

# ALGEBRA PLACEMENT TEST



**Division of Bilingual Education and World Languages  
Miami-Dade County Public Schools**

Name: \_\_\_\_\_

Date: \_\_\_\_\_

School: \_\_\_\_\_

I.D.# \_\_\_\_\_

1. Find the value of the expression  $2[3(4 \div 2) + 6] - 5$

- A. 13
- B. 19
- C. 25
- D. 43

2. The probability that a student will answer 6 multiple-choice questions correctly by guessing is  $6.4 \times 10^{-5}$ . How is this probability expressed in standard form?

- A. 0.0064
- B. 0.00064
- C. 0.000064
- D. 0.0000064

3. Saying that  $4 < \sqrt{x} < 9$  is equivalent to saying what about  $x$  ?

- A.  $0 < x < 5$
- B.  $2 < x < 3$
- C.  $4 < x < 9$
- D.  $16 < x < 81$

4. Which statement represents the multiplicative inverse property for real numbers?

- A.  $\left(\frac{1}{3}\right)(0) = 0$
- B.  $\left(\frac{1}{3}\right)\left(\frac{1}{3}\right) = \frac{1}{9}$
- C.  $\left(\frac{1}{3}\right)(1) = \frac{1}{3}$
- D.  $\left(\frac{1}{3}\right)(3) = 1$

5. Which expression is equivalent to  $\sqrt{(-4)^2}$  ?

- A.  $\sqrt{-8}$
- B.  $|\sqrt{16}|$
- C. -4
- D. -8

6. Which expression is equivalent to  $\sqrt{16} + \sqrt[3]{8}$  ?

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

7. If  $x < 0$ , which statement is always true?

- A.  $5x > 2x$
- B.  $5x < 2x$
- C.  $5x > 2$
- D.  $5x = 2$

8. Which equation is equivalent to  $4(2x - 3) - 3(x - 4) + 7x = 6$ ?

- A.  $5x = 6$
- B.  $12x = 6$
- C.  $12x - 7 = 6$
- D.  $12x - 24 = 6$

9. Which equation is equivalent to  $\frac{2n+1}{3} - 8n = 5$ ?

- A.  $2n+1-8n=15$
- B.  $2n+1-24n=15$
- C.  $6n+3-8n=15$
- D.  $6n+3-24n=15$

10. Solve the following equation:  $-3x + 25 = 79$

- A.  $x = 51$
- B.  $x = 18$
- C.  $x = -18$
- D.  $x = -34\frac{1}{3}$

11. If  $2(b - 5) = -11$ , then  $b =$ ?

- A.  $-\frac{21}{2}$
- B.  $-8$
- C.  $-\frac{11}{2}$
- D.  $-\frac{1}{2}$

12. Solve the following inequality:  $3x + 5 > 8x - 35$

- A.  $x > 8$
- B.  $x < 8$
- C.  $x > 6$
- D.  $x < 6$

13. Justin used the inequalities below to provide clues about a mystery number.

$$y^2 > y \text{ and } y^3 < y$$

For the inequalities shown, which number is a possible value of  $y$ ?

- A. -4.0
- B. -0.5
- C. 0.5
- D. 4.0

14. Solve the following proportion for  $x$ ;  $\frac{9}{6} = \frac{x}{8}$

- A.  $x = 5\frac{1}{3}$
- B.  $x = 10\frac{1}{2}$
- C.  $x = 11$
- D.  $x = 12$

15. If the total cost of  $x$  oranges is  $b$  cents, what is a general formula for the cost,  $c$ , in cents, of  $y$  oranges?

- A.  $c = \frac{by}{x}$
- B.  $c = \frac{x}{by}$
- C.  $c = \frac{xy}{b}$
- D.  $c = \frac{b}{xy}$

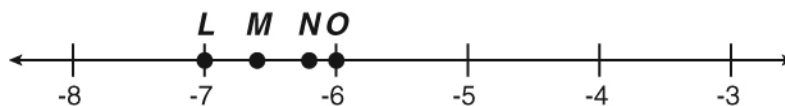
16. Graham has enough fencing to enclose a rectangular garden with a perimeter of 140 feet. If the width of his garden is 20 feet shorter than the length, what is the width of the garden?

- A. 20 feet
- B. 25 feet
- C. 40 feet
- D. 45 feet

17. On a bicycle trip, Erika rode 5 miles in the first 30 minutes and 13 miles in the next hour. What was her average rate of speed, in miles per hour?

- A. 9 miles per hour
- B. 10 miles per hour
- C. 11 miles per hour
- D. 12 miles per hour

18. Which point on the number line is closest to  $-\frac{13}{2}$ ?

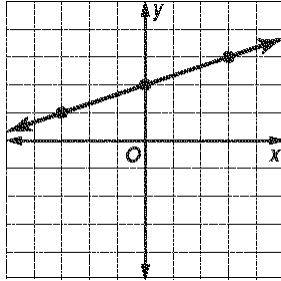


- A. *L*
- B. *M*
- C. *N*
- D. *O*

19. What is the slope,  $m$ , of the line with the equation  $2x + 3y + 6 = 0$ ?

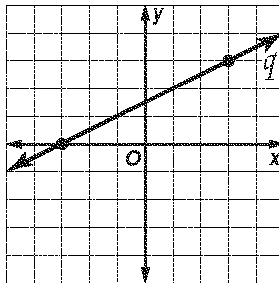
- A.  $m = \frac{2}{3}$
- B.  $m = -\frac{2}{3}$
- C.  $m = -3$
- D.  $m = -2$

20. The line  $y = \frac{1}{3}x + 2$  is graphed. The graph of the line parallel to this line with y- intercept -1 contains the point at (3, h). What is the value of h?



- A. -2
- B. -3
- C. 0
- D. 1

21. The graph of line q is shown. Which of the following is an equation of a line that is **perpendicular** to line q at point (1, 2)?



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

22. Point A (-4, 1) is in the standard (x, y) coordinate plane. What must be the coordinates of point B so that the line  $x = 2$  is the perpendicular bisector of  $\overline{AB}$ ?

- A. ( 8, 1 )
- B. ( -6, 1 )
- C. ( -2, 1 )
- D. ( -4, 3 )

23. The table shows values of x and y for the equation  $\frac{1}{2}x + y = 4$ .

What is the **value** of y when  $x = -6$ ?

x	y
-6	?
-4	6
-2	5
0	4
2	3

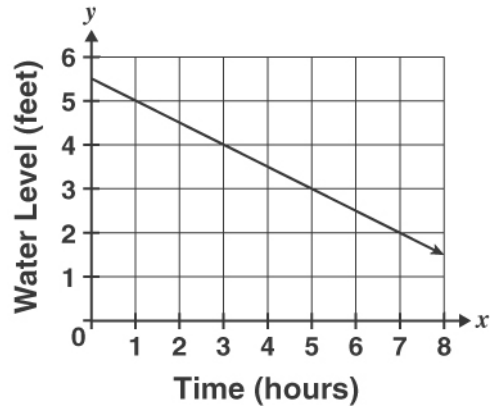
- A. 1
- B. 7
- C. 0
- D. -7

24. The order pair (3, 4) makes which system of equations true?

- A.  $x + y = 7$   
 $x - y = 7$
- B.  $x + 2y = 11$   
 $5x - y = 11$
- C.  $2x + y = 10$   
 $3x - y = 10$
- D.  $2x + y = 10$   
 $3x + 2y = 10$



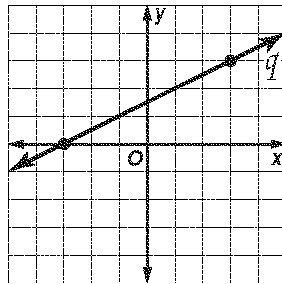
25. A water tank is being drained at a steady rate. The initial level of the water was 5.5 feet from the bottom of the tank. The graph below shows the water level over time as the tank is drained.



What is the slope of the line representing the water level?

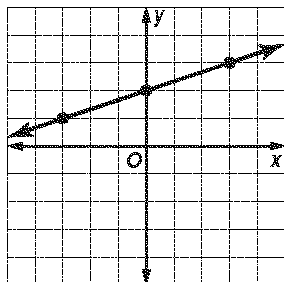
- A.  $-2$
- B.  $-\frac{1}{2}$
- C.  $\frac{1}{2}$
- D.  $2$

26. Identify the coordinates of the x intercept.



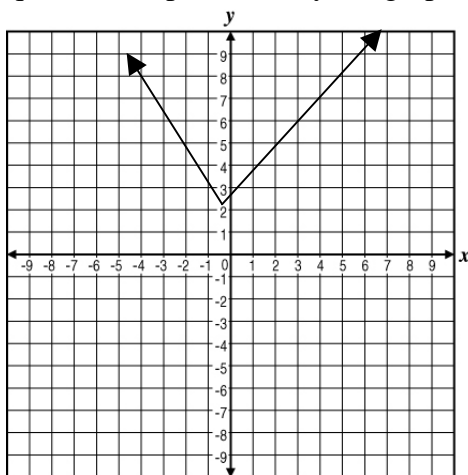
- A.  $(3, 0)$
- B.  $(3, 3)$
- C.  $(-3, 0)$
- D.  $(0, -3)$

27. Identify the coordinates of the y intercept.



- A. (0, 2)
- B. (-2, 1)
- C. (2, 0)
- D. (-3, 1)

28. Which absolute value equation is represented by the graph below?



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

29. If the sum of  $x$  and  $y$  is 90 and  $y$  is 6 more than four times  $x$ , which system of equations could be used to solve for  $x$  and  $y$ ?

- A.  $x + y = 90$   
 $x - 4y = 6$
- B.  $x + y = 90$   
 $4x - y = 6$
- C.  $x + y = 90$   
 $4x - y = -6$
- D.  $x + y = 90$   
 $6x - y = -4$

30. Which function is described by the table below?

$x$	$f(x)$
0	5
5	30
10	105
25	630
100	10,005

- A.  $f(x) = 6x + 5$
- B.  $f(x) = x^2 + 5$
- C.  $f(x) = 2x^2 + 5$
- D.  $f(x) = (x + 5)^2$

31. Add the following polynomials:  $3a^2b + 2a^2b^2$  and  $-ab^2 + a^2b^2$ ?

- A.  $3a^2b - ab^2 + 3a^2b^2$
- B.  $3a^2b - ab^2 + 2a^2b^2$
- C.  $2a^2b + 3a^2b^2$
- D.  $2a^2b^3 + 2a^3b^3$

32. Subtract the following polynomials:  $3a^3 - 4a^2 + 8$  and  $2a^3 + 6a - 3$ ?

- A.  $a^3 - 10a^2 + 11$
- B.  $a^3 - 4a^2 + 6a + 5$
- C.  $a^3 - 4a^2 + 6a + 11$
- D.  $a^3 - 4a^2 - 6a + 11$

33. Perform the following operation:  $3x(x^2 + y)$

- A.  $3x^3 + 3xy$
- B.  $3x^3 + 3x^2y$
- C.  $3x^3 - 3xy$
- D.  $3x^2 + 3xy$

34. Multiply the following polynomials:  $(3a - 7b)$  and  $(4a + 5b)$ ?

- A.  $12a^2 + 13ab - 35b^2$
- B.  $12a^2 - 43ab - 35b^2$
- C.  $12a^2 - 13ab - 35b^2$
- D.  $12a^2 - 35b^2$

35. Divide the following polynomials:  $x^2 - 6x + 9$  and  $x - 3$

- A.  $x + 3$
- B.  $-x + 3$
- C.  $-x - 3$
- D.  $x - 3$

36. Which of the following is a factor of the polynomial  $x^2 - x - 20$ ?

- A.  $x + 5$
- B.  $x + 10$
- C.  $x - 4$
- D.  $x - 5$

37. 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.  $9t^2 + 12t + 4$

38. Paul is solving this equation by factoring.

$$10x^2 - 25x + 15 = 0$$

Which expression could be one of his correct factors?

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

39. Which is the factored form of  $x^2 - 49$ ?

- A.  $(x + 7)(x + 7)$
- B.  $(x + 7)(x - 7)$
- C.  $(x + 1)(x - 49)$
- D.  $(x - 1)(x + 49)$

40. What are the solutions for the quadratic equation  $x^2 + 6x - 16 = 0$ ?

- A.  $x = -2$  or  $x = -8$
- B.  $x = -2$  or  $x = 8$
- C.  $x = 2$  or  $x = -8$
- D.  $x = 2$  or  $x = 8$

41. What quantity should be added to both sides of the equation to complete the square?

$$x^2 - 8x = 5$$

- A. 4
- B. -4
- C. 16
- D. -16

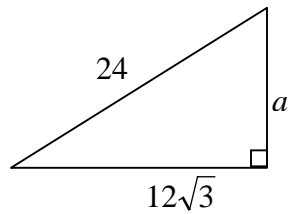
42. Michelle correctly solved the equation  $x^2 + 4x = 6$  by completing the square. Which equation is part of her solution?

- A.  $(x + 2)^2 = 8$
- B.  $(x + 2)^2 = 10$
- C.  $(x + 4)^2 = 10$
- D.  $(x + 4)^2 = 22$

43. What is the 6th number in the quadratic sequence 1, 2, 5, 10, 17, ... ?

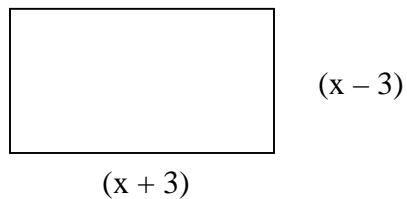
- A. 26
- B. 24
- C. 22
- D. 20

44. Which equation can be used to find the length of the shortest side ( $a$ ) of the right triangle shown below?



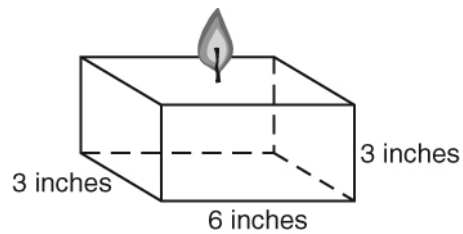
- A.  $a^2 + 432 = 24^2$
- B.  $a + 12\sqrt{3} = 24$
- C.  $a^2 = (12\sqrt{3})^2 + 24^2$
- D.  $a^2 + 24^2 = 432$

45. Write an expression for the area of the rectangle.



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

46. Shannon has a candle that is a right rectangular prism as shown below.



What volume, in cubic inches, is left after Shannon burns  $\frac{1}{3}$  of her candle?

- A. 12
- B. 18
- C. 36
- D. 54

47. A square room has a floor area of 150 square feet. Which number is closest to the length of one side of the room?

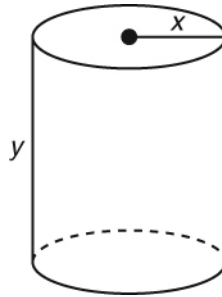
- A.  $12\frac{1}{5}$  feet
- B.  $12\frac{1}{4}$  feet
- C.  $12\frac{3}{10}$  feet
- D.  $12\frac{1}{2}$  feet

48. A commercial photographer has to reduce by a factor of 25% each dimension of a rectangular poster that measures 12 inches by 36 inches. Which are the dimensions of the new poster?

- A. 3 in. by 9 in.
- B. 9 in. by 27 in.
- C. 12 in. by 27 in.
- D. 15 in. by 45 in.



49. Thomas is going to paint the outside of a cylindrical container. He only needs to paint the lateral surface and top.



If the radius of the roof is  $x$  feet and the container is  $y$  feet in height, which expression represents the total area Thomas needs to paint?

- A.  $2\pi xy$
- B.  $\pi x^2 + 2\pi xy$
- C.  $2\pi x^2 + 2\pi xy$
- D.  $2\pi x^2 + 2\pi xy^2$

50. The table below lists the heights, in feet, of 8 buildings.

Buildings	
Location	Height (ft)
Shanghai	1,255
New York	1,250
Taiwan	1,470
Chicago	1,450
Malaysia	1,483
New York	1,250
Chicago	1,136
Hong Kong	1,335

What is the median of the data in the table?

- A. 1,295 feet
- B. 1,315 feet
- C. 1,450 feet
- D. 1,483 feet