45. The surface area,  $S$ , of a cylinder is calculated using the formula  $S = 2\pi r l + 2\pi r^2$ . Which equation is equivalent to this formula solved for  $l$ , the length of the cylinder?

- A.  $l = \frac{S-1}{r}$
- B.  $l = \frac{S-2\pi r}{2\pi r^2}$
- C.  $l = \frac{S-2\pi r}{r}$
- D.  $l = \frac{S-2\pi r^2}{2\pi r}$

47. Patrick compared the slope of the function  $g(x) = -2x - 8$  to the slope of the linear function shown in the table below. Let  $m$  = the slope of  $g(x)$  and  $n$  = the slope of  $h(x)$ .

$x$	$h(x)$
-3	1
-2	-2
-1	-5
0	-8

Which statement is true?

- A  $m < n$
- B  $m > n$
- C  $m = n$

$$\frac{20x^2 + 5x}{5x}$$

Which of the following is the correct result?

- A.  $4x$
- B.  $4x + 1$
- C.  $20x^2$
- D.  $20x^2 + 1$

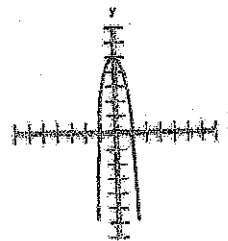
42. John collected data on the number of new movies produced in different years.

- Suppose that the number of movies made in 2005 was 595, and the number made in 2010 was 895.

What is the average rate of change in the number of new movies between 2005 and 2010?

- A 50 movies per year
- B 60 movies per year
- C 300 movies per year

44. What is the range of the relation shown in the graph below?



- A. All  $y \leq 5$
- B. All  $x \leq 5$
- C. All values of  $y$
- D. All values of  $x$

46. Rogelio divides a trinomial by a monomial, as shown below.

$$\frac{3x^4 + 9x^2 + 15x}{3x}$$

Which of the following is the correct result?

- A.  $x^3 + 9x^2 + 15x$
- B.  $x^4 + 3x^2 + 5x$
- C.  $x^3 + 3x + 5$
- D.  $3x^4 + 9x^2 + 5$

48. Shelly has been asked to factor the following expression completely.

$$36y - 81x^2y$$

Which answer choice shows her completely factored expression?

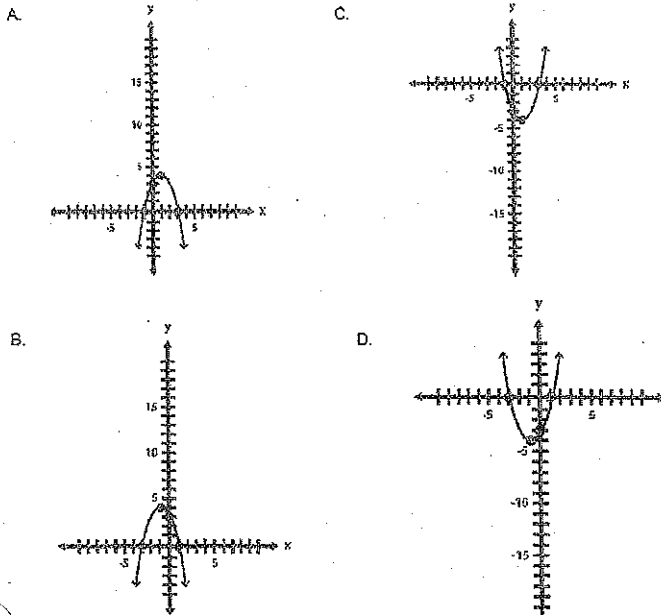
- A.  $y(6+9x)(6-9x)$
- B.  $9y(2+3x)(2-3x)$
- C.  $y(36-81x^2)$
- D.  $9y(4-9x^2)$

49. The function below can be used to describe the path of a bird flying through the air.  
 $f(x) = x^2 - 4x - 32$

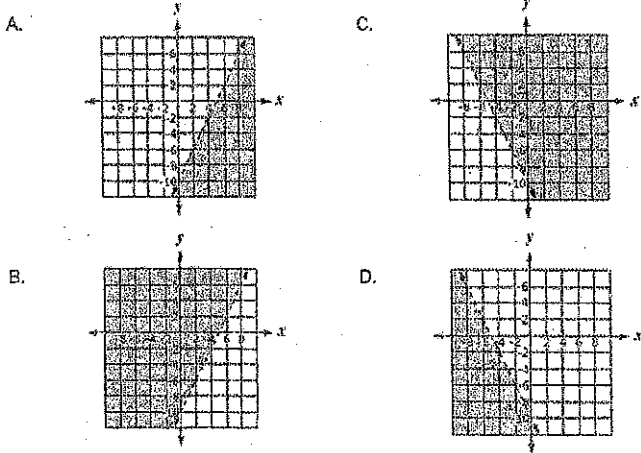
Which of the following shows the correct factorization of this function  $f(x) = 0$ ?

- A.  $(x + 4)(x + 8) = 0$
- B.  $(x + 4)(x - 8) = 0$
- C.  $(x - 4)(x - 8) = 0$
- D.  $(x - 4)(x + 8) = 0$

51. Which of the following is the graph of the function  $y = x^2 + 2x - 3$ ?



53. Which graph best represents  $2x - y < 10$ ?



55. What are the solutions for the quadratic equation  $x^2 + 6x = 16$ ?

- A.  $\{-2, -8\}$
- B.  $\{-2, 8\}$
- C.  $\{2, -8\}$
- D.  $\{2, 8\}$

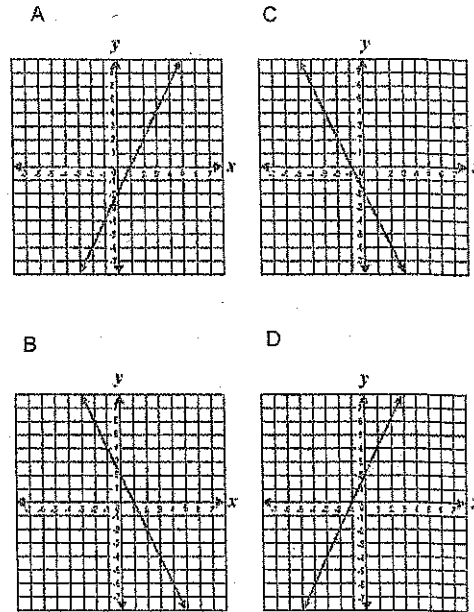
50. Yanet needs to simplify the expression below before she substitutes values for  $x$  and  $y$ .

$$\frac{x^{16}x^{12} + x^8y^8}{x^3y^4}$$

If  $x = 0$  and  $y = 0$ , which of the following is a simplified version of the expression above?

- A.  $x^9y^8$
- B.  $x^{24}y^{16}$
- C.  $x^6y^8 + x^3y^2$
- D.  $x^{15}y^8 + x^6y^4$

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



54. The formula below illustrates how to calculate body mass index ( $B$ ), using weight ( $w$ ) and height ( $h$ ).

$$B = \frac{703w}{h^2}$$

Which of the following shows this equation correctly solved for  $w$ ?

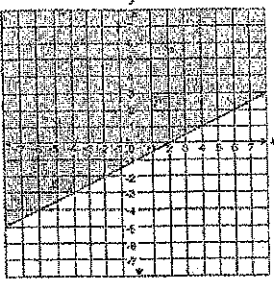
- A.  $w = Bh^2 - 703$
- B.  $w = B + h^2 - 703$
- C.  $w = \frac{Bh^2}{703}$
- D.  $w = \frac{703B}{h^2}$

56. Solve  $6 - 3(4x - 5) = 7$ .

- A.  $-\frac{4}{3}$
- B.  $\frac{7}{6}$
- C.  $\frac{11}{6}$
- D.  $\frac{7}{3}$

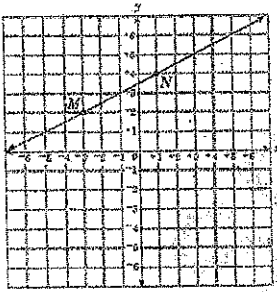
57. Which expression represents  $y^4 - 36$  in simplest factored form?
- A.  $(y^2 + 4)(y^2 - 9)$   
 B.  $(y^2 + 4)(y - 3)(y + 3)$   
 C.  $(y^2 + 6)(y^2 - 6)$   
 D.  $(y^4 - 36)(y + 1)$

59. Which inequality is shown on the graph below?



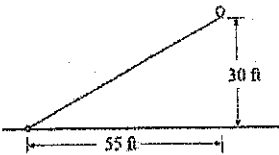
- A.  $y < \frac{1}{2}x - 1$   
 B.  $y \leq \frac{1}{2}x - 1$   
 C.  $y > \frac{1}{2}x - 1$   
 D.  $y \geq \frac{1}{2}x - 1$

61. Which is an equation of a line that is parallel to line  $\overline{MN}$ ?



- A.  $2x - y = 3$   
 B.  $x - 2y = 3$   
 C.  $8x + 4y = 4$   
 D.  $9x + 18y = -9$

63. A long string with a balloon at the end was tied to the ground. After a breeze came up, the balloon was 55 feet to the right of where it was tied and 30 feet above the ground, as shown in the figure below.



What is the slope of the line between the balloon and the point where it was tied?

- A.  $\frac{6}{11}$   
 B.  $\frac{11}{6}$   
 C. 30  
 D. 55
65. A computer is purchased for \$1,200 and depreciates at \$140 per year. Which linear equation represents the value,  $V$ , of the computer at the end of  $t$  years?
- A.  $V = 1,200 - 140t$   
 B.  $V = 140t$   
 C.  $V = 140t - 1,200$   
 D.  $V = 140(1,200 - t)$

58. Solve  $x^2 - 7x + 10 = 28$ .
- A.  $\{-4, -7\}$   
 B.  $\{-2, 9\}$   
 C.  $\{5, 2\}$   
 D.  $\{30, 33\}$

60. What is the value of  $x$  in the equation:  $6(4x + 5) = 3(x + 8) + 3$

- A. -3  
 B.  $-\frac{1}{7}$   
 C.  $\frac{1}{3}$   
 D. 7

62. Simplify  $\frac{14c^3d^2 - 21c^2d^3}{14cd}$

- A.  $c^2 - \frac{3cd}{2}$   
 B.  $c^2 - \frac{3c^2d}{2}$   
 C.  $c^2 - 21c^2d^3$   
 D.  $c^2d - \frac{3cd^2}{2}$

64. The distance traveled by a marble on a flat table as it rolls in a straight line is determined by the formula:

$$s = ut + \frac{1}{2}at^2$$

where

- $s$  = Distance traveled  
 $u$  = Initial Velocity  
 $t$  = Time elapsed  
 $a$  = Acceleration

Which of the following shows the distance traveled formula solved for  $a$ ?

- A.  $a = \frac{2s - 2ut}{t^2}$   
 B.  $a = \frac{2s - ut}{t^2}$   
 C.  $a = \frac{2s - 2u}{t}$   
 D.  $a = \frac{s - ut}{t^2}$
66. Which equation is equivalent to  $5x - 2(7x + 1) = 14x$ ?
- A.  $-9 - 2x = 14x$   
 B.  $-9x + 1 = 14x$   
 C.  $-9x - 2 = 14x$   
 D.  $12x - 1 = 14x$

67. At a local grocery store, watermelons are sold for \$4 each plus an additional \$0.25 per pound. Write a function that describes the relationship between  $x$ , the number of pounds of a watermelon, and  $f(x)$ , the total cost of the watermelon.

- A.  $f(x) = 4.25x$
- B.  $f(x) = 4 + 0.25x$
- C.  $f(x) = 4(0.25x + 1)$
- D.  $f(x) = 4x(0.25x + 4)$

69. Find an equation for the line with y-intercept 3 that is perpendicular to the line  $3y = 2x - 4$ .

- A.  $2y = 6 - 3x$
- B.  $2y = 3x + 6$
- C.  $3y = 9 - 2x$
- D.  $3y = 2x + 9$

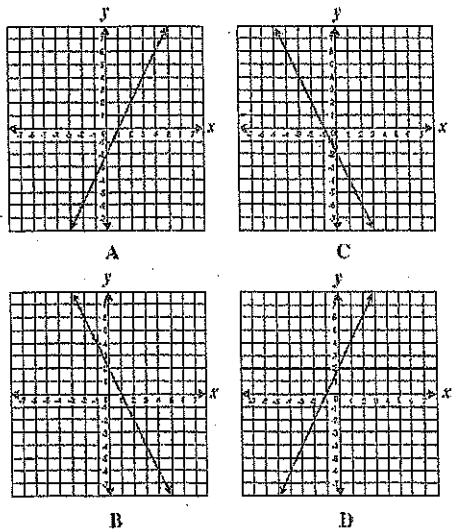
71. The sum of two binomials is  $5x^2 - 6x$ . If one of the binomials is  $3x^2 - 2x$ , what is the other binomial?

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

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

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

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



77. Harry determined that every time he tapped his wand the sound increased 4 decibels. He noticed that after tapping his wand three times, the sound measured 34 decibels. Which equation best represents the sound when  $w$  represents a move of the wand and  $s$  represents the loudness of the sound?

- A.  $s = 4w - 22$
- B.  $s = 4w + 22$
- C.  $s = 4w - 43$
- D.  $s = 4w + 43$

68. A group of 3 children and 2 adults pay a total of \$120 to take a karate class. A group of 5 children and 1 adult take the same karate class for \$95. What is the total cost for 1 child and 1 adult to take the karate class?

- A. \$60
- B. \$55
- C. \$51
- D. \$48

70. Which is the line parallel to the line  $y = 8x - 2$ ?

- A.  $y = 2x - 8$
- B.  $y = -1/8x + 3$
- C.  $y = 4 + 8x$
- D.  $2y = 8x + 3$

72. If  $f(x) = \frac{3-x^2}{3-x}$ , what is  $f(2)$ ?

- A. -2
- B. -1
- C. 1
- D. 2

74.  $(4x^2 - 2x + 8) - (x^2 + 3x - 2) =$

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

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

Renting a Bicycle

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 be the equation of a line that fits the data?

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

78. The total cost  $f(d)$  in dollars of renting a sailboat for  $d$  days is given by the function

$$f(d) = 120 + 60d.$$

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

- A. 2
- B. 4
- C. 6
- D. 8

79. Given the system of equations below:

$$\begin{aligned} 3x - 2y &= 12 \\ 4x - y &= 11 \end{aligned}$$

What is the value of  $y$  in the solution?

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

81. The equations  $5x + 2y = 48$  and  $3x + 2y = 32$  represent the money collected from school concert ticket sales during two class periods. If  $x$  represents the cost for each adult ticket and  $y$  represents the cost for each student ticket, what is the cost for each adult ticket?

- A. \$20
- B. \$10
- C. \$8
- D. \$4

The pressure exerted on the floor by a person's shoe heel depends on the weight of the person and the width of the heel. The formula is

$$83. \quad P = \frac{1.2W}{H^2}$$

where  $P$  is pressure in pounds per square inch,  $W$  is weight in pounds, and  $H$  is heel width in inches. Which of the following shows the pressure formula solved for  $H$ ?

- A.  $H = \pm \sqrt{1.2WP}$
- B.  $H = \pm \sqrt{\frac{1.2W}{P}}$
- C.  $H = \pm \frac{1.2W}{P}$
- D.  $H = \frac{1.2W}{2P}$

85. The area of a parallelogram is  $35p^6q^8$  square units. If the base of the parallelogram measures  $5pq^2$  units, what is the height of the parallelogram? ( $p > 0$  and  $q > 0$ )

- A.  $7p^5q^4$  units
- B.  $7p^6q^3$  units
- C.  $30p^5q^4$  units
- D.  $30p^6q^3$  units

87. At a linen sale Mrs. Earle bought twice as many pillowcases for \$2 each as sheets for \$5 each. If she spent less than \$40, not including tax, what is the maximum number of pillowcases she could have purchased?

- A. 3
- B. 4
- C. 6
- D. 8

89. The population of Williston is currently 15,400 people. If the population increases at an average rate of 325 people per year, which equation could be used to find the approximate number of years it will take for the population to reach 18,000 people?

- A.  $15,400 + 325n = 18,000$
- B.  $325n = 18,000$
- C.  $15,400n + 325 = 18,000$
- D.  $15,400n = 18,000$

91. Which sequence uses the algebraic expression  $4n + 5$  to describe the relationship between a term in the sequence and its position,  $n$ , in the sequence?

- A. 4, 9, 14, 19, 24 ...
- B. 4, 8, 12, 16, 20 ...
- C. 9, 13, 17, 21, 25 ...
- D. 9, 10, 11, 12, 13 ...

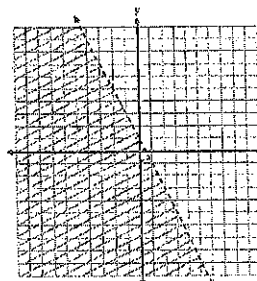
80. Which expression is equivalent to  $x^6 \cdot x^2$ ?

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

82. Which expression represents  $\frac{(2x^2)(8x^6)}{4x^6}$  in simplest form?

- A.  $x^2$
- B.  $x^9$
- C.  $4x^2$
- D.  $4x^9$

84. Which inequality is represented by the graph below?



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

86. The cost of renting a van for one day includes a flat rental fee plus a charge for each mile the van is driven while it is rented. A van that is driven 107 miles costs \$97.15. A van that is driven 127 miles costs \$106.15. What is the flat rental fee?

- A. \$19.00
- B. \$20.00
- C. \$45.00
- D. \$49.00

88. The gas tank in Mina's car holds 15 gallons. Her car gets between 25 and 30 miles to the gallon. If Mina fills up the gas tank and then drives until she runs out of gas, what is the least number of miles she can drive?

- A. 300 mi
- B. 375 mi
- C. 405 mi
- D. 450 mi

90. To which of the following situations can the function  $y = 5x + 10$  best be applied?

- A. The number of miles a person walks if he walks for 5 hours at the rate of 10 miles per hour
- B. The total weight on a scale if 5 pounds is placed there initially and a series of 10-pound weights are added to it
- C. The total wages earned by a waiter who is paid \$5 per hour and earns \$10 in tips
- D. The combined length of 5 boards, each 10 feet longer than the width of a doorway

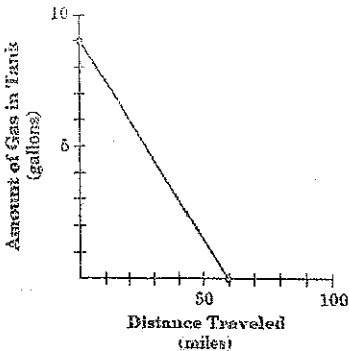
92. Which expression is equivalent to the following expression?

$$\frac{1}{2}x(4x - 6) + 3(x^2 - 1)$$

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



93. According to the graph, which statement best describes the slope?



- A. As the distance traveled increases by 20, the amount of gas in the tank decreases by 3.  
 B. As the distance traveled decreases by 3, the amount of gas in the tank increases by 20.  
 C. As the distance traveled increases by 30, the amount of gas in the tank increases by 2.  
 D. As the distance traveled decreases by 20, the amount of gas in the tank decreases by 3.

95. Which of the following equations describes the same function in the table below?

x	y
2	8
3	13
4	18
5	23

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

97. Brock is six feet tall. He climbs a ladder to paint some trim on his house. For each rung that he climbs, Brock is 1.2 feet higher above the ground. Which equation could you use to calculate the distance,  $d$ , from the top of Brock's head to the ground if  $r$  represents the number of ladder rungs he has climbed?

- A.  $d = 1.2r + 6$   
 B.  $d = 1.2r$   
 C.  $d = r + 6$   
 D.  $d = 6r + 1.2$

99. Dr. Chait is considering joining the Garden Club. If he pays a \$25 membership fee, he can buy rosebushes from the club at a reduced price of \$10 each. If he does not join the club, he can buy rosebushes from a local nursery for \$15 each. The graph below compares the cost of buying rosebushes from the Garden Club and from the local nursery.

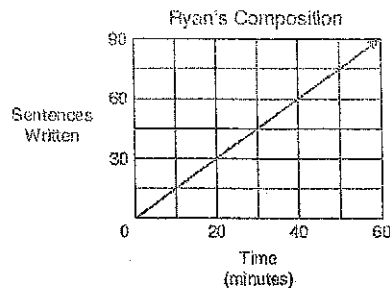
How many rosebushes will Dr. Chait have to buy from the Garden Club before he would begin to save money?

- A. 5  
 B. 7  
 C. 25  
 D. 75

101. Each month Jessie's phone bill includes a \$25 basic fee plus a charge of \$.07 per minute for the number of minutes of long-distance calls she makes. Which equation best describes the total amount of Jessie's monthly phone bill,  $t$ , in terms of  $m$ , the number of minutes of long-distance calls she makes?

- A.  $t = 0.07 + 25m$   
 B.  $t = 25 + 0.07m$   
 C.  $t = 25(0.07m)$   
 D.  $t = 25(7m)$

94. Ryan is writing a composition for homework. He decides to keep track of the number of sentences he writes compared to the time in minutes he works. The graph below shows the data he collected.



At what rate does Ryan write his composition?

- A. 0.5 sentence per minute  
 B. 1 sentence per minute  
 C. 1.5 sentences per minute  
 D. 2 sentences per minute

96. What is the slope of the equation  $2x - 5y = 10$ ?

- A.  $-2$   
 B.  $\frac{2}{5}$   
 C. 5  
 D.  $-\frac{2}{5}$

98. Alyssa is enrolled in a public-speaking class. Each week she is required to give a speech of greater length than the speech she gave the week before. The table below shows the lengths of several of her speeches.

Alyssa's Speeches				
Week Number	3	4	5	6
Length of Speech (seconds)	150	180	210	240

If this trend continues, in which week will she give a 12-minute speech?

- A. 22  
 B. 12  
 C. 15  
 D. 24

100. The side length of a square is  $4x^3yz^4$  units. What is the area of the square?

- A.  $8x^6y^2z^8$  square units  
 B.  $8x^3yz^{16}$  square units  
 C.  $16x^6y^2z^8$  square units  
 D.  $16x^3yz^{16}$  square units

102. Shaniqua is constructing an isosceles triangle to use as a model in her Algebra class. The perimeter of her triangle is 24 inches. Shaniqua uses the equation  $b = 24 - 2s$  to find  $b$ , the length of the triangle's third side, in terms of  $s$ , the length of each of its two congruent sides. What is her equation written in terms of  $s$ ?

- A.  $s = 2(b + 24)$   
 B.  $s = \frac{24 + b}{2}$   
 C.  $s = 2(b - 24)$   
 D.  $s = \frac{24 - b}{2}$

