Systems of Equations Test

Multiple Choice
Identify the choice that best completes the statement or answers the question.

1. 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

2. Jack bought 3 slices of cheese pizza and 4 slices of mushroom pizza for a total cost of $12.50. Grace bought 3 slices of cheese pizza and 2 slices of mushroom pizza for a total cost of $8.50. What is the cost of one slice of mushroom pizza?
   a. $1.50
   b. $2.00
   c. $3.00
   d. $3.50

3. Which ordered pair is a solution to the system of equations $y = x$ and $y = x^2 - 2$?
   a. $(-2, -2)$
   b. $(-1, 1)$
   c. $(0, 0)$
   d. $(2, 2)$

4. 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
   b. 15
   c. 29
   d. 33

5. 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

6. 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. $(5, 2)$

7. Which ordered pair is a solution of the system of equations $y = x^2 - x - 20$ and $y = 3x - 15$?
   a. $(-5, -30)$
   b. $(-1, -18)$
   c. $(0, 5)$
   d. $(5, -1)$

8. The sum of two numbers is 47, and their difference is 15. What is the larger number?
   a. 16
   b. 31
   c. 32
   d. 36

9. At Genesee High School, the sophomore class has 60 more students than the freshman class. The junior class has 50 fewer students than twice the students in the freshman class. The senior class is three times as large as the freshman class. If there are a total of 1,424 students at Genesee High School, how many students are in the freshman class?
   a. 202
   b. 205
   c. 235
   d. 236

10. What is the value of the $y$-coordinate of the solution to the system of equations $x + 2y = 9$ and $x - y = 3$?
    a. 6
    b. 2
    c. 3
    d. 5

11. What is the value of the $y$-coordinate of the solution to the system of equations $x - 2y = 1$ and $x + 4y = 7$?
12. What is an equation for the line that passes through the coordinates (2, 0) and (0, 3)?
   a. \( y = -\frac{3}{2}x + 3 \)
   b. \( y = -\frac{3}{2}x - 3 \)
   c. \( y = -\frac{2}{3}x + 2 \)
   d. \( y = -\frac{2}{3}x - 2 \)

13. What is the slope of the line containing the points (3, 4) and (-6, 10)?
   a. \( \frac{1}{2} \)
   b. 2
   c. \( \frac{2}{3} \)
   d. \( \frac{3}{2} \)

14. What is the slope of the line that passes through the points (-6, 1) and (4, -4)?
   a. -2
   b. 2
   c. \( \frac{1}{2} \)
   d. \( \frac{1}{2} \)

15. What is an equation of the line that passes through the points (3, -3) and (-3, -3)?
   a. \( y = 3 \)

Short Answer

20. Solve the following systems of equations graphically, on the set of axes below, and state the coordinates of the point(s) in the solution set.
   \[ y = x^2 - 6x + 5 \]
   \[ 2x + y = 5 \]
21. The cost of 3 markers and 2 pencils is $1.80. The cost of 4 markers and 6 pencils is $2.90. What is the cost of each item? Include appropriate units in your answer.

22. Solve the following system of equations algebraically:

\[
3x + 2y = 4 \\
4x + 3y = 7
\]

[Only an algebraic solution can receive full credit.]

23. On the set of axes below, solve the following system of equations graphically for all values of \( x \) and \( y \).

\[
\begin{align*}
y &= x^2 - 6x + 1 \\
y + 2x &= 6
\end{align*}
\]

24. On the grid below, solve the system of equations graphically for \( x \) and \( y \).

\[
\begin{align*}
4x - 2y &= 10 \\
y &= -2x - 1
\end{align*}
\]
25. Write an equation that represents the line that passes through the points \((5, 4)\) and \((-5, 0)\)