Date Completed: _____
Mentor Initials: _____

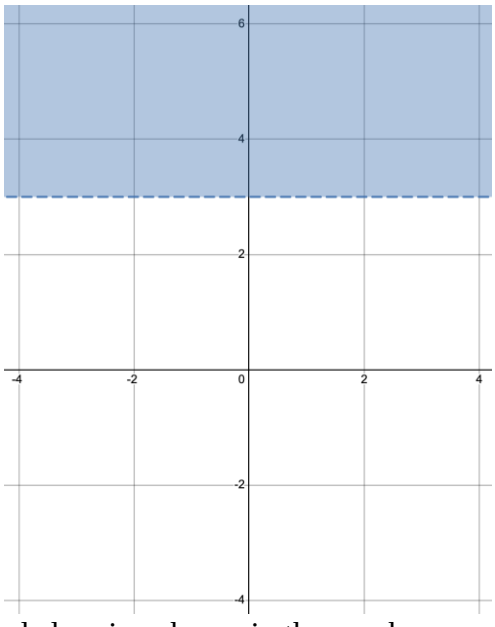
Inequalities

1. The solution set of $4x - 2 \geq -14$ is the set of all real values of x such that:
A) $x \leq -4$
B) $x \leq -3$
C) $x \geq -3$
D. $x \geq 3$

2. What is the greatest integer solution to $4x - 8 \leq 20.3$?
A) 5
B) 6
C) 7
D) 8

3. Which of the following is equivalent to the inequality $-2x + 4y > -2y - 4$?
A) $x < 3y - 2$
B) $x < 3y + 2$
C) $x > 3y - 2$
D) $x > 3y + 2$

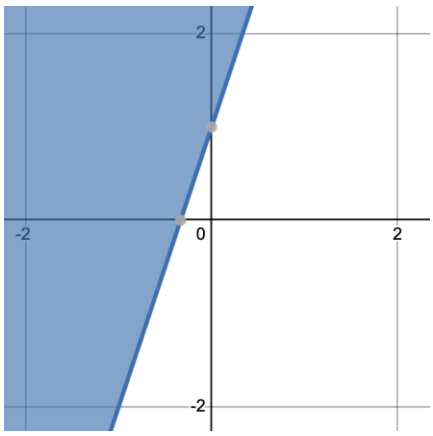
4.



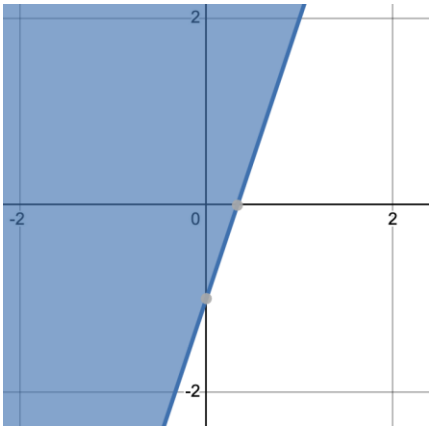
The shaded region shown in the graph represents all the solutions to which inequality?
A) $x < 3$
B) $x > 3$
C) $y < 3$
D) $y > 3$

5. In which of the following graphs does the shaded region consist of the solutions to $y \geq 3x - 1$?

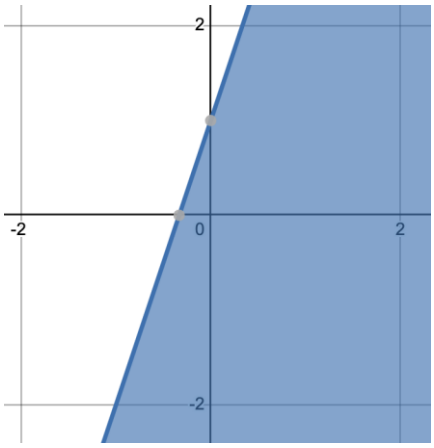
A)



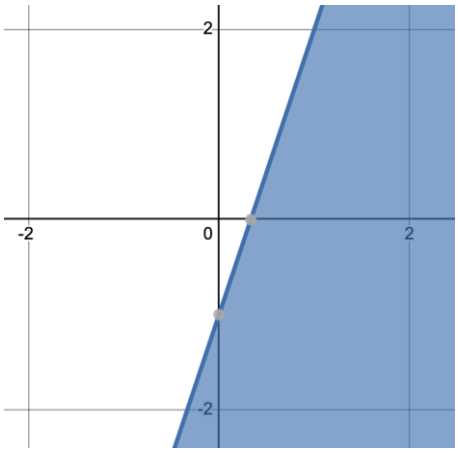
B)



C)



D)



6. Which of the following is equivalent to the inequality $3x - 9 > 10x + 12$?

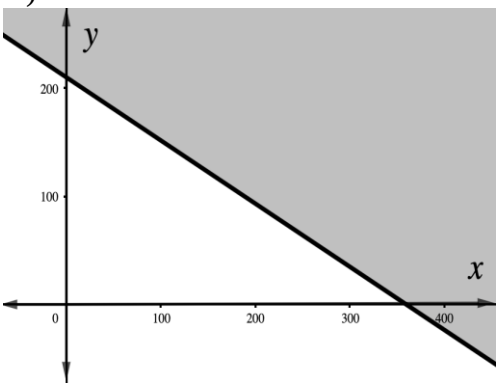
A) $x < -3$
B) $x > -3$
C) $x > 3$
D) $x < 3$

7. The graph of $y < x$ in the xy-plane contains point $(a, -3a)$, where a is a constant. What must be true about the value of a?

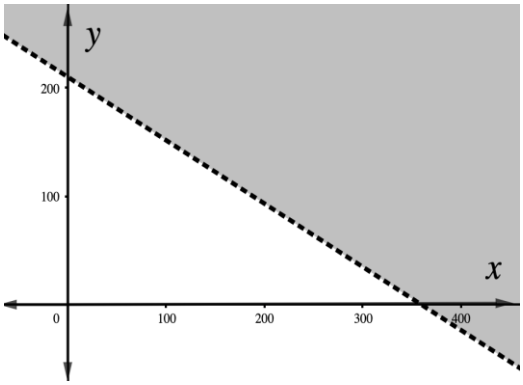
A) It is zero.
B) It is positive.
C) It is negative.
D) There is no possible value of a.

8. Tickets for the championship football game are \$12.00 for adults and \$7.00 for students. To cover expenses, a total of \$2,520.00 must be collected from ticket sales for the game. Which of the following graphs in the standard (x, y) coordinate plane, where x is the number of adult tickets sold and y is the number of student tickets sold, represents all of the possible combinations of tickets sales that will cover expenses?

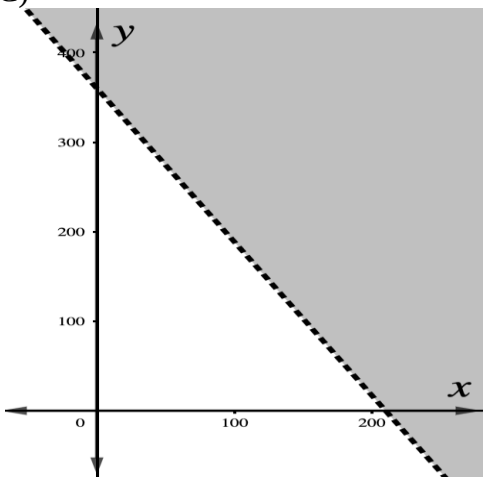
A)



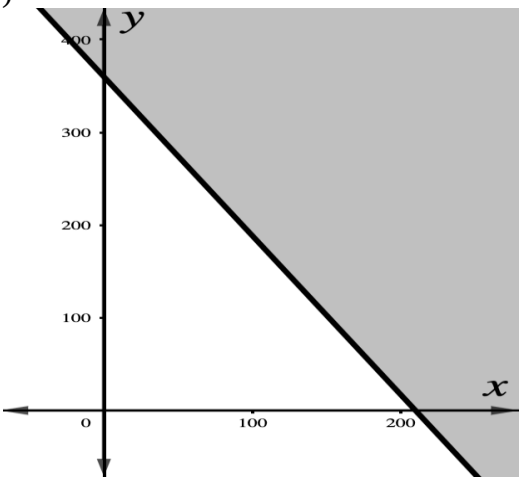
B)



C)



D)



9.

$$y < \frac{2}{3}x + 5$$
$$y > -3x + 5$$

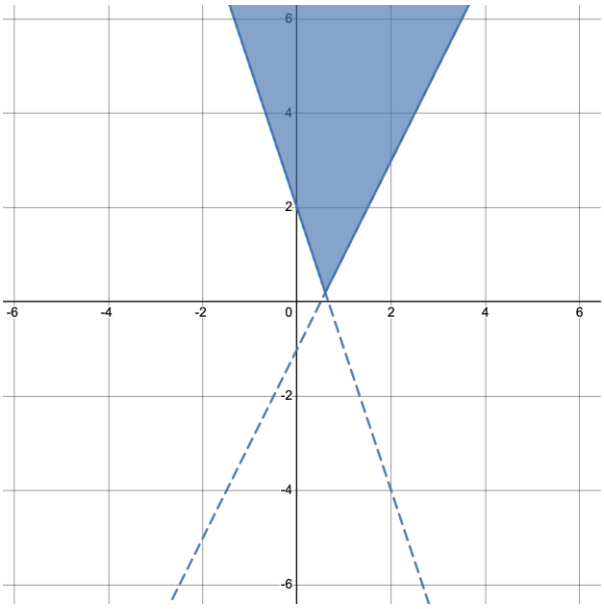
Which ordered pair (x, y) is a solution to the given system of inequalities in the xy-plane?

A) $(0, -6)$
B) $(-6, 0)$
C) $(0, 6)$
D) $(6, 0)$

10. Ilene works as a mailwoman for 20$ per hour and as private trainer for 30$ on weekends. Last week, she made at most \$180 working x hours as a mailwoman and y hours as a private trainer. Which of the following inequalities models this situation?

A) $4x + 6y \leq 36$
B) $4x + 6y \leq 45$
C) $6x + 4y \leq 36$
D) $6x + 4y \leq 45$

11.



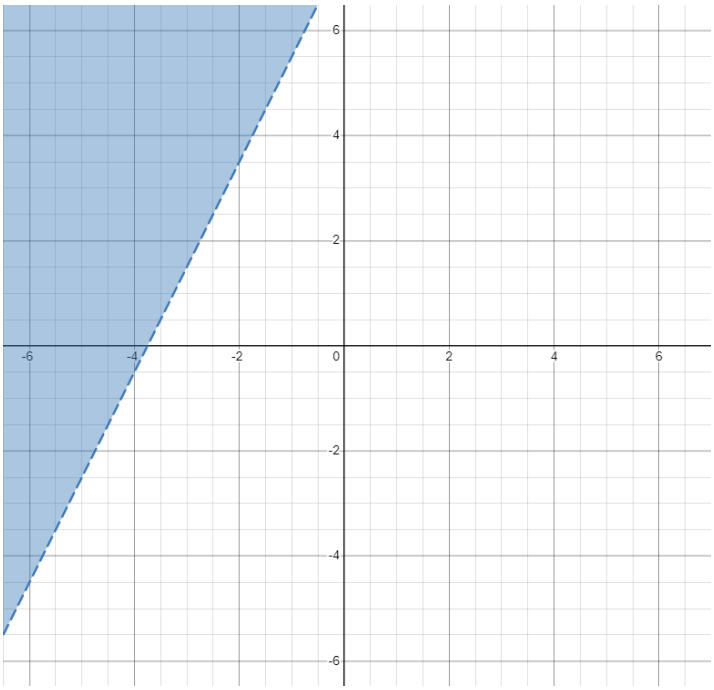
The shaded region shown in the graph represents all the solutions to a system of inequalities. Which ordered pair (x, y) is a solution to this system?

A) $(\ 0, -6)$
B) $(-6,\ \ 0)$
C) $(\ 0,\ \ 6)$
D) $(\ 6,\ \ 0)$

12. The set of all values of x that satisfies $|x - 3| < 8$ is the same set of all values x that satisfies:

A) $-11 < x < 11$
B) $\ \ 0 < x < 11$
C) $-5 < x < 11$
D) $-11 < x < 5$

13.



The shaded region shown in the graph represents all the solutions to a system of inequalities. Which ordered pair (x, y) is a solution to this system?

A) $(0, -6)$
B) $(-6, 0)$
C) $(0, 6)$
D) $(6, 0)$

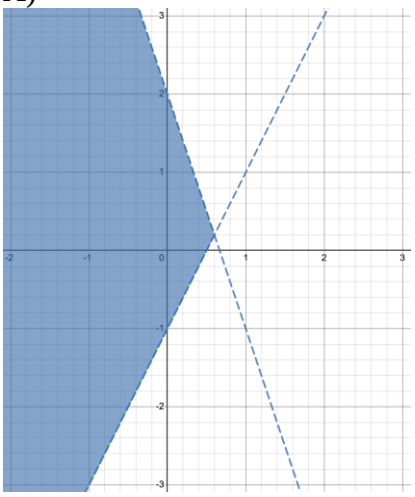
14. From 2006 to 2007, the number of sociology doctorates awarded in the United States was at least 500 greater than the number of worldwide non-commercial space launches. If the number of sociology doctorates awarded in the US in 2006 is s and the number of worldwide non-commercial space launches is w, which of the following must be true?

A) $s \leq w - 500$
B) $s \geq w - 500$
C) $s \geq w + 500$
D) $s \leq w + 500$

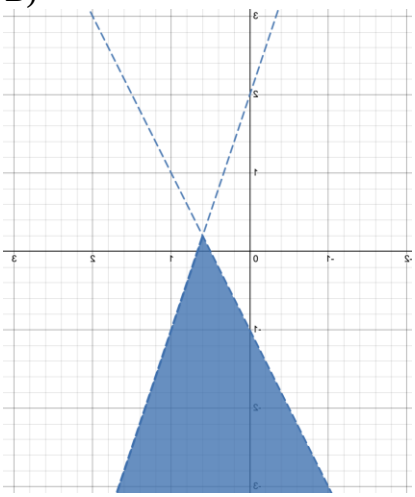
15. $y < 2x - 1$
$y > -3x + 2$

Which of the following shaded regions represents all the solutions of the given system of inequalities?

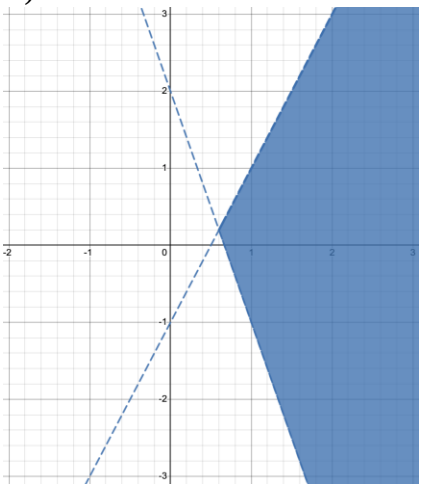
A)



B)



C)



D)