

$$4x + 6y = 12$$

$$y = 8 - kx$$

- For what value of  $k$  does the system of equations above have no solution?
  - $-\frac{3}{2}$
  - 0
  - $\frac{2}{3}$
  - 4
- Sara correctly solves a system of two linear equations and finds that the system has no solution. If one of the two equations is  $\frac{y}{6} - \frac{x}{4} = 1$ , which could be the other equation in this system?
  - $y = \frac{2}{3}x + 12$
  - $y = \frac{3}{2}x$
  - $y = -\frac{3}{2}x$
  - $y = \frac{3}{2}x + 6$
- Ben correctly solves a system of two linear equations and finds that the system has an infinite number of solutions. If one of the two equations is  $3(x + y) = 6 - x$ , which could be the other equation in this system?
  - $y = \frac{3}{4}x + 2$
  - $y = -\frac{4}{3}x$
  - $y = -\frac{4}{3}x + 2$
  - $y = -\frac{4}{3}x + 6$
- The graph of the inequality  $y \leq 2x$  will include all of the points in which quadrant?
  - Quadrant I
  - Quadrant II
  - Quadrant III
  - Quadrant IV

$$\frac{1}{2}x - \frac{5}{6}y = 5$$

$$-2x + ky = 3$$

5. In the system of linear equations above,  $k$  is a constant. If the system has no solution, what is the value of  $k$ ?

(A)  $\frac{5}{3}$

(B)  $\frac{5}{2}$

(C)  $\frac{10}{3}$

(D)  $\frac{15}{2}$

6. The graph of a line in the  $xy$ -plane has slope  $\frac{1}{2}$  and contains the point  $(0, 7)$ . The graph of a second line passes through the points  $(0, 0)$  and  $(-1, 3)$ . If the two lines intersect at the point  $(r, s)$ , what is the value of  $r + s$ ?

(A)  $-3$

(B)  $-2$

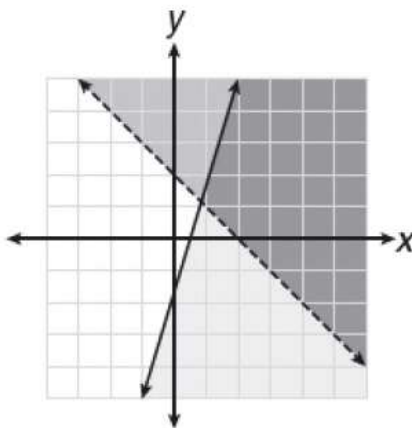
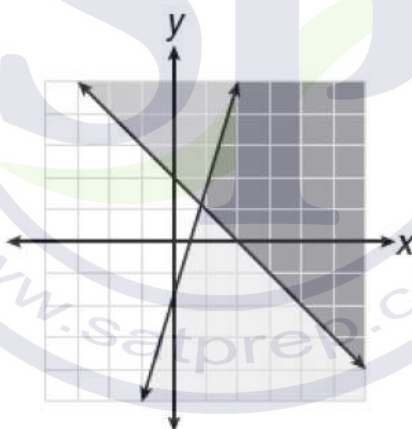
(C)  $2$

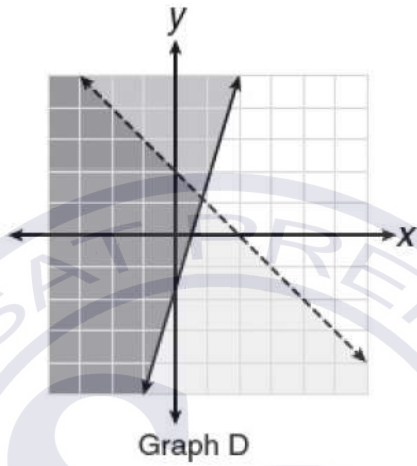
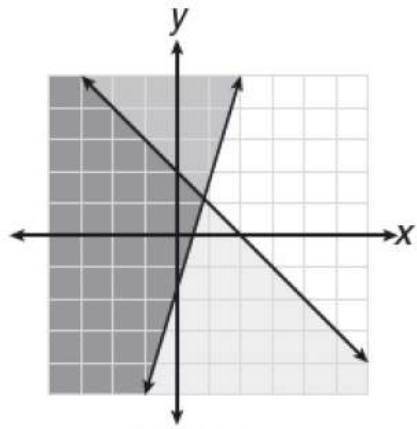
(D)  $4$

$$y + x > 2$$

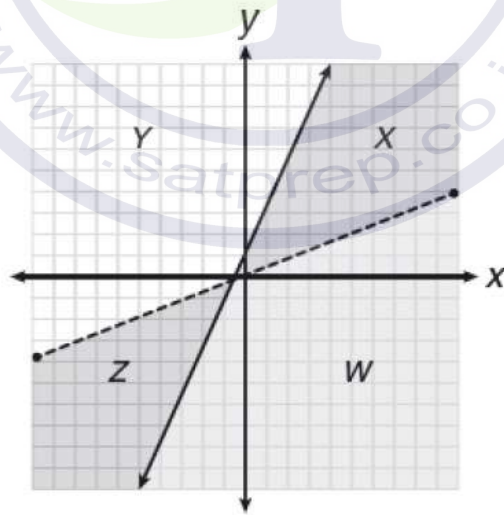
$$y \leq 3x - 2$$

7. Which graph shows the solution of the set of inequalities above?





- (A) Graph A
- (B) Graph B
- (C) Graph C
- (D) Graph D



$$2y < x$$

$$y \geq 3x + 1$$

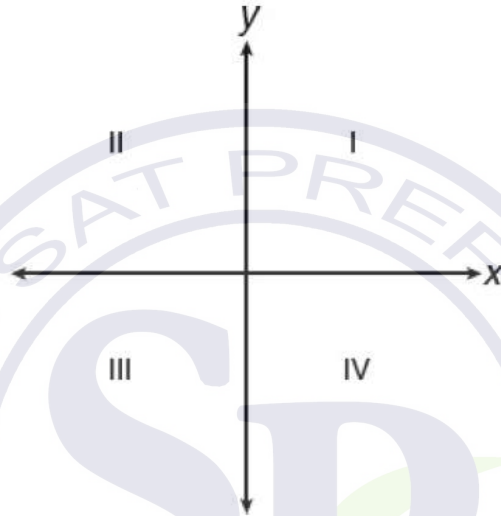
8. A system of inequalities and a graph are shown above. Which region or regions of the graph could represent the set of all ordered pairs that satisfy the system?
- (A) Region X
  - (B) Regions X and Z

- (C) Regions X, Y, and W  
 (D) Region Z

$$3x + 5 = 2y$$

$$\frac{x}{3} + \frac{y}{2} = \frac{2}{3}$$

9. For the system of equations above, which of the following statements is true?
- (A) The system has no solution.  
 (B) The graphs of the equations in the  $xy$ -plane intersect at right angles.  
 (C) The graphs of the equations in the  $xy$ -plane intersect but *not* at right angles.  
 (D) The system has infinitely many solutions.



10. If the system of inequalities  $y < 2x + 4$  and  $y \geq -x + 1$  is graphed in the  $xy$ -plane above which quadrant does not contain any solutions to the system?
- (A) Quadrant I  
 (B) Quadrant II  
 (C) Quadrant III  
 (D) Quadrant IV

### Grid-In

$$6x + py = 21$$

$$qx + 5y = 7$$

1. If the above system of equations has infinitely many solutions, what is the value of  $\frac{p}{q}$ ?

$$(k - 1)x + \frac{1}{3}y = 4$$

$$k(x + 2y) = 7$$

2. In the system of linear equations above,  $k$  is a constant. If the system has no solution, what is the value of  $k$ ?

$$\frac{1}{3}r + 4s = 1$$

$$kr + 6s = -5$$

3. In the system of equations above,  $k$  and  $s$  are nonzero constants. If the system has no solutions, what is the value of  $k$ ?
4. The graph of a line in the  $xy$ -plane passes through the points  $(5, -5)$  and  $(1, 3)$ . The graph of a second line has a slope of 6 and passes through the point  $(-1, 15)$ . If the two lines intersect at  $(p, q)$ , what is the value of  $p + q$ ?

