Name _____ Date _____ Class _____

8th

End of Course Test

Select the best answer.

1. Which situation is best modeled by the expression $2 + x$?

   A Tabitha lost 2 out of her x marbles under the couch.

   B Sudhir had \$2 and spent x dollars on a hamburger.

   C Fatima is 2 years older than her sister Delilah who is x years old.

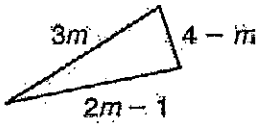
   D Dominic ran the x mile course 2 times.

2. Solve $8x - (2x + 3) = 4x + 1$.

   F $-\frac{1}{3}$ H 2

   G -1 J 4

3. Which expression represents the perimeter of the triangle below?



   A $3 + 4m$ C $5 + 4m$

   B $3 + 6m$ D $5 + 6m$

4. If $x = -1$, which quadrant does the point $(2x, -x)$ lie in?

   F Quadrant I H Quadrant III

   G Quadrant II J Quadrant IV

5. The time it takes Jarvis to get to school on his bike is $\frac{1}{3}$ of the time it takes to walk. Which equation can be solved to find the time it takes Jarvis to walk to school if he can bike there in 5 minutes?

   A $3w = 5$ C $\frac{1}{3}w = 5$

   B $w = \frac{1}{3} \times 5$ D $w - \frac{1}{3} = 5$

6. Solve $-\frac{x}{7} - \frac{2}{3} = \frac{4}{21}$.

   F -6 H $1\frac{1}{3}$

   G $-1\frac{1}{3}$ J 6

7. Approximately 9 out of 100 people are left handed. Out of a population of 1740 people, how many are likely to be left handed?

   A 139 C 174

   B 157 D 193

8. Solve $2|x + 1| = 8$.

   F 3 H $-4, 3$

   G 3, 5 J $-5, 3$

9. Which is NOT a solution to the inequality $4x - 7 < 5$?

   A -2 C 1

   B 0 D 3

10. Lorena and Sebastian are both five years old. Every year they each get a cash present from their neighbor. Sebastian gets \$1.50 for every year in his age, and Lorena gets \$20. How old will they be when Sebastian gets more money than Lorena?

    F 9 H 14

    G 13 J 20

11. Which represents the solutions of $|2x| - 5 < -1$?

    A $x > 2$ OR $x < -2$

    B $x > 2$ OR $x > -2$

    C $x > -2$ AND $x < 2$

    D $x < -2$ AND $x > 2$

Name _____ Date _____ Class _____

End of Course Test

12. Which of the following statements is true?

F The dependent variable is the input of the function.

G The dependent variable determines the domain of the function.

H In $f(x) = 2x + 1$, x is the dependent variable.

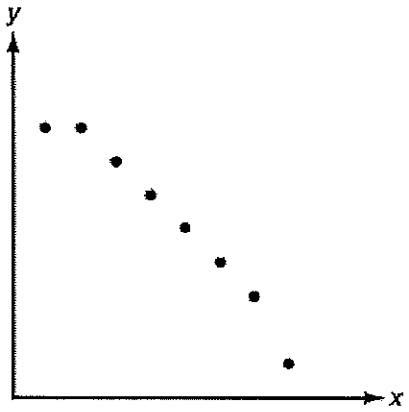
J In $f(x) = 2x + 1$, $f(x)$ is the dependent variable.

13. Which function has (0, 7) on its graph?

A $-3x + y = 7$ C $y = 14 - x$

B $y = x - 7$ D $-7x + y = 2$

14. Which situation best fits the graph below and what type of correlation is it?



F distance traveled vs. cost of gas; negative correlation

G distance traveled vs. cost of gas; positive correlation

H time traveled vs. distance from destination; negative correlation

J time traveled vs. distance from destination; positive correlation

15. A function has x-intercept 3 and y-intercept 2. Which of the functions below could be this function?

A $4 + 3x = 2y$

B $2x - 3y = -6$

C $2y + 3x = 4$

D $3y - 6 = -2x$

16. The scoring for a football game by quarters was recorded as the ordered pairs {(1, 7), (2, 10), (3, 21), (4, 21}. Which of the following statements is true?

F The relation is a function with domain {1, 2, 3, 4}.

H he relation is a function with domain {7, 10, 21}.

G The relation is a not a function.

J The relation is a function with domain $\{1 \le x \le 4\}$.

17. Which equation describes a line that passes through (7, 1) and is perpendicular to the line described by $y = -\frac{1}{2}x + 3$?

A $y = 2x - 13$ C $y = 2x - 6$

B $y = 2x - 7$ D $y = 2x + 3$

18. The change from $f(x) = 4x + 2$ to $g(x) = 3x + 2$ is an example of which type of transformation?

F rotation H translation up

G reflection J translation down

19. A local video store has two new renting plans. Plan A charges a \$10 monthly fee and \$2 for every movie rented. Plan B charges \$40 per month but then each movie rented is only 25¢. How many movies must be rented in a month to make plan B the cheaper option?

A 17 C 28

B 18 D 29

20. Classify the system $\begin{cases} y = 2x + 3 \\ y = -2x + 3 \end{cases}$.

F inconsistent

G consistent and independent

H inconsistent and dependent

J consistent and dependent

21. Which point is a solution of $\begin{cases} y - 3x \ge 2 \\ y \le x + 9 \end{cases}$?

A (–2, 8) C (4, –1)

B (–1, 4) D (8, –2)

Name _____ Date _____ Class _____

End of Course Test

22. Which of the following pairs of points is the solution to the system of equations below? $\begin{cases} y = x^2 - 1 \\ y = -x + 5 \end{cases}$

F (2, 3), (4, 15)
G (–3, 8), (1, 4)
H (–3, 8), (2, 3)
J (1, –1), (1, 4)

23. Which of the following is NOT equivalent to $\left(\frac{x^2y}{4x^5}\right)^{-2}$?

A $\left(\frac{y}{4x^3}\right)^{-2}$
B $\left(\frac{4x^3}{y}\right)^{2}$
C $\left(\frac{16x^5}{y^2}\right)$
D $\left(\frac{4x^5}{x^2y}\right)^{2}$

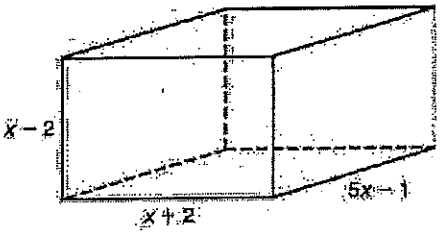
24. Simplify $\left(x^{\frac{1}{4}}\right)^8 \sqrt[3]{x^3}$. All variables represent nonnegative numbers.

F x^3
G x^4
H $x^2(x)$
J x^6

25. Identify the quartic trinomial.

A $4x^4 - 2x^5 + 6x$
B $-x^3 + 7x^2 - 2x + 3$
C $x^3 + 14x^4 - 3$
D $4x^4 - x^3 - 5x + 1$

26. What is the volume of the rectangular prism shown below?



F $5x^3 - 21x^2 + 24x - 4$
G $5x^3 - x^2 - 20x + 4$
H $5x^3 + x^2 - 20x - 4$
J $5x^3 + 19x^2 + 16x - 4$

27. Which pair of terms has a GCF of $5x$?

A $5x^2$ and 15
B $5x^2$ and $20x$
C $25x^2$ and $50x$
D $40x^3$ and $8x^2$

28. Factor $2x^2 + 17x + 30$.

F $(2x + 6)(x + 5)$
G $(2x + 5)(x + 6)$
H $(2x + 10)(x + 3)$
J $(2x + 3)(x + 10)$

29. Which values of b and c would make $x^2 + bx + c$ a perfect square trinomial?

A $b = 2, c = 6$
B $b = 6, c = 12$
C $b = 8, c = 16$
D $b = 10, c = 100$

30. Which of the following statements does NOT apply to the quadratic function $f(x) = -x^2 + 7$?

F The vertex is at (0, 7).
G The parabola opens downward.
H Its axis of symmetry is $y = 0$.
J There are two x-intercepts.

31. Michele is hiking and notices that some of the mountains resemble parabolas. If the following functions describe shapes of mountains, which of the following mountains would have the steepest slope?

A Mountain A: $y = -\frac{3}{2}x^2 + 5$
B Mountain B: $y = -x^2 + 5$
C Mountain C: $y = -\frac{1}{2}x^2 + 5$
D Mountain D: $y = -\frac{1}{5}x^2 + 5$

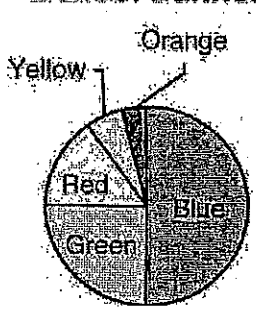
32. Solve $x^2 + 10x = 39$ by completing the square.

F $x = -5 \pm \sqrt{14}$
G $x = -3$ or 13
H $x = 3$ or -13
J $x = 5 \pm \sqrt{14}$

Name _____ Date _____ Class _____

End of Course Test

33. Ava's class was surveyed to help figure out what color their school banner should be. If a total of 28 students were surveyed, how many chose green?



A 4 students C 7 students

B 6 students D 10 students

34. Which of the following pieces of information can be obtained from a box-and-whisker plot?

F the mean of the data set

G the number of values in the data set

H the median of the data set

J the mode of the data set

35. Ivan has 7 tickets to a concert and 2 of the tickets have backstage passes. If Ivan passes out the tickets randomly to 7 friends, what are the odds against his friend Jada getting a backstage pass?

A 2:5 C 5:2

B 2:7 D 5:7

36. The table shows the number of customers at an ice cream shop and the number of sundaes sold. Which is the best line of fit for the data?

Customers	10	12	20	24
Sundaes	60	70	118	148

F $y \approx 6.24x - 4.0$ H $y \approx 6.82x - 11.0$

G $y \approx 6.0x - 1.3$ J $y \approx 4.0x - 48.7$

37. What is the 5th term in the geometric sequence 96, 72, 54, ...?

A 30 C 36

B $30\frac{3}{8}$ D $40\frac{1}{2}$

38. Which two quadrants is the function $f(x) = 2(4)^x$ graphed in?

F Quadrants I and II

G Quadrants II and III

H Quadrants III and IV

J Quadrants I and IV

39. Which function has the higher rate of change over the interval [0, 3]?

A $y = 2x + 4$

B $y = -x - 3$

C $y = 2x^2 - 1$

D $y = 2(3)^x$

40. Which is the more precise measurement?

F 84.2 cm

G 84 cm

H 842 mm

J 0.8 m

41. What is the x-value for the solution to the system of equations below?

$$\begin{cases} 2x + y = 8 \\ -4x - y = -14 \end{cases}$$

A –3 C 3

B –2 D 4

42. A research biologist starts with 100 bacteria and watches it double in number each day. Which equation will give the number of bacteria as a function of x, the number of days?

F $y = 2^x$

G $y = 100^x$

H $y = 2(100)^x$

J $y = 100(2)^x$

43. Which is an x-intercept of the graph of $y = x^2 + x - 12$?

A 1

B –4

C – 3

D 4

Answers

END OF COURSE TEST

1. C
2. J
3. A
4. G
5. C
6. F
7. B
8. J
9. D
10. H
11. C
12. J
13. A
14. H
15. D
16. F
17. A
18. F
19. B
20. G
21. B
22. H
23. C
24. F
25. C
26. G
27. B
28. G
29. C
30. H
31. A
32. H
33. C
34. H
35. C
36. F
37. B
38. F
39. D
40. H
41. C
42. J
43. B