Algebra I Unit 9: Systems of Equations and Inequalities

1. Which of the following is the solution to the system of equations $y = -x + 6$ and $y = -5x - 14$?

(A) $(5, 11)$
(B) $(5, 1)$
(C) $(-5, 9)$
(D) $(-5, 11)$

2. Which of the following does **not** describe an option for the solution to a system of linear equations?

(A) One coordinate point where the lines intersect
(B) No solution when the lines are parallel
(C) Infinite solutions when the lines overlap
(D) Two solutions when the lines cross the x-axis

3. Which of the following is **not** a way of representing the solution to a system of equations?

(A) An ordered pair
(B) A graph
(C) The x-intercept
(D) Infinite solutions

4. Which of the following is the graph of the system of equations $y = 4x + 4$ and $-2x - y = 6$?

(A)

(B)

(C)

(D)
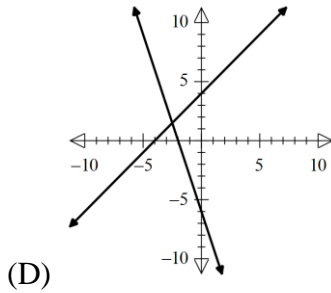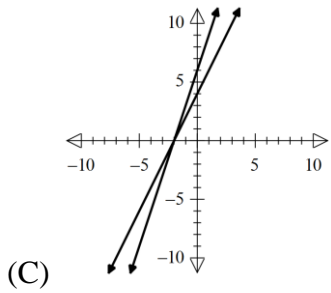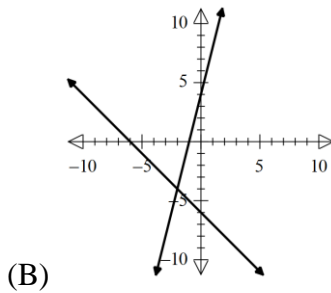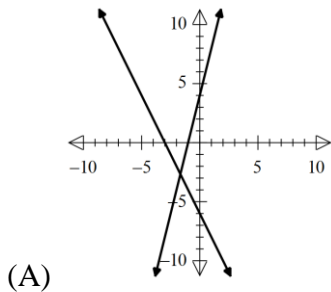
5. Which of the following is **not** the appropriate step when using the substitution method of finding the solution to a system of equations?

(A) Isolate one of the variables
(B) Substitute the equivalent expression for that variable into the other equation
(C) Replace x with y
(D) Solve for the remaining variable

6. Using the elimination method of solving, what is the solution to the system of equations $x - y = 6$ and $2x + y = 15$?

(A) $(9, -3)$
(B) $(1, 7)$
(C) $(7, 1)$
(D) No solution

7. Which of the following methods is the most efficient choice for solving the system of equations $2y = \frac{1}{4}x + \frac{3}{5}$ and $\frac{1}{3}y = -\frac{1}{4}x - 7$? Why?

(A) Substitution, because one of the variables is isolated
(B) Elimination, because when the equations are added, a variable cancels out
(C) Graphing, because these equations are easy to graph
(D) None of the above

8. Which of the following is **not** possible when you have a system of equations with a linear equation and a quadratic equation?

(A) No solution
(B) One solution
(C) Two solutions
(D) Three solutions

9. If we graph the following system of inequalities, $y < 2x + 5$ and $y > x - 3$, are the points $(0, 0)$ or $(2, 3)$ included in the solution?

(A) Yes, both $(0, 0)$ and $(2, 3)$ are included in the solution.
(B) No, neither of those points are included in the solution.
(C) Yes, only $(0, 0)$ is included in the solution.
(D) Yes, only $(2, 3)$ is included in the solution.

10. Which of the following systems of inequalities is shown in the graph below?
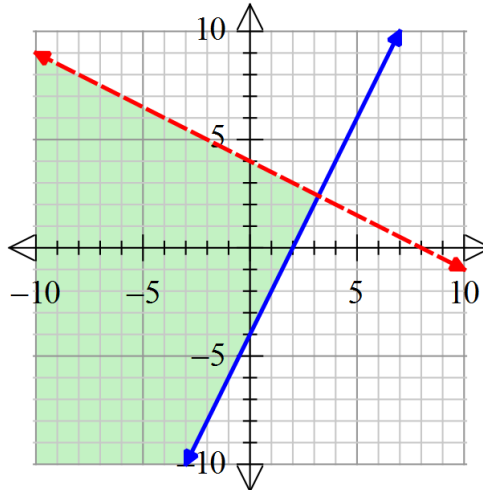
(A) $y \leq 2x - 4$ and $y > -\frac{1}{2}x + 4$

(B) $y < 2x - 4$ and $y \geq -\frac{1}{2}x + 4$

(C) $y \geq 2x - 4$ and $y < -\frac{1}{2}x + 4$

(D) $y > 2x - 4$ and $y \leq -\frac{1}{2}x + 4$

11. Car rental agency A charges an initial paperwork fee of $150, and $25 per day to rent a car. Car rental agency B does not require an initial fee, but charges $40 per day to rent a car. If we wanted to rent a car for 5 days, which agency would be cheaper? On which day would the cost of renting a car be the same at both agencies?

(A) Agency A; 5 days
(B) Agency A; 10 days
(C) Agency B; 5 days
(D) Agency B; 10 days

12. Meg earns $10 per hour walking dogs and $15 per hour walking cats (they're a lot harder to walk). She needs to earn at least $500 by the end of the summer. If she can work 100 hours at most over the summer, with d being the hours spent walking dogs and c being the hours spent walking cats, what system of inequalities represents this situation?

(A) $10d - 15c \geq 500$ and $d + c \geq 100$
(B) $10d + 15c \geq 500$ and $d + c \leq 100$
(C) $10d + 15c \leq 500$ and $d - c < 100$
(D) $10d + 15c > 500$ and $d + c \leq 100$

13. To solve the system of equations $3y = -x + 4$ and $y = 7x - 1$ by elimination, why are we allowed to multiply the equation $y = 7x - 1$ by -3?

(A) Because we would be doing the same operation to all terms on both sides of the equation
(B) Because we're trying to eliminate one of the equations
(C) Because we want to change one of the equations to equal the other equation
(D) Because $x = -3$