

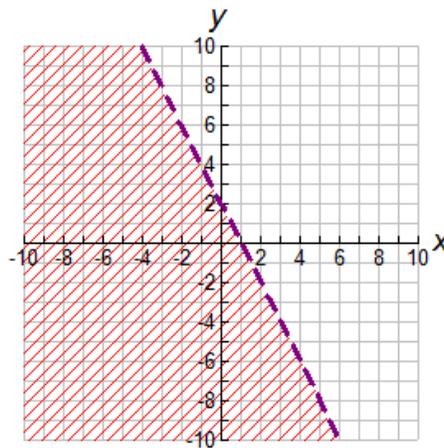
**IIT Foundation**  
**Maths – M10IQWS1**  
**Topic: Inequalities**

**Instructions:**

1. Immediately fill your particulars by using a Blue/Black Pen Only.
2. There is only one correct answer for each question. Fill the bubble on the OMR to mark your answer.
3. Working should be done only in the space provided.
4. Don't fold or make any stray marks on the Answer Sheet.

Name: \_\_\_\_\_ Section: \_\_\_\_\_ Roll No: \_\_\_\_\_ School Id \_\_\_\_\_

1. Which inequality is represented by the graph at the right?



- $y < 2x + 2$                       (2)  $y < -2x + 2$                       (3)  $y < \frac{1}{2}x + 2$                       (4)  $y < -\frac{1}{2}x + 2$
2. Which quadrant will be completely shaded by the graph of the inequality  $y < 3x$  ?  
 (1) Quadrant I                      (2) Quadrant II                      (3) Quadrant III                      (4) Quadrant IV
3. Solve the quadratic inequality  $x^2 - 3x - 10 > 0$ .  
 (1)  $(-\infty, -2) \cup (5, \infty)$                       (2)  $(-\infty, 2) \cup (5, \infty)$                       (3)  $(2, 5)$                       (4)  $[2, 5]$
4. Number of integers satisfying  $(x^2 - 4)\sqrt{x^2 - 1} < 0$   
 (1) 1                      (2) 2                      (3) 3                      (4) infinite
5. The region specified by  $x \geq 0, x + y \geq 0$  includes :  
 (1) 1<sup>st</sup> quadrant                      (2) 2<sup>nd</sup> quadrant                      (3) 3<sup>rd</sup> quadrant                      (4) 4<sup>th</sup> quadrant
6. The range of Solve  $x^2 - x - 6 = 0$   
 (1)  $(-\infty, -2] \cup [3, +\infty)$                       (2)  $(-2, 3)$                       (3)  $(-\infty, -2) \cup (3, +\infty)$                       (4)  $[-2, 3]$
7. The area of rectangular region  $2 \leq x \leq 5, -1 \leq y \leq 3$  is  
 (1) 9 sq units                      (2) 12 sq. units                      (3) 15 sq. units                      (4) 20 sq. units
8. Graph of the inequation  $2x - 5y \geq 5$  in Cartesian plane is  
 (1) above the line  $2x - 5y = 5$                       (2) below the line  $2x - 5y = 5$   
 (3) on & above the line  $2x - 5y = 5$                       (4) on & below the line  $2x - 5y = 5$

9. The area of the region bounded by the lines  $x - y = 0$ ,  $x + 2y = 0$  and  $y = 3$  is  
 (1) 17 sq. units (2) 6.75 sq. units (3) 27 sq. units (4) 13.5 sq. units
10. The range of  $-x^2 + 4 > 0$   
 (1)  $x < -2$  or  $x > 2$  (2)  $x < -2$  (3)  $x > 2$  (4) None of these
11. The range of  $2x^2 + 4x > x^2 - x - 6$  is  
 (1)  $x \leq -3$  (2)  $x > -2$  (3)  $(-2, 3)$  (4)  $x \leq -3$  or  $x > -2$
12. The range of  $x^2 + 2x - 8 < 0$   
 (1)  $-4 \leq x \leq 2$  (2)  $-2 < x < 4$  (3)  $-4 < x < 2$  (4)  $-4 = x = 4$
13. The range of  $-x^2 + 6x - 9 > 0$  is  
 (1)  $x < 3$  (2)  $x > 3$  (3)  $x = 3$  (4) No solution
14. Which of the following is not true?  
 (1) If  $x < 2$  then  $x^2 \geq 0$  (2) If  $x > -3$  then  $x^2 \geq 0$   
 (3) If  $x^2 - x - 2 > 0$  then  $x^2 > 1$  (4) None of these
15. Number of integers satisfying  $x + \sqrt{3-x} \geq \sqrt{3-x} + 3$  is  
 (1) 0 (2) 1 (3) 2 (4) 3
16. Which of the following is not the solution of the inequality  $\frac{2x+3}{x^2+x-12} < \frac{1}{2}$ ?  
 (1)  $(-\infty, -4)$  (2)  $(-3, 3)$  (3)  $(6, \infty)$  (4) none of these
17. Which of the following is not the solution of the inequality  $\frac{1}{x-2} + \frac{1}{x-1} > \frac{1}{x}$ ?  
 (1)  $(-\sqrt{2}, 0)$  (2)  $(1, \sqrt{2})$  (3)  $(2, \infty)$  (4) none of these
18. Number of integers satisfying  $\sqrt{8+2x-x^2} > 6-3x$   
 (1) 0 (2) 2 (3) 3 (4) 4
19. The length of the smallest interval for which  $\frac{\sqrt{2x-1}}{x-2} < 1$  is satisfied is  
 (1) 1/2 (2) 1 (3) 3/2 (4) 2
20. Number of integers satisfying  $\sqrt{x-6} - \sqrt{10-x} \geq 1$  is  
 (1) 4 (2) 5 (3) 3 (4) 1

OMR (Use HB Pencil Only)

1	① ② ③ ④	2	① ② ③ ④	3	① ② ③ ④	4	① ② ③ ④	5	① ② ③ ④
6	① ② ③ ④	7	① ② ③ ④	8	① ② ③ ④	9	① ② ③ ④	10	① ② ③ ④
11	① ② ③ ④	12	① ② ③ ④	13	① ② ③ ④	14	① ② ③ ④	15	① ② ③ ④
16	① ② ③ ④	17	① ② ③ ④	18	① ② ③ ④	19	① ② ③ ④	20	① ② ③ ④